School of Medicine
and Public Health
UNIVERSITY OF WISCONSIN-MADISON

# CT Protocols for Optima CT580W

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Manufactured in USA

**University of Wisconsin-Madison CT Protocols for Optima CT580W**

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** NOTE: Neuro protocols for pediatric patients are in the Neuro Protocols section.*

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** NOTE: Neuro protocols for pediatric patients are in the Neuro Protocols section.*

# Changes from Revision 3 to Revision 4

As part of our ongoing UW Madison CT protocol optimization, we have made the following changes between the Revision 3 and Revision 4 release. All of these changes have been internally reviewed and validated by our team of Radiologists, Physicists, and CT Technologists, thereby fulfilling The Joint Commission mandate on protocol review. Detailed documentation of our compliance with The Joint Commission Standards regarding the performance element for CT protocol review is posted on our website (https://www.radiology.wisc.edu/protocols/CT/resources.php).

This manual includes new guidance on scanning combined Trauma Chest and T-Spines. In this version, you need to scan Trauma Chest and T-Spines using two different protocols. In previous UW protocol versions, the Trauma Chest protocol was sufficient to retro recon T-Spines. More details on this change can be found in the section titled "Trauma Chest and CAP T-Spine Workflow". Note, this also affects the Trauma CAP protocol when combined with an order for a T-Spine.

## New Scanners Added

Protocols for the Revolution CT, Optima CT580W, and Discovery IQ PET/CT platforms will be delivered to GE by the end of April 2019.

## New Protocols Added

A Gemstone spectral imaging CT Head Without Contrast was created for scanners that have the feature intended for Brain Post Thrombolysis.

The new scanners that were added have the same protocols as the existing scanners offered in the UW protocol set, with an additional GSA protocol for PE for the Revolution CT scanner.

## Global Changes Made to the UW Protocols

Series descriptions are now standardized for all protocols. They are vendor neutral and will assist with hanging protocols. A manual for this can be found on our website, https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

Protocol guidance documents have been developed for all sections that enables the technologist and the radiologist to choose the proper protocol based on indication and the patients' disease. A manual for this can be found on our website, https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

Guidance is now provided for Metal Artifact Reduction. Higher dose with metal protocols are no longer recommended to be used for spines and extremities. Users should turn on MAR if they have it. If the user does not have MAR, we don't advise turning up the kV and dose as it only minimally helps mitigate the metal artifacts. Direct patients to scanners that have MAR capabilities whenever possible.

## Abdominal Protocols

Added a 'Without' series for the Urothelial Tumor protocol.

Added a dynamic transition option for the following protocols: Liver Donor, Triphasic, CTA Pancreas Transplant, Biphasic, Mesenteric Ischemia, Hepatocellular Carcinoma, Liver Transplant Recipient, Trauma Chest, and Trauma Chest/Abdomen/Pelvis. Previous to this change, the technologist was required to manually trigger the scan when the ROI value/s reached the defined threshold.

Lowered the dose in the Pancreas Transplant Without Contrast series.

Removed the Without Contrast series in the Pancreas Cancer Protocol and included the entire abdomen on the With Contrast series.

Turned on exam split Chest/Abdomen/Pelvis Without and the Chest/Abdomen/Pelvis with Contrast protocols.

## Chest Protocols

Added additional instructions for breathing on the PE protocol. These extra instructions are meant to avoid transient interruptions of contrast events from motivating a repeat scan.

## Cardiovascular (CV) Protocols

Added lung recons and reformats to the CTA Chest protocols. This change should enable better harmonization of protocols covering the same body region.

Increased the ASIR to 60% for the CTA Coronary exam.

Changed the CTA Upper Extremity contrast chaser from100 mLs to 50 mLs of saline.

Moved the CTA Lower Extremity protocol from the Chest section on the scanner (it is still in the manual under the CV section) to the Knee section and turned on the series split.

## Musculoskeletal (MSK) Protocols

We are still providing our "with metal" MSK protocols that have higher kV and doses, but recommend using our regular MSK protocols with MAR turned on.

## Neuroradiology (Neuro) Protocols

The Pediatric CTA Head/Neck/Perfusion protocol is now using Isovue 370 for the entire scan.

Added guidance to retro recon the cervical spine from a CTA Neck to save patient dose.

All pediatric spines were changed to a soft reconstruction.

On scanners other than the Revolution CT, the ASIR level was increased from 30% to 60% on the standard recon for the following protocols: Orbit, Pituitary Gland, Temporal Bone, Routine Soft Tissue Neck, Brachial Plexus, CTA Head, CTA Neck, Stroke Deluxe, Venography, Parathyroid Adenoma and Salivary Gland.

Included a 30% ASIR to all soft recon for the Cervical, Thoracic and Lumbar Spines.

Included the "size selection for Neck and C-spine" into the actual protocols for easier reference.

Updated the subclavian injection protocol for the dual head injector to inject 140 mLs of Isovue 370 at a rate of 4 ml/sec and then 10 mls of contrast pre-mixed with 90 mLs of saline at a rate of 3 mLs/second.

Updated the Parathyroid Adenoma Dose Check Alert.

## Pediatric Protocols

In the Pediatric Chest/Abdomen/Pelvis, the smart prep location was changed to the pulmonary artery and a 20 second diagnostic delay was added, contrast peak at 30 Hounsfield units to create a later phase for the chest.

# Additional UW CT Protocol Resources

In addition to the protocols contained in this manual, we've cultivated a website with additional resources to augment the protocols and assist your practice in all facets of CT scanning. As shown in the graphic on the next page and as found at the URL address below, we have many resources available, including the following:

https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

- Mapping Indications to Protocols Quick Guide
  - This is a manual that is meant to be a quick reference guide for mapping diagnosis and indications to the UW protocols. We offer various protocols which are required to properly span patient size and the wide range of indications found in most radiology practices.

- Complying with Accreditation/Regulatory Requirements
  - By using the UW protocols, you are compliant with a number of Joint Commission Diagnostic Imaging Performance Criteria. Please see the letter on the website which itemizes this.

- Series Description and Hanging Protocols Uniformity
  - We have a vendor neutral manual that details homogeneous name reconstructions and assists the tech workflow with image hanging in PACS.

- Quality Assurance Instructions
  - This includes detailed instructions on Daily, Weekly and Monthly QA testing and analyzing for CT Scanners, including phantom scanning instructions, data collection worksheets, and step-by-step instructions on how to scan and gather measurement data for ACR and TJC compliance.

- Dose Check and Dose Benchmarking
  - We provide dose check values tuned to patient size and indication with instructions on how to enter them on your scanner. (All UW protocol discs will come with these already pre-loaded for you.)
  - We also incorporate dose data from thousands of UW patients scanned using these protocols, providing appropriate standard references.

- Contrast Guidance
  - Reference material is provided for daily tech use on: needle gauges, creatinine/eGFR levels, weight-based dosing, contrast media, and oral contrast mixtures.

- Patient Positioning Tutorials
  - Improper patient positioning can lead to poor image quality. This tutorial document goes over proper positioning to avoid degradation in spatial resolution and amplifications of image noise.

- Patient Size Selection Quick Guide
  - Many techs initially have trouble with our use of small/medium/large sized based scans. We created a manual and defined our default reconstruction FOV to mitigate any issues. This information is also included within this protocol manual.

We hope the collection of scanner protocols contained in this manual, and the plethora of resources on our website, will aide you in your effort to provide the best patient care possible!

# Compatibility for Optima CT580W

## Introduction:

Listed below are the minimum scanner options required to use this set of protocols on your Optima CT580W scanner. The protocols in this document have been validated on a scanner compatible with the requirements listed below. The portability of UW protocols to scanners with different specifications may be possible with the proper assistance from your institution's CT protocol optimization team, but should no longer be considered validated UW protocols.

As with any protocol "restore" operation, the existing "user" protocols will be deleted when these UW protocols are loaded onto your scanner. We therefore recommend you keep a copy of any protocols you wish to use after loading the UW protocols, which can then be added to the UW protocol set under your "user" tab.

**IMPORTANT—The following two rules should always be followed when restoring protocols: 1) protocols must only be transferred between scanners of the same model, and 2) protocols must only be transferred from another scanner with a software version that is older or equal in revision number, but not newer.**

## Scanner Compatibility List:

ASiR

16 slices acquisition at 0.625 mm

Cardiac Options: This package does not ship with protocols that use retrospective or prospective gating.

Tube rotation times (helical mode): 0.5, 0.6, 0.7, 0.8, 0.9, and 1.0 second.

mA limits/kV: 715 mA at 140 kV, 800 mA at 120 kV, 770 mA at 100 kV, and 675 mA at 80 kV

# Direct Multi-Planar Reformat (DMPR) Protocols

**Introduction:**

A Direct Multi-Planar Reformat (DMPR) is a process set up and is executed as part of the scan protocol. It can use the same protocol that might be used in a General Reformat. In DMPR, the user defines the reformat protocols to be executed and sets as an Automated Batch mode or a Manual Batch mode. It is then executed on the ExamRx desktop.

Reformat is available on the Image Works Desktop and requires manual loading of the data once the scan is completed.

**DMPR Protocols:**

A reformat protocol must be created to be selected for use in protocols with DMPR enabled. For DMPR to work with the UW protocols, reformat protocols will need to be built with the same names as those used in the protocols. To build reformat protocols, you need to select images from an exam already performed to create the initial same-name reformat protocol. Reformat protocols created for use in DMPR must be single-step protocols and can only be created in the axial, sagittal, or coronal viewports. Reformat protocols for use in DMPR need to be saved in the General category if using Volume Viewer. You must create the DMPR reformat protocol on images from the body part that the protocol will be used for (i.e., a Pediatric DMPR protocol must be created on images for a Pediatric case and an Adult DMPR protocol must be created on images for an adult case).

UW-specific DMPR reformat protocol names are identified below with window width and level values for use with UW Protocols:

| | | |
|---|---|---|
| **BODY - WW/WL 450/50**<br>**CO BODY**<br>**SA BODY** | **CHEST - WW/WL 450/50**<br>***(created off of a C/A/P study)***<br>**SA**<br>**CO** | **CHEST - WW/WL 1500/-700 off bone+ images**<br>**MIPS** |
| **PEDS BODY - WW/WL 450/50**<br>**CO PEDS**<br>**SA PEDS** | **PEDS CHEST - WW/WL 450/50**<br>**SA PEDS CHEST**<br>**CO PEDS CHEST** | **PEDS CHEST - WW/WL 1500/-700**<br>**PEDS CO CHEST**<br>**PEDS SA CHEST** |

All slice thickness and intervals can be found in the actual protocols.

**Manual Reformats (non DMPR, these are for populating the drop down menu in the image works utility):**

Optional pre-built reformats: These need to be built manually under Image works; reformat; batch and then protocol drop down menu. (follow the instruction below)

| Label | Slice Thickness (mm) | Spacing/Interval (mm) | WW | WL |
|---|---|---|---|---|
| Head | 3 | 1.5 | 180 | 25 |
| MIPS 2x1 | 2 | 1 | 800 | 200 |
| MIPS 10x2 | 10 | 2.5 | 600 | 200 |
| CO ST 3X1 | 3 | 1.5 | 450 | 50 |
| CO BONE 3x1 | 3 | 1.5 | 2500 | 350 |
| CO ST 2x1 | 2 | 1 | 450 | 50 |
| CO BONE 2x1 | 2 | 1 | 2500 | 350 |

**How to Create a Reformat Protocol for use in a DMPR or manual sessions:**

1. Load thin slices (make your reformat 0.625/1.25) into Reformat selected on the Image Works desktop. (You must pick a study that has a wide display field of view and a long scan range, i.e. a run off works well for building these.)
2. Select Batch Reformat.
3. Set the slice thickness, interval, FOV and mode to the values for the protocol it will be used with.
4. Define the overage (number of images) for the reformat protocol according to the anatomical area for the protocol.
5. At the bottom of the Batch screen, click ADVANCED.
6. Click SAVE AS PROTOCOL.
7. Enter the Protocol Name* and click SAVE.

*The exact name listed above must be used in the naming of the protocol so DMPR will use the appropriate reformat protocol, which has been predefined in each of the protocols that use DMPR. Once you create these reformat protocols, you will not need to do it again.

Should you decide not to use these suggested reformat protocol names, slice thicknesses, or intervals, you will need to create your own reformat protocols and modify all protocols using DMPR with your selections; otherwise, DMPR will fail to output reformatted series.

# Size Selection

## Adults: Small/Medium/Large

All Adult Body Protocols are divided into **Small**, **Medium**, and **Large** Adult Protocols.

> **Small** Adult Body Protocols shall be used for all patients with a combined AP plus Lateral size of 60 cm or less.
>
> **Medium** Adult Body Protocols shall be used for all patients with a combined AP plus Lateral size of greater than 60 cm and less than 80 cm.
>
> **Large** Adult Body Protocols shall be used for all patients with a combined AP plus Lateral size of 80 cm or greater.

These sizes shall be measured off of the Scout image over the largest anatomy of clinical interest.

With the use of these 3 protocols, matched to patient size, there should not be any need for the CT technologist to make further adjustments to the scan techniques when scanning any patient.

## Pediatrics: Color Code

When selecting the patient size protocol to use, the combined AP plus Lateral Size of the patient is the primary determining factor. This sum of the AP plus Lateral dimensions of the patient should be measured off of the scout image over the largest anatomy of clinical interest. For accurate measurement, the patient must be properly centered. Also the window width must be adjusted wide enough so that the measurements can be taken from the surface of the skin. For patients with a combined AP plus Lateral Size above 60 cm, use a Medium Adult protocol. Between 55 and 60 cm, use a small adult protocol.

The pediatric color coding scheme divides pediatric patients into five sizes coded by color. The approximate age of patients and size ranges are given as follows:

**Pink** - Newborns. Typical AP + Lateral size of 0-26 cm.

**Red/Purple** - 6 months-2.5 years. Typical AP + Lateral size of 27-31 cm.

**Yellow/White** - 3-7 years. Typical AP + Lateral size of 32-37 cm.

**Blue/Orange** - 8-12 years. Typical AP + Lateral size of 38-43 cm.

**Green/Black** - 13-18 years. Typical AP + Lateral size of 44-55 cm.

The 9 colors that are used in this scheme are derived from the Broselow tape scale which was originally used to color code doses of medication given in pediatric care.

## Neuro: Adult/Child/Infant

Some of the neuro protocols have scan parameters that are divided into three groups for: Adults, children (3-6 years old), and infants (0-3 years old).

# Size Selection for Neck and C-Spine

**NOTE: If the patient has lymphoma and the study is a follow-up, use the small neck protocol (regardless of the patient's actual size) since it will provide a lower dose.**

- Verify that the arms are outside of the CT wrap, and that the shoulders are relaxed down toward the feet as far as possible. Measure the width of the shoulders through the level of the mid-humeral head, as shown below.
- Check BMI.
- Select small, medium or large based on the table below.

| Measure width through mid-humeral heads | Small | Medium | Large |
|---|---|---|---|
| | **Shoulder width less than 46 cm *OR* BMI less than 26** | **Shoulder Width 46 to 50 cm** | **Shoulder width greater than 50 cm *OR* BMI greater than 35** |

# Trauma Chest and CAP T-Spine Workflow

## New Workflow

- You get an order for Trauma Chest only --> you scan the patient using the Trauma - Chest protocol
- You get an order for Trauma CAP only --> you scan the patient using the Trauma - Chest/Abd/Pelvis protocol
- You get an order for a Trauma Chest and a T-Spine--> You scan the patient with the Trauma - Chest protocol **AND THEN YOU MUST PERFORM A SEPARATE SCAN USING THE** Thoracic Spine protocol
- You get an order for a Trauma CAP and a T-Spine--> You scan the patient with the Trauma - Chest/Abd/Pelvis protocol (and possible delays) **AND THEN YOU MUST PERFORM A SEPARATE SCAN USING THE** Thoracic Spine protocol

**Note**: You won't be able to do a retro recon of the T-Spine from the Trauma Chest or Trauma CAP protocol anymore. So make sure the Trauma physician knows if they decide they want T-Spine images at a later time, the patient will have to be re-scanned.

**Note**: The abdomen portion of the Trauma CAP is still delivered at a spine level dose. In other words, you don't have to perform a separate L-Spine scan if you get an order for Trauma CAP and an L-Spine. So if you get an order for a Trauma CAP and a T-Spine and L-Spine, you need to scan using just the Trauma CAP and T-Spine protocols.

**Note**: The pediatric Trauma CAP protocol can still be used to retro recon the T-Spine. In other words, you should **NEVER** scan both a pediatric Trauma CAP and then a T-Spine protocol.

## Old Workflow

All T-Spines could be reconstructed from a Trauma Chest or Trauma CAP scan. Therefore, you only had to scan the patient with the Trauma Chest or Trauma CAP protocol.

# History of Workflow

Previous versions of UW Protocols scanned Trauma Chest and CAP at a dose level sufficient for T-Spine reconstruction. This allowed a single scan to fulfill orders for both a Trauma Chest and a T-Spine. In order to deliver enough dose and minimal artifact for the spines, our technique used a 0.516:1 pitch and relatively long rotation times. This produced good spine images, but the scan times were too long which caused undesired motion on the Trauma Chest images.

# CT Perfusion Protocol: (Specific Instructions)

## Setup

1. Patient Supine, AP and lateral scouts, no gantry tilt
2. Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).
3. Usually done in conjunction with a CT/CTA of the Head or CT/CTA of Head/Neck
4. Best to use 64 (4 cm detector coverage) slice scanners

## Exam

CT Perfusion

1. Scan Type Cine
2. Cine Duration 65 seconds
3. Perfusion Area (next page)
4. Contrast Adult: 40 ml of 370 Isovue (14.8 g Iodine) with 30 ml saline chase

Peds: 0.25 mg/kg Isovue 370 with 10 ml saline chase

1. Injection Rate Adult: 5 ml per sec

Peds: 3-4 ml per sec (Depends on size of needle and age of patient)

1. Prep Delay 5 seconds
2. Perfusion Slabs Use maximum number (4-8-16) of contiguous 5 mm slabs allowed by each specific CT scanner (use toggle/shuttle mode if possible)

## DFOV

1. Preferred 22 cm

## Perfusion Post Processing

(see below for further details):

1. Prospectively reconstruct the images to .5 seconds. This is found under thick/speed - (under recon 2).
2. When you are in recon 2, enter the RAS coordinates manually.
3. Network raw perfusion images to ALI Store

## Acquisition Parameters

### Cine

| | Adult and Child non Revolution256 | Adult and Child Revolution256 |
|---|---|---|
| **Scan Type** | **Cine** | **Cine** |
| **Rotation Time** | **1.0** | **1.0** |
| **Beam Collimation** | **40** | **80** |
| **Detector Rows** | **64** | **128** |
| **Detector Configuration** | **64 x 0.625** | **128 x 0.625** |
| **Scan FOV** | **Head** | **Head** |
| **Number of images per rotation** | **8i** | **16i** |
| **kV** | **80** | **80** |
| **Smart or Manual mA** | **Manual mA** | **Manual mA** |
| **Manual mA for Adults** | **150** | **200** |
| **Manual mA for Ped < 6 y/o** | **75** | **100** |
| **Cine Duration (sec)** | **65** | **65** |
| **Slice Thickness (mm)** | **5.0** | **5.0** |
| **Interval (mm)** | **0** | **0** |

Note: Apply 30% ASiR/ASiR-V to the perfusion recons.

## Shuttle

| | Adult and Child |
|---|---|
| Scan Type | Shuttle |
| Rotation Time | 0.5 |
| Beam Collimation | 40 |
| Detector Rows | 64 |
| Detector Configuration | 64 x 0.625 |
| Scan FOV | Head |
| Number of images per rotation | 8i |
| kV | 80 |
| Smart or Manual mA | Manual mA |
| Manual mA for Adults | 400 |
| Manual mA for Ped < 6 y/o | no shuttle scans for peds |
| Cine Duration (sec) | 65 |
| Slice Thickness (mm) | 5.0 |
| Interval (mm) | 0 |

Note: Apply 30% ASiR/ASiR-V to the perfusion recons.

# CT Perfusion Coverage

## 32 and higher slice scanners (shuttle mode)

Obtain 16 contiguous 5 mm slices from EAC Upward

## 32 and higher slice scanners (cine mode)

64 Channel CT Perfusion: Non-shuttle Mode (8x5 mm slice coverage)

64 Channel CT Perfusion: Non-shuttle Mode (8x5 mm slice coverage)

## 8-16 Slice scanners (cine mode)

8-16 Channel CT Perfusion: (4x5 mm slice coverage)

# Abd/Pelvis 6.1/6.2/6.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluate for abdominal pathology other than hypervascular tumors.

Video for this protocol

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

If the patient is a bariatric post-op patient the patient will not drink up on the floor. Rather they will get between 100-150 mL oral contrast when they get to CT right before getting on the table. This should be in the order itself. If you have questions please ask the protocolling radiologist.

**Pre-Scan Instructions**

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through iliac crest or pubic symphysis
- Series 2 – Helical Scan
  - Smart Prep- Monitor Phase: Center over the liver. Put ROI (3) in the liver. Threshold 50 Hounsfield units. No more than 80 seconds delay.
  - Scan Phase: Start scan at the top of the diaphragm, for Abdomen Only end at the iliac crests or for Abdomen/Pelvis end at pubic symphysis.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 40 | 40 | 40 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# High Image Quality Cancer Follow-Up Abd/Pelvis 6.7/6.8/6.9

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Higher image quality version of the routine abdomen pelvis protocol. This protocol is to be used for cancer follow-up on patients with pathology known to be of a subtle nature. The order should specifically ask for this version of the abdomen pelvis routine protocol at the time of placing the order. Typically, a determination would be made based on age and disease process (usually dependent on whether they could have metastatic disease to the liver).

- Use HIQ on Colorectal, Pancreas, Esophageal, Lung and Breast cancer.
- Do not use HIQ on Lymphoma or Testicular cancer
- Use Biphasic protocol on hypervascular metastatic disease (Renal cell and Neuroendocrine tumors)

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

If the patient is a bariatric post-op patient the patient will not drink up on the floor. Rather they will get between 100-150 mL oral contrast when they get to CT right before getting on the table. This should be in the order itself. If you have questions please ask the protocolling radiologist.

**Pre-Scan Instructions**

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through iliac crest or pubic symphysis
- Series 2 – Helical Scan

- Smart Prep- Monitor Phase: Center over the liver. Put ROI (3) in the liver. Threshold 50 Hounsfield units. No more than 80 seconds delay.
- Scan Phase: Start scan at the top of the diaphragm, for Abdomen Only end at the iliac crests or for Abdomen/Pelvis end at pubic symphysis.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 40 | 40 | 40 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.9 | 0.7 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-430) | (70-690) | (60-680) |
| Manual mA | 220.0 | 350.0 | 410.0 |
| Noise Index | 10.5 | 11.5 | 14.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd/Pelvis - R/O Hernia (Use routine abd/pelvis protocol)

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Standard CT of the abdomen and pelvis with the patient performing a Valsalva maneuver during the scan aquisition. This increases the likelihood of detecting hernia.

Video for this protocol

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

**Bariatric post-op patients:**

Oral contrast is only given on the CT scan table.

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of .75 dose = 100-150mL on the CT scan table.

There will be an order in EPIC to administer only 1 dose.

**Pre-Scan Instructions**

Technologists should educate the patient on how to perform the Valsalva maneuver. When asked to breathe in, the patient should be instructed to bear down forcefully. They will need to hold this for the 10-20 seconds of the scan. Use the Routine Abdomen/Pelvis protocol in the scanner.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate.

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through iliac crest (for abdomen only) or pubic symphysis (for abdomen/pelvis)
- Series 2
  - Smart Prep- Monitor Phase: Center over the liver. Put 3 ROIs in the liver. The smartprep threshold is 50 Hounsfield units. Wait no longer than 80 seconds before starting the scan if the threshold is not reached.
  - Helical Scan- Scan Phase: Start scan at the top of the diaphragm, for Abdomen Only end at the iliac crests or for Abdomen/Pelvis end at pubic symphysis.
    - As the scanner instructs the patient to “breath in and hold it”, please tell the patient to “bear down”. Intermittently reinforce it by telling the patient to keep holding it. When the scanner says “breathe” please add “and relax”.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

Same as Abd/Pelvis 6.1/6.2/6.3

# Abd/Pelvis - Flank Pain 6.10/6.11/6.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Patients with flank pain. R/O Renal Calculi.

Video for this protocol

### Oral Contrast

Scan with a full bladder. Hydrate ER patients if time allows.

### Pre-Scan Instructions

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

### IV Contrast Parameters

None

### Field of View

Same as previous study or as small as appropriate

### Scan Description

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis
- Series 2 - W/O IV Contrast - Start at the top of the kidneys and end at the base of the bladder.
- If Radiologist wants to convert to with IVC use the routine Abd/Pel protocol.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

- If diagnosis is uncertain and contrast is needed convert to a routine abd/pel, creatinine level is not necessary.

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd/Pelvis - Pre-IVC Filter Removal 6.73/6.74/6.75

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

This is a standard CT of the abdomen and pelvis optimized for evaluation of residual clot in the IVC prior to IVC filter removal

### Oral Contrast

None

### Pre-Scan Instructions

None

### IV Contrast Parameters

Use the Medrad™ P3T Abdomen protocol. 2 mL per second.

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

### Field of View

As small as possible

### Scan Description

- Series 1 - AP/Lateral Scouts: from diaphragm through pubic symphysis.
- Series 2
  - Timing: Begin 180 seconds after the injection.
  - With IV Contrast: Scan from the top of the diaphragm, end at the pubic symphysis.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.

- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Low Dose Renal Stone (including limited follow-up) 6.13/6.14/6.15

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Follow-up for known urinary tract calculi.

Optional limited variant: follow-up for renal calculi (kidneys only).

Video for this protocol

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour) if time allows. Scan the patient with a full bladder.

**Pre-Scan Instructions**

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

None

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

Low Dose Renal stone:

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis
- Series 2 - W/O IV Contrast - Start at the top of the kidneys and end at the base of the bladder.

LIMITED exam for renal stone follow-up: (If the patient is extremely large use routine flank pain)

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis
- Series 2 - W/O IV Contrast - Start at the top of the kidneys and end at bottom of the kidneys (approximately T12-L4 to rule out calculi).

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (45-360) | (45-450) | (50-570) |
| Manual mA | 180.0 | 230.0 | 340.0 |
| Noise Index | 20.0 | 22.0 | 27.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd/Pelvis - Colonography 6.16/6.17/6.18

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Suspicion or evaluation of polyps or other abnormalities within the colon.

**Oral Contrast**

None

**Pre-Scan Instructions**

Make sure the patient has been prepped properly. Encourage use of restroom.

Place the patient on the CT table on their left side to insufflate the colon with CO2, left decubitus for ~ 1.5 liters, right decubitus for another 2.0-2.5 L for a total volume of 3.5-4.0 L, and then roll supine and assess for equilibrium pressures. If equilibrium pressures present, then scan supine series. Please be sure that carbon dioxide remains continuously infusing throughout the scan.

If the patient cannot lie on their stomach for the prone series, you can go straight to the Right Lateral Decubitus series after the supine series and add the Left Lateral if needed.

- **Proper positioning for the decubitus portion of the CTC screening exam**

Just as patient positioning is critical in our routine supine and prone exams, it is also critical in the decubitus portion of our virtual colonoscopy screening exam. To provide the best image quality at the lowest dose, proper patient centering in the scanner gantry is critically important.
You cannot simply have the patient roll to their side, this will leave their pelvis in an off center position! You must have the patient roll and then confirm that they have shifted their pelvis back to the scanner of the couch. **Roll and shift!**
Aim to get the patient's ilium bones centered in the scanner.
Note, it is also possible that after proper positioning, the patient may tilt to the side before the scan. Tilting to the side is a natural response to being placed in the decubitus position. Please watch for this and instruct the patient to return to the proper position.

**Poor Position**

**Bad Looking Scout**

**Good Position**

**Good Looking Scout**

**Resulting Bad Looking Image** **Resulting Good Looking Image**

Bone Density Scanning

- Supine Only: Invert patient toes, include lesser trochanters. Recon 3 is Pelvis only 2.5 x 2.5 (send to QCT-HIP)

**IV Contrast Parameters**

None

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

Scan is performed supine and prone.

- Series 1 - PA & Lateral supine scouts: top of the diaphragm through pubic symphysis
- Series 2 - Supine – Start above the highest flexure of the colon and scan through the rectum. Review images to check for proper colonic distention, pay special attention to sigmoid distention.
- Series 3 – Prone scouts: top of diaphragm through pubic symphysis.
  - After the scout deflate the balloon before scanning.
- Series 4 – Prone – Start above the highest flexure of the colon and scan though the rectum. Review images to check for proper colonic distention.
- Consider right decubitus Series 5 and 6 (Scout and Scan) if areas of sigmoid collapse are present on both views. These series are built into the protocol, you do not have to repeat series.

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

The 5mm images (Recon 2) and scouts are networked to (ALI_Store) PACS - network the 1.25mm images from series 2 & 4 (& 5) to these 3 places V3D3_Primary, V3D_Backup, and (ALI_Source) Thin PACS. The Bone Density Recon 3 is sent to QCT-HIP. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None.

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 120 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-520) | (40-520) | (40-520) |
| Manual mA | 190 | 190 | 190 |
| Noise Index | 25.0 | 25.0 | 25.0 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 2000/0 | 2000/0 | 2000/0 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 2.5 | 2.5 | 2.5 |

## Series 3, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 120 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-520) | (40-520) | (40-520) |
| Manual mA | 190 | 190 | 190 |
| Noise Index | 60.0 | 60.0 | 60.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 2000/0 | 2000/0 | 2000/0 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 5, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 6, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 120 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-520) | (40-520) | (40-520) |
| Manual mA | 190 | 190 | 190 |
| Noise Index | 60.0 | 60.0 | 60.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 6, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 2000/0 | 2000/0 | 2000/0 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Chest/Abd/Pelvis with IV Contrast 5.4/5.5/5.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluate for adenopathy, abscess, and neoplasm.

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

**Bariatric post-op patients:**

Oral contrast is only given on the CT scan table.

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of .75 dose = 100-150mL on the CT scan table.

There will be an order in EPIC to administer only 1 dose.

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from lower neck through iliac crest or pubic symphysis
- Series 2 – Helical Scan- Scan Phase: - Performed in 2 groups. Scan using 1 breath hold for each group (allow the patient to breath between the chest and abd/pelvis groups).
    - Smart Prep- Monitor Phase: Center over pulmonary artery, threshold 100 HU. No greater than a 50 second delay.
    - 1st group – Chest - Inspiration: Start just above the lung apices and extend through the lung bases.

- 2nd group – Abd/Pel: Scanned at 70 seconds from the start of the injection. Adjust Prep Group delay to achieve this, for Abdomen only end at the iliac crests or for Abdomen/Pelvis end at pubic symphysis

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | THIN Bone | DMPR (Chest) | Average | 1500/-700 | 1.5 | 0.75 | sagittal |
| CO | THIN Bone | DMPR (Chest) | Average | 1500/-700 | 1.5 | 0.75 | coronal |
| Axial MIP | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | AX MIPS |
| SA BODY | THIN ST | DMPR (Abd/Pelvis) | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR (Abd/Pelvis) | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images (including thins) sent to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

For Chest/Abd/Pelvis SPLIT CASES please refer to the Chest Protocol and the A/P protocol for Reformats

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Chest/Abd/Pelvis without IV Contrast 5.7/5.8/5.9

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate for adenopathy, abscess, and neoplasm.

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

**Bariatric post-op patients:**

Oral contrast is only given on the CT scan table.

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of .75 dose = 100-150mL on the CT scan table.

There will be an order in EPIC to administer only 1 dose.

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan.

**IV Contrast Parameters**

None

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from lower neck through iliac crest (for chest/abdomen) or pubic symphysis (for CAP)
- Series 2 – Scan using 1 breath hold for each group (allow the patient to breath between the chest and abd/pelvis groups). Performed in 2 groups with minimal delay between the groups.
  - 1st group – Chest - Inspiration: Start just above the lung apices and extend through the lung bases.
  - 2nd group – Abd/Pel: Overlap 1st group 2 cm and end at the iliac crests or pubic symphysis (if pelvis is ordered).

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | THIN Bone | DMPR (Chest) | Average | 1500/-700 | 1.5 | 0.75 | sagittal |
| CO | THIN Bone | DMPR (Chest) | Average | 1500/-700 | 1.5 | 0.75 | coronal |
| Axial MIP | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | AX MIPS |
| SA BODY | THIN ST | DMPR (Abd/Pelvis) | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR (Abd/Pelvis) | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images (including thins) sent to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

For Chest/Abd/Pelvis SPLIT CASES please refer to the Chest Protocol and the A/P protocol for Reformats

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd/Pelvis - Urography 6.22/6.23/6.24

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

General renal imaging, hematuria work-up.

Video for this protocol

**Oral Contrast**

Give a total 400 mL of water prior to scan (A 200mL dose every 15 minutes over 30 minutes).

Have patient void before bringing patient into the scanner.

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ Urography protocol

**Injection 1:**

- 50 mL Iohexol (Omnipaque) 300 MG/ML injection @ 1.5 mL/sec

**Injection 2:**

- 100 mL Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec
- 50 mL Sodium Chloride 0.9% @ 3 mL/sec

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scouts: from top of diaphragm through bladder.
- Series 2 - Without IV contrast: Top of the kidneys through bladder base.
- INJECTION – Inject 50cc of contrast @ 1.5cc/sec. Wait 10 min, THEN proceed to the next series.
- Series 3 - Parenchymal phase: inject the remaining contrast at 3cc/sec. Start the injection and the scanner at the same time, there is a 115 sec delay built into the scanner. Start at the top of the kidneys and end at the bottom of the bladder base in women and the bottom of the prostate in men.

**Reformat Instructions**

- Use DMPR from THIN ST of the non-contrast phase for the first coronal reformats

- Use DMPR from THIN ST of the parenchymal phase for the second set of reformats (sagittal/coronal).

### Reformats

### Non-Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | Coronal |

**Contrast** (do these for all three phases if using the Urothelial tumor follow-up protocol)

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images including the Without Thins are networked to (ALI_Store) PACS, except the Parenchymal thins send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.5 | 0.6 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (70-670) | (70-700) |
| Manual mA | 220.0 | 330.0 | 420.0 |
| Noise Index | 16.5 | 18.0 | 22.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Urothelial Tumor Follow-up 6.70/6.71/6.72

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

This protocol will be for patients with known urothelial cancer (bladder or ureters) and NO current evidence of or suspected metastatic disease. Also, some of these patients will not have a bladder (so no need for those to void as they will have a urostomy)

If they have metastatic disease, routine CT A/P will suffice.

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Have patient void before bringing patient into the scanner.

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scouts: from diaphragm through bladder.
- Series 2 - Helical Scan, Without Contrast
  - Scan Range: start scan at the top of the diaphragm and end at pubic symphysis.
- Series 3 - Helical Scan, Urethial Phase
  - Start the injection and the scanner at the same time, there is a 60 sec delay built into the scanner.
  - Scan Range: Start scan at the top of the diaphragm and end at pubic symphysis.
- Series 4 – Helical, Delay
  - Wait 10 minutes before scanning this phase
  - Scan Range: Start at the top of the kidneys and end at the bottom of the bladder base or the prostate on men.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

**Contrast** (do these for all three phases if using the Urothelial tumor follow-up protocol)

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd-Liver - Biphasic 6.25/6.26/6.27

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Arterial and Venous phase scanning for the evaluation of hypervascular metastatic disease to the liver such as neuroendocrine tumor.

Videos for this protocol

Liver Scanning:

Biphasic Liver Protocol:

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol;

Iohexol (Omnipaque) 300 MG/ML injection @ 5 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from top of diaphragm through iliac crests (for abdomen only) or pubic symphysis (if a pelvis is ordered).
- Series 2 - With IV Contrast: This scan is performed in 2 groups.
  - Smart Prep - Monitor Phase: On the aorta at the level of mid liver, dynamic transition is turned on. There will be a 15 second diagnostic delay built in.
  - 1st group - Start scan at the top of the liver and end at the bottom of the liver.
  - 2nd group - Scanned at 70 seconds from the start of the injection. Adjust Prep Group delay to achieve this. Start at the top of the liver (same place as group 1). For Abdomen only end at the iliac crests or for Abdomen/Pelvis end at pubic symphysis.

- If doing a Chest with a biphasic, include the chest with the 2nd group. Be sure to subtract the amount of time it takes to scan through the chest from the 70 seconds from the start of injection.

### Reformat Instructions

If doing a chest turn off DMPR and do reformats manually for both the Chest and Abdomen/Pelvis separately.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.
- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | 15 | 15 | 15 |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.8 | 0.5 | 0.6 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-680) | (60-660) |
| Manual mA | 200.0 | 340.0 | 400.0 |
| Noise Index | 17.5 | 18.5 | 22.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd-Liver - Triphasic 6.28/6.29/6.30

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Work-up of a potential liver transplant recipient.

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

150 mL Iopamidol (Isovue 370) 76% injection @ 5mL/sec

70 mL Sodium Chloride 0.9%

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through iliac crest or pubic symphysis.
- Series 2 - Without IV contrast: (to localize) Start at the top of the liver and end at the bottom of the liver. Make sure the proximal SMA is on the scan.
- Series 3 (3 groups)
  - Smart Prep - Monitor Phase on the aorta at the level of mid liver. Dynamic transition is turned on. Delays are pre-programmed for the following two groups.
  - 1st group - Arterial phase: Start at the top of the liver and end at the bottom of the liver or proximal SMA which ever is lower.
  - 2nd group - Late arterial phase: Start at the bottom of the liver (same coordinates and table positions) and end at the top.
  - 3rd group – Portal phase: 70 seconds after the start of the injection, scan from the top of the liver and end at the iliac crests for the Abdomen or at pubic symphysis for the Abdomen/Pelvis

- If doing a Chest with a Triphasic, **do not** include the chest with the abdomen groups (dose and scan speeds are not adequate). Perform the entire triphasic liver and then select the routine chest protocol as quickly as possible to get a delayed phase exam of the chest.

**Reformat Instructions**

If doing a chest turn off DMPR and do reformats manually for both the Chest and Abdomen/Pelvis separately.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins send to (ALI_Source) Thin PACS and 3D Lab. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (45-360) | (45-450) | (50-570) |
| Manual mA | 180.0 | 230.0 | 340.0 |
| Noise Index | 20.0 | 22.0 | 27.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 2 | 2 | 2 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 1 | 0.9 | 0.9 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-670) | (70-780) |
| Manual mA | 190.0 | 330.0 | 470.0 |
| Noise Index | 13.0 | 20.0 | 24.0 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 3, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.9 | 0.6 | 0.7 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-675) | (70-690) | (70-690) |
| Manual mA | 210.0 | 350.0 | 420.0 |
| Noise Index | 20.5 | 21.5 | 26.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.9 | 0.6 | 0.7 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-675) | (70-690) | (70-690) |
| Manual mA | 210.0 | 350.0 | 420.0 |
| Noise Index | 20.5 | 21.5 | 26.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Group 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd-Liver - Hepatocellular Carcinoma (HCC) 6.82/6.83/6.84

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Arterial, Venous, and Delayed phase scanning for the evaluation of possible hepatocellular carcinoma. This protocol fulfills the UNOS criteria.

Video for this protocol

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol;

Iohexol (Omnipaque) 300 MG/ML injection @ 5 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through iliac crests or pubic symphysis.
- Series 2 – Helical Scan- Scan Phase With IV Contrast: This scan is performed in 2 groups.
  - Smart Prep- Monitor Phase: On the aorta at the level of mid liver, dynamic transition is turned on. There will be a 15 second diagnostic delay built in.
  - 1st group - Start scan at the top of the liver and end at the bottom of the liver.
  - 2nd group - Pause 70 seconds from the start of the injection. Start scan at the top of the diaphragm, for Abdomen only end at the iliac crest or for Abdomen/Pelvis end at pubic symphysis.
- Series 3 - Delay: 3 Min Delay
  - Start at top of diaphragm and end at bottom of the liver.

- **If doing a Chest with a biphasic, include the chest with the 2nd group. Be sure to subtract the amount of time it takes to scan through the chest from the 70 seconds from the start of injection.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.
- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | 15 | 15 | 15 |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.8 | 0.5 | 0.6 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-680) | (60-660) |
| Manual mA | 200.0 | 340.0 | 400.0 |
| Noise Index | 17.5 | 18.5 | 22.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.8 | 0.5 | 0.6 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-680) | (60-660) |
| Manual mA | 200.0 | 340.0 | 400.0 |
| Noise Index | 17.5 | 18.5 | 22.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

# Abd-Adrenal Gland - Adenoma 6.31/6.32/6.33

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Characterization for adrenal mass (For a pheochromocytoma do routine abdomen)

Video for this protocol

**Oral Contrast**

NONE. If converted to with IVC give a 200mL dose of water on the CT scan table while the IV is being placed.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scouts: from diaphragm through iliac crests or pubic symphysis.
- Series 2 - Without IV contrast: Start at the top of the adrenal glands and end at the bottom of the adrenal glands. Check this series with physician before performing series 3, 4 and 5
- Series 3
  - Smart Prep - Monitor Phase: Center over the liver. Put ROI (3) in the liver. Threshold 50 Hounsfield units. No more than 80 seconds delay.
  - Helical Scan-Scan Phase- With IV Contrast: Start scan at the top of the diaphragm, for Abdomen only end at the iliac crest or for Abdomen/Pelvis end at pubic symphysis.
- Series 4 - Delayed Scan: Wait 15 minutes and then scan through the adrenal glands only.
- Check before continuing with the exam and giving contrast

**Reformat Instructions**

Use DirectMPR on Recon 2 for **BOTH** the non contrast and with contrast phases.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 40 | 40 | 40 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

# Abd-Pancreas - Pancreas Cancer (Neoplasm Screening) 6.40/6.41/6.42

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Suspicion of pancreatic neoplasm. Use this protocol if patient has already had pancreatic neoplasm CTA.

Preoperative evaluation of known pancreatic neoplasm.

Video for this protocol

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - A/P & lateral scouts - Diaphragm through Iliac crest.
- Series 2 With IV Contrast (This is performed in 2 groups.)
  - NO SMART PREP NEEDED - Start 40 seconds after the start of the injection. (If patient appears ill, then SMART PREP over the liver; put ROI in the aorta - begin 20 sec. after contrast is seen in the aorta. This delay is built into the diagnostic delay of smart prep.)
  - 1st group: With IV Contrast: Start at the top of the liver and end at the iliac crest.
  - 2nd group: Portal phase: 70 secs after injection, start at the top of the liver and end at the iliac crest.

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.
- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.9 | 0.7 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-430) | (70-690) | (60-680) |
| Manual mA | 220.0 | 350.0 | 410.0 |
| Noise Index | 13.0 | 16.5 | 20.5 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd/Pelvis - Kidney Tumor 6.49/6.50/6.51

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Suspicion or evaluation of small renal neoplasm

Video for this protocol

**Oral Contrast**

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from diaphragm through iliac crest or pubic symphysis if pelvis is ordered.
- Series 2 – Without IV contrast: Start at the top of the kidneys and end at the bottom of the kidneys. Approximate levels of T10 – L3.
- Series 3
  - Smart Prep- Monitor Phase: Center over the liver. Put ROI (3) in the liver. Threshold of 70 Hounsfield units. No more than 80 seconds delay.
  - Helical Scan-Scan Phase- With contrast: Start at the top of the diaphragm, for Abdomen only end at the iliac crest or for Abdomen/Pelvis end at pubic symphysis
- Series 4 - 2 minute delayed sequence through kidneys only

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.
- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-410) | (50-510) | (60-640) |
| Manual mA | 200.0 | 260.0 | 390.0 |
| Noise Index | 18.5 | 20.5 | 26.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 40 | 40 | 40 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 11.5 | 13.0 | 16.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

# CTA Abd - Renal Donor 6.52/6.53/6.54

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Work-up of a potential renal donor.

Video for this protocol

**Oral Contrast**

Give a total 400 mL of water prior to scan (A 200mL dose every 15 minutes over 30 minutes).

Have patient void before bringing patient into the scanner.

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Load 150 mL, Iopamidol (Isovue 370) 76% injection

90 mL Sodium Chloride 0.9%

Scan without series start Injection Part 1, wait 5 minutes and then use renal donor part 2 and Series 3 at same time.

**Injection Part 1:**

- 20 mL Iopamidol (Isovue 370) 76% injection
- 20 mL Sodium Chloride 0.9% test injection

**Injection Part 2: Multi-phase inject**

- 30 mL Iopamidol (Isovue 370) 76% injection @ 3 mL/sec
- 30 mL Sodium Chloride 0.9% @ 3 mL/sec
- Pause 20 sec
- 100 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from diaphragm to the bottom of the SI joints.
- Series 2 - Without IV contrast: Through kidneys; approximate levels T12 – L4 to R/O calculi.

- Series 3 - Vascular Phase: Start at the top of the kidneys and end just below the SI Joints. Start the multi-phase injection and the scan at the same time, there is a 70sec delay built in.
- Series 4 – Parenchymal phase: Begin scan 3 min from start of multi-phase injection. Start at the top of liver and end at the iliac crest.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS (including the thin CTA images) with an exception for the thins from the venous phase should be sent to (ALI_Source) Thin PACS.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-410) | (50-510) | (60-640) |
| Manual mA | 200.0 | 260.0 | 390.0 |
| Noise Index | 18.5 | 20.5 | 26.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 1 | 0.9 | 0.9 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-670) | (70-780) |
| Manual mA | 190.0 | 330.0 | 470.0 |
| Noise Index | 18.0 | 28.0 | 34.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.8 | 0.5 | 0.6 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-680) | (60-660) |
| Manual mA | 200.0 | 340.0 | 400.0 |
| Noise Index | 17.5 | 18.5 | 22.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Abd-Small Bowel - Enterography 6.55/6.56/6.57

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Evaluate for small bowel disease.

Video for this protocol

### Oral Contrast

Give a total dose of = 1350mL of Volumen.

Give the entire amount over an hour (the first 2/3 of the bottle drank in the first 30 minutes and the last 1/3 of the bottle in the second 30 minutes.

Give an additional 200mL dose of water on the CT scan table. No Positive Oral Contrast.

### Pre-Scan Instructions

None

### IV Contrast Parameters

5 mL Medrad™ Protocol

150 mL Iopamidol (Isovue 370) 76% injection.

### Field of View

Same as previous study or as small as appropriate

### Scan Description

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis
- Series 2 - Portal phase: 55 seconds after injection, start at the diaphragm and end at the pubic symphysis.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

- All body images are networked to (ALI_Store) PACS, except the body thins send to (ALI_Source) Thin PACS.
- If a chest is included, please send all chest series to (ALI_Store) PACS including the Dose Information Slide.

- Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.7 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-780) | (70-710) |
| Manual mA | 220.0 | 390.0 | 430.0 |
| Noise Index | 14.5 | 18.5 | 23.0 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# CTA Abd - Obscure GI Bleed 6.58/6.59/6.60

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate for cause of obscure gastrointestinal bleed.

Video for this protocol

**Oral Contrast**

Give a total dose of = 1350mL of Volumen.

Give the entire amount over an hour (the first 2/3 of the bottle drank in the first 30 minutes and the last 1/3 of the bottle in the second 30 minutes.

Give an additional 200mL dose of water on the CT scan table. No Positive Oral Contrast.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

**Obscure GI Bleed, multi-phase injection:**

- 30 mL Iopamidol (Isovue 370) 76% @ 3 mL/sec
- 30 mL Sodium Chloride 0.9% @ 3 mL/sec
- Pause 10 seconds
- 100 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis.
- Series 2 - Without IV contrast: From diaphragm to pubic symphysis.
- Series 3 - Vascular Phase: From diaphragm to pubic symphysis. Start the multi-phase injection and the scan at the same time; the scan will have a 60 sec delay built in so that scan acquisition will begin at 60 sec after the start of the multi-phase injection.
- Series 4 – Delayed phase: Begin scan 3 min from start of multi-phase injection. From diaphragm to pubic symphysis.

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | Vascular phase THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | Sagittal |
| CO BODY | Vascular phase THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | Coronal |
| SA BODY | Vascular phase THIN ST | Manual | MIP | 450/50 | 10 | 5 | Sagittal |
| SA BODY | Delayed phase THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | Sagittal |
| CO BODY | Delayed phase THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | Coronal |

### Networking

All images are networked to (ALI_Store) PACS (including the arterial phase for the mesenteric), except the thins send to (ALI_Source) Thin PACS and 3D Lab. Unless there is a chest then all images networked to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-410) | (50-510) | (60-640) |
| Manual mA | 200.0 | 260.0 | 390.0 |
| Noise Index | 18.5 | 20.5 | 26.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 1 | 0.9 | 0.9 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-670) | (70-780) |
| Manual mA | 190.0 | 330.0 | 470.0 |
| Noise Index | 10.5 | 14.0 | 17.0 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.9 | 0.6 | 0.7 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-675) | (70-690) | (70-690) |
| Manual mA | 210.0 | 350.0 | 420.0 |
| Noise Index | 20.5 | 21.5 | 26.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# CTA Abd - Mesenteric Ischemia 6.61/6.62/6.63

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate for mesenteric ischemia.

Video for this protocol

**Oral Contrast**

Give a total 400 mL of water prior to scan (A 200mL dose every 15 minutes over 30 minutes).

Give an additional 200mL dose of water on the CT scan table.

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T PA protocol

To set up P3T= choose P3T, Thorax, PA then click on ok. Confirm contrast and load fluids. Enter scan duration and click ok.

Iopamidol (Isovue 370) 76% injection

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts: from diaphragm through pubic symphysis
- Series 2
  - Group 1
    - Smart prep-Monitor Phase: at the level of the celiac on the aorta, dynamic transition is turned on.
    - Helical Scan- Scan Phase- Arterial phase: Start above the celiac artery and end at the level of the femoral heads.
  - Group 2
    - Helical Scan: 70 seconds after injection, start at the diaphragm and end at the pubic symphysis.

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS (including the arterial phase for the mesenteric), except the thins send to (ALI_Source) Thin PACS and 3D Lab. Unless there is a chest then all images networked to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 1 | 0.9 | 0.9 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-390) | (70-670) | (70-780) |
| Manual mA | 190.0 | 330.0 | 470.0 |
| Noise Index | 18.0 | 28.0 | 34.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.9 | 0.6 | 0.7 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-675) | (70-690) | (70-690) |
| Manual mA | 210.0 | 350.0 | 420.0 |
| Noise Index | 20.5 | 21.5 | 26.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Trauma - Chest 5.22/5.23/5.24

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Emergency evaluation for aortic injury or organ disruption. Routine creatinine cut-off for IV contrast administration does not apply in a trauma.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

None

**IV Contrast Parameters**

Medrad™ P3T Abdomen

4 mL Iohexol (Omnipaque) 300 MG/ML injection

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from lower neck to mid-abdomen.
- Series 2
  - Smart Prep- Monitor Phase: Center over the liver. Put ROI in the aorta, dynamic transition is turned on.
  - Helical Scan- Scan Phase- With IV Contrast: Start scan mid L2 (*be sure to cover the spleen*) and end at the top of the lungs (apices). The scan should be performed at full inspiration. Intubated patients should have their breathing suspended by respiratory therapy, whenever possible.

**Reformat Instructions**

Perform a manual reformat for the axial MIP. The CO and SA reformats are set-up for DMPR.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| MIPS | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | axial |
| SA | THIN BONE | DMPR | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | THIN BONE | DMPR | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Trauma - Chest/Abd/Pelvis 5.25/5.26/5.27

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Emergency evaluation for aortic injury or organ disruption. Routine creatinine cut-off for IV contrast administration does not apply in a trauma.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Patients with a Foley catheter must have it clamped prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

Medrad™ P3T Abdomen

4 mL Iohexol (Omnipaque) 300 MG/ML injection

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1- PA & lateral scout: from mid-neck through iliac crests or pubic symphysis.
- Series 2 – Helical Scan- Scan Phase: With IV Contrast scans – Performed in 2 groups: Chest (1st group) – Abdomen and Pelvis (2nd group)
  - Smart Prep- Monitor Phase: Center over the liver. Put ROI in the aorta, dynamic transition is turned on.
  - 1st group, start mid L2 (*be sure to cover the spleen*) and scan to the top of the lungs (apex)
  - 2nd group, Scanned at 70 seconds from the start of the injection. Adjust Prep Group delay to achieve this, for Abdomen/Pelvis end at pubic symphysis
- Series 3 - Delayed Scan (Optional per MD)
  - 7 minute delayed scans from the top of the kidneys through the bladder base

**Reformat Instructions**

The axial MIPs of the chest are manual and the L-spines (if ordered) are manual. The rest of the reformats for the chest and abdomen/pelvis use DMPR.

Extra Recons on Trauma Protocols:

- To save radiation we Retro L-spines off of our abdomen/pelvis scans for all Trauma patients, this in turn saves us time scanning and radiation to the patients. If a T-Spine is ordered, you will need to perform an extra T-Spine scan.
- The recons that are turned on in a Trauma Protocol are specific to that protocol that you picked (ie: Trauma Abd/ Pelvis or Trauma Chest/Abd/Pelvis). These will be either the first two or first three recons in the scan. The recons following those will be turned off but will be set for the correct Scan Factors for a Lumbar spine. You can turn these on if you have an order to recon the L-spine for the patient. REMEMBER: Once you turn these recons on you must put them in the correct FOV, pick your start and end location, R/L centering, and A/P centering.
- The Lumbar spines must all be in separate recons to be able to split them once your exam is done. When you turn on the recons only turn on the group 2 recons (the abdomen/pelvis) for the Lumbar spine.
- If combined with a lower extremity run-off, the reformats for the run-off will be handled by the 3D lab.

## Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| MIPS | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | axial |
| SA | BONE | DMPR | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | BONE | DMPR | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |
| SA BODY | Body THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | Body THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

Reformats for the L-spine (remember, if a T-Spine is ordered you must scan a separate T-Spine since the Trauma Chest series of the Trauma CAP is not meant for spine reformats):

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

## Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

## Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.9 | 0.9 | 1 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-430) | (70-710) | (80-715) |
| Manual mA | 220.0 | 360.0 | 490.0 |
| Noise Index | 10.5 | 10.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

| | | | |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 6 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Trauma - Abd/Pelvis 6.4/6.5/6.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Emergency evaluation for aortic injury or organ disruption. Routine creatinine cut-off for IV contrast administration does not apply in a trauma.

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

### IV Contrast Parameters

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

### Field of View

Same as previous study or as small as appropriate

### Scan Description

- Series 1 - PA & lateral scout: from diaphragm through iliac crests or pubic symphysis.
- Series 2
  - Smart Prep- Monitor Phase: Center over the liver. Put the ROI in the liver. Threshold 50 Hounsfield units. No greater than 80 second delay.
  - Helical Scan-Scan Phase: Start scan at the top of the diaphragm and end below the pubic symphysis.
- Series 3 - Delayed (Optional per MD) 7 minute delayed scans from the top of the kidneys through the bladder

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

Reformats for the spine:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 450/60 | 2 | 1 | Coronal |
| CO BONE | THIN Bone | Manual | Average | 3000/300 | 2 | 1 | Coronal |
| SA ST | THIN ST | Manual | Average | 450/60 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE | Manual | Average | 3000/300 | 2 | 1 | Sagittal |

### Reformat Instructions

Extra Recons on Trauma Protocols:

- To save radiation we Retro spines off of our body scans for all Trauma patients, this in turn saves us time scanning and radiation to the patients.
- The recons that are turned on in a Trauma Protocol are specific to that protocol that you picked (ie: Trauma Abd/Pelvis or Trauma Chest/Abd/Pelvis). These will be either the first two or first three recons in the scan. The recons following those will be turned off but will be set for the correct Scan Factors for a Thoracic and Lumbar spine. You can turn these on if you have an order to recon the spines for the patient. REMEMBER: Once you turn these recons on you must put them in the correct FOV, pick your start and end location, R/L centering, and A/P centering.
- The Thoracic and Lumbar spines must all be in separate recons to be able to split them once your exam is done. When you turn on the recons only turn on the top part (the chest) for the Thoracic spine and the bottom part (the abdomen) for the Lumbar spine.

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 40 | 40 | 40 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Large** | **Large** | **Large** |
| **Pitch** | **0.562** | **0.562** | **0.562** |
| **Speed (mm/rot)** | **11.20** | **11.20** | **11.20** |
| **Rotation Time (s)** | **0.9** | **0.9** | **1** |
| **kV** | **100** | **120** | **140** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(50-430)** | **(70-710)** | **(80-715)** |
| **Manual mA** | **220.0** | **360.0** | **490.0** |
| **Noise Index** | **10.5** | **10.0** | **12.5** |
| **Slice Thickness (mm)** | **3.75** | **5** | **5** |
| **Interval (mm)** | **2.25** | **3.0** | **3.0** |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Cystogram 8.10/8.11/8.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Bladder tumor.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Bladder contrast – 20 ml of Iohexol 300 in a 500 ml bag of normal saline. The saline should be warmed to body temperature if time allows. Check with radiologist to see if without series needed first.

- Using sterile technique, connect the tubing from the bag of 2% contrast (see # 6) to the Foley catheter and allow the bladder to fill retrograde. Make sure to place Foley below the level of the bladder.
- If the patient is oriented, have the patient tell you when they are getting uncomfortably full. If they are unable to let you know, run about 300 ml in to start. Note on series description the amount of contrast instilled into the bladder.

**IV Contrast Parameters**

None

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scout: from crest to pubic symphysis
- Series 2 - Pre bladder contrast. Scan from the top of the crest through the pubic symphysis (skip this step if the scan was ordered with a trauma A/P)
- Series 3 – Full bladder contrast. Scan from the top of the crest through the pubic symphysis. Make sure contrast has filled the entire bladder

Note: Annotate on the series description the amount of contrast used for the cystogram

Post void (optional) - Check with radiologist. (each case is different)

**Reformat Instructions**

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Body Pelvis 8.16/8.17/8.18

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate for abdominal pathology other than hypervascular tumors.

Video for this protocol

**Oral Contrast**

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of 4 doses = 800mL (1 dose every 20 minutes over of an hour).

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

**Bariatric post-op patients:**

Oral contrast is only given on the CT scan table.

Mix 4mL Iohexol 300 (Omnipaque) 300 MG/ML injection in 200mL of a clear liquid.

Give a total of .75 dose = 100-150mL on the CT scan table.

There will be an order in EPIC to administer only 1 dose.

**Pre-Scan Instructions**

Clamp Foley catheter prior to scanning. Make sure to place Foley below the level of the bladder.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA & lateral scout: from diaphragm through pubic symphysis
- Series 2 – 70 sec delay start scan at the top of the iliac crests and end at pubic symphysis

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.8 | 0.6 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (60-450) | (80-760) | (60-640) |
| Manual mA | 230.0 | 380.0 | 380.0 |
| Noise Index | 14.0 | 15.5 | 19.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

# Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Chest - Standard (Routine & High-Resolution) 5.1/5.2/5.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate mediastinal abnormality, lung cancer, lymphoma, esophageal carcinoma, metastases, empyema, pleural effusion, lung nodules, and chest wall lesion. This protocol also replaces the traditional HRCT of the Chest, with optional additional series as indicated.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan.

**IV Contrast Parameters**

75 mL Iohexol (Omnipaque) 300 mg/mL @ 3 mL/sec

30 mL Sodium Chloride 0.9% @ 3 mL/sec

**Field of View**

Small as appropriate including all of breasts and chest wall.

**Scan Description**

- Series 1 - PA and lateral scout: from lower neck to diaphragm on inspiration.
- Series 2 - Helical Inspiration
  - Smart Prep-Monitor Phase (if giving IV contrast): Center over the pulmonary artery, threshold 100 H.U. No greater than a 50 second delay. For pleural tumor indications, a fixed 60 second delay should be used (i.e. do not use smart Prep in this case, the radiologist will specifically order a fixed delay if required).
  - Scan Phase: Start just above the lung apices and extend through the lung bases. It there is a history of or suspected lung cancer, include all of the adrenal glands.
- Series 3 (optional) - Sequential/Axial Supine Expiration (only if requested by radiologist) Start just above the lung apices and extend through the lung bases. These scans have a slice thickness of 1.25mm and an interval of 20mm.
- Series 4 (optional) PA and lateral scout (prone): from lower neck to diaphragm on inspiration.
- Series 5 (optional) – Sequential/Axial Prone Inspiration (only if requested by radiologist): Start at carina and extend to lung bases

### Reformat Instructions

Perform a manual reformat for the axial MIP. The CO and SA reformats are set-up for DMPR.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| MIPS | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | axial |
| SA | LUNG | DMPR | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | LUNG | DMPR | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |

### Networking

*For axial and reformatted images*: Please send the entire study to PACS including the Dose Information Slide. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- You will need to review your images in PACS to assure the CAD read was processed.
- If the CAD images are missing after you have sent them, please call PACS. There could be an issue with the server.
- If there is a lot of motion or the arms are at the side, CAD read may not work.
- If CAD read does not work on the patients exam, please change the request.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 1.25 | 1.25 | 1.25 |
| Detector Rows | 2.0 | 2.0 | 2.0 |
| Detector Configuration | 2x0.625 | 2x0.625 | 2x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 1.30 | 1.30 | 1.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (35-460) | (45-740) | (40-630) |
| Manual mA | 280.0 | 380.0 | 380.0 |
| Noise Index | 28.0 | 31.5 | 41.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 20 | 20 | 20 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | | | |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 20 | 20 | 20 |

## Series 4, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 5, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 1.25 | 1.25 | 1.25 |
| Detector Rows | 2.0 | 2.0 | 2.0 |
| Detector Configuration | 2x0.625 | 2x0.625 | 2x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 1.30 | 1.30 | 1.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (35-460) | (45-740) | (40-630) |
| Manual mA | 280.0 | 380.0 | 380.0 |
| Noise Index | 28.0 | 31.5 | 41.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 20 | 20 | 20 |

## Series 5, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | | | |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 20 | 20 | 20 |

# Chest - Low Dose Follow-up/Screening 5.10/5.11/5.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Follow-up of mediastinal abnormality, lung cancer, lymphoma, esophageal carcinoma, metastases, empyema, pleural effusion, lung nodules, and chest wall lesion.

Video for this protocol (low dose f/u)

Also used for Lung Cancer Screening.

Video for this protocol (screening)

**Oral Contrast**

None

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan.

**IV Contrast Parameters**

75 mL Iohexol (Omnipaque) 300 mg/mL @ 3 mL/sec

30 mL Sodium Chloride 0.9% @ 3 mL/sec

**Field of View**

Small as appropriate including all of breasts and chest wall.

**Scan Description**

- Series 1 - PA and lateral scout: from lower neck to diaphragm on inspiration.
- Series 2 - Helical Inspiration
  - Smart Prep-Monitor Phase (if giving IV contrast): Center over the pulmonary artery, threshold 100 H.U. No greater than a 50 second delay.
  - Scan Phase: Start just above the lung apices and extend through the lung bases. It there is a history of or suspected lung cancer, include all of the adrenal glands.

### Reformat Instructions

Perform a manual reformat for the axial MIP. The CO and SA reformats are set-up for DMPR.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| MIPS | THIN ST | Manual | MIP | 1500/-700 | 10 | 5 | axial |
| SA | LUNG | DMPR | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | LUNG | DMPR | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |

### Networking

*For axial and reformatted images*: Please send the entire study to PACS including the Dose Information Slide. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- You will need to review your images in PACS to assure the CAD read was processed.
- If the CAD images are missing after you have sent them, please call PACS. There could be an issue with the server.
- If there is a lot of motion or the arms are at the side, CAD read may not work.
- If CAD read does not work on the patients exam, please change the request.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 100 | 100 | 100 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (20-240) | (20-290) | (25-460) |
| Manual mA | 120.0 | 150.0 | 280.0 |
| Noise Index | 26.5 | 29.5 | 33.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Chest - CTA for PE 5.16/5.17/5.18

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluate for known or suspected pulmonary embolism.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Practice the 3 breaths for scouts, smart prep, and the actual helical scan, we do not want to induce a transient interruption of contrast (TIC) which would can mimic a PE and or produce an indeterminate exam. Please give the patient these EXACT instructions: **"When you take your last breath before the exam, take a full breath but gently hold. Do not bear down, tense up, or strenuously hold your breath. This exam will be over in about 4 seconds from when we tell you hold your breath to when you may breath again.**

We would like to visualize contrast in the pulmonary arteries and aorta because this is a double rule out protocol. If you see the contrast in the pulmonary arteries at a much lower intensity than the SVC and aorta, the patient likely had a TIC which kept the PA from enhancing correctly. This is not a scan timing issue, but an issue with un-opacified blood entering the heart faster from the IVC than opacified blood from the SVC caused by a pressure imbalance between the thorax and abdomen. This is why the breathing instructions we provide above are critical for this exam. As a guidance tool, a good PE exam will have an enhancement threshold of 300 HU.

If your exam looks like the one shown here on the left, please call the reading room and have them review the images before letting the patient leave the CT suite.

**IV Contrast Parameters**

**Patient weight < 140 kilos.(Less than 300 lbs.)**

- 100 mL Iohexol (Omnipaque) 300 MG/ML @ 5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 5 mL/sec

**Patient weight 140-160 kilos.(300-350 lbs.)**

- 100 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 5 mL/sec

**Patient weight > 160 kilos.(More than 350 lbs.)**

- 150 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 5 mL/sec

**Field of View**

Smallest possible to include all of chest including axillae and breasts.

**Scan Description**

- Series 1 - PA and lateral scouts: from lower neck to diaphragm using the suspension breathing instructions
- Series 2 –Helical Scan
  - Smart Prep-Monitor Phase: Center on Lt atrium; Watch for atrial filling with contrast on the bolus tracking scan and then start using manual start, no delay is needed.
  - Scan Phase: from lower neck to diaphragm with IV Contrast. Inspiratory breathing instructions are on, remind the patient not to bear down or strain.

Smart Prep location should be the LA

**Adjustments for Bariatric PE and Cardiac Studies** We do not have a bariatric protocol for chest PE or cardiac (retrospectively or prospectively gated coronaries) studies. Our large protocol is already designed to deliver a higher maximum dose than the medium and small adult protocols, but it uses 120 kV to maximize iodine contrast. Other large adult protocols that are not angiograms use 140 kV for large adults. Therefore, for bariatric patients who 1. **fill the scout view** or 2. **max out the mA table** please increase the kV from 120 kV to 140 kV.

**Note: If you know the patient is likely to max out the mA table before taking the scout, you should increase the scout kV from 120 to 140.**

Example of a patient **filling the scout view**

Example patient **filling the scout AP view**

Example patient **filling the scout lateral view**

resulting poor image quality from a patient who **fills the scout**

### Reformat Instructions

No special reformat instructions, see the reformat section for basic details.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | THIN LUNG | Manual | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | THIN LUNG | Manual | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |
| MIPS | THIN ST | Manual | MIP | 920/125 | 10 | 5 | Axial |

### Networking

*For axial and reformatted images*: Please send the entire study to PACS including the Dose Information Slide. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- You will need to review your images in PACS to assure the CAD read was processed.
- If the CAD images are missing after you have sent them, please call PACS. There could be an issue with the server.
- If there is a lot of motion or the arms are at the side, CAD read may not work.
- If CAD read does not work on the patients exam, please change the request.

### Miscellaneous

- Ventilated patients will be scanned on inspiration to allow respiratory therapists to be outside of the scan room during the scan.
- DO NOT USE VISIPAQUE UNLESS INSTRUCTED BY THE RADIOLOGIST

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 20 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 2.0 | 2.0 | 2.0 |
| Monitoring ISD (sec) | 1.0 | 1.0 | 1.0 |
| Enhancement Threshold (HU) | 60 | 60 | 60 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.6 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (45-560) | (35-600) | (45-720) |
| Manual mA | 280.0 | 300.0 | 430.0 |
| Noise Index | 37.5 | 46.0 | 50.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Chest - Dynamic 3D Airway 5.70/5.71/5.72

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluate for airway for stenosis, tumor, tracheo(broncho)malacia.

**Oral Contrast**

None

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan. **Coach patient again before expiration. Expiratory scan should be performed during *forced exhalation* (use manual breathing instructions)**

**IV Contrast Parameters**

100 mL Iohexol (Omnipaque) 300 MG/ML @ 4 mL/sec

30 mL Sodium Chloride 0.9% @ 4 mL/sec

**(Only if requested by radiologist for known or suspected central airway tumor)**

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Smallest possible to include all of chest including axillae and breasts.

**Scan Description**

- Series 1 - PA & lateral scouts: from lower neck to diaphragm on inspiration.
- Series 2 - Inspiration: Start scan mid-neck C3 – C4 and extend through the diaphragm to include entirety of lungs.
- Series 3 - Dynamic forced expiration: Start scan mid-neck C3 – C4 and extend through top of diaphragm

**Reformat Instructions**

No reformats unless requested by a Radiologist.

### Reformats

None.

### Networking

*For axial and reformatted images*: Please send the entire study to PACS including the Dose Information Slide. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- You will need to review your images in PACS to assure the CAD read was processed.
- If the CAD images are missing after you have sent them, please call PACS. There could be an issue with the server.
- If there is a lot of motion or the arms are at the side, CAD read may not work.
- If CAD read does not work on the patients exam, please change the request.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-630) | (50-780) | (40-680) |
| Manual mA | 310.0 | 390.0 | 410.0 |
| Noise Index | 16.5 | 18.0 | 20.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (20-240) | (20-290) | (25-460) |
| Manual mA | 120.0 | 150.0 | 280.0 |
| Noise Index | 26.5 | 29.5 | 33.5 |
| Slice Thickness (mm) | 3.75 | 5 | 5 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 3.75 | 5.0 | 5.0 |
| Interval (mm) | 2.25 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Non-Gated CTA (Chest/Abd/Pelvis) 5.28/5.29/5.30

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluate for known or suspected type “B” (descending) aortic dissection, intramural hematoma (IMH), aneurysm, leak, tear, or vasculitis.

Guidelines for using this protocol: (Note, please consult the protocolling radiologist if you have any questions on this protocol's use or if the order appears to not meet the criteria below.)

1. These studies require a non-contrast series first:
    - Acute aorta
        - Aortic dissection
        - Intramural hematoma
        - Penetrating atherosclerotic ulcer
    - Post-operative aorta
        - Endovascular repair (EVAR, TEVAR, FEVAR, PEVAR)
        - Open repair
2. These studies only require a single series (could be just non-contrast or CTA during arterial phase)
    - Aortic aneurysm
        - Initial evaluation
        - Follow-up

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Practice breathing instructions. Ask patient to cough just prior to the scan. Due to longer scan times patient may need to start breathing after scanning through the Lung is completed

**IV Contrast Parameters**

18G IV started in right arm. Please call radiologist if unable to obtain IV in right arm.

Use the Medrad™ P3T PA protocol. (load Isovue 370)

To set up P3T= choose P3T, Thorax, PA then click on ok. Confirm contrast and load fluids. After you set up the scan, enter scan duration and click ok.

**Field of View**

As small as possible to a minimum of 32 cm, while still including entire lungs and abdomen (can clip subcutaneous fat).

Be sure to include femoral arteries if pelvis is included.

### Scan Description

- Series 1 - PA and lateral scout
  - During inspiration breath-hold.
  - Coverage:
    - Chest: Lower neck to mid-abdomen
    - Abd/Pelvis: Diaphragm to upper thighs
- Series 2 - Non-contrast (only when ordered)
  - During inspiration breath-hold
  - Coverage:
    - Chest: Lung apex to below the sma
    - Abdomen: Diaphragm to iliac crests
    - Pelvis: Iliac crests to lesser trochanters
- Series 3 - CTA
  - Use smartprep with 6s diagnostic delay
    - If chest is included on the **non-revolution** scanner: Smartprep on left ventricle
    - If chest is included on the **revolution 256** scanner: Smartprep on descending aorta, **dynamic transition is turned on**
    - If chest is not included: Smartprep on mid abdominal aorta
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan
- Series 4 (optional) – Delayed (Only needed to detect slow leak, for example, when evaluating endostents for endoleak)
  - Begin scan 2 min after beginning of contrast injection
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan

If CAD is included, bill as:

- For all chest w/o: *CT Chest W/O IV contrast W/CAD*
- For all chest with contrast: *CT Chest W IV contrast W/CAD*
- For all (retrospective/prospective/non gated) chest CTA: *CT Angio Chest W/CAD*
- For all (retrospective/prospective/non gated) CAP CTA: *CT Angio Chest/ABD/PEL W/CAD*
- For PE chest: *CT Angio Chest PE Protocol W/CAD*

### Reformat Instructions

- C/A/P = DMPR CO Body and SA Body is set up for the entire C/A/P. Please preform the chest reformats manually.
- Abdomen/Pelvis only = DMPR CO Body and SA Body is set up for the A/P.
- Chest only = Please preform the chest reformats manually.

### Reformats

CAP or ABD/PELVIS only table

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | sagittal |
| CO BODY | THIN ST | DMPR | Average | 450/50 | 5 | 2.5 | coronal |

For the CAP, also do these for the lung field

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | THIN LUNG | Manual | Average | 1500/-700 | 1.5 | 0.75 | sagittal<br>Include the spine and sternum. |
| CO | THIN LUNG | Manual | Average | 1500/-700 | 1.5 | 0.75 | coronal<br>Include the spine and sternum. |
| MIPS | THIN ST | Manual | MIP | 920/125 | 10 | 5 | Axial |

### Networking

*For axial and reformatted images*: Please send the entire study to PACS including the Dose Information Slide. Also send the study to the 3D lab. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- You will need to review your images in PACS to assure the CAD read was processed.
- If the CAD images are missing after you have sent them, please call PACS. There could be an issue with the server.
- If there is a lot of motion or the arms are at the side, CAD read may not work.
- If CAD read does not work on the patients exam, please change the request.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.6 | 0.7 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-650) | (35-700) | (35-690) |
| Manual mA | 330.0 | 350.0 | 410.0 |
| Noise Index | 28.5 | 36.0 | 45.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 1 | 1 | 1 |
| Enhancement Threshold (HU) | 80 | 80 | 80 |
| Diagnostic Delay | 6 | 6 | 6 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.6 | 0.7 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (30-520) | (35-670) | (30-670) |
| Manual mA | 260.0 | 340.0 | 410.0 |
| Noise Index | 22.0 | 34.0 | 41.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 80 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (35-560) | (30-600) | (35-700) |
| Manual mA | 280.0 | 300.0 | 420.0 |
| Noise Index | 32.5 | 39.5 | 48.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Upper Extremity CTA 4.10/4.11/4.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

R/O arterial injury, embolus, vasculitis, peripheral vascular disease in the upper extremity.

**Oral Contrast**

None

**Pre-Scan Instructions**

Patient positioned prone with affected extremity (i.e arm) overhead in "superman" position and positioned in the center of the scanner. Hand should be placed flat palm down on the couch. The non-affected extremity (with IV) should be placed at the patient's side. Practice breathing instructions. Ask patient to cough just prior to the scan. If the patient cannot lie prone, supine and lateral positioning are acceptable alternatives. If the patient cannot raise their arm above their head, a supine position with their arm at the side may be attempted as a last resort.

**IV Contrast Parameters**

18-20G antecubital IV started in unaffected arm

100 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec

50 mL Sodium Chloride 0.9% @ 5 mL/sec

Injection rate of 5mL per second, unless patient is over 100 kilos then inject at 6mL per second.

**Field of View**

As small as possible to a minimum of 32 cm, while still including entire arm and brachiocephalic artery.

**Scan Description**

- Series 1 – PA and lateral scout
  - Coverage: diaphragm to finger tips
- Series 2 – Non-contrast
  - Coverage:
    - ACUTE EMBOLISM: Diaphragm through the fingertips.
    - ROUTINE: Carina through fingertips.
    - FOCUSED: As specified on protocol sheet. If not specified, then contact protocolling physician to determine appropriate coverage.
- Series 3, Group 1 – CTA
  - Coverage: The exact same as your non-contrast scan.
  - Smart prep on the ascending aorta at the level of the carina
- Series 3, Group 2 - CTA
  - Immediately follow with 2nd scan from the elbow to the fingertips (all in one series, but two groups)

Smartprep location ROI for ascending aorta Position

### Reformat Instructions

See table below.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO | Thin ST | Manual | MIP | 450/50 | 1.25 | 0.625 | coronal from skin to skin |

### Networking

All the images are sent to ALI and 3D Lab workstation. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (25-360) | (25-450) | (25-570) |
| Manual mA | 180.0 | 230.0 | 350.0 |
| Noise Index | 24.0 | 31.0 | 39.0 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 4 | 4 | 4 |
| Monitoring ISD (sec) | 1.0 | 1.0 | 1.0 |
| Enhancement Threshold (HU) | 80 | 80 | 80 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.6 | 0.6 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-770) | (90-770) | (100-800) |
| Manual mA | 240.0 | 380.0 | 530.0 |
| Noise Index | 12.0 | 18.5 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.6 | 0.6 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-770) | (90-770) | (100-800) |
| Manual mA | 240.0 | 380.0 | 530.0 |
| Noise Index | 12.0 | 18.5 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| **DFOV** | **30** | **40** | **50** |
| **Recon Type** | **Standard** | **Standard** | **Standard** |
| **WW/WL** | **450/50** | **450/50** | **450/50** |
| **Recon Option** | **Plus** | **Plus** | **Plus** |
| **Recon Option** | **IQ Enhance** | **IQ Enhance** | **IQ Enhance** |
| **ASIR (non Rev256/Rev256)** | **30% / 10%** | **30% / 10%** | **30% / 10%** |
| **Slice Thickness (mm)** | **1.25** | **1.25** | **1.25** |
| **Interval (mm)** | **0.625** | **0.625** | **0.625** |

# Lower Extremity CTA 9.13/9.14/9.15

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

For iliac occlusive disease, peripheral vascular disease, and patients with a “cold foot”. For patients with “cold foot” use complete coverage.

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

Place feet close together, straight, and near the center of the scanner.

**IV Contrast Parameters**

**Medrad™ Run Off protocol:**

- 100 mL Iopamidol (Isovue 370) 76% @ 5-6mL/sec
- 70 mL Sodium Chloride 0.9% @ 5-6 mL/sec

**1st phase:**

- 40 mL Iopamidol (Isovue 370) 76% @ 6 mL/sec

**2nd phase:**

- 60 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec

**3rd phase:**

- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

**Field of View**

As small as possible to a minimum of 32 cm, while still including aorta, iliac, femoral and lower extremity vessels.

**Scan Description**

- Series 1 – PA and lateral scout
  - Coverage: carina through tips of toes
- Series 2 – Non-contrast
  - Coverage:
    - ACUTE EMBOLISM: Carina through tips of toes
    - ROUTINE: Diaphragm through toes

        - FOCUSED: As specified on protocol sheet. If not specified, then contact protocolling physician to determine appropriate coverage.
- Series 3, Group 1 - CTA
    - Smart Prep - Monitor Phase: Center over the femoral heads. Put an ROI on each femoral artery. Pay attention to both arteries, if one artery lights up more quickly than the other, use the artery with the longer delay. If the smart prep has not peaked after 30 seconds, please scan. The REV 256 has a diagnostic delay of 7 seconds built in after the peak of contrast.
    - Coverage is the same as your Non-Contrast scan.
- Series 3, Group 2 - CTA knees down
    - Immediately follow with 2nd scan from popliteal fossa to tips of toes (all in one series, but two groups)
    - If there are more than 3000 images within this series, the scanner will not let you scan. You need to delete the second group. Scan the first group, once completed, hit repeat series move the start location to the knees, the end location should still be set up at the toes and then scan the delays.

Image showing where the smart prep location is located on a scout. The image also shows the location of the femoral arteries and their appearance on a non contrast and with contrast (CTA) scan. **Blue arrows are arteries where you need to put the ROI. Purple arrows (medial/posterior to the artery) denote the veins, do not put the ROI over the veins.**

### Reformat Instructions

Do coronal reformats at three different levels, making sure to include the anatomy in the DFOV below:

1. From above diaphragm to just below Symphysis pubis
2. From above femoral heads to just below the knee joint
3. From above the knee joint to the bottom of the feet (choose aquisition with best arterial enhancement). You may not be able to get this exact slice thickness and interval (1.5 X 0.98 usually works). More importantly overlap!

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CV | CO ABD/PEL | Manual | Average | 800/150 | 1.25 | 0.98 | coronal |
| CV | CO PELVIS TO KNEES | Manual | Average | 800/150 | 1.25 | 0.98 | coronal |
| CV | CO KNEES TO FEET | Manual | Average | 800/150 | 1.25 | 0.98 | coronal |

### Networking

Send the Non Contrast & CTA series to (ALI_Source) Thin PACS and all other series (including the Dose Information Slide) to (ALI_Store) PACS. Send Angio series to 3D Lab. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (25-360) | (25-450) | (25-570) |
| Manual mA | 180.0 | 230.0 | 350.0 |
| Noise Index | 24.0 | 31.0 | 39.0 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 1.0 | 1.0 | 1.0 |
| Enhancement Threshold (HU) | 80 | 80 | 80 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.6 | 0.6 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-770) | (90-770) | (100-800) |
| Manual mA | 240.0 | 380.0 | 530.0 |
| Noise Index | 12.0 | 18.5 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.6 | 0.6 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-770) | (90-770) | (100-800) |
| Manual mA | 240.0 | 380.0 | 530.0 |
| Noise Index | 12.0 | 18.5 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Post-Endostent Non-Con Volume Change (Abd/Pelvis only) 6.43/6.44/6.45

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

To rule out endoleak for patients that have had a prior post-endostent scan that showed no leak. Only usable for endostents below the diaphragm.

**Oral Contrast**

None

**Pre-Scan Instructions**

Notify the 3D technologist that a volume patient is on the table

**IV Contrast Parameters**

None

**Field of View**

As small as possible to a minimum of 32 cm, while still including entire lungs and abdomen (can clip subcutaneous fat). Be sure to include femoral arteries if pelvis is included.

**Scan Description**

- Series 1 - PA and lateral scout from diaphragm to pubic symphysis
- Series 2 - Non-contrast
  - During inspiration breath-hold
  - Coverage:Abd/Pelvis: Diaphragm to pubic symphysis
- Patient may get off table and remain in the waiting area
  - If non-contrast images show <2% volume increase, then patient may go
  - If non-contrast images show >2% volume increase, bring patient back and perform enhanced CTA and delayed series as (use the Nongated CTA protocol for this)
  - Billing: CT Abd/Pel w/o IVC and 3D

**Reformat Instructions**

No special reformat instructions, see the reformat section for basic details.

**Reformats**

None.

### Networking

All the images are sent to ALI and 3D Lab workstation. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

Give requisition to the 3D lab for processing.

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.6 | 0.7 | 0.9 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-650) | (35-700) | (35-690) |
| Manual mA | 330.0 | 350.0 | 410.0 |
| Noise Index | 28.5 | 36.0 | 45.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Bony Pelvis/Hips/SI/Femur/FAI (Without Metal) 8.1/8.2/8.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

For evaluation of the cortex of the pelvic ring and acetabuli, typically in the setting of acute trauma. This protocol is also used for Femoroacetabular Impingement (FAI). Note: there are separate adult and pediatric protocols for bony pelvis and there is a separate adult femoral anteversion and pediatric SPICA protocol.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine, legs flat on the table.
- No cushions/wedges under legs/feet.
- Turn the toes inward.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 – PA and lateral scout
- Series 2 – CT Bony Pelvis
  - Coverage: (see picture)
  - From above iliac crests (white line)
  - To below lesser trochanters and below ischial tuberosities (gray line)
  - If hardware is present, cover the hardware and adjacent bone (dotted line)

Bony Pelvis Scan Range

**Reformat Instructions**

Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes in the Bone Window unless specified to also do STD.

- Straight Axial Reformats
  - Set-up off a coronal image that shows both femoral heads.
  - Angle such that slices cut through femoral heads evenly (dotted line).
  - Cover from iliac crests through ischial tuberosities and lesser trochanters.
- Straight Coronal Reformats
  - Set-up off an axial image that shows pubic symphysis.
  - Angle slices through ischial tuberosities evenly (dotted line).
  - Cover from in front of the pubic symphysis to behind the gluteal muscles.
- Straight Sagittal Reformats
  - Can set-up off same axial image as above.
  - Cover continuously from the right hip to the left hip, including the sacrum.

Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes
**For "FAI" add oblique reformats parallel to femoral necks (blue lines)**

Judet Views (For acetabular fractures)

- To reformat “Judet” views on GE CT scanner:
- Move reference to femoral head on oblique viewport
- Adjust slice thickness (middle mouse button) ~60mm
- Change “MIP” to “Average” (right mouse button)

- Set Window=2000, Level=350
- Hide Annotations (right mouse button)
- Click “Rotate/Translate” button; set to 45 degrees
    - Scanner 1, 4, & ER: To locate the Rotate/Translate button, click on “Display button” (blue box with the letter A)
- Click to “Rotate to Left”
- Save Image (right mouse button)
- Click TWICE to rotate to center, then to right
- Save this image as well.
    - Repeat steps 7-10 for other hip. Send the 4 images.

Example of Judet reformating

SI Joints- Reformat 3mm Thick at 1.5mm Intervals

- Oblique Coronal Reformats
    - Set-up off a mid-line sagittal image through the sacrum.
    - Angle slices parallel to the long axis of the sacrum.
    - Cover the sacrum front-to-back. (Check the reformats to make sure the SI joints are covered in their entirety.)
- Oblique Axial Reformats
    - Set-up off same mid-sagittal image as above.
    - Angle slices to be perpendicular to the oblique coronals.
    - Cover the entire sacrum top-to-bottom.

SI joints for reformatting

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

- Choose the standard thin images (usually A:3) from pacs and load into vitrea
- On the left side of the screen, under protocol, choose “musculoskeletal CT”
- In the 3D image, the lower right corner, click on “pick”
- If you need to remove the table, in the 3D port click on the letter “S” on the bottom of the port
- This will place the pelvis in a superior position
- Under segment anatomy in the top left corner of the screen, click on “sculpt”
- Place you mouse back in the 3D port
- You will see a pencil, hold the left mouse down until the pencil becomes small
- Click and drag the pencil around the table completely, bringing the pencil back to when you started to draw
- There will be a red circle around the area you want to remove
- A small box “3D sculpt” will come up in the middle of the screen and click on remove
- Click on the letter “A” in the bottom of the port to bring the pelvis back into the AP position
- Click on the Batch Tab (top left corner of screen)
- Under 3D rotation, click on “Full 360 rotation”

- Under output control, you will see “number of images”. Hover over the number just above the slider bar and type in 37.
- Click on “Batch” at the bottom of the screen to save

3D Spinner on GE Scanner Directions

- These are only needed on a trauma patient that had a bony pelvis scanned or reformatted from prior data set.
- You will need to create one horizontal 3D spinner of the bony pelvis.
- Load the 1.25 standard images from the bony pelvis into reformat.
- In the oblique port, right click on the patient’s name and choose hide.
- In the oblique port, right click on the word Oblique and change to VR on the drop down list.
- On the left side of the screen choose tools then Auto Select.

- Click on batch
- Choose rotate
- Change number of images to 37 and click ok

- Close out of exam and send to ALI-Store

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-630) | (80-780) | (70-710) |
| Manual mA | 310.0 | 390.0 | 430.0 |
| Noise Index | 20.0 | 26.0 | 32.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Bony Pelvis/Hips/SI/Femur/FAI (With Metal) 8.4/8.5/8.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

For evaluation of the cortex of the pelvic ring and acetabuli, typically in the setting of acute trauma. This protocol is also used for Femoroacetabular Impingement (FAI). Note: there are separate adult and pediatric protocols for bony pelvis and there is a separate adult femoral anteversion and pediatric SPICA protocol.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine, legs flat on the table.
- No cushions/wedges under legs/feet.
- Turn the toes inward.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate.

**Scan Description**

- Series 1 – PA and lateral scout
- Series 2 – CT Bony Pelvis
  - Coverage: (see picture)
  - From above iliac crests (white line)
  - To below lesser trochanters and below ischial tuberosities (gray line)
  - If hardware is present, cover the hardware and adjacent bone (dotted line)

Bony Pelvis Scan Range

**Reformat Instructions**

Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes in the Bone Window unless specified to also do STD.

- Straight Axial Reformats
  - Set-up off a coronal image that shows both femoral heads.
  - Angle such that slices cut through femoral heads evenly (dotted line).
  - Cover from iliac crests through ischial tuberosities and lesser trochanters.
- Straight Coronal Reformats
  - Set-up off an axial image that shows pubic symphysis.
  - Angle slices through ischial tuberosities evenly (dotted line).
  - Cover from in front of the pubic symphysis to behind the gluteal muscles.
- Straight Sagittal Reformats
  - Can set-up off same axial image as above.
  - Cover continuously from the right hip to the left hip, including the sacrum.

Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes
**For "FAI" add oblique reformats parallel to femoral necks (blue lines)**

Judet Views (For acetabular fractures)

- To reformat “Judet” views on GE CT scanner:
- Move reference to femoral head on oblique viewport
- Adjust slice thickness (middle mouse button) ~60mm
- Change “MIP” to “Average” (right mouse button)

- Set Window=2000, Level=350
- Hide Annotations (right mouse button)
- Click “Rotate/Translate” button; set to 45 degrees
    - Scanner 1, 4, & ER: To locate the Rotate/Translate button, click on “Display button” (blue box with the letter A)
- Click to “Rotate to Left”
- Save Image (right mouse button)
- Click TWICE to rotate to center, then to right
- Save this image as well.
    - Repeat steps 7-10 for other hip. Send the 4 images.

Example of Judet reformating

SI Joints- Reformat 3mm Thick at 1.5mm Intervals

- Oblique Coronal Reformats
    - Set-up off a mid-line sagittal image through the sacrum.
    - Angle slices parallel to the long axis of the sacrum.
    - Cover the sacrum front-to-back. (Check the reformats to make sure the SI joints are covered in their entirety.)
- Oblique Axial Reformats
    - Set-up off same mid-sagittal image as above.
    - Angle slices to be perpendicular to the oblique coronals.
    - Cover the entire sacrum top-to-bottom.

SI joints for reformatting

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

## Reformats

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

## Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

## Miscellaneous

- Choose the standard thin images (usually A:3) from pacs and load into vitrea
- On the left side of the screen, under protocol, choose “musculoskeletal CT”
- In the 3D image, the lower right corner, click on “pick”
- If you need to remove the table, in the 3D port click on the letter “S” on the bottom of the port
- This will place the pelvis in a superior position

- Under segment anatomy in the top left corner of the screen, click on “sculpt”
- Place you mouse back in the 3D port
- You will see a pencil, hold the left mouse down until the pencil becomes small
- Click and drag the pencil around the table completely, bringing the pencil back to when you started to draw
- There will be a red circle around the area you want to remove
- A small box “3D sculpt” will come up in the middle of the screen and click on remove
- Click on the letter “A” in the bottom of the port to bring the pelvis back into the AP position
- Click on the Batch Tab (top left corner of screen)
- Under 3D rotation, click on “Full 360 rotation”
- Under output control, you will see “number of images”. Hover over the number just above the slider bar and type in 37.
- Click on “Batch” at the bottom of the screen to save

3D Spinner on GE Scanner Directions

- These are only needed on a trauma patient that had a bony pelvis scanned or reformatted from prior data set.
- You will need to create one horizontal 3D spinner of the bony pelvis.
- Load the 1.25 standard images from the bony pelvis into reformat.
- In the oblique port, right click on the patient’s name and choose hide.
- In the oblique port, right click on the word Oblique and change to VR on the drop down list.
- On the left side of the screen choose tools then Auto Select.

- Click on batch
- Choose rotate
- Change number of images to 37 and click ok

- Close out of exam and send to ALI-Store

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.6 | 0.8 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (70-600) | (70-700) | (80-715) |
| Manual mA | 300.0 | 350.0 | 490.0 |
| Noise Index | 11.5 | 17.5 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 3 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Knee/Tibia (Without Metal) 9.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Assess the alignment and degree of displacement of fracture fragments, particularly at the articular surfaces. Also for the evaluation of arthritis, mineralized lesions, and to evaluate the bone surrounding metallic implants.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine.
- Slide patient over so that knee being imaged is centered in scanner.
- Tapping the toes together helps stabilize knees.
  - In most cases it is fine to leave the other knee straight and within the scanning field.
  - If the other knee contains hardware/metal, try to bend it so it is NOT in the scanning field.
- Plaster casts are not problematic.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

25 cm

The FOV must include:

- The entire patella
- Both femoral condyles in their entirety
- The proximal tibia through the level of the fibular head
- If scanning a metal knee prosthesis, it is necessary to cover the entire length of both the femoral and tibial components.

## Scan Description

- Series 1 – PA and lateral scout
- Series 2 – CT Knee
  - Coverage (see images)

Knee FOV

## Reformat Instructions

Reformatting Planes in the Bone Window unless specified to also do STD.

- All Knee CTs are reformatted in 3 orthogonal planes using the BonePlus source images.
  - Reformatted images should be stored using a “Bone” window (2000/350).
  - Unless specifically requested, it is not necessary to make “Standard” algorithm reformats.
- In most cases, make the reformats 3mm thick at 1.5mm intervals (no gap) in all 3 planes.
  - If the request is for “OCD” (Osteochondral Defect, Osteochondritis Desiccans) make the Coronal and sagittal reformats 1mm thick at 1mm intervals (no gap).
- Coronal & sagittal reformats are made off an axial reference image.
  - Parallel & perpendicular to a line through the back of the femoral condyles.

Three Knee Reformats

- Axial reformats are made off a mid-coronal reference image.
  - Parallel to the top if the tibial plateau.
  - Annotate as to “Right” or “Left”.
- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on Recon 2 (140D) and Recon 3 (110D) and send to ALI_Store. When naming the reformat please use 140D and 110D in the name so they can decifer the two.

If a long bone scan (tibia/fibula) is ordered, do CO/SA/AX reformat in 3x1.5 mm using the thin bone series.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

**Reformats**

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For OCD:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

**Networking**

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 120 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 120 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 120 |
| AEC type | Manual mA |
| mA Range | (50-335) |
| Manual mA | 270.0 |
| Noise Index | 15.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | No Metal |
|---|---|
| Recon 1 | |
| DFOV | 25 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 25 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 25 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 25 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Knee/Tibia (With Metal) 9.4

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Assess the alignment and degree of displacement of fracture fragments, particularly at the articular surfaces. Also for the evaluation of arthritis, mineralized lesions, and to evaluate the bone surrounding metallic implants.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine.
- Slide patient over so that knee being imaged is centered in scanner.
- Tapping the toes together helps stabilize knees.
  - In most cases it is fine to leave the other knee straight and within the scanning field.
  - If the other knee contains hardware/metal, try to bend it so it is NOT in the scanning field.
- Plaster casts are not problematic.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

25 cm

The FOV must include:

- The entire patella
- Both femoral condyles in their entirety
- The proximal tibia through the level of the fibular head
- If scanning a metal knee prosthesis, it is necessary to cover the entire length of both the femoral and tibial components.

**Scan Description**

- Series 1 – PA and lateral scout
- Series 2 – CT Knee
    - Coverage (see images)

Knee FOV

**Reformat Instructions**

Reformatting Planes in the Bone Window unless specified to also do STD.

- All Knee CTs are reformatted in 3 orthogonal planes using the BonePlus source images.
    - Reformatted images should be stored using a “Bone” window (2000/350).
    - Unless specifically requested, it is not necessary to make “Standard” algorithm reformats.
- In most cases, make the reformats 3mm thick at 1.5mm intervals (no gap) in all 3 planes.
    - If the request is for “OCD” (Osteochondral Defect, Osteochondritis Desiccans) make the Coronal and sagittal reformats 1mm thick at 1mm intervals (no gap).
- Coronal & sagittal reformats are made off an axial reference image.
    - Parallel & perpendicular to a line through the back of the femoral condyles.

Three Knee Reformats

- Axial reformats are made off a mid-coronal reference image.
  - Parallel to the top if the tibial plateau.
  - Annotate as to “Right” or “Left”.
- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on Recon 2 (140D) and Recon 3 (110D) and send to ALI_Store. When naming the reformat please use 140D and 110D in the name so they can decifer the two.

If a long bone scan (tibia/fibula) is ordered, do CO/SA/AX reformat in 3x1.5 mm using the thin bone series.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

**Reformats**

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For OCD:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

**Networking**

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 140 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 140 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 140 |
| AEC type | Manual mA |
| mA Range | (90-700) |
| Manual mA | 470.0 |
| Noise Index | 9.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | With Metal |
|---|---|
| Recon 1 | |
| DFOV | 25 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 25 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 25 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 25 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Ankle/Foot/Distal Tibia (Without Metal) 9.1

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluation of treated fractures, fracture fixation, assess progress of osseous healing, arthritis, mineralized lesions, osteochondral lesions of the joints, and to evaluate the bone surrounding metallic implants. This protocol is also indicated in patients have undergone surgical ankle or hindfoot fusion (arthrodesis) to assess the extent of osseous union.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Use a foot holder, if available.
- Patient supine.
- Feet together, centered in scanner.
- Toes pointing straight up.
- No gantry tilt.
- In most cases scan both feet together.
    - If feet cannot be brought together,position the patient such that the foot/ankle of interest is centered in the scanner.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - PA and lateral scout
  - Coverage (see images)

Ankle coverage

- Series 2 - CT Ankle
  - Coverage for Ankle/Foot/Distal Tibia:
  - From above syndesmosis (Tib/fib Joint)(Higher for pilon Fractures as noted in image.)
  - To below calcaneus

**Reformat Instructions**

Use the Bone Window unless specified to use STD. Ankle/Foot/Distal Tibia Ankle/Distal Tibia (centered on Ankle Joint) Appropriate for:

- Distal tibial fractures (Pilon, malleoli, triplane, juvenile Tillaux)
- Talar dome fractures (OCD)

Picture descriptions from left to right:

- Straight Axial- Off the sagittal, 3x1.5mm
- Mortise Coronal- Off an axial, 3x1.5mm
- Mortise Sagittal- Off an axial, 3x1.5mm

Three different looks at an ankle joint

Hindfoot/Midfoot (centered on Chopart's Joint) Appropriate for:

- Hindfoot fractures (calcaneus, talar body, sub-talar joint)
- Tarsal coalitions

Picture descriptions from left to right:

- Straight Sagittal- Off an axial
- Oblique Coronal- Off a sagittal
- Straight Axial- Off a sagittal
- Oblique Axial- Off a sagittal and parallel to MT

Four different reformats of the mid foot

Forefoot/Midfoot (centered on Lisfranc's Joint) Appropriate for:

- Forefoot fractures (Lisfranc dislocation, metatarsals)

ALL PLANES RELATIVE TO 1ST METATARSAL (May have to oblique reference image to see 1st MT) Picture descriptions from left to right:

- Axial or long axis- Off a sagittal, 3x1.5mm
- Short axis- Off a sagittal
- Sagittal- Off an axial, 3x1.5mm

Three different looks at the forefoot

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

## Reformats

For Distal Tibia:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For OCD:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Hindfoot/Midfoot:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| OBL CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| OBL AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |

For Forefoot/Midfoot:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Long | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| AX Short | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 120 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 120 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 120 |
| AEC type | Manual mA |
| mA Range | (50-335) |
| Manual mA | 270.0 |
| Noise Index | 15.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | No Metal |
|---|---|
| Recon 1 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Ankle/Foot/Distal Tibia (With Metal) 9.2

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Evaluation of treated fractures, fracture fixation, assess progress of osseous healing, arthritis, mineralized lesions, osteochondral lesions of the joints, and to evaluate the bone surrounding metallic implants. This protocol is also indicated in patients have undergone surgical ankle or hindfoot fusion (arthrodesis) to assess the extent of osseous union.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Use a foot holder, if available.
- Patient supine.
- Feet together, centered in scanner.
- Toes pointing straight up.
- No gantry tilt.
- In most cases scan both feet together.
    - If feet cannot be brought together,position the patient such that the foot/ankle of interest is centered in the scanner.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - PA and lateral scout
  - Coverage (see images)

Ankle coverage

- Series 2 - CT Ankle
  - Coverage for Ankle/Foot/Distal Tibia:
  - From above syndesmosis (Tib/fib Joint)(Higher for pilon Fractures as noted in image.)
  - To below calcaneus

**Reformat Instructions**

Use the Bone Window unless specified to use STD. Ankle/Foot/Distal Tibia Ankle/Distal Tibia (centered on Ankle Joint) Appropriate for:

- Distal tibial fractures (Pilon, malleoli, triplane, juvenile Tillaux)
- Talar dome fractures (OCD)

Picture descriptions from left to right:

- Straight Axial- Off the sagittal, 3x1.5mm
- Mortise Coronal- Off an axial, 3x1.5mm
- Mortise Sagittal- Off an axial, 3x1.5mm

Three different looks at an ankle joint

Hindfoot/Midfoot (centered on Chopart's Joint) Appropriate for:

- Hindfoot fractures (calcaneus, talar body, sub-talar joint)
- Tarsal coalitions

Picture descriptions from left to right:

- Straight Sagittal- Off an axial
- Oblique Coronal- Off a sagittal
- Straight Axial- Off a sagittal
- Oblique Axial- Off a sagittal and parallel to MT

Four different reformats of the mid foot

Forefoot/Midfoot (centered on Lisfranc's Joint) Appropriate for:

- Forefoot fractures (Lisfranc dislocation, metatarsals)

ALL PLANES RELATIVE TO 1ST METATARSAL (May have to oblique reference image to see 1st MT) Picture descriptions from left to right:

- Axial or long axis- Off a sagittal, 3x1.5mm
- Short axis- Off a sagittal
- Sagittal- Off an axial, 3x1.5mm

Three different looks at the forefoot

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

## Reformats

For Distal Tibia:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For OCD:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Hindfoot/Midfoot:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| OBL CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| OBL AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |

For Forefoot/Midfoot:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Long | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| AX Short | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 140 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 140 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 140 |
| AEC type | Manual mA |
| mA Range | (90-700) |
| Manual mA | 470.0 |
| Noise Index | 9.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | With Metal |
|---|---|
| Recon 1 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Femoral Anteversion/Lower Extremity Rotational Study 9.8/9.9/9.10

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

For evaluation of the rotation angle of the femoral necks relative to the femoral condyles, bilaterally. A secondary measurement is the femoral lengths. This protocol may also be used for tibial torsion imaging requests.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine, feet first, legs flat on the table.
  - No cushions/wedges under legs/feet
- Legs as close together as possible.
  - Consider taping feet together (or using foot-board).
  - Consider taping knees if extra stability is needed.

**IV Contrast Parameters**

None

**Field of View**

36 cm

**Scan Description**

- Series 1 – PA and lateral scout
- Series 2 – CT Femoral Anteversion
  - Scan ankles ONLY if Tibias are clinically requested
  - Acquire 3 small slabs covering bilateral hips, knees, and ankles
    - Just above femoral heads through lesser trochanters
    - From the distal femoral metaphysis through tops of tibias
    - Just above syndesmosis, through talar domes

Femoral Anteversion

### Reformat Instructions

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

### Reformats

None.

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Group 1, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (35-260) | (35-330) | (40-410) |
| Manual mA | 130.0 | 160.0 | 250.0 |
| Noise Index | 15.5 | 20.0 | 25.0 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Group 1, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Group 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (10-90) | (10-110) | (15-140) |
| Manual mA | 40.0 | 50.0 | 80.0 |
| Noise Index | 13.5 | 17.5 | 22.0 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Group 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Group 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (10-90) | (10-110) | (15-140) |
| Manual mA | 40.0 | 50.0 | 80.0 |
| Noise Index | 13.5 | 17.5 | 22.0 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Group 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| **DFOV** | **30** | **40** | **50** |
| **Recon Type** | **Bone Plus** | **Bone Plus** | **Bone Plus** |
| **WW/WL** | **2500/350** | **2500/350** | **2500/350** |
| **Recon Option** | **Plus** | **Plus** | **Plus** |
| **Recon Option** | | | |
| **ASIR (non Rev256/Rev256)** | **None** | **None** | **None** |
| **Slice Thickness (mm)** | **5.0** | **5.0** | **5.0** |
| **Interval (mm)** | **3.0** | **3.0** | **3.0** |

# Shoulder/Humerus (With or Without Metal) 4.1/4.2/4.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluation of the progress of osseous healing, fracture fixation, characterization of fractures, arthritis, mineralized lesions, and to evaluate the bone surrounding metallic implants. Shoulder CT is also indicated in patients with shoulder dislocation to evaluate complicating factors such as prolonged or irreducible dislocation.

**Oral Contrast**

None

**Pre-Scan Instructions**

Non-Arthrogram:

- Image the shoulder of interest with the patient lying supine with the arm being scanned at their side.
- The imaged shoulder should lie in the neutral position (palm facing the ceiling).
- Place the contralateral shoulder in the ABER position. (See picture below)
- Have the patient turn their head away from the shoulder being imaged.
- Move the imaged shoulder as close to the center of the scan field as possible. Image sharpness degrades significantly as an object is moved from the center to the edge of the 50 cm scan field of view.

Arthrogram:

- The patient is positioned supine in the CT scanner and 2 scans are performed.
- For the first scan the patient's arm is at their side, PALM UP, and the shoulder is scanned as in a routine CT, and the 3 standard sets of reformatted images are made.
- For the second scan the patient shoulder is placed in the Abducted/External Rotation (ABER) position, with their hand behind their head.

Arthrogram Position

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

24 cm

**Scan Description**

- Series 1 - PA and lateral scout
- Series 2 - CT Shoulder
  - Coverage (non-arthrogram):
    - From above Acromial-Clavicular (AC) joint, through the bottom of the scapula.
    - Field of View (FOV) wide enough to include entire scapula and proximal humerus.
    - If there is a shoulder prosthesis, scan past the end of the humeral component.
- Series 3 - CT shoulder arthrogram (OPTIONAL)
  - Coverage (Arthrogram):
    - From above Acromial-Clavicular (AC) joint, past the bottom of the glenoid.
    - Field of View (FOV) wide enough to include the scapula and proximal humerus. Scan coverage should resemble the image below.

Shoulder Scan Range (routine)

ABER Position

**Reformat Instructions**

Non-Arthrogram:

- Reformat in 3 planes using the "BonePlus" images in a "Bone Window" (1500/300).
- All reformats are 3mm thick at 1.5mm intervals.
- ALL REFORMATS ARE RELATIVE TO THE GLENO-HUMERAL JOINT (Shown below).

Relative guide for reformats

- Coronal & Sagittal Reformats are made off an Axial reference image, perpendicular & parallel to the Gleno-Humeral Joint.

Images of what the reformats should look like

Arthrogram:

- Using the ABER source images, find a Coronal reference image through the middle of the Gleno-Humeral Joint.
- Create ABER reformatted images perpendicular to the Gleno-Humeral Joint, 3mm thick at 1.5mm intervals.
- The ABER images should look something like the image below:

ABER reformats

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

If a long bone scan (humerus) is ordered, do CO/SA/AX reformat in 3x1.5 mm using the thin bone series.

**Reformats**

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| ABER | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | Aber |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

**Networking**

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-440) | (70-680) | (70-710) |
| Manual mA | 220.0 | 340.0 | 430.0 |
| Noise Index | 14.5 | 22.5 | 32.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Standard | Standard | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 3 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Standard | Standard | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-440) | (70-680) | (70-710) |
| Manual mA | 220.0 | 340.0 | 430.0 |
| Noise Index | 14.5 | 22.5 | 32.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Standard | Standard | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

**If the patient has metal in the scan FOV and the scanner has MARS, duplicate recon 1 and 2 with MARS turned on for recon spots 3 and 4. You may also do this using retro recon instead. Send all 4 series to PACS.**

# Elbow/Forearm (Without Metal) 4.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluation of the progress of osseous healing, fracture fixation, characterization of fractures, arthritis, osteochondral lesions, mineralized bone and soft tissue lesions, and to evaluate the bone surrounding metallic implants. CT is also useful in identifying ossified joint bodies that could cause a mechanical block to flexion or extension.

**Oral Contrast**

None

**Pre-Scan Instructions**

<u>Elbow CT Scanning Techniques</u>

- The elbow is the most difficult joint to scan.
  - It is usually difficult to optimally position the elbow.
    - Particularly when the elbow is in a cast.
  - It often requires 6 sets of reformats.
    - 3 relative to the distal humerus.
    - 3 relative to the proximal forearm.
- Extra care should be taken when positioning elbows.
  - The better the elbow is positioned in the scanner:
    - The better the source data will be, and
    - The easier it will be to make the reformats

<u>Keys to Optimally Positioning the Elbow</u>

- The arm should be raised above the patient's head.
  - This is usually best achieved with the patient laying supine on the table.
  - Sometimes creative positioning (prone, decubitus) will be necessary.
- This is crucial because:
  - It puts the elbow near the center of the scanner (allowing use of "Small SFOV").
  - It avoids radiation to the head and torso.
    - It helps to have the patient bend their head away from the elbow
    - Watch to make sure the patient's head doesn't hit the edge of scanner!
- The arm should not be across the patient's body.
  - This yields undesirable beam hardening artifacts from the torso, while it also causes unnecessary radiation to the torso.
- If the arm cannot be raised above the head, **USE THE SHOULDER PROTOCOL WITH THE PATIENT'S ARM AT THIER SIDE** and create the same reformats of the elbow as if you had scanned using the elbow protocol. Having the elbow "half up" sitting next to the head is worse than having the elbow at the patients side. If the relative position of the elbow joint is important for the scan, please consult a radiologist for positioning guidance. If possible, place the contralateral arm above the head, if the patient cannot do that, it is okay to have the contralateral arm "half up" near the head since you will not be scanning that arm.
  - Respiratory motion will produce unacceptable reformatting artifacts (see below)

Effects of beam hardening and respiratory motion

- If the patient's elbow is not in a cast:
  - The elbow should be as straight as possible. (Fully extended)
  - The arm should be supinated (palm up), causing the radius/ulna to be uncrossed.
- If the patient's elbow is in a cast:
  - The degree of elbow extension will be limited by the cast.
    - Even with a cast, every effort should be made to position the elbow above the head
  - Try to avoid positioning forearm bones parallel to scanning plane.
    - This causes beam hardening artifacts along entire length of radius & ulna.
  - It is better to have forearm oblique to the scanning plane.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - PA and lateral scouts

- Series 2 - CT Elbow cover distal humerus through proximal forearm

**Reformat Instructions**

Elbow Anatomy:

- Lateral and AP views respectively

Elbow Anatomy

Reformatting: 3x1.5 mm standard All While Using the Multi-Oblique Reformatting Tool:

1. Using the axial images, align the coronal plane so that it is parallel to the transepicondylar axis of the distal humerus (diagram below)
2. Align both the sagittal and coronal planes to be parallel to the shaft of the distal humerus
3. Again use the axial images to fine tune the coronal plane to ensure that it is parallel to the transepicondylar axis of the distal humerus. Corresponding orthogonal views represent the sagittal and axial reformatting planes.

Elbow reformat instructions (guidance when using the multi-oblique reformatting tool)

Then, create your reformats off of these planes you just created as shown below.

1. Axial
2. Sagittal
3. Coronal

Reformat planes

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

If a long bone scan (forearm ulna/radius) is ordered, do CO/SA/AX reformat in 3x3 mm using the thin bone series.

### Reformats

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| AX Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |
| AX Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.626 | coronal |
| SA Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 120 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 120 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 120 |
| AEC type | Manual mA |
| mA Range | (50-335) |
| Manual mA | 270.0 |
| Noise Index | 15.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| Recon 1 | No Metal |
|---|---|
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| Recon 3 | If Metal |
|---|---|
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Elbow/Forearm (With Metal) 4.7

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Evaluation of the progress of osseous healing, fracture fixation, characterization of fractures, arthritis, osteochondral lesions, mineralized bone and soft tissue lesions, and to evaluate the bone surrounding metallic implants. CT is also useful in identifying ossified joint bodies that could cause a mechanical block to flexion or extension.

**Oral Contrast**

None

**Pre-Scan Instructions**

<u>Elbow CT Scanning Techniques</u>

- The elbow is the most difficult joint to scan.
  - It is usually difficult to optimally position the elbow.
    - Particularly when the elbow is in a cast.
  - It often requires 6 sets of reformats.
    - 3 relative to the distal humerus.
    - 3 relative to the proximal forearm.
- Extra care should be taken when positioning elbows.
  - The better the elbow is positioned in the scanner:
    - The better the source data will be, and
    - The easier it will be to make the reformats

<u>Keys to Optimally Positioning the Elbow</u>

- The arm should be raised above the patient's head.
  - This is usually best achieved with the patient laying supine on the table.
  - Sometimes creative positioning (prone, decubitus) will be necessary.
- This is crucial because:
  - It puts the elbow near the center of the scanner (allowing use of "Small SFOV").
  - It avoids radiation to the head and torso.
    - It helps to have the patient bend their head away from the elbow
    - Watch to make sure the patient's head doesn't hit the edge of scanner!
- The arm should not be across the patient's body.
  - This yields undesirable beam hardening artifacts from the torso, while it also causes unnecessary radiation to the torso.
- If the arm cannot be raised above the head, **USE THE SHOULDER PROTOCOL WITH THE PATIENT'S ARM AT THIER SIDE** and create the same reformats of the elbow as if you had scanned using the elbow protocol. Having the elbow "half up" sitting next to the head is worse than having the elbow at the patients side. If the relative position of the elbow joint is important for the scan, please consult a radiologist for positioning guidance. If possible, place the contralateral arm above the head, if the patient cannot do that, it is okay to have the contralateral arm "half up" near the head since you will not be scanning that arm.
  - Respiratory motion will produce unacceptable reformatting artifacts (see below)

Effects of beam hardening and respiratory motion

- If the patient's elbow is not in a cast:
  - The elbow should be as straight as possible. (Fully extended)
  - The arm should be supinated (palm up), causing the radius/ulna to be uncrossed.
- If the patient's elbow is in a cast:
  - The degree of elbow extension will be limited by the cast.
    - Even with a cast, every effort should be made to position the elbow above the head
  - Try to avoid positioning forearm bones parallel to scanning plane.
    - This causes beam hardening artifacts along entire length of radius & ulna.
  - It is better to have forearm oblique to the scanning plane.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - PA and lateral scouts

- Series 2 - CT Elbow cover distal humerus through proximal forearm

**Reformat Instructions**

Elbow Anatomy:

- Lateral and AP views respectively

Elbow Anatomy

Reformatting: 3x1.5 mm standard All While Using the Multi-Oblique Reformatting Tool:

1. Using the axial images, align the coronal plane so that it is parallel to the transepicondylar axis of the distal humerus (diagram below)
2. Align both the sagittal and coronal planes to be parallel to the shaft of the distal humerus
3. Again use the axial images to fine tune the coronal plane to ensure that it is parallel to the transepicondylar axis of the distal humerus. Corresponding orthogonal views represent the sagittal and axial reformatting planes.

Elbow reformat instructions (guidance when using the multi-oblique reformatting tool)

Then, create your reformats off of these planes you just created as shown below.

1. Axial
2. Sagittal
3. Coronal

Reformat planes

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

If a long bone scan (forearm ulna/radius) is ordered, do CO/SA/AX reformat in 3x3 mm using the thin bone series.

## Reformats

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA Humerus | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| AX Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |
| CO Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | coronal |
| SA Forearm | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA Humerus | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |
| AX Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.626 | coronal |
| SA Forearm | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

## Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 140 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 140 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Large |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 140 |
| AEC type | Manual mA |
| mA Range | (90-700) |
| Manual mA | 470.0 |
| Noise Index | 9.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | |
|---|---|
| Recon 1 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | |
|---|---|
| Recon 3 | |
| DFOV | 22 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 22 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Wrist (Without Metal) 4.8

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Detection or characterization of fractures, evaluation of treated fractures to evaluate the progress of osseous healing or adequacy of fracture fixation. Also for the evaluation of arthritis, mineralized bone and soft tissue lesions, and to evaluate the bone surrounding metallic implants.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Arm over head
  - For most patients, this is best achieved prone (Alternatively, try decubitus positioning)
- Arm should be as straight as possible.
  - If the patient is in a long arm cast it will not be possible to completely straighten the arm.
- Wrist centered in gantry.
- No gantry tilt.

wrist positioning

- If the arm cannot be raised above the head, **USE THE SHOULDER PROTOCOL WITH THE PATIENT'S ARM AT THIER SIDE** and create the same reformats of the wrist as if you had scanned using the wrist protocol. Having the wrist "half up" sitting next to the head is worse than having the wrist at the patients side. If the relative position of the wrist joint is important for the scan, please consult a radiologist for positioning guidance. If possible, place the contralateral arm above the head, if the patient cannot do that, it is okay to have the contralateral arm "half up" near the head since you will not be scanning that arm.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

12 cm

**Scan Description**

- Series 1 - PA and lateral scouts
- Series 2 - CT wrist
  - Wrist Coverage
    - When scanning the wrist
      - Always start proximal to the DRUJ (Distal Radial-Ulnar Joint)
      - Always scan distal to C-MC joints (Carpal-MetaCarpal joints)
    - When scanning the hand
      - Always start proximal to the DRUJ
      - Scan through the area of interest (This should be determined by the radiologist)

Wrist coverage example

**Reformat Instructions**

- Use the Bone Window unless specified to use the STD.
- In nearly all cases, wrist CTs should be reformatted in at least the basic 3 orthogonal planes – A, B, & C. In addition, E, an oblique axial reformat parallel to the distal articular surface of the radius should be performed.
  - (In rare circumstances, such as for DRUJ instability, the radiologist may indicate that no reformats are necessary. See shaded box below.)

- If the indication is to evaluate the “Scaphoid” or “Navicular,”

then also reformat in the 4th plane, the oblique sagittal plane – D.

- If the wrist was obliqued in the scanner, the reference images will need to be obliqued to yield “True Sagittal” and “True Coronal” planes.

In order from left:

- Coronal with a standard of 2x1mm, made off a true sagittal
- Sagittal with a standard of 3x1.5mm, made off a true coronal
- Axial with a standard of 3x1.5mm, made of a true coronal

Reformats A,B and C

- The next photo, D, is of an oblique sagittal 1x1mm made off a true coronal

↑ (D) is along the long axis of the scaphoid

Special (limited) Protocol: DRUJ Instability

Patient Prone, with BOTH arms over head.
(Superman Position)
Scan the patient twice
With both hands PALM DOWN
With both hands PALM UP
Helical scans, 5mm thick, 5mm intervals
Important: Cover both DRUJs!
No Reformats
Charge for one joint only, without reformats
Send all images to "CT Folder" on PACS

Special instructions

Reformats A,B and C

(E) Wrist reformats

- For E, 1x.5mm standard. Oblique axial reformat parallel to the distal articular surface of the radius.

2D Reformats

- Reformats in 3 or 4 planes
  - Use "BonePlus" Images for all 2D reformats.
  - (In general, the "Standard" images are used solely for 3D reformats).
- Annotate as to "Right" or "Left".
- Do not create "Standard" 2D reformats unless requested by radiologist.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

## Reformats

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |

For Navicular FX

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| OBL SA | Thin Bone | Manual | Average | 2500/350 | 1 | .5 | sagittal |

For Distal Radius FX

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| OBL SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 100 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 100 |
| Scout 2 mA | 40 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Small |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 100 |
| AEC type | Manual mA |
| mA Range | (45-350) |
| Manual mA | 170.0 |
| Noise Index | 14.0 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | No Metal |
|---|---|
| Recon 1 | |
| DFOV | 12 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 12 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 12 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 12 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Wrist (With Metal) 4.9

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Detection or characterization of fractures, evaluation of treated fractures to evaluate the progress of osseous healing or adequacy of fracture fixation. Also for the evaluation of arthritis, mineralized bone and soft tissue lesions, and to evaluate the bone surrounding metallic implants.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Arm over head
  - For most patients, this is best achieved prone (Alternatively, try decubitus positioning)
- Arm should be as straight as possible.
  - If the patient is in a long arm cast it will not be possible to completely straighten the arm.
- Wrist centered in gantry.
- No gantry tilt.

Wrist Positioning

- If the arm cannot be raised above the head, **USE THE SHOULDER PROTOCOL WITH THE PATIENT'S ARM AT THIER SIDE** and create the same reformats of the wrist as if you had scanned using the wrist protocol. Having the wrist "half up" sitting next to the head is worse than having the wrist at the patients side. If the relative position of the wrist joint is important for the scan, please consult a radiologist for positioning guidance. If possible, place the contralateral arm above the head, if the patient cannot do that, it is okay to have the contralateral arm "half up" near the head since you will not be scanning that arm.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

12 cm

**Scan Description**

- Series 1 - PA and lateral scouts
- Series 2 - CT wrist
  - Wrist Coverage
    - When scanning the wrist
      - Always start proximal to the DRUJ (Distal Radial-Ulnar Joint)
      - Always scan distal to C-MC joints (Carpal-MetaCarpal joints)
    - When scanning the hand
      - Always start proximal to the DRUJ
      - Scan through the area of interest (This should be determined by the radiologist)

Wrist coverage example

**Reformat Instructions**

- Use the Bone Window unless specified to use the STD.
- In nearly all cases, wrist CTs should be reformatted in at least the basic 3 orthogonal planes – A, B, & C. In addition, E, an oblique axial reformat parallel to the distal articular surface of the radius should be performed.
  - (In rare circumstances, such as for DRUJ instability, the radiologist may indicate that no reformats are necessary. See shaded box below.)

- If the indication is to evaluate the “Scaphoid” or “Navicular,”

then also reformat in the 4th plane, the oblique sagittal plane – D.

- If the wrist was obliqued in the scanner, the reference images will need to be obliqued to yield “True Sagittal” and “True Coronal” planes.

In order from left:

- Coronal with a standard of 2x1mm, made off a true sagittal
- Sagittal with a standard of 3x1.5mm, made off a true coronal
- Axial with a standard of 3x1.5mm, made of a true coronal

Reformats A,B and C

- The next photo, D, is of an oblique sagittal 1x1mm made off a true coronal

↑ (D) is along the long axis of the scaphoid

Special (limited) Protocol: DRUJ Instability

Patient Prone, with BOTH arms over head.
(Superman Position)
Scan the patient twice
With both hands PALM DOWN
With both hands PALM UP
Helical scans, 5mm thick, 5mm intervals
Important: Cover both DRUJs!
No Reformats
Charge for one joint only, without reformats
Send all images to "CT Folder" on PACS

Special instructions

Reformats A,B and C

(E) Wrist reformats

- For E, 1x.5mm standard. Oblique axial reformat parallel to the distal articular surface of the radius.

2D Reformats

- Reformats in 3 or 4 planes
  - Use "BonePlus" Images for all 2D reformats.
  - (In general, the "Standard" images are used solely for 3D reformats).
- Annotate as to "Right" or "Left".
- Do not create "Standard" 2D reformats unless requested by radiologist.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

**Reformats**

For Adults:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | sagittal |
| AX | Thin Bone | Manual | Average | 2500/350 | 3 | 1.5 | axial |

For Navicular FX

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| OBL SA | Thin Bone | Manual | Average | 2500/350 | 1 | .5 | sagittal |

For Distal Radius FX

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| OBL SA | Thin Bone | Manual | Average | 2500/350 | 1 | 0.5 | sagittal |

For Pediatrics:

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 1.25 | 0.625 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | |
|---|---|
| Scout 1 kV | 140 |
| Scout 1 mA | 10 |
| Scout 1 Angle | 180 |
| Scout 2 kV | 140 |
| Scout 2 mA | 10 |
| Scout 2 Angle | 90 |
| WW/WL for Scout | 500/50 |

## Series 2, Scan Phase

| | |
|---|---|
| Scan Type | Helical |
| Beam Collimation | 10 |
| Detector Rows | 16.0 |
| Detector Configuration | 16x0.625 |
| Scan FOV | Small |
| Pitch | 0.562 |
| Speed (mm/rot) | 5.60 |
| Rotation Time (s) | 1 |
| kV | 140 |
| AEC type | Manual mA |
| mA Range | (80-700) |
| Manual mA | 380.0 |
| Noise Index | 8.5 |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

## Series 2, Recons

| | With Metal |
|---|---|
| Recon 1 | |
| DFOV | 12 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 2 | |
| DFOV | 12 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

| | If Metal |
|---|---|
| Recon 3 | |
| DFOV | 12 |
| Recon Type | Bone Plus |
| WW/WL | 2500/350 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |
| Recon 4 | |
| DFOV | 12 |
| Recon Type | Standard |
| WW/WL | 450/50 |
| Recon Option | Plus |
| Recon Option | IQ Enhance |
| Recon Option | MARS On |
| ASIR (non Rev256/Rev256) | |
| Slice Thickness (mm) | 0.625 |
| Interval (mm) | 0.312 |

# Chest Wall/Clavicle/AC Joint/SC Joint/Sternum/Ribs 4.13/4.14/4.15

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Detection or characterization of fractures, evaluation of treated fractures to evaluate the progress of osseous healing or adequacy of fracture fixation. Also for the evaluation of arthritis, mineralized bone and soft tissue lesions, and to evaluate osteoarthritis. For infection, contrast will likely be needed.

**Oral Contrast**

None

**Pre-Scan Instructions**

If doing clavicle, AC or SC joints, arms should be down. If doing chest wall, sternum or ribs, arms should be up. Please remember to have the patient hold their breath for this scan.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Variable, see scan description.

**Scan Description**

- Series 1 - PA and lateral scouts
- Series 2 - Helical Scan
  - Coverage:
    - SC Joint and Sternum
      - FOV should extend 5 cm laterally on each side of the sternum.
    - Clavicle
      - FOV should extend 5 cm laterally past the sternum and extend laterally past the AC joint.
    - AC Joint
      - FOV should be mid clavicle to past the AC joint laterally.
    - Ribs
      - The entire chest skin to skin should be covered and include all 12 ribs.

- Note: if both AC joints/clavicle etc. are ordered, do not do 2 separate scans. If both sides are ordered, perform separate recons for each side using the same acquisition data.

### Reformat Instructions

- All reformats will be 2 by 1 mm.
- For the clavicle: need a view along the long axis of the bone (Coronal) and perpendicular to the long axis of the bone (Sagittal), and an axial plane aligned to the body of the clavicle.
- For the AC and SC joints, the AX, SA, and CO should all be relative to the plane of the joint.
- For the chest wall, sternum, and ribs, the reformat planes should be aligned to the patient.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Bone | Manual | Average | 3000/300 | 2 | 1 | axial |
| CO | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | coronal |
| SA | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-440) | (70-680) | (70-710) |
| Manual mA | 220.0 | 340.0 | 430.0 |
| Noise Index | 14.5 | 22.5 | 32.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Standard | Standard | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 24 | 24 | 24 |
| Recon Type | Standard | Standard | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | | | |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Soft Tissue Extremity with IV Contrast 9.24/9.25/9.26

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Detection or characterization of mass or infection.

**Oral Contrast**

None

**Pre-Scan Instructions**

If scanning the arm

- Patient positioned prone with affected extremity overhead in "superman" position and positioned in the center of the scanner. Non-affected extremity (with IV) at patient's side.

If scanning the legs

- Place feet close together, straight, and near the center of the scanner.

**IV Contrast Parameters**

Medrad™ P3T Abdomen protocol.

Iohexol (Omnipaque) 300 MG/ML injection @ 3 mL/sec

Rate: As appropriate for IV access (up to 3mL/sec)

Delay: 90sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Same as previous study or as small as appropriate

**Scan Description**

- Series 1 - PA and lateral scouts
- Series 2 - Helical Scan
  - Coverage:
    - Variable: according to radiologist's order. Only scan the extremity of interest.
    - If ordered, perform an additional reconstruction at a FOV wide enough to cover both legs (if a lower extremity). For this extra recon, there will be a recon already set-up, you just need to turn it on. It should be at 5 mm by 2.5 mm and a standard kernel.
  - Timing: 90 seconds from the start of the injection.

### Reformat Instructions

No special instructions for the standard reformats for this protocol.

- **If a HD/GSI Scan**: Recons & Reformats: Do all reformats specific for this protocol on the 140 keV BonePlus recon (QC is recon 1) and send to ALI_Store.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin Soft Tissue | Manual | Average | 450/50 | 3 | 1.5 | axial |
| CO | Thin Soft Tissue | Manual | Average | 450/50 | 3 | 1.5 | coronal |
| SA | Thin Soft Tissue | Manual | Average | 450/50 | 3 | 1.5 | sagittal |

### Networking

All images are networked to (ALI_Store) PACS, except the thins (including thin MAR recons) send to (ALI_Source) Thin PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.6 | 0.6 | 0.6 |
| kV | 100 | 100 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-770) | (90-770) | (100-800) |
| Manual mA | 240.0 | 380.0 | 530.0 |
| Noise Index | 12.0 | 18.5 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 40 | 50 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Brain - Routine and Pediatric NAT/Trauma (Helical Mode) 1.1/11.1/11.2

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

Guidance on choosing the correct version of the routine head protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Supine, PA and lateral scouts, no gantry angle
- Helical mode should be used routinely for head CT scans. Only use axial mode when you cannot move the patient's head into proper position (trauma, cervical collar, rigid neck).

- Positioning: Tilt the patients head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see below). Use axial mode and angle the gantry if you cannot place the patient's head within 15 degrees of the proper setup angle.

**IV Contrast Parameters**

Adults:

120 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec (1 minute)

Begin scanning 5 minutes after end of injection (6 minutes from start of injection)

Peds:

0.7 mL/pound (1.5 mL/kg) of Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Begin scanning 5 minutes after end of injection.

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1-Scouts PA and Lateral
- Series 2-Scan Phase
  - Scan Range, start scans at the bottom of C1 and scan through the top of the head
  - If Pediatric NAT, turn on Recon 4 (1.25 mm bone) in order to make the ped NAT trauma reformats (described in the table below)
  - If head w/c only is ordered, skip the head w/o series and use the next series head w/c.

Canthal-Meatal Line

Scan Range for Brain

## Reformat Instructions

For routine head imaging (adult and peds), see the general table below.

For NAT and Pediatric Trauma: Perform a 3D.

## Reformats

| Name (Adult) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Adult) | Slice Thickness (mm) (Adult) | Interval (mm) (Adult) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Sagittal |

| Name (Peds) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Peds) | Slice Thickness (mm) (Peds) | Interval (mm) (Peds) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 150/30 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 150/30 | 3 | 1.5 | Sagittal |

Only for Pediatric NAT/Trauma, also do

| Name (Peds NAT/Trauma) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO BONE | THIN BONE | Manual | Average | 2500/350 | 1.25 | 0.625 | Coronal |
| SA BONE | THIN BONE | Manual | Average | 2500/350 | 1.25 | 0.625 | Sagittal |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

**Miscellaneous**

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 3.4 | 3.6 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 4.0 | 4.2 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# Brain - Helical Scan with Angled Axial Reformations 1.2/11.3/11.4

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

Guidance on choosing the correct version of the routine head protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Use this protocol when the head cannot be properly positioned for a routine helical head scan. Example: when you cannot move the patient's head into proper position (trauma, cervical collar, rigid neck).
- Supine, PA and lateral scouts, no gantry angle

- Important: Be certain that dental filling artifact does not extend across the brain on the helical raw data. If it does, then use the axial mode head protocol instead.

**IV Contrast Parameters**

Adults:

120 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec (1 minute)

Begin scanning 5 minutes after end of injection (6 minutes from start of injection)

Peds:

0.7 mL/pound (1.5 mL/kg) of Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Begin scanning 5 minutes after end of injection.

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - Scouts PA and Lateral
- Series 2 – Start the scans at C1 and scan through the top of the head

**Reformat Instructions**

Obtain 2D-reformations parallel to a line connecting the infraorbital rim with the opisthion (see below). Use a sagittal view on Imageworks slightly off midline to choose proper angle of reconstruction. Start reformations at the bottom of C1 and go to the top of the head using a 20 cm DFOV.

Helical Scan with Angled Axial Reformations

Helical

### Reformats

| Name (Adult) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Adult) | Slice Thickness (mm) (Adult) | Interval (mm) (Adult) | Orientation |
|---|---|---|---|---|---|---|---|
| AX ST | THIN ST | Manual | Average | 80/25 | 5 | 2.5 | Axial |
| AX BONE | THIN BONE | Manual | Average | 2500/350 | 2.5 | 1.25 | Axial |
| CO ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Sagittal |

| Name (Peds) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Peds) | Slice Thickness (mm) (Peds) | Interval (mm) (Peds) | Orientation |
|---|---|---|---|---|---|---|---|
| AX ST | THIN ST | Manual | Average | 80/25 | 5 | 2.5 | Axial |
| AX BONE | BONE | Manual | Average | 2500/350 | 2.5 | 1.25 | Axial |
| CO ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Sagittal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 6.8 | 7.1 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 8.0 | 8.3 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Brain (Axial Mode) 1.3/11.5/11.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

Guidance on choosing the correct version of the routine head protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Supine, PA and lateral scouts
- Helical mode should be used routinely for head CT scans. Only use axial mode when you cannot move the patient's head into proper position (trauma, cervical collar, rigid neck). This mode can also be used in unstable patients in the ED when the CT scan time must be expedited.
- Patient Positioning: Using the lateral scout image, angle the gantry so that it is parallel to a line connecting the infraorbital rim with the opisthion (see below).

**IV Contrast Parameters**

Adults:

120 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec (1 minute)

Begin scanning 5 minutes after end of injection (6 minutes from start of injection)

Peds:

0.7 mL/pound (1.5 mL/kg) of Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Begin scanning 5 minutes after end of injection.

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 - Scouts PA and Lateral
- Series 2 – Start scans at the bottom of C1 and scan through the top of the head

Sagittal Brain

**Reformat Instructions**

No special reformat instructions, see the reformat section for basic details.

### Reformats

| Name (Adult) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Adult) | Slice Thickness (mm) (Adult) | Interval (mm) (Adult) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 180/25 | 3 | 1.5 | Sagittal |

| Name (Peds) | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL (Peds) | Slice Thickness (mm) (Peds) | Interval (mm) (Peds) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 150/30 | 3 | 1.5 | Coronal |
| SA ST | THIN ST | Manual | Average | 150/30 | 3 | 1.5 | Sagittal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 8.0 | 8.0 | 8.0 |
| Detector Configuration | 8x1.25 | 8x1.25 | 8x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 10.00 | 10.00 | 10.00 |
| Rotation Time (s) | 0.7 | 0.7 | 0.8 |
| kV | 120 | 100 | 80 |
| AEC type | Manual mA | Manual mA | Manual mA |
| mA Range | (220-740) | (220-740) | (190-650) |
| Manual mA | 520.0 | 520.0 | 460.0 |
| Noise Index | 3.4 | 3.6 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 10 | 10 | 10 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 8.0 | 8.0 | 8.0 |
| Detector Configuration | 8x1.25 | 8x1.25 | 8x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 10.00 | 10.00 | 10.00 |
| Rotation Time (s) | 0.9 | 0.9 | 0.8 |
| kV | 100 | 80 | 80 |
| AEC type | Manual mA | Manual mA | Manual mA |
| mA Range | (210-710) | (210-675) | (190-650) |
| Manual mA | 530.0 | 530.0 | 460.0 |
| Noise Index | 4.0 | 4.2 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 10 | 10 | 10 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A |

# Stealth - Stereotactic Head (Whole Brain Treatment Planning) 1.10/11.11/11.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Stereotactic guidance imaging for operating room

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine on table top, use the head holder only if patient cannot hold still.
- PA and lateral scouts
- Be sure to include the entire nose
- Have the patient shut their eyes for the scan
- No gantry angle
- Using the lasers, line up patient so that the canthomeatal line is perpendicular to the CT table. This may require you to tilt the patients head either up or down slightly.

**IV Contrast Parameters**

Adults:

120 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec (1 minute)

Begin scanning 5 minutes after end of injection (6 minutes from start of injection)

Peds:

0.7 mL/pound (1.5 mL/kg) of Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Begin scanning 5 minutes after end of injection.

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 - Stereotactic Head: Scan from the hard palate to the top of the head: Be sure to include the entire nose.

### Reformat Instructions

No special reformat instructions, see the reformat section for basic details.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX ST | ST | Manual | Average | 80/25 | 3 | 1.5 | Axial |
| CO ST | ST | Manual | Average | 80/25 | 3 | 1.5 | Coronal |
| SA ST | ST | Manual | Average | 80/25 | 3 | 1.5 | Sagittal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

If there is ANY patient motion, start the scan over.

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16 | 16 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Head | Head | Head |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 10.00 | 10.00 | 10.00 |
| Rotation Time (s) | 1 | 0.5 | 0.5 |
| kV | 120 | 120 | 120 |
| AEC type | Manual mA | Manual mA | Manual mA |
| mA Range | (160-530) | (160-530) | (160-530) |
| Manual mA | 250 | 250 | 250 |
| Noise Index | 9.0 | 12.5 | 12.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | | | |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A |

# Orbit - Routine 2.1/12.1/12.2

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Orbital Mass, Foreign Body, Trauma, Orbital / Periorbital cellulitis, proptosis

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle.
- Extend the scouts to include aortic arch for smart prep.
- Patient Positioning: Tilt the patients head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol). You may need to put a foam pad under the occiput to get the head in this position.
- Ask the patient to look straight ahead and hold their eyes in a very still position.

**IV Contrast Parameters**

**Adults:**

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 3 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 - Scouts PA and Lateral
- Series 2 – CT Orbit Without: Start the scans at the infraorbital rim and scan through the top of the orbit
- Series 3
  - (If Indicated by protocol for Contrast) Smart prep over the aortic arch. Begin scanning 10 seconds (adults) or 6 seconds (pediatric) after arrival of contrast.
  - CT Orbit With: Start the scans at the infraorbital rim and scan through the top of the orbit

**Reformat Instructions**

- All 2-D reformats described below are to be done as 2 mm x 1 mm reformats. Do them in the coronal, sagittal, and bilateral oblique sagittal planes as shown in the image below.
- If this is an exam solely with contrast or solely without contrast: Do 2D-reformats using both the ST AND the THIN BONE.

- If this is a “with & without” contrast study: Do not do Thin BONE contrast scan. Do 2D-reformats using the ST only from the contrast series AND also do 2 mm x 1 mm reformats using the THIN BONE from the non-contrast series.
- Do not send the 0.625 mm bone images to PACS.

Orbit

## Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 300/0 | 2 | 1 | Coronal |
| CO BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST | Manual | Average | 300/0 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Sagittal |
| RT OBL | THIN ST | Manual | Average | 300/0 | 2 | 1 | Oblique |
| RT OBL | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Oblique |
| LT OBL | THIN ST | Manual | Average | 300/0 | 2 | 1 | Oblique |
| LT OBL | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Oblique |

With And Without Contrast (use the non cons for the bone reformats and the with contrast phase for the soft tissue reformats)

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 300/0 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 300/0 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |
| RT OBL | THIN ST (with contrast phase) | Manual | Average | 300/0 | 2 | 1 | Oblique |
| RT OBL | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Oblique |
| LT OBL | THIN ST (with contrast phase) | Manual | Average | 300/0 | 2 | 1 | Oblique |
| LT OBL | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Oblique |

**Networking**

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

**Miscellaneous**

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 6.8 | 7.1 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/0 | 350/20 | 350/20 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 2 | 2 | 2 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 12 | 6 | 6 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 8.0 | 8.3 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/0 | 350/20 | 350/20 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Facial Trauma - Routine 2.5/12.9/12.10

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Facial Trauma / Reconstruction, Maxillofacial surgery follow-up

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include aortic arch for smart prep.
- Remove all metallic and high-density objects from the scanning area.
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus and the EAC is perpendicular to the CT tabletop (see head CT protocol).

**IV Contrast Parameters**

**Adults:**

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 3 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Facial Trauma Without Contrast: Start just below the mandible to the top of the frontal sinuses.
- Series 3
  - (If Indicated to do with contrast) Smart prep over the aortic arch and begin scanning 15 seconds (adults) or 8 seconds (pediatrics) after arrival of contrast in the arch.
  - Facial Trauma With Contrast: Start just below the mandible to the top of the frontal sinuses.

**Reformat Instructions**

- All 2-D reformats described below are to be done as 2 mm x 1 mm reformats as shown in the image below
  - Oblique Sagittal: Through each orbit parallel to the optic nerves.
  - Sagittal: Through both orbits. Be sure to include both TMJs.
  - Coronal: From the anterior aspect of the superior orbital rim through the sella. Be sure to include all of the TMJ.

- If this is an exam solely with contrast or solely without contrast: Do 2D-reformats using both the THIN ST AND THIN BONE.
- If this is a “with & without” contrast study: Do not do THIN BONE on the contrast scan. Do 2D-reformats using the THIN ST only from the contrast series AND also do 2mm x 1mm reformats using the THIN BONE from the non-contrast series.

Orbit

## Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 400/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST | Manual | Average | 400/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Sagittal |
| RT OBL | THIN ST | Manual | Average | 400/50 | 2 | 1 | Oblique |
| RT OBL | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Oblique |
| LT OBL | THIN ST | Manual | Average | 400/50 | 2 | 1 | Oblique |
| LT OBL | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Oblique |

With and Without Contrast (soft tissue reformats done using the with contrast series, bone reformats done using the without contrast series)

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 400/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 400/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |
| RT OBL | THIN ST (with contrast phase) | Manual | Average | 400/50 | 2 | 1 | Oblique |
| RT OBL | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Oblique |
| LT OBL | THIN ST (with contrast phase) | Manual | Average | 400/50 | 2 | 1 | Oblique |
| LT OBL | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Oblique |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

**Miscellaneous**

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 6.8 | 7.1 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 2 | 2 | 2 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 12 | 6 | 6 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 8.0 | 8.3 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Sinuses - Diagnostic 2.7/12.13/12.14

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Rhinosinusitis, Sinusitis, Nasal Discharge, Facial pain, Sinus surgery planning

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see below). The tip of the nose and both zygomatic bones must be on the scan.
- Use Axial CT scan factors if a coronal plane scan is ordered.

**IV Contrast Parameters**

**Adults:**

- 100 mL Iohexol (Omnipaque) 300 MG/ML @ 3 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- Delay: Adults: 60 sec after start of injection; Pediatrics: 45 sec after start of injection

**Field of View**

Preferred 14 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Sinus Without Contrast:
  - Adults: Scan from bottom of upper teeth to 3.5 cm above the orbital roof (see below)
  - Peds: Scan from bottom of upper teeth to top of frontal sinuses
- Series 3 – (If Indicated to do with contrast) Delay: Adults: 60 sec after start of injection; Pediatrics: 45 sec after start of injection
- Series 3 – CT Sinus With Contrast:
  - Adults: Scan from bottom of upper teeth to 3.5 cm above the orbital roof (see below)
  - Peds: Scan from bottom of upper teeth to top of frontal sinuses.

Scan Range for Sinus

**Reformat Instructions**

- All 2-D reformats described below are to be done as 2 mm x 1 mm reformats (see below)
  - Sagittal: Through both orbits. Be sure to include both TMJs.
  - Coronal: From the anterior aspect of the superior orbital rim through the sella. Be sure to include all of the TMJ.
- If this is an exam solely with contrast or solely without contrast: Do 2D reformats using both THIN ST and the THIN BONE images.
- If this is a "with & without" contrast study: Do not do THIN BONE on the contrast scan. Do 2D-reformats using the THIN ST imagesonly from the contrast series and also do 2 mm x 1 mm reformats using THIN BONE images from the non-contrast series.

Sagittal and Coronal

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST | Manual | Average | 400/30 | 2 | 1 | Coronal |
| CO BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST | Manual | Average | 400/30 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

With and Without Contrast (soft tissue reformats are made from the with contrast phases, bone reformats are made from the without contrast phases)

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 400/30 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 400/30 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

Choose the CT scan factors on the scanner for the proper age range of the patient

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (40-150) | (40-150) | (40-150) |
| Manual mA | 70.0 | 70.0 | 70.0 |
| Noise Index | 13.6 | 13.6 | 13.6 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 14 | 14 | 14 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 14 | 14 | 14 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (50-180) | (50-180) | (40-150) |
| Manual mA | 90.0 | 90.0 | 70.0 |
| Noise Index | 16.0 | 16.0 | 13.6 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 14 | 14 | 14 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 14 | 14 | 14 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Temporal Bone (without Contrast) 2.10/12.18/12.19

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

### Indication

Hearing loss, conductive hearing loss, sensorineural hearing loss, otitis, otalgia, temporal bone fracture, trauma, otitis externa, mastoiditis.

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

- Patient Supine, PA and lateral scouts, no gantry angle
- Only use 16 and 64 slice scanners
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see below).

### IV Contrast Parameters

None

### Field of View

1. Recon 1 and Retro Recons: Preferred 22 cm
2. Recon 2 and 3 of TB: 9.6 cm

### Scan Description

- Series 1 – Scout PA and Lateral
- Series 2 – Tbone without: Start scans at the mastoid tip and finish at the top of the petrous bone (see below)

Scan Range for T-Bone

## Reformat Instructions

- Do 1 mm by 0.5 mm 2D-reformats in the coronal, Stenver's, and Pöschl planes of each temporal bone using THIN BONE.

Sagittal and Coronal

## Reformats

Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| RT CO | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| RT STENV | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| RT POSCH | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT CO | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| LT STENV | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT POSCH | THIN BONE | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |

## Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

**Miscellaneous**

Choose the CT scan factors on the scanner for the proper age range of the patient:

- Child: (3 – 6 years)
- Infant: (0 – 3 years)

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 4.8 | 5.0 | 7.1 |
| Slice Thickness (mm) | 2.5 | 2.5 | 1.25 |
| Interval (mm) | 1.5 | 1.5 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 4 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

# Temporal Bone (with Contrast Only or with & without Contrast) 2.11/12.20/12.21

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Otitis / mastoiditis with concern for abscess, intracranial spread, venous thrombosis

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Only use 16 and 64 slice scanners
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see below).

**IV Contrast Parameters**

**Adult:**

- 120 mL Iohexol (Omnipaque) 300 MG/ML @ 3 mL/sec

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

1. Recon 1 and Retro Recons: Preferred 22 cm
2. Recon 2 and 3 of TB: 9.6 cm

**Scan Description**

- Series 1 – Scout PA and Lateral
- Series 2 – Tbone without: Start scans at the mastoid tip and finish at the top of the petrous bone (see below)
- Series 3 – Tbone with: Begin scanning 60 seconds (adult) 45 seconds (peds) after the start of contrast: Start scans at the mastoid tip and finish at the top of the petrous bone (see below)

Scan Range for T-Bone

## Reformat Instructions

- Do 1 mm by 0.5 mm 2D-reformats in the coronal, Stenver's, and Pöschl planes of each temporal bone using THIN BONE.

Sagittal and Coronal

### Reformats

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| RT CO | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| RT STENV | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| RT POSCH | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| RT CO | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| RT STENV | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| RT POSCH | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT CO | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| LT STENV | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT POSCH | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT CO | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Coronal |
| LT STENV | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |
| LT POSCH | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 1 | 0.5 | Oblique |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **10** | **10** | **10** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x0.625** | **16x0.625** | **16x0.625** |
| **Scan FOV** | **Head** | **Head** | **Head** |
| **Pitch** | **0.562** | **0.562** | **0.562** |
| **Speed (mm/rot)** | **5.60** | **5.60** | **5.60** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** |
| **kV** | **120** | **100** | **80** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(170-580)** | **(170-580)** | **(170-580)** |
| **Manual mA** | **280.0** | **280.0** | **280.0** |
| **Noise Index** | **4.8** | **5.0** | **7.1** |
| **Slice Thickness (mm)** | **2.5** | **2.5** | **1.25** |
| **Interval (mm)** | **1.5** | **1.5** | **0.625** |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 4 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Head** | **Head** | **Head** |
| **Pitch** | **0.562** | **0.562** | **0.562** |
| **Speed (mm/rot)** | **11.20** | **11.20** | **11.20** |
| **Rotation Time (s)** | **0.5** | **0.6** | **0.5** |
| **kV** | **100** | **80** | **80** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(210-720)** | **(180-600)** | **(170-580)** |
| **Manual mA** | **360.0** | **300.0** | **280.0** |
| **Noise Index** | **5.7** | **5.9** | **7.1** |
| **Slice Thickness (mm)** | **2.5** | **2.5** | **1.25** |
| **Interval (mm)** | **1.5** | **1.5** | **0.625** |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 9.6 | 9.6 | 9.6 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 4 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

# Adult Neck - Routine 3.1/3.2/3.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Neck mass, globus sensation, lymphadenopathy, head and neck cancer evaluation/follow-up, pharyngitis, tonsillar or peritonsillar abscess, neck abscess

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine, PA and lateral scouts from sella to mid chest (include the aortic arch), no gantry angle
- Have the patient remove any dentures or removable teeth, please place the shoulders as low possible
- Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).
- Do angled views at 2.5 mm 4i for 16 slices at 2 different angles if there are many artifacts from dental fillings or metal hardware (see below)
- When scanning a N/C/A/P with contrast use 100mls(chest/abd/pel) and 50mls(neck) Iohexol 300, Inject at 2mL/sec and change the prep delay to 45 seconds on the neck protocol.
- When scanning a Chest and Neck with contrast use 75mls (chest) and 75mls (neck) Iohexol 300, Inject at 2mL/sec and change the prep delay to 45 seconds on the neck protocol.

**IV Contrast Parameters**

**Adults:**

- Load 100 mL Iohexol (Omnipaque) 300 MG/ML and 50 mL Sodium Chloride 0.9%
  - Inject: *Note there is no test injection*
  - 60 mLs of Iohexol at 2mLs/sec
  - 30 second pause
  - 40mLs of Iohexol at 2mLs/sec
  - 50 mLs of saline at 3mLs/sec

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 1.5 mL/sec
- 20 mL Sodium Chloride 0.9% @ 1.5 mL/sec

**Field of View**

Preferred 30 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Neck with Contrast: Begin Scanning 85 seconds (adults) 45 seconds (peds) after the start of injection: Start the scan at the top of the orbit and scan to the carina. Remind the patient not to swallow during the scan.
- Series 3 - Angled Axials- If there is a significant amount of metal artifact from dental work, perform angled axials at 2 different angels. (see below picture)

Scan Range for Neck

Angled Views

**NOTE - if the patient has lymphoma and the study is a follow-up, use the small neck protocol (regardless of the patients actual size) since it will provide a lower dose**

- Verify that the arms are outside of the CT wrap, and that the shoulders are relaxed down toward the feet as far as possible. Measure the width of the shoulders through the level of the mid-humeral head, as shown below.

- Check BMI
- Select small, medium and large based on the table below.

| Measure width through mid-humeral heads | Small | Medium | Large |
|---|---|---|---|
| | **Shoulder width less than 46 cm *OR* BMI less than 26** | **Shoulder Width 46 to 50 cm** | **Shoulder width greater than 50 cm *OR* BMI greater than 35** |

### Reformat Instructions

- Reformats should cover from the nose to the back of the neck.
- Only send STD AND BONE to PACS. Use THIN ST for the soft tissue Reformats. Use THIN BONE for the bone Reformats.**For the soft tissue: Perform 2D reformats from Recon 3 in both the coronal and sagittal planes, using a 3 mm thickness and 1.5 mm increment.
- For bone: Perform 2D reformats from THIN BONE for both the coronal and sagittal planes, using a 1.5 mm thickness and 0.8 mm increment.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| **CO ST** | **Thin ST** | **Manual** | **Average** | **300/35** | **3** | **1.5** | **Coronal** |
| **CO BONE** | **Thin Bone** | **Manual** | **Average** | **2500/350** | **1.5** | **0.75** | **Coronal** |
| **SA ST** | **Thin ST** | **Manual** | **Average** | **300/35** | **3** | **1.5** | **Sagittal** |
| **SA BONE** | **Thin Bone** | **Manual** | **Average** | **2500/350** | **1.5** | **0.75** | **Sagittal** |

### Networking

All Images to (ALI_Store) PACS. Do not send Thin Bone or Thin STD. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

- Send both standard and bone plus series for the angled axial images to (ALI_Store) PACS.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| **Scout 1 kV** | **120** | **140** | **140** |
| **Scout 1 mA** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** |
| **Scout 2 kV** | **120** | **140** | **140** |
| **Scout 2 mA** | **80** | **80** | **80** |
| **Scout 2 Angle** | **90** | **90** | **90** |
| **WW/WL for Scout** | **500/50** | **500/50** | **500/50** |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Large** | **Large** | **Large** |
| **Pitch** | **0.562** | **0.562** | **0.562** |
| **Speed (mm/rot)** | **11.20** | **11.20** | **11.20** |
| **Rotation Time (s)** | **0.6** | **0.7** | **1** |
| **kV** | **120** | **140** | **140** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(190-500)** | **(200-680)** | **(250-715)** |
| **Manual mA** | **370.0** | **510.0** | **510.0** |
| **Noise Index** | **10.9** | **13.4** | **17.4** |
| **Slice Thickness (mm)** | **2.5** | **2.5** | **2.5** |
| **Interval (mm)** | **1.5** | **1.5** | **1.5** |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 20.00 | 20.00 | 20.00 |
| Rotation Time (s) | 0.7 | 0.7 | 0.7 |
| kV | 120 | 120 | 120 |
| AEC type | Manual mA | Manual mA | Manual mA |
| mA Range | (220-740) | (220-740) | (220-740) |
| Manual mA | 520.0 | 520.0 | 520.0 |
| Noise Index | 4.8 | 4.8 | 4.8 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 0 | 0 | 0 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A |

# Neck (Parathyroid Adenoma) Adult 3.5/3.6/3.7

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Hypercalcemia, parathryoid adenoma (suspected or confirmed), parathyroid surgical planning.

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts from sella to mid chest, no gantry angle
- Only do on a 64 slice scanner
- **This exam is scanned in 4 series. Series 1 are the PA and Lateral Scouts. Series 2 is the limited non contrast neck. Series 3 is an arterial neck. Series 4 is scanned immediately to follow as a Routine Neck.**
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).
- Remove any dentures or removable teeth; please place the shoulders as low as possible

**IV Contrast Parameters**

**Adults:**

- 100 mL Iohexol (Omnipaque) 300 MG/ML @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

**Field of View**

1. Series 2: 30 cm (adults), 20 cm (peds 3-6 y/o), 18 cm (peds 0-3 y/o)
2. Series 3: (as in routine neck CT)

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 Limited Non Contrast Phase: top of sternum through hyoid
- Series 3
  - Smart Prep: Over aortic arch (initiate scan at the entry of contrast in the aortic arch)
  - Arterial Phase of Lower Neck: Start scans at carina and scan to bottom of the upper teeth. Standard Algorithm only
    - Scan the routine neck immediately after the arterial neck, without any delay.
- Series 4 – Routine Neck: Start the scan at the carina and scan to the top of the orbit
  - Do not use any CT scan delay, start scanning the routine neck CT immediately after Series 2 is finished.
  - Do angled views if necessary

Coverage for non con and arterial phases

### Reformat Instructions

No reformats needed from the limited non contrast neck. Radiologists can create reformats if needed from the thin soft tissue images. Bone reformats are needed only for the routine neck phase, not the arterial phase.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA ST | Thin ST (from arterial phase) | Manual | Average | 400/30 | 2 | 1 | Sagittal |
| CO ST | Thin ST from arterial phase) | Manual | Average | 400/30 | 2 | 1 | Coronal |
| CO BONE | Thin Bone (from routine neck phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | Thin ST (from routine neck phase) | Manual | Average | 300/35 | 3 | 1.5 | Sagittal |
| SA BONE | Thin Bone (from routine neck phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

### Networking

All images (including thins) sent to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small Adult | Medium Adult | Large Adult |
|---|---|---|---|
| Scout 1 kV | 120 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small Adult | Medium Adult | Large Adult |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 120 | 120 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (180-800) | (180-800) | (180-800) |
| Manual mA | 500 | 500 | 500 |
| Noise Index | 11.3 | 11.3 | 11.3 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Small Adult | Medium Adult | Large Adult |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.7 | 1 |
| kV | 120 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (220-600) | (200-680) | (250-715) |
| Manual mA | 450.0 | 510.0 | 510.0 |
| Noise Index | 15.5 | 18.9 | 24.7 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.6 | 0.7 | 1 |
| kV | 120 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (190-500) | (200-680) | (250-715) |
| Manual mA | 370.0 | 510.0 | 510.0 |
| Noise Index | 10.9 | 13.4 | 17.4 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |

## Series 4, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | |
| DFOV | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 5, Axial Scan

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Axial | Axial | Axial |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 1 | 1 | 1 |
| Speed (mm/rot) | 20.00 | 20.00 | 20.00 |
| Rotation Time (s) | 0.7 | 0.7 | 0.7 |
| kV | 120 | 120 | 120 |
| AEC type | Manual mA | Manual mA | Manual mA |
| mA Range | (220-740) | (220-740) | (220-740) |
| Manual mA | 520.0 | 520.0 | 520.0 |
| Noise Index | 4.8 | 4.8 | 4.8 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 0 | 0 | 0 |

## Series 5, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 300/35 | 300/35 | 300/35 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | N/A | N/A | N/A |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A |

# Pediatric Neck - Routine 13.1.1/13.2.1/13.4.1/13.6.1/13.8.1

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Neck mass, globus sensation, lymphadenopathy, head and neck cancer evaluation/follow-up, pharyngitis, tonsillar or peritonsillar abscess, neck abscess

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient supine, PA and lateral scouts from sella to mid chest (include the aortic arch), no gantry angle
- Have the patient remove any dentures or removable teeth, please place the shoulders as low possible
- Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).
- Do angled views at 2.5 mm 4i for 16 slices at 2 different angles if there are many artifacts from dental fillings or metal hardware (see below)
- When scanning a N/C/A/P with contrast use 100mls(chest/abd/pel) and 50mls(neck) Iohexol 300, Inject at 2mL/sec and change the prep delay to 45 seconds on the neck protocol.
- When scanning a Chest and Neck with contrast use 75mls (chest) and 75mls (neck) Iohexol 300, Inject at 2mL/sec and change the prep delay to 45 seconds on the neck protocol.

**IV Contrast Parameters**

**Adults:**

- Load 100 mL Iohexol (Omnipaque) 300 MG/ML and 50 mL Sodium Chloride 0.9%
  - Inject: *Note there is no test injection*
  - 60 mLs of Iohexol at 2mLs/sec
  - 30 second pause
  - 40mLs of Iohexol at 2mLs/sec
  - 50 mLs of saline at 3mLs/sec

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 1.5 mL/sec
- 20 mL Sodium Chloride 0.9% @ 1.5 mL/sec

**Field of View**

Preferred 30 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Neck with Contrast: Begin Scanning 85 seconds (adults) 45 seconds (peds) after the start of injection: Start the scan at the top of the orbit and scan to the carina. Remind the patient not to swallow during the scan.
- Series 3 - Angled Axials- If there is a significant amount of metal artifact from dental work, perform angled axials at 2 different angels. (see below picture)

scan range for neck

Angled Views

**NOTE - if the patient has lymphoma and the study is a follow-up, use the small neck protocol (regardless of the patients actual size) since it will provide a lower dose**

- Verify that the arms are outside of the CT wrap, and that the shoulders are relaxed down toward the feet as far as possible. Measure the width of the shoulders through the level of the mid-humeral head, as shown below.

- Check BMI
- Select small, medium and large based on the table below.

| Measure width through mid-humeral heads | Small | Medium | Large |
|---|---|---|---|
| | **Shoulder width less than 46 cm *OR* BMI less than 26** | **Shoulder Width 46 to 50 cm** | **Shoulder width greater than 50 cm *OR* BMI greater than 35** |

### Reformat Instructions

- Reformats should cover from the nose to the back of the neck.
- Only send STD AND BONE to PACS. Use THIN ST for the soft tissue Reformats. Use THIN BONE for the bone Reformats.**For the soft tissue: Perform 2D reformats from Recon 3 in both the coronal and sagittal planes, using a 3 mm thickness and 1.5 mm increment.
- For bone: Perform 2D reformats from THIN BONE for both the coronal and sagittal planes, using a 1.5 mm thickness and 0.8 mm increment.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 400/60 | 3 | 1.5 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | Thin ST | Manual | Average | 400/60 | 3 | 1.5 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 100 | 120 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 100 | 120 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **1.375** | **1.375** | **0.562** | **0.562** | **0.562** |
| **Speed (mm/rot)** | **27.50** | **27.50** | **11.20** | **11.20** | **11.20** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.5** | **0.6** |
| **kV** | **80** | **80** | **80** | **100** | **120** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(100-410)** | **(170-610)** | **(110-450)** | **(120-530)** | **(200-740)** |
| **Manual mA** | **360.0** | **540.0** | **400.0** | **460.0** | **650.0** |
| **Noise Index** | **10.3** | **11.7** | **13.2** | **11.9** | **12.1** |
| **Slice Thickness (mm)** | **2.5** | **2.5** | **2.5** | **2.5** | **2.5** |
| **Interval (mm)** | **1.5** | **1.5** | **1.5** | **1.5** | **1.5** |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Recon 2 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Standard | Standard | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Axial | Axial | Axial | Axial | Axial |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Large | Large |
| Pitch | 1 | 1 | 1 | 1 | 1 |
| Speed (mm/rot) | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 |
| Rotation Time (s) | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 |
| kV | 80 | 80 | 80 | 100 | 100 |
| AEC type | Manual mA | Manual mA | Manual mA | Manual mA | Manual mA |
| mA Range | (190-650) | (190-650) | (190-650) | (220-740) | (220-740) |
| Manual mA | 460.0 | 460.0 | 460.0 | 520.0 | 520.0 |
| Noise Index | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 0 | 0 | 0 | 0 | 0 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 22 | 22 | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard | Standard | Standard |
| WW/WL | 400/45 | 400/45 | 400/45 | 400/45 | 400/45 |
| Recon Option | Full | Full | Full | Full | Full |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Interval (mm) | N/A | N/A | N/A | N/A | N/A |
| Recon 2 | | | | | |
| DFOV | 22 | 22 | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Full | Full | Full | Full | Full |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | N/A | N/A | N/A | N/A | N/A |

# Adult Cervical Spine (without Metal) 3.16/3.17/3.18

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Trauma, neck pain, cervical stenosis, radiculopathy, fracture, evaluate fixation hardware

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Patient Positioning:
  - Warning: Do not flex or extend the neck if there has been recent spine trauma or if the patient is in a c-spine trauma collar.
  - If no recent trauma, tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop.
  - The shoulders should be pulled down as much as possible
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning in order to distribute the contrast evenly in the spinal canal.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Cspine without: Scan from the top of the sella to the bottom of T2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Cspine with: Scan from the top of the sella to the bottom of T2

Scan Range for C-Spine

- Verify that the arms are outside of the CT wrap, and that the shoulders are relaxed down toward the feet as far as possible. Measure the width of the shoulders through the level of the mid-humeral head, as shown below.
- Check BMI
- Select small, medium and large based on the table below.

| Measure width through mid-humeral heads | Small | Medium | Large |
|---|---|---|---|
| | **Shoulder width less than 46 cm *OR* BMI less than 26** | **Shoulder Width 46 to 50 cm** | **Shoulder width greater than 50 cm *OR* BMI greater than 35** |

## Reformat Instructions

- If the patient has a lot of metal in their teeth please use the MARS recons for the reformats.
- If exam is solely with contrast or solely without contrast:
  - Do 2-D reformats using both THIN ST and THIN BONE images.
- If this is a "with & without" contrast study:
  - Do not do THIN BONE on the contrast scan. Do 2-D reformats using the THIN ST images only from the contrast series.
  - Do 1.5 mm by 0.8 mm reformats using THIN BONE images from the non-contrast series.

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 3 | 1.5 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 3 | 1.5 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 3 | 1.5 | Coronal |
| CO BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 3 | 1.5 | Sagittal |
| SA BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.7 | 1 |
| kV | 120 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (220-600) | (200-680) | (250-715) |
| Manual mA | 450.0 | 510.0 | 510.0 |
| Noise Index | 15.5 | 18.9 | 24.7 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.7 | 1 |
| kV | 120 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (220-600) | (200-680) | (250-715) |
| Manual mA | 450.0 | 510.0 | 510.0 |
| Noise Index | 15.5 | 18.9 | 24.7 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Adult Cervical Spine (With Metal) 3.19/3.20/3.21

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Trauma, neck pain, cervical stenosis, radiculopathy, fracture, evaluate fixation hardware

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Patient Positioning:
  - Warning: Do not flex or extend the neck if there has been recent spine trauma or if the patient is in a c-spine trauma collar.
  - If no recent trauma, tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop.
  - The shoulders should be pulled down as much as possible
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning in order to distribute the contrast evenly in the spinal canal.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Cspine without: Scan from the top of the sella to the bottom of T2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Cspine with: Scan from the top of the sella to the bottom of T2

Scan Range for C-Spine

- Verify that the arms are outside of the CT wrap, and that the shoulders are relaxed down toward the feet as far as possible. Measure the width of the shoulders through the level of the mid-humeral head, as shown below.
- Check BMI
- Select small, medium and large based on the table below.

| Measure width through mid-humeral heads | Small | Medium | Large |
|---|---|---|---|
| | **Shoulder width less than 46 cm *OR* BMI less than 26** | **Shoulder Width 46 to 50 cm** | **Shoulder width greater than 50 cm *OR* BMI greater than 35** |

## Reformat Instructions

- If the patient has a lot of metal in their teeth please use the MARS recons for the reformats.
- If exam is solely with contrast or solely without contrast:
  - Do 2-D reformats using both THIN ST and THIN BONE images.
- If this is a "with & without" contrast study:
  - Do not do THIN BONE on the contrast scan. Do 2-D reformats using the THIN ST images only from the contrast series.
  - Do 1.5 mm by 0.8 mm reformats using THIN BONE images from the non-contrast series.

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 3 | 1.5 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 3 | 1.5 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 3 | 1.5 | Coronal |
| CO BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 3 | 1.5 | Sagittal |
| SA BONE | THIN BONE (without contrast phase) | Manual | Average | 2500/350 | 1.5 | 0.75 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 80 | 80 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (230-620) | (210-710) | (290-715) |
| Manual mA | 470.0 | 530.0 | 610.0 |
| Noise Index | 12.2 | 17.3 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (230-620) | (210-710) | (290-715) |
| Manual mA | 470.0 | 530.0 | 610.0 |
| Noise Index | 12.2 | 17.3 | 22.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Adult Thoracic Spine (without Metal) 7.4/7.5/7.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Trauma, thoracic pain, thoracic stenosis, radiculopathy, fracture, evaluate fixation hardware

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Non-contrast unless otherwise protocoled
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning to distribute the contrast evenly in the spinal canal.
- **Only if both CT T and L spines are ordered**
  - Please start scanning T and L spines together (scanning acquisition parameters are identical so we will be saving the patients some radiation dose due to avoiding any overlap).
  - Do separate coronal and sagittal reformats and send to PACS as 2 different exams using exam split.
  - Axial images of the entire spine (T and L) should be sent to both T and L spine exams. Sagittal and coronal reformats for the t-spine should go from C7 to L1, and the sag and cor reformats from the l-spine go from T12 to S2.
  - Also include the entire T/L spine sagittal reformat. Do not include a coronal reformat of the entire T/L spine.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Tspine without: Scan from the top of C7 to the bottom of L1
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Tspine with: Scan from the top of C7 to the bottom of L1

**Reformat Instructions**

- Do not send the 0.625 mm bone images (Recon 2) to PACS
- Do 2 x 1 mm coronal and sagittal 2D-reformats.

- If exam is solely with contrast or solely without contrast: Do 2D-reformats using both the standard 1.25 mm images (Recon 1) AND the bone 0.625 mm images (Recon 2)
- If this is a “with & without” contrast study: Do not do Recons 2 and 3 on the non-contrast part
- If this is a “with & without” contrast study: Do 2D-reformats only from the contrast portion of the study using standard 1.25 mm images (Recon 1) AND bone 0.625 mm images (Recon 2)

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (100-770) | (80-800) | (80-715) |
| Manual mA | 390.0 | 400.0 | 490.0 |
| Noise Index | 18.0 | 20.0 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (100-770) | (80-800) | (80-715) |
| Manual mA | 390.0 | 400.0 | 490.0 |
| Noise Index | 18.0 | 20.0 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Adult Thoracic Spine (with Metal) 7.13/7.14/7.15

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Trauma, thoracic pain, thoracic stenosis, radiculopathy, fracture, evaluate fixation hardware

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Non-contrast unless otherwise protocoled
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning to distribute the contrast evenly in the spinal canal.
- **Only if both CT T and L spines are ordered**
  - Please start scanning T and L spines together (scanning acquisition parameters are identical so we will be saving the patients some radiation dose due to avoiding any overlap).
  - Do separate coronal and sagittal reformats and send to PACS as 2 different exams using exam split.
  - Axial images of the entire spine (T and L) should be sent to both T and L spine exams. Sagittal and coronal reformats for the t-spine should go from C7 to L1, and the sag and cor reformats from the l-spine go from T12 to S2.
  - Also include the entire T/L spine sagittal reformat. Do not include a coronal reformat of the entire T/L spine.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Tspine without: Scan from the top of C7 to the bottom of L1
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Tspine with: Scan from the top of C7 to the bottom of L1

**Reformat Instructions**

- Do not send the 0.625 mm bone images (Recon 2) to PACS
- Do 2 x 1 mm coronal and sagittal 2D-reformats.

- If exam is solely with contrast or solely without contrast: Do 2D-reformats using both the standard 1.25 mm images (Recon 1) AND the bone 0.625 mm images (Recon 2)
- If this is a “with & without” contrast study: Do not do Recons 2 and 3 on the non-contrast part
- If this is a “with & without” contrast study: Do 2D-reformats only from the contrast portion of the study using standard 1.25 mm images (Recon 1) AND bone 0.625 mm images (Recon 2)

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.9 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-650) | (70-715) | (90-715) |
| Manual mA | 320.0 | 370.0 | 590.0 |
| Noise Index | 12.0 | 16.0 | 23.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.9 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-650) | (70-715) | (90-715) |
| Manual mA | 320.0 | 370.0 | 590.0 |
| Noise Index | 12.0 | 16.0 | 23.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Adult Lumbar Spine (without Metal) 7.1/7.2/7.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Trauma, neck pain, lumbar stenosis, radiculopathy, fracture, evaluate fixation hardware

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Non-contrast unless otherwise protocoled
- Scan from the top of T12 to the top of S2
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning to distribute the contrast evenly in the spinal canal.
- **Only if both CT T and L spines are ordered**
  - Please start scanning T and L spines together (scanning acquisition parameters are identical so we will be saving the patients some radiation dose due to avoiding any overlap).
  - Do separate coronal and sagittal reformats and send to PACS as 2 different exams using exam split.
  - Axial images of the entire spine (T and L) should be sent to both T and L spine exams. Sagittal and coronal reformats for the t-spine should go from C7 to L1, and the sag and cor reformats from the l-spine go from T12 to S2.
  - Also include the entire T/L spine sagittal reformat. Do not include a coronal reformat of the entire T/L spine.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Lspine without: Scan from the top of T12 to the top of S2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Lspine with: Scan from the top of T12 to the top of S2

**Reformat Instructions**

- Do not send the 0.625 mm bone images (Recon 2) to PACS

- Do 2 x 1 mm coronal and sagittal 2D-reformats.
- If exam is solely with contrast or solely without contrast: Do 2D-reformats using both the standard 1.25 mm images (Recon 1) AND the bone 0.625 mm images (Recon 2)
- If this is a “with & without” contrast study: Do not do Recons 2 and 3 on the non-contrast part
- If this is a “with & without” contrast study: Do 2D-reformats only from the contrast portion of the study using standard 1.25 mm images (Recon 1) AND bone 0.625 mm images (Recon 2)

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 100 | 120 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 100 | 120 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (100-770) | (80-800) | (80-715) |
| Manual mA | 390.0 | 400.0 | 490.0 |
| Noise Index | 18.0 | 20.0 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.8 | 1 |
| kV | 100 | 120 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (100-770) | (80-800) | (80-715) |
| Manual mA | 390.0 | 400.0 | 490.0 |
| Noise Index | 18.0 | 20.0 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Adult Lumbar Spine (with Metal) 7.10/7.11/7.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Trauma, neck pain, lumbar stenosis, radiculopathy, fracture, evaluate fixation hardware

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, no gantry angle
- Extend the scouts to include the aortic arch for smart prep if IV contrast is to be used.
- Non-contrast unless otherwise protocoled
- Scan from the top of T12 to the top of S2
- Post myelography patients: Please remember to roll the patient 360 degrees before scanning to distribute the contrast evenly in the spinal canal.
- **Only if both CT T and L spines are ordered**
  - Please start scanning T and L spines together (scanning acquisition parameters are identical so we will be saving the patients some radiation dose due to avoiding any overlap).
  - Do separate coronal and sagittal reformats and send to PACS as 2 different exams using exam split.
  - Axial images of the entire spine (T and L) should be sent to both T and L spine exams. Sagittal and coronal reformats for the t-spine should go from C7 to L1, and the sag and cor reformats from the l-spine go from T12 to S2.
  - Also include the entire T/L spine sagittal reformat. Do not include a coronal reformat of the entire T/L spine.

**IV Contrast Parameters**

80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

**Field of View**

Preferred 18 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – CT Lspine without: Scan from the top of T12 to the top of S2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Lspine with: Scan from the top of T12 to the top of S2

**Reformat Instructions**

- Do not send the 0.625 mm bone images (Recon 2) to PACS

- Do 2 x 1 mm coronal and sagittal 2D-reformats.
- If exam is solely with contrast or solely without contrast: Do 2D-reformats using both the standard 1.25 mm images (Recon 1) AND the bone 0.625 mm images (Recon 2)
- If this is a “with & without” contrast study: Do not do Recons 2 and 3 on the non-contrast part
- If this is a “with & without” contrast study: Do 2D-reformats only from the contrast portion of the study using standard 1.25 mm images (Recon 1) AND bone 0.625 mm images (Recon 2)

### Reformats

With or Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | Thin ST | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | Thin Bone | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

With and Without Contrast

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| CO ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Coronal |
| CO BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Coronal |
| SA ST | THIN ST (with contrast phase) | Manual | Average | 450/50 | 2 | 1 | Sagittal |
| SA BONE | THIN BONE (with contrast phase) | Manual | Average | 2500/350 | 2 | 1 | Sagittal |

### Networking

All Images to (ALI_Store) PACS except the thin bone. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Small | Medium | Large |
|---|---|---|---|
| Scout 1 kV | 140 | 140 | 140 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 140 | 140 | 140 |
| Scout 2 mA | 40 | 40 | 80 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.9 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-650) | (70-715) | (90-715) |
| Manual mA | 320.0 | 370.0 | 590.0 |
| Noise Index | 12.0 | 16.0 | 23.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

## Series 3, Smart Prep

| | Small | Medium | Large |
|---|---|---|---|
| mA | 40 | 40 | 40 |
| Monitoring Delay (sec) | 15 | 15 | 15 |
| Monitoring ISD (sec) | 3 | 3 | 3 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | 20 | 20 | 20 |

## Series 3, Scan Phase

| | Small | Medium | Large |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 10 | 10 | 10 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x0.625 | 16x0.625 | 16x0.625 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 5.60 | 5.60 | 5.60 |
| Rotation Time (s) | 0.5 | 0.9 | 1 |
| kV | 140 | 140 | 140 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (80-650) | (70-715) | (90-715) |
| Manual mA | 320.0 | 370.0 | 590.0 |
| Noise Index | 12.0 | 16.0 | 23.0 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Small | Medium | Large |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |
| Recon 3 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

### If Metal

| | Small | Medium | Large |
|---|---|---|---|
| Recon 4 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | |
| DFOV | 18 | 18 | 18 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| Recon Option | MARS On | MARS On | MARS On |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 |

# Stroke Deluxe – Total Cerebrovascular 1.6/1.13/11.16/11.17

## If you get an order for perfusion only, please still do the non-con and with-con head along with the perfusion. Just skip the CTA head/neck.

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Stroke, mental status change, dissection, arterial embolism

Videos for this protocol

Stroke Deluxe

Perfusion

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, No Gantry Tilt
- Extend the scouts to include the aortic arch for smart prep.
- 16 or 64 slice scanners only
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).

**IV Contrast Parameters**

**CTA Contrast for Adults:**

- 80 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

**CTA Contrast for Peds:**

- 1.0 ml/kg Iopamidol (Isovue 370) 76% @ 2.0 mL/sec
- 10 mL Sodium Chloride 0.9% @ 2.0 mL/sec

**Perfusion Contrast Adults:**

- 40 ml of Isovue 370 (14.8 g Iodine) with 30 mL saline chase

- Injection Rate Adults: 5 mL per sec with a 5 sec prep delay

**Perfusion Contrast Peds:**

- 0.5 mL/kg Isovue 370 with 10 mL saline chase
- 3-4 mL per sec (Depends on size of needle and age of patient)

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Routine CT Head without contrast (Helical)
- Series 3
  - Smart Prep: Aortic arch (initiate the scan at contrast entry)
  - CTA Head and Neck: Scan from bottom of carina to the top of head (bottom up)
- Series 4 – CT Perfusion
  - Coverage - Bottom of scan range should start at the EAC (if doing cine, see perfusion levels in the supplemental perfusion information)
  - If a stroke code: Wait 30 seconds after CTA to begin perfusion (see perfusion page for details)
  - If a non emergent case: Wait 5 minutes after CTA to begin perfusion (see perfusion page for details)
- Series 5 – Routine Head With contrast (Helical): Must be done AFTER perfusion, but can start immediately after perfusion.
  - If your site does not perform perfusion, this scan phase must be completed 30 seconds after the end of the CTA phase.

Scan Range

**Reformat Instructions**

Please send all images to PACS before starting reformats. See table below for reformat instructions.

## Reformats

Thin MIP 2D-Reformations through the vertebral and carotid arteries

- Make sure the reference line is parallel to the carotid canal (see image below)
- Axial images to use for obtaining the oblique sagittal 2-D Reformations
- Use a DFOV of 10

Send to ALI Store (PACS)

Where to take reformats

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| RT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |
| LT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |

2D Thick-Slab MIP Reformats of Head

- Do axial, sagittal, and coronal thick-slab MIPs through the entire head. (See examples below)

Send to ALI Store (PACS).

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | axial |
| SA | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | sagittal |
| CO | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | coronal |

2D MIP-Reformations through the vertebral and carotid arteries

- Use an axial image near the level of the hyoid bone at the carotid bifurcation to prescribe the correct oblique angles. Use an image that shows the external and internal carotid arteries.
- Choose only the axial images from the aortic arch to the EAC.
- Include both the carotid and vertebral arteries (See example below)
- Send all images to ALI Store(PACS).

Coronal and Sagittal 2D- MIP Reformats
Through Carotid Bifurcations

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | Thin ST | Manual | MIP | 800/200 | 2 | 1 | sagittal |
| CO | Thin ST | Manual | MIP | 800/200 | 2 | 1 | coronal |

## Networking

All Images to (ALI_Store) PACS.

Perfusion is set up to auto send to RAPID (outside facilities send to your own stroke processing software solution).

Do not wait until the end of the exam to start sending images to PACS if the case is emergent, please send images as you create them to get the stroke care team images asap.

Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

## Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 3.4 | 3.6 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3.0 | 3.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (180-800) | (160-700) | (160-675) |
| Manual mA | 500 | 400 | 400 |
| Noise Index | 11.3 | 11.3 | 9.6 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Perfusion

Perfusion Details can be found on the perfusion appendix page

## Series 5, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 4.0 | 4.2 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 5, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

# CTA Head Only (Stenosis, Aneurysm, Unknown Bleed) 1.7/11.18/11.19

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Stenosis, Aneurysm, Unknown Bleed

Videos for this protocol

CTA Head and Neck

Perfusion

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, No Gantry Tilt
- Extend the scouts to include the aortic arch for smart prep.
- 16 or 64 slice scanners only
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).

**IV Contrast Parameters**

**CTA Contrast for Adults:**

- 80 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

**CTA Contrast for Peds:**

- 1.0 ml/kg Iopamidol (Isovue 370) 76% @ 2.0 mL/sec
- 10 mL Sodium Chloride 0.9% @ 2.0 mL/sec

**Perfusion Contrast Adults:**

- 40 ml of Isovue 370 (14.8 g Iodine) with 30 mL saline chase
- Injection Rate Adults: 5 mL per sec with a 5 sec prep delay

**Perfusion Contrast Peds:**

- 0.5 mL/kg Isovue 370 with 10 mL saline chase
- 3-4 mL per sec (Depends on size of needle and age of patient)

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Routine CT Head without contrast (Helical)
- Series 3
  - Smart Prep: Aortic arch (initiate the scan at contrast entry)
  - CTA Head Only: Scan from bottom of C2 to the top of head (bottom up)
- Series 4 – CT Perfusion: Wait 5 minutes after CTA to begin perfusion (see perfusion page for details)
- Series 5 – Routine Head With contrast (Helical): Must be done AFTER perfusion, but can start immediately after perfusion.

Scan Range

**Reformat Instructions**

Please send all images to PACS before starting reformats. See table below for reformat instructions.

**Reformats**

Thin MIP 2D-Reformations through the vertebral and carotid arteries

- Make sure the reference line is parallel to the carotid canal (see image below)
- Axial images to use for obtaining the oblique sagittal 2-D Reformations
- Use a DFOV of 10

Send to ALI Store (PACS)

Where to take reformats

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| RT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |
| LT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |

2D Thick-Slab MIP Reformats of Head

Do axial, sagittal, and coronal thick-slab MIPs through the entire head. (See examples below)

Send to ALI Store (PACS).

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | axial |
| SA | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | sagittal |
| CO | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | coronal |

**Networking**

All Images to (ALI_Store) PACS.

Perfusion is set up to auto send to RAPID (outside facilities send to your own stroke processing software solution).

Do not wait until the end of the exam to start sending images to PACS if the case is emergent, please send images as you create them to get the stroke care team images asap.

Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 3.4 | 3.6 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3.0 | 3.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 8.0 | 8.3 | 7.1 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Perfusion

Perfusion Details can be found on the perfusion appendix page

## Series 4, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 350/20 | 350/20 | 350/20 |
| Recon Option | | | |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 30% / 10% | 30% / 10% | 30% / 10% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 40 | 40 | 40 |

## Series 5, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 4.0 | 4.2 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 5, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

# CTA Neck Only (Cerebrovascular Disease) 3.11/11.22/11.23

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

**Indication**

Carotid Stenosis, Vertebral stenosis, dissection, trauma, hemorrhage

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, No Gantry Tilt
- Extend the scouts to include the aortic arch for smart prep.
- 16 or 64 slice scanners only
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).

**IV Contrast Parameters**

**Adults:**

- 80 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

**Pediatrics:**

- 1.5 mL/kg (1.5 ml/kg) Iohexol (Omnipaque) 300 MG/ML @ 2.5 mL/sec
- 25 mL Sodium Chloride 0.9% @ 2.5 mL/sec

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2
  - Smart Prep: Aortic arch (initiate the scan at contrast entry)
  - CTA Neck Only: Scan from Carina and end at EAC (bottom to top.)
- Series 3 - Optional - **For patients needing a Delay Routine CT Neck after the CTA Neck use the Routine CT neck protocol and obtain the scan at 80 seconds from the start of the contrast injection.**

CTA Neck Only Coverage

## Reformat Instructions

Please send all images to PACS before starting reformats. See table below for reformat instructions.

## Reformats

2D MIP-Reformations through the vertebral and carotid arteries

- Use an axial image near the level of the hyoid bone at the carotid bifurcation to prescribe the correct oblique angles. Use an image that shows the external and internal carotid arteries.
- Choose only the axial images from the aortic arch to the EAC.
- Include both the carotid and vertebral arteries (See example below)
- Send all images to ALI Store (PACS).

Coronal and Sagittal 2D- MIP Reformats
Through Carotid Bifurcations

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | Thin ST | Manual | MIP | 800/200 | 2 | 1 | sagittal |
| CO | Thin ST | Manual | MIP | 800/200 | 2 | 1 | coronal |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

NOTE: Assign the pediatric neuro cases to "**Read, Neuro**" **NOT** "Read, Peds"

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3.0 | 3.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (180-800) | (160-700) | (160-675) |
| Manual mA | 500 | 400 | 400 |
| Noise Index | 11.3 | 11.3 | 9.6 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

# CT Venography 1.9/11.24/11.25

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Venous Sinus Thrombosis

**Oral Contrast**

None

**Pre-Scan Instructions**

- Patient Supine, PA and lateral scouts, No Gantry Tilt
- Extend the scouts to include the aortic arch for smart prep.
- Patient Positioning: Tilt the patient's head so that a line connecting the lateral canthus of the eye and the EAC is perpendicular to the CT tabletop (see head CT protocol).

**IV Contrast Parameters**

**Adult:**

- 120 mL Iohexol (Omnipaque) 300 MG/ML @ 3.8 mL/sec (31.6 sec contrast injection time)
- 50 mL Sodium Chloride 0.9% @ 3.8 mL/sec

**Pediatrics:**

- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- 25 mL Sodium Chloride 0.9% @ 1.5 mL/sec

**Field of View**

Preferred 22 cm

**Scan Description**

- Series 1 – Scouts PA and Lateral
- Series 2 – Routine CT Head without contrast (Helical)
- Series 3 - Smart Prep: Aortic arch –
  - CTV Head Only: Scan from bottom of C2 to the top of head (bottom up)
    - Timing: initiate the scan 5 seconds after entry of contrast in aortic arch (i.e. the delay will be the auto minimum plus this extra 5 seconds)
  - CTV Head and Neck: Scan from carina to top of head (bottom up)
    - Timing: initiate scan 10 seconds after entry of contrast in aortic arch (i.e. the delay will be the auto minimum plus the extra 10 seconds)
- Series 4 – Routine Head With contrast (Helical): Wait at least 5 min from start of CTV contrast injection before beginning scan.

Scan range

**Reformat Instructions**

Please send all images to PACS before starting reformats. See table below for reformat instructions.

**Reformats**

Thin MIP 2D-Reformations through the vertebral and carotid arteries

- Make sure the reference line is parallel to the carotid canal (see image below)
- Axial images to use for obtaining the oblique sagittal 2-D Reformations
- Use a DFOV of 10

Send to ALI Store (PACS)

Where to take reformats

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| RT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |
| LT OBL | Thin ST | Manual | MIP | 800/200 | 1 | 1 | Axial |

2D Thick-Slab MIP Reformats of Head

- Do axial, sagittal, and coronal thick-slab MIPs through the entire head. (See examples below)

Send to ALI Store (PACS).

What reformats should look like

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| AX | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | axial |
| SA | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | sagittal |
| CO | Thin ST | Manual | MIP | 600/200 | 10 | 2.5 | coronal |

2D MIP-Reformations through the vertebral and carotid arteries

- Use an axial image near the level of the hyoid bone at the carotid bifurcation to prescribe the correct oblique angles. Use an image that shows the external and internal carotid arteries.
- Choose only the axial images from the aortic arch to the EAC.
- Include both the carotid and vertebral arteries (See example below)
- Send all images to ALI Store(PACS).

Coronal and Sagittal 2D- MIP Reformats
Through Carotid Bifurcations

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA | Thin ST | Manual | MIP | 800/200 | 2 | 1 | sagittal |
| CO | Thin ST | Manual | MIP | 800/200 | 2 | 1 | coronal |

### Networking

All Images to (ALI_Store PACS. Note: if smartprep is used, please also send the screen save (Series 99 of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Adult | Child | Infant |
|---|---|---|---|
| Scout 1 kV | 120 | 100 | 80 |
| Scout 1 mA | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 |
| Scout 2 kV | 120 | 100 | 80 |
| Scout 2 mA | 20 | 20 | 20 |
| Scout 2 Angle | 90 | 90 | 90 |
| WW/WL for Scout | 500/50 | 500/50 | 500/50 |

## Series 2, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (170-580) | (170-580) | (170-580) |
| Manual mA | 280.0 | 280.0 | 280.0 |
| Noise Index | 3.4 | 3.6 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 2, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 2.5 | 2.5 | 2.5 |
| Interval (mm) | 1.5 | 1.5 | 1.5 |
| Recon 3 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 180/25 | 180/25 | 180/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 80% / 40% | 80% / 40% | 80% / 40% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Smart Prep

| | Adult | Child | Infant |
|---|---|---|---|
| mA | 80 | 40 | 40 |
| Monitoring Delay (sec) | 10 | 10 | 10 |
| Monitoring ISD (sec) | 3 | 3.0 | 3.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 3, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Large | Large | Large |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 120 | 100 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (180-800) | (160-700) | (160-675) |
| Manual mA | 500 | 400 | 400 |
| Noise Index | 11.3 | 11.3 | 9.6 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 3, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Standard | Standard | Standard |
| WW/WL | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |
| Recon 2 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 |

## Series 4, Scan Phase

| | Adult | Child | Infant |
|---|---|---|---|
| Scan Type | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Head | Head | Head |
| Pitch | 0.562 | 0.562 | 0.562 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 |
| kV | 100 | 80 | 80 |
| AEC type | smart mA | smart mA | smart mA |
| mA Range | (210-720) | (210-675) | (170-580) |
| Manual mA | 360.0 | 360.0 | 280.0 |
| Noise Index | 4.0 | 4.2 | 3.5 |
| Slice Thickness (mm) | 5 | 5 | 5 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

## Series 4, Recons

| | Adult | Child | Infant |
|---|---|---|---|
| Recon 1 | | | |
| DFOV | 22 | 22 | 22 |
| Recon Type | Soft | Soft | Soft |
| WW/WL | 80/25 | 80/25 | 80/25 |
| Recon Option | Plus | Plus | Plus |
| Recon Option | | | |
| ASIR (non Rev256/Rev256) | 60% / 30% | 60% / 30% | 60% / 30% |
| Slice Thickness (mm) | 5.0 | 5.0 | 5.0 |
| Interval (mm) | 3.0 | 3.0 | 3.0 |

# Routine Abdomen/Pelvis 16.1.1/16.2.1/16.4.1/16.6.1/16.8.1

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Abdominal pain, r/o abscess, neoplasm, fever of unknown origin. Small bowel obstruction in patients with h/o prior surgery.

Video for this protocol

### Oral Contrast

These are target volumes for oral contrast. If the child is vomiting or otherwise unable to tolerate the total amount, it can obviously be decreased. For optimal interpretation of these scans, encourage the above amounts.

Hydrate ER patient if time allows

Mix 4mL Iohexol 300 (Omnipaque) in 200mL of a clear liquid.

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

| Age | Weight (lbs) | Total Oral Contrast Quantity |
|---|---|---|
| 0 - 1 | 10 - 25 | 100 mls |
| 1 - 3 | 20 - 40 | 200 mls |
| 3 - 5 | 30 - 60 | 400 mls |
| 5 - 10 | 40 - 90 | 600 mls |
| 11+ | over 90 | 800 mls + |

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

Contrast Dosage (patients should have a 22G IV (or larger) or a central line) 2 mL/kilo for patients up to 40 kilos.

**Patients 40-65 kilos:**

- 80 mL Iohexol (Omnipaque) 300 MG/mL @ 2 mL/sec

**Patients above 65 kilos:**

- Use the Medrad™ P3T for contrast.

**For non-sedated infants or if you only have a 24G IV or an IV in the hand:**

- Inject at 1 mL/sec
- Saline chaser equal to 1/2 of the contrast dose

**Field of View**

As small as possible

**Scan Description**

- Series 1 – PA & Lateral Scout: from diaphragm through pubic symphysis.
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: Center over the liver. Place 3 ROIs in the liver. If enhancement threshold is not reach by 70 seconds, start the scan.
  - Scan Phase: – Start scan at the top of the diaphragm, end at the pubic symphysis. If patient has inflammatory bowel disease, scan through perineum.

**Reformat Instructions**

Use DMPR on THIN ST.

**Reformats**

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS | Thin ST | DMPR | Average | 500/80 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 500/80 | 4 | 2 | coronal |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 20.0 | 20.0 | 25.0 | 25.0 | 30.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Acute Appendicitis - Abdomen/Pelvis 16.1.1/16.2.1/16.4.1/16.6.1/16.8.1

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

### Indication

RLQ pain. Evaluate for appendicitis.

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

Contrast Dosage (patients should have a 22G IV (or larger) or a central line) 2 mL/kilo for patients up to 40 kilos.

### Patients 40-65 kilos.:

- 80 mL Iohexol (Omnipaque) 300 MG/mL @ 2 mL/sec

### Patients above 65 kilos:

- Use the Medrad™ P3T for contrast.

### For non-sedated infants or if you only have a 24G IV or an IV in the hand:

- Inject at 1 mL/sec
- Saline chaser equal to 1/2 of the contrast dose

### Field of View

As small as possible

### Scan Description

- Series 1 – PA & Lateral Scout: from diaphragm through pubic symphysis
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: Center over the liver. Place 3 ROIs in the liver. If enhancement threshold is not reach by 70 seconds, start the scan.
  - Scan Phase: Start scan at bottom of kidneys, end at pubic symphysis.

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

**This protocol uses the same acquisition parameters as the Routine Abdomen/Pelvis.**

# Renal Stone/Flank Pain 16.1.2/16.2.2/16.4.2/16.6.2/16.8.2

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Suspected urolithiasis in setting of equivocal renal/bladder ultrasound.

Video for this protocol

### Oral Contrast

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

Hydrate ER patients if time allows

### Pre-Scan Instructions

- Scan with a full bladder.
- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-55 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

None

### Field of View

As small as possible

### Scan Description

- Series 1 – PA & Lateral Scout: from diaphragm through pubic symphysis
- Series 2 – Scan from top of kidneys to base of bladder

### Reformat Instructions

Use DMPR on THIN ST.

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Triphasic Liver 16.1.3/16.2.3/16.4.3/16.6.3/16.8.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

preoperative planning, liver tumor evaluation, evaluate hepatic artery/portal vein patency,upon surgeon request. Alternatively, MR with eovist contrast might be helpful.

Video for this protocol

### Oral Contrast

Give a total 800 mL of water prior to scan (A 200mL dose every 20 minutes over an hour).

Give an additional 200mL dose of water on the CT scan table.

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

2 mL/kilo for patients up to 40 kilos.

### Patients 40-65 kilos.:

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 4 mL/sec

### Patients above 65 kilos.:

- Medrad™ P3T
- 4-5 mL/sec injection rate

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

**Field of View**

As small as possible

**Scan Description**

- Series 1 – PA and lateral scout: from diaphragm through iliac crest (or pubic symphysis if pelvis also ordered)
- Series 2 – manually breath patient for the arterial and late arterial phase
  - Smart Prep - Monitor Phase on the aorta at the level of mid liver. Dynamic transition is turned on. Delays are pre-programmed for the following two groups.
  - Early arterial phase. Scan from top of liver to bottom of liver; be sure to include proximal SMA
  - Late arterial phase. Same coverage as early arterial phase.
    - On 8 and 16 detector scanners: immediately start at the bottom of the liver and end at the top
    - On 64 slice detector scanners: 20 seconds after peak of the contrast timing bolus, start at the bottom of the liver and end at the top
- Portal venous phase – 70 seconds after the peak of the timing bolus, start at diaphragm and scan through iliac crest (or pubic symphysis if pelvis also ordered).

**Reformat Instructions**

Use DMPR on THIN ST.

**Reformats**

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | coronal |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 10 | 10 | 10 | 20 | 20 |
| Monitoring Delay (sec) | 10.0 | 10.0 | 10.0 | 10.0 | 10 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Group 1, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.516 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 10.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 | 0.9 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (25-350) | (45-530) | (50-675) | (40-610) | (60-730) |
| Manual mA | 250.0 | 370.0 | 480.0 | 420.0 | 510.0 |
| Noise Index | 8.5 | 9.5 | 10.5 | 12.0 | 11.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 1, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 2, Group 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Trauma Abdomen/Pelvis 16.1.4/16.2.4/16.4.4/16.6.4/16.8.4

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

blunt or penetrating trauma

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

- Clamp Foley catheter prior to exam. Make sure to place Foley below the level of the bladder.
- Image with arms up if possible.
- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-55 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

Contrast Dosage (patients should have a 22G IV (or larger) or a central line) 2 mL/kilo for patients up to 40 kilos.

### Patients 40-65 kilos.:

- 80 mL Iohexol (Omnipaque) 300 MG/mL @ 2 mL/sec

### Patients above 65 kilos:

- Use the Medrad™ P3T for contrast.

### For non-sedated infants or if you only have a 24G IV or an IV in the hand:

- Inject at 1 mL/sec
- Saline chaser equal to 1/2 of the contrast dose

**Field of View**

As small as possible

**Scan Description**

- Series 1 – PA & Lateral Scout: from diaphragm through pubic symphysis
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: Center over the liver. Place 3 ROIs in the liver. If enhancement threshold is not reach by 70 seconds, start the scan.
  - Scan Phase: Start scan at the top of the diaphragm and end below the pubic symphysis.
- Series 3 - Delayed (Optional per MD) 5 - 7 minute delayed scans only in area of interest

**Reformat Instructions**

Use DMPR on recon 2 (thins) and (if spines are ordered) Manual on recon 3 and 5

**Reformats**

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/80 | 4 | 2 | coronal |
| SA ST | Thin ST | Manual (if spines are ordered) | Average | 550/80 | 1.5 | 0.75 | sagittal |
| CO ST | Thin ST | Manual (if spines are ordered) | Average | 550/80 | 1.5 | 0.75 | coronal |
| SA BONE | Thin Bone | Manual (if spines are ordered) | Average | 2500/350 | 1.5 | 0.75 | sagittal |
| CO BONE | Thin Bone | Manual (if spines are ordered) | Average | 2500/350 | 1.5 | 0.75 | coronal |

**Networking**

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 20.0 | 20.0 | 25.0 | 25.0 | 30.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.516 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 10.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 | 0.9 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (25-350) | (45-530) | (50-675) | (40-610) | (60-730) |
| Manual mA | 250.0 | 370.0 | 480.0 | 420.0 | 510.0 |
| Noise Index | 8.5 | 9.5 | 10.5 | 12.0 | 11.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | | | |
| DFOV | 12 | 12 | 12 | 12 | 12 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Chest - Standard (Routine & High-Resolution) 15.1.1/15.2.1/15.4.1/15.6.1/15.8.1

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

### Indication

Chest with contrast: Initial evaluations for metastatic disease.

Chest without contrast: Follow-up osteosarcoma mets

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

2 mL/kilo for patients up to 37 kilos.

75 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec for patients > 37 kilos.

### Field of View

Small as possible, including all of chest wall

### Scan Description

- Series 1 – PA & Lateral Scout: from base of neck through lung bases with inspiration
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: center over the pulmonary artery. Once it reaches the proper threshold, hit scan phase. The scan will then have a 12 second diagnostic delay built in. If enhancement threshold is not reach by 50 seconds, start the scan.
  - Scan Phase: Scan from just above the lung apices and extend through lung bases with full inspiration.

- Series 3 (optional) - Sequential/Axial Supine Expiration (only if requested by radiologist) Start just above the lung apices and extend through the lung bases. These scans have a slice thickness of 1.25 mm and an interval of 10 mm.

### Reformat Instructions

Use DMPR on recon 2 and recon 4

- Recon 2 is the Soft Tissue Recon
- Recon 4 is the Lung Recon

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS CHEST | Thin ST | DMPR | Average | 550/100 | 4 | 2 | sagittal |
| CO PEDS CHEST | Thin ST | DMPR | Average | 550/100 | 4 | 2 | coronal |
| PEDS SA CHEST | Thin Bone | DMPR | Average | 2100/-450 | 4 | 2 | sagittal |
| PEDS CO CHEST | Thin Bone | DMPR | Average | 2100/-450 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | 12 | 12 | 12 | 12 | 12 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **1.375** | **1.375** | **1.375** | **1.375** | **1.375** |
| **Speed (mm/rot)** | **27.50** | **27.50** | **27.50** | **27.50** | **27.50** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.6** | **0.7** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(10-150)** | **(20-220)** | **(30-400)** | **(35-560)** | **(60-700)** |
| **Manual mA** | **100.0** | **150.0** | **280.0** | **390.0** | **490.0** |
| **Noise Index** | **13.0** | **14.5** | **16.5** | **18.5** | **18.0** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Axial | Axial | Axial | Axial | Axial |
| Beam Collimation | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Detector Rows | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Detector Configuration | 1x1.25 | 1x1.25 | 1x1.25 | 1x1.25 | 1x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1 | 1 | 1 | 1 | 1 |
| Speed (mm/rot) | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (10-110) | (15-160) | (20-290) | (30-490) | (60-710) |
| Manual mA | 70.0 | 110.0 | 200.0 | 340.0 | 500.0 |
| Noise Index | 22.0 | 25.5 | 28.5 | 32.5 | 31.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 | 10 | 10 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | | | | | |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 | 10 | 10 |

# Peds Chest Dynamic 3D Airway 15.1.2/15.2.2/15.4.2/15.6.2/15.8.2

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Evaluate for airway for stenosis, tumor, tracheo(broncho)malacia.

### Oral Contrast

None

### Pre-Scan Instructions

Practice breathing instructions. Ask patient to cough just prior to the scan. **Coach patient again before expiration. Expiratory scan should be performed during *forced exhalation* (use manual breathing instructions)**

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-55 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

2 mL/kilo for patients up to 37 kilos.

75 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec for patients > 37 kilos.

### Field of View

Small as possible, including all of chest wall

### Scan Description

- Series 1 - PA & lateral scouts: from lower neck to diaphragm on inspiration.
- Series 2 - Inspiration: Start scan mid-neck C3 – C4 and extend through the diaphragm to include entirety of lungs. If the patient needs IV contrast use this phase.
  - Smart Prep – Monitor Phase: center over the pulmonary artery. Once it reaches the proper threshold, hit scan phase. The scan will then have a 12 second diagnostic delay built in. If enhancement threshold is not reach by 50 seconds, start the scan.
- Series 3 - Dynamic forced expiration: Start scan mid-neck C3 – C4 and extend through top of diaphragm
  - Positioning

- If patient is under general anesthesia, scan supine for both inspiratory and expiratory phases.
- If patient is not sedated, scan supine for inspiratory and prone for expiratory. You should re-scout before the prone series.

**Reformat Instructions**

No reformats unless requested by a Radiologist

**Reformats**

None.

**Networking**

Please send the entire study to PACS including the Dose Information Slide. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

**Miscellaneous**

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **20** | **40** | **40** | **40** | **40** |
| **Monitoring Delay (sec)** | **20.0** | **20.0** | **20.0** | **20.0** | **20.0** |
| **Monitoring ISD (sec)** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **12** | **12** | **12** | **12** | **12** |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **1.375** | **1.375** | **1.375** | **1.375** | **1.375** |
| **Speed (mm/rot)** | **27.50** | **27.50** | **27.50** | **27.50** | **27.50** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.6** | **0.7** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(10-150)** | **(20-220)** | **(30-400)** | **(35-560)** | **(60-700)** |
| **Manual mA** | **100.0** | **150.0** | **280.0** | **390.0** | **490.0** |
| **Noise Index** | **13.0** | **14.5** | **16.5** | **18.5** | **18.0** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **1.375** | **1.375** | **1.375** | **1.375** | **1.375** |
| **Speed (mm/rot)** | **27.50** | **27.50** | **27.50** | **27.50** | **27.50** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.6** | **0.7** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(10-150)** | **(20-220)** | **(30-400)** | **(35-560)** | **(60-700)** |
| **Manual mA** | **100.0** | **150.0** | **280.0** | **390.0** | **490.0** |
| **Noise Index** | **13.0** | **14.5** | **16.5** | **18.5** | **18.0** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Chest Pectus 15.1.3/15.2.3/15.4.3/15.6.3/15.8.3

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Eval for chest wall deformities, Haller index and corrections indices in pectus excavatum.

Video for this protocol

### Oral Contrast

None

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

None

### Field of View

Small as possible, including all of rib cage

### Scan Description

- Series 1 – PA & Lateral Scout: from base of neck through lung bases with inspiration
- Series 2 – Scan from just above the lung apices and extend through the 12th rib so as to image the entire bony thorax. Scan in inspiration.

### Reformat Instructions

Use DMPR on recon 2 and recon 4

- Recon 2 is the Soft Tissue Recon
- Recon 4 is the Lung Recon

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS CHEST | Thin ST | DMPR | Average | 550/100 | 4 | 2 | sagittal |
| CO PEDS CHEST | Thin ST | DMPR | Average | 550/100 | 4 | 2 | coronal |
| PEDS SA CHEST | Thin Bone | DMPR | Average | 2100/-450 | 4 | 2 | sagittal |
| PEDS CO CHEST | Thin Bone | DMPR | Average | 2100/-450 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (10-100) | (15-150) | (20-280) | (30-470) | (50-680) |
| Manual mA | 70.0 | 110.0 | 190.0 | 330.0 | 480.0 |
| Noise Index | 15.5 | 17.5 | 19.5 | 22.5 | 21.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1900/-475 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# CTA Chest for PE 15.1.4/15.2.4/15.4.4/15.6.4/15.8.4

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

known or suspected pulmonary embolism.

### Oral Contrast

None

### Pre-Scan Instructions

- Practice the 3 breaths for scouts, smart prep, and the actual helical scan, we do not want to induce a Valsalva which would push the contrast out of the area of interest. Ask patient to cough just prior to the exam. Ask patient to breathe quietly during exam and then stop breathing for image acquisition. Inform the patient to not bear up, tense up or strenuously hold their breath. Scan ventilated patients at full inspiration.
- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-55 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

2 mL/kilo for patients up to 40 kilos.

### Patients 40-65 kilos.:

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 4 mL/sec

### Patients above 65 kilos.:

- Medrad™ P3T
- 4-5 mL/sec injection rate

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

### Field of View

Small as possible, including all of chest wall

**Scan Description**

- Series 1 - PA and lateral scouts: from lower neck to diaphragm using the suspension breathing instructions
- Series 2 –Helical Scan
  - Smart Prep-Monitor Phase: Center on Lt atrium; Watch for atrial filling with contrast on the bolus tracking scan and then start using manual start, no delay is needed.
  - Scan Phase: from lower neck to diaphragm with IV Contrast. Inspiratory breathing instructions are on, remind the patient not to bear down or strain.

Smart Prep location should be the LA

**Adjustments for Bariatric PE and Cardiac Studies** We do not have a bariatric protocol for chest PE or cardiac (retrospectively or prospectively gated coronaries) studies. Our large protocol is already designed to deliver a higher maximum dose than the medium and small adult protocols, but it uses 120 kV to maximize iodine contrast. Other large adult protocols that are not angiograms use 140 kV for large adults. Therefore, for bariatric patients who 1. **fill the scout view** or 2. **max out the mA table** please increase the kV from 120 kV to 140 kV.

**Note: If you know the patient is likely to max out the mA table before taking the scout, you should increase the scout kV from 120 to 140.**

Example of a patient **filling the scout view**

Example patient **filling the scout AP view**

Example patient **filling the scout lateral view**

resulting poor image quality from a patient who **fills the scout**

### Reformat Instructions

Use DMPR on recon 2 (thins)

- Recon 2 is the Lung Recon

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| PEDS SA CHEST | Thin Bone | Manual | MIP | 2100/-450 | 4 | 2 | sagittal |
| PEDS CO CHEST | Thin Bone | Manual | MIP | 2100/-450 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Monitoring ISD (sec) | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (10-150) | (20-220) | (30-400) | (35-560) | (60-700) |
| Manual mA | 100.0 | 150.0 | 280.0 | 390.0 | 490.0 |
| Noise Index | 13.0 | 14.5 | 16.5 | 18.5 | 18.0 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Routine Chest/Abdomen/Pelvis 15.1.5/15.2.5/15.4.5/15.6.5/15.8.5

## PEDS patients between the age of 18-20 yrs: to be scanned CAP in one scan. Do not scan using two groups.

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

### Indication

Neoplasm, fever of unknown origin, infection. Metasatic disease workup/follow-up.

Video for this protocol

### Oral Contrast

These are target volumes for oral contrast. If the child is vomiting or otherwise unable to tolerate the total amount, it can obviously be decreased. For optimal interpretation of these scans, encourage the above amounts.

Hydrate ER patient if time allows

Mix 4mL Iohexol 300 (Omnipaque) in 200mL of a clear liquid.

Give an additional dose on the CT scan table. Mix 8mL Iohexol 300 (Omnipaque) in 200mL of clear liquid.

| Age | Weight (lbs) | Total Oral Contrast Quantity |
|---|---|---|
| 0 - 1 | 10 - 25 | 100 mls |
| 1 - 3 | 20 - 40 | 200 mls |
| 3 - 5 | 30 - 60 | 400 mls |
| 5 - 10 | 40 - 90 | 600 mls |
| 11+ | over 90 | 800 mls + |

### Pre-Scan Instructions

- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-60 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

### IV Contrast Parameters

Contrast Dosage (patients should have a 22G IV (or larger) or a central line) 2 mL/kilo for patients up to 40 kilos.

**Patients 40-65 kilos.:**

- 80 mL Iohexol (Omnipaque) 300 MG/mL @ 2 mL/sec

**Patients above 65 kilos:**

- Use the Medrad™ P3T for contrast.

**For non-sedated infants or if you only have a 24G IV or an IV in the hand:**

- Inject at 1 mL/sec
- Saline chaser equal to 1/2 of the contrast dose

### Field of View

As small as possible

### Scan Description

- Series 1 – PA & Lateral Scout: from base of neck through pubic symphysis
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: Center over the pulmonary artery. There is a built in diagnostic delay of 20 seconds after the smart prep enhancement threshold is reached.
  - Scan Phase: Scan Chest/ Abdomen/Pelvis in portal venous phase.
  - Coverage: Start just above the lung apices. For a Chest/Abdomen, end at the iliac crests and for a full CAP end at the pubic symphysis.
  - If the patient requires an adult medium or large protocol, please delete the abd/pel group and extend the chest through the pelvis, scan in one group, not two. Please add a 20 second diagnostic delay to the smart prep. You may want to turn off your DMPR's and manually preform the reformats.

### Reformat Instructions

Use DMPR on recon 2 (thins)

- Recon 2 is the Soft Tissue Recon

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| PEDS SA CHEST | Thin BONE | Manual | Average | 2100/-450 | 4 | 2 | sagittal |
| PEDS CO CHEST | Thin BONE | Manual | Average | 2100/-450 | 4 | 2 | coronal |
| SA PEDS | Thin ST | DMPR | Average | 550/100 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/100 | 4 | 2 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 30 | 30 | 30 | 30 | 30 |
| Diagnostic Delay | 20 | 20 | 20 | 20 | 20 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1900/-475 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Trauma Chest/Abdomen/Pelvis 15.1.6/15.2.6/15.4.6/15.6.6/15.8.6

## **Note**: The pediatric Trauma CAP protocol can still be used to retro recon the T-Spine. You should NEVER scan both a pediatric Trauma CAP and then a T-Spine.

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

**Indication**

Blunt or penetrating trauma

Video for this protocol

**Oral Contrast**

None

**Pre-Scan Instructions**

- Clamp Foley catheter prior to exam. Make sure to place Foley below the level of the bladder.
- Image with arms up if possible.
- To properly select a pediatric protocol size:
  - First use the patient's age to select scout parameters
  - After acquiring the scout, measure the PA + Lateral widths
  - Scan using the protocol corresponding to the sum of the AP+Lateral measurements (you may need to select a protocol that does not match the patient's age)

| Color Grouping | Pink | Red/Purple | Yellow/White | Blue/Orange | Green/Black |
|---|---|---|---|---|---|
| Age | Newborn | 6 mo - 2.5 yr | 3-7 yr | 8-12 yr | 13-18 yr |
| PA + Lat (cm) | 0-26 | 27-31 | 32-37 | 38-43 | 44-55 |

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

**IV Contrast Parameters**

- 2 mL/kilo for patients up to 40 kilos.
- Patients 40-65 kilos use 80 mL contrast.
- Patients above 60 kilos use the Medrad™ P3T for contrast.
- 4 mL/sec injection rate; saline chase
- Iohexol 300

For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

### Field of View

As small as possible

### Scan Description

- Series 1 – PA & Lateral Scout: from base of neck through pubic symphysis
- Series 2 – Smart Prep – Monitor Phase: Center over the liver. Put ROI in the aorta. Start scan as soon as contrast is seen in the aorta.
- Series 2 – Helical Scan – Helical Scan: Performed in 2 groups: Chest (1st group) – Abdomen and Pelvis (2nd group)
  - 1st group, start at the base of the lungs (diaphragm) and scan to the top of the lungs (apex)
  - 2nd group, pause 70 sec. from the start of the injection, start scan at the top of the diaphragm and end at the pubic symphysis.
- Series 3 - Delayed Scan (Optional per MD) 5-7 minute delayed scans ONLY in area of interest

### Reformat Instructions

Use DMPR on recon 2 (thins)

- Recon 2 is a Soft Tissue Recon
- Recon 4 & 7 are Spine Soft Tissue Recon
- Recon 6 & 9 are Spine Bone Recon

### Reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA PEDS CHEST | Thin ST | DMPR | Average | 550/80 | 4 | 2 | sagittal |
| CO PEDS CHEST | Thin ST | DMPR | Average | 550/80 | 4 | 2 | coronal |
| SA PEDS | Thin ST | DMPR | Average | 550/100 | 4 | 2 | sagittal |
| CO PEDS | Thin ST | DMPR | Average | 550/100 | 4 | 2 | coronal |

For T and L Spine reformats

| Name | Source Recon | DMPR or Manual | Type (MIP, Average, etc.) | WW/WL | Slice Thickness (mm) | Interval (mm) | Orientation |
|---|---|---|---|---|---|---|---|
| SA ST | Thin ST | Manual (spines only if ordered) | Average | 550/80 | 1.5 | 0.8 | sagittal |
| CO ST | Thin ST | Manual (spines only if ordered) | Average | 550/80 | 1.5 | 0.8 | coronal |
| SA BONE | Thin Bone | Manual (spines only if ordered) | Average | 3000/300 | 1.5 | 0.8 | sagittal |
| CO BONE | Thin Bone | Manual (spines only if ordered) | Average | 3000/300 | 1.5 | 0.8 | coronal |

### Networking

All Images to (ALI_Store) PACS. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

### Miscellaneous

None

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 10.0 | 10.0 | 10.0 | 10.0 | 15.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 50 | 50 | 50 | 50 | 50 |
| Diagnostic Delay | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum | Auto Minimum |

## Series 2, Group 1, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.516 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 10.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 | 0.9 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (25-350) | (45-530) | (50-675) | (40-610) | (60-730) |
| Manual mA | 250.0 | 370.0 | 480.0 | 420.0 | 510.0 |
| Noise Index | 8.5 | 9.5 | 10.5 | 12.0 | 11.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 1, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

| Recon 3 | | | | | |
|---|---|---|---|---|---|
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 6 | | | | | |
| DFOV | 12 | 12 | 12 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 2, Group2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.516 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 10.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.7 | 0.9 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (25-350) | (45-530) | (50-675) | (40-610) | (60-730) |
| Manual mA | 250.0 | 370.0 | 480.0 | 420.0 | 510.0 |
| Noise Index | 8.5 | 9.5 | 10.5 | 12.0 | 11.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 7 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

| Recon 8 | | | | | |
|---|---|---|---|---|---|
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 9 | | | | | |
| DFOV | 12 | 12 | 12 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-200) | (25-300) | (40-540) | (40-630) | (60-760) |
| Manual mA | 140.0 | 210.0 | 380.0 | 440.0 | 530.0 |
| Noise Index | 11.0 | 12.5 | 14.0 | 16.0 | 15.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Routine Abdomen/Pelvis (Higher Image Quality) 16.1.6/16.2.6/16.4.6/16.6.6/16.8.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Routine Abdomen/Pelvis 16.1.1/16.2.1/16.4.1/16.6.1/16.8.1

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **20** | **40** | **40** | **40** | **40** |
| **Monitoring Delay (sec)** | **20.0** | **20.0** | **25.0** | **25.0** | **30.0** |
| **Monitoring ISD (sec)** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Acute Appendicitis - Abdomen/Pelvis (Higher Image Quality) 16.1.6/16.2.6/16.4.6/16.6.6/16.8.6

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

## Clinical Instructions

Clinical Instructions for this protocol are identical to Acute Appendicitis - Abdomen/Pelvis 16.1.1/16.2.1/16.4.1/16.6.1/16.8.1

## Acquisition Parameters

**This protocol uses the same acquisition parameters as Routine Abdomen/Pelvis (Higher Image Quality) 16.1.6/16.2.6/16.4.6/16.6.6/16.8.6**

# Renal Stone/Flank Pain (Higher Image Quality) 16.1.7/16.2.7/16.4.7/16.6.7/16.8.7

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Renal Stone/Flank Pain 16.1.2/16.2.2/16.4.2/16.6.2/16.8.2

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Triphasic Liver (Higher Image Quality) 16.1.8/16.2.8/16.4.8/16.6.8/16.8.8

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Triphasic Liver 16.1.3/16.2.3/16.4.3/16.6.3/16.8.3

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **10** | **10** | **10** | **20** | **20** |
| **Monitoring Delay (sec)** | **10.0** | **10.0** | **10.0** | **10.0** | **10** |
| **Monitoring ISD (sec)** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** |

## Series 2, Group 1, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 0.562 | 0.562 | 0.562 | 0.938 | 0.938 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (20-270) | (25-340) | (45-540) | (60-720) | (70-900) |
| Manual mA | 170.0 | 210.0 | 340.0 | 450.0 | 570.0 |
| Noise Index | 7.0 | 7.5 | 8.5 | 10.0 | 9.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 1, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 2, Group 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 2, Group 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Trauma Abdomen/Pelvis (Higher Image Quality) 16.1.9/16.2.9/16.4.9/16.6.9/16.8.9

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Trauma Abdomen/Pelvis 16.1.4/16.2.4/16.4.4/16.6.4/16.8.4

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **20** | **40** | **40** | **40** | **40** |
| **Monitoring Delay (sec)** | **20.0** | **20.0** | **25.0** | **25.0** | **30.0** |
| **Monitoring ISD (sec)** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **0.562** | **0.562** | **0.562** | **0.938** | **0.938** |
| **Speed (mm/rot)** | **11.20** | **11.20** | **11.20** | **18.80** | **18.80** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(20-270)** | **(25-340)** | **(45-540)** | **(60-720)** | **(70-900)** |
| **Manual mA** | **170.0** | **210.0** | **340.0** | **450.0** | **570.0** |
| **Noise Index** | **7.0** | **7.5** | **8.5** | **10.0** | **9.5** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 4 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | | | |
| DFOV | 12 | 12 | 12 | 12 | 12 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |
| Recon 6 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| DFOV | 20 | 20 | 20 | 22 | 22 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Chest - Standard (Routine & High-Resolution) (Higher Image Quality) 15.1.8/15.2.8/15.4.8/15.6.8/15.8.8

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Chest - Standard (Routine & High-Resolution) 15.1.1/15.2.1/15.4.1/15.6.1/15.8.1

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (20-280) | (25-350) | (30-380) | (25-300) | (30-380) |
| Manual mA | 180.0 | 220.0 | 240.0 | 190.0 | 240.0 |
| Noise Index | 10.5 | 12.0 | 13.5 | 15.0 | 15.0 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Axial | Axial | Axial | Axial | Axial |
| Beam Collimation | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Detector Rows | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Detector Configuration | 1x1.25 | 1x1.25 | 1x1.25 | 1x1.25 | 1x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1 | 1 | 1 | 1 | 1 |
| Speed (mm/rot) | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.6 | 0.7 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (10-160) | (20-240) | (30-430) | (40-610) | (60-760) |
| Manual mA | 110.0 | 170.0 | 300.0 | 430.0 | 530.0 |
| Noise Index | 18.0 | 20.5 | 23.0 | 26.5 | 25.5 |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 | 10 | 10 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 30 | 30 | 30 | 30 | 30 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | | | | | |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 10 | 10 | 10 | 10 | 10 |

# Chest Pectus (Higher Image Quality) 15.1.10/15.2.10/15.4.10/15.6.10/15.8.10

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Chest Pectus 15.1.3/15.2.3/15.4.3/15.6.3/15.8.3

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 1.375 | 1.375 | 1.375 |
| Speed (mm/rot) | 27.50 | 27.50 | 27.50 | 27.50 | 27.50 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (15-190) | (20-240) | (30-380) | (25-310) | (30-380) |
| Manual mA | 120.0 | 150.0 | 240.0 | 190.0 | 240.0 |
| Noise Index | 12.5 | 14.5 | 16.0 | 18.5 | 17.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1900/-475 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# CTA Chest for PE (Higher Image Quality) 15.1.11/15.2.11/15.4.11/15.6.11/15.8.11

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to CTA Chest for PE 15.1.4/15.2.4/15.4.4/15.6.4/15.8.4

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **20** | **40** | **40** | **40** | **40** |
| **Monitoring Delay (sec)** | **10.0** | **10.0** | **10.0** | **10.0** | **10.0** |
| **Monitoring ISD (sec)** | **1.0** | **1.0** | **1.0** | **1.0** | **1.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (20-280) | (25-350) | (30-380) | (25-300) | (30-380) |
| Manual mA | 180.0 | 220.0 | 240.0 | 190.0 | 240.0 |
| Noise Index | 10.5 | 12.0 | 13.5 | 15.0 | 15.0 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Routine Chest/Abdomen/Pelvis (Higher Image Quality) 15.1.12/15.2.12/15.4.12/15.6.12/15.8.12

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Routine Chest/Abdomen/Pelvis 15.1.5/15.2.5/15.4.5/15.6.5/15.8.5

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scout 1 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 1 mA | 10 | 10 | 10 | 10 | 10 |
| Scout 1 Angle | 180 | 180 | 180 | 180 | 180 |
| Scout 2 kV | 80 | 80 | 80 | 80 | 100 |
| Scout 2 mA | 40 | 40 | 40 | 40 | 40 |
| Scout 2 Angle | 90 | 90 | 90 | 90 | 90 |
| WW/WL for Scout | 600/50 | 600/50 | 600/50 | 600/50 | 600/50 |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| mA | 20 | 40 | 40 | 40 | 40 |
| Monitoring Delay (sec) | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| Monitoring ISD (sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enhancement Threshold (HU) | 30 | 30 | 30 | 30 | 30 |
| Diagnostic Delay | 20 | 20 | 20 | 20 | 20 |

## Series 2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **1.375** | **1.375** | **0.938** | **0.938** | **0.938** |
| **Speed (mm/rot)** | **27.50** | **27.50** | **18.80** | **18.80** | **18.80** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(30-380)** | **(35-480)** | **(40-510)** | **(35-410)** | **(40-510)** |
| **Manual mA** | **240.0** | **300.0** | **330.0** | **260.0** | **330.0** |
| **Noise Index** | **9.0** | **10.0** | **11.5** | **13.0** | **12.5** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

## Series 2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1900/-475 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 4 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

# Trauma Chest/Abdomen/Pelvis (Higher Image Quality) 15.1.13/15.2.13/15.4.13/15.6.13/15.8.13

Additional resources for this protocol are available here https://www.radiology.wisc.edu/uw-ge-ct-protocol-project/resources/

# Clinical Instructions

Clinical Instructions for this protocol are identical to Trauma Chest/Abdomen/Pelvis 15.1.6/15.2.6/15.4.6/15.6.6/15.8.6

# Acquisition Parameters

## Series 1, Scout

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scout 1 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 1 mA** | **10** | **10** | **10** | **10** | **10** |
| **Scout 1 Angle** | **180** | **180** | **180** | **180** | **180** |
| **Scout 2 kV** | **80** | **80** | **80** | **80** | **100** |
| **Scout 2 mA** | **40** | **40** | **40** | **40** | **40** |
| **Scout 2 Angle** | **90** | **90** | **90** | **90** | **90** |
| **WW/WL for Scout** | **600/50** | **600/50** | **600/50** | **600/50** | **600/50** |

## Series 2, Smart Prep

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **mA** | **20** | **40** | **40** | **40** | **40** |
| **Monitoring Delay (sec)** | **10.0** | **10.0** | **10.0** | **10.0** | **15.0** |
| **Monitoring ISD (sec)** | **2.0** | **2.0** | **2.0** | **2.0** | **2.0** |
| **Enhancement Threshold (HU)** | **50** | **50** | **50** | **50** | **50** |
| **Diagnostic Delay** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** | **Auto Minimum** |

## Series 2, Group 1, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| **Scan Type** | **Helical** | **Helical** | **Helical** | **Helical** | **Helical** |
| **Beam Collimation** | **20** | **20** | **20** | **20** | **20** |
| **Detector Rows** | **16.0** | **16.0** | **16.0** | **16.0** | **16.0** |
| **Detector Configuration** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** | **16x1.25** |
| **Scan FOV** | **Small** | **Small** | **Small** | **Small** | **Large** |
| **Pitch** | **0.562** | **0.562** | **0.562** | **0.938** | **0.938** |
| **Speed (mm/rot)** | **11.20** | **11.20** | **11.20** | **18.80** | **18.80** |
| **Rotation Time (s)** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| **kV** | **80** | **80** | **80** | **80** | **100** |
| **AEC type** | **smart mA** | **smart mA** | **smart mA** | **smart mA** | **smart mA** |
| **mA Range** | **(20-270)** | **(25-340)** | **(45-540)** | **(60-720)** | **(70-900)** |
| **Manual mA** | **170.0** | **210.0** | **340.0** | **450.0** | **570.0** |
| **Noise Index** | **7.0** | **7.5** | **8.5** | **10.0** | **9.5** |
| **Slice Thickness (mm)** | **3.75** | **3.75** | **3.75** | **3.75** | **3.75** |
| **Interval (mm)** | **2.25** | **2.25** | **2.25** | **2.25** | **2.25** |

## Series 2, Group 1, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 3 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 | 1500/-700 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

| Recon 4 | | | | | |
|---|---|---|---|---|---|
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 5 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 6 | | | | | |
| DFOV | 12 | 12 | 12 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 2, Group2, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 0.562 | 0.562 | 0.562 | 0.938 | 0.938 |
| Speed (mm/rot) | 11.20 | 11.20 | 11.20 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (20-270) | (25-340) | (45-540) | (60-720) | (70-900) |
| Manual mA | 170.0 | 210.0 | 340.0 | 450.0 | 570.0 |
| Noise Index | 7.0 | 7.5 | 8.5 | 10.0 | 9.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 2, Group2, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |

| | | | | | |
|---|---|---|---|---|---|
| Recon 7 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Soft | Soft | Soft | Soft | Soft |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 450/50 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 8 | | | | | |
| DFOV | 15 | 15 | 15 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Recon 9 | | | | | |
| DFOV | 12 | 12 | 12 | 15 | 15 |
| Recon Type | Bone Plus | Bone Plus | Bone Plus | Bone Plus | Bone Plus |
| WW/WL | 2500/350 | 2500/350 | 2500/350 | 2500/350 | 2500/350 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | None | None | None | None | None |
| Slice Thickness (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| Interval (mm) | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |

## Series 3, Scan Phase

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Scan Type | Helical | Helical | Helical | Helical | Helical |
| Beam Collimation | 20 | 20 | 20 | 20 | 20 |
| Detector Rows | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 |
| Detector Configuration | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 | 16x1.25 |
| Scan FOV | Small | Small | Small | Small | Large |
| Pitch | 1.375 | 1.375 | 0.938 | 0.938 | 0.938 |
| Speed (mm/rot) | 27.50 | 27.50 | 18.80 | 18.80 | 18.80 |
| Rotation Time (s) | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| kV | 80 | 80 | 80 | 80 | 100 |
| AEC type | smart mA | smart mA | smart mA | smart mA | smart mA |
| mA Range | (30-380) | (35-480) | (40-510) | (35-410) | (40-510) |
| Manual mA | 240.0 | 300.0 | 330.0 | 260.0 | 330.0 |
| Noise Index | 9.0 | 10.0 | 11.5 | 13.0 | 12.5 |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Series 3, Recons

| | Pink/Newborn/0-26 cm | Red Purple/6 mo.-2.5 years/27-31 cm | Yellow White/3-7 years/32-37 cm | Blue Orange/8-12 years/38-43 cm | Green Black/13-18 years/44-55 cm |
|---|---|---|---|---|---|
| Recon 1 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | | | | | |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| Interval (mm) | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |
| Recon 2 | | | | | |
| DFOV | 20 | 20 | 20 | 25 | 25 |
| Recon Type | Detail | Detail | Detail | Detail | Detail |
| WW/WL | 450/50 | 450/50 | 450/50 | 450/50 | 490/70 |
| Recon Option | Plus | Plus | Plus | Plus | Plus |
| Recon Option | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance | IQ Enhance |
| ASIR (non Rev256/Rev256) | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% | 40% / 20% |
| Slice Thickness (mm) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Interval (mm) | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |