School of Medicine and Public Health
UNIVERSITY OF WISCONSIN-MADISON

CT Protocols for Revolution EVO 32ch with ASiR

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Manufactured in USA

University of Wisconsin-Madison CT Protocols for Revolution EVO 32ch with ASiR

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Changes from Revision 2 to Revision 3

As part of our ongoing UW Madison CT protocol optimization, we have made the following changes between the Revision 2 and Revision 3 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).

New Protocols Added

The following protocols are new to the Revision 3 protocol release: Neck (Parathyroid Adenoma) Adult; High Image Quality Cancer Follow-Up Abd/Pelvis; Urothelial tumor follow-up; Soft Tissue Extremity with IV Contrast; Chest Wall/Clavicle/AC Joint/SC Joint/Sternum/Ribs; Peds Chest Dynamic 3D Airway; Prospectively-Gated Left Atrial Appendage.

Global Changes Made to the UW Protocols

We turned on auto voice when using smart prep. Upon interacting with users of our protocols, we realized most users expected this feature to be turned on by default.

Window width and window level have been standardized across all protocols. There is now a systematic approach to setting window width and window level, which is included in the Protocols Manual.

Scout start and end locations have been standardized for all protocols and are documented in a new section of the Protocols Manual. This includes a standardization of landmarks ex: om, sn, xy, ic. The anatomical landmarks on all non-scout series/groups have been standardized as well.

Tables for reformats have been created in all sections; previous versions lacked reformat tables for some protocols.

The naming of all series descriptions has been standardized to soft tissue, thin soft tissue, bone, thin bone, axial soft tissue, etc.

To optimize image quality, all reformats have been changed to set intervals at one half of the reformatted slice thickness.

The Smart prep phase was mistakenly called a series; this is now corrected in the protocol documentation.

References made in the reformat instructions were changed from the recon number to the series description of the source reconstruction.

All oral contrast and IV instructions were updated to be uniform with respect to their units.

Creatinine Guidelines and Pediatric Contrast Guidelines were also added to the protocol resources section of the manual.

Abdominal Protocols

To assist CT technologists in choosing the correct size protocol (small/medium/large), all medium DFOV were changed from 36 to 40 cm. This means patients too big to be scanned as small or medium will reveal tissue extending outside of the "blue target region" on the scout images, prompting the technologist to select a larger-sized protocol.

The threshold for switching from small to medium was moved from a scout AP + Lateral measurement of 55 to 60cm to improve the image quality of patients on the smaller side of what could be considered a medium patient.

All large protocols with a 50 DFOV were changed from soft to a standard algorithm to increase the resolution and decrease the "blurry" appearance of the large protocol's soft tissue reconstructions.

Realizing that some organizations may not have the P3T power injector option on their Bayer injector, a weight-based contrast chart was created for non-P3T sites. This is located in the Protocol Resources Section of the Protocols Manual.

To save patient dose during the smartprep phase, the monitoring delay was increased from 30 to 40 seconds since contrast usually never peaks before 40 seconds.

A dedicated "Oncology Cancer Follow-up" protocol was created to better visualize subtle lesions on cancer follow-up patients.

DMPR was added to the without series on the Adrenal Gland Adenoma protocol, and on all three phases of the liver donor work-up.

Realizing the text-based instructions provided in previous versions of the protocols were confusing for some, an easier to use formula and pictures were created to calculate the timing for the Liver - Triphasic and liver donor protocols.

The contrast amount was updated for Chest/Abd/Pel/Neck (100 cc contrast/50 cc chaser) and Chest/Neck (75 cc contrast /75 cc chaser).

The "exam split" feature is now utilized on the Chest/Abd/Pelvis protocols (both the with and without contrast), which allows multiple sections to read different body regions (i.e., the Chest section reads the chest portion of the exam and the Abdominal section reads the Abd/Pelvis portion of the exam). The DMPRs on the chest portion of the Chest/Abd/Pelvis protocol were also updated.

Trauma - Chest exams are now started at the bottom of the spleen to improve visualization of any arterial injuries in that organ.

The Trauma - Cystogram protocol, which was scanned at a trauma-level dose, was removed. This protocol was found to be unnecessary since no spine reconstructions were performed with that protocol. For trauma cases, the Cystogram (Non Trauma) protocol is now recommended, which includes a without contrast, a with contrast, and a delay phase. For trauma patients, the without phase is skipped.

In the Trauma - Chest/Abd/Pelvis protocol, recon #10 was changed to a thoracic/lumbar spine instead of the bony pelvis.

The Abd/Pelvis - Urography protocol has been changed to a 115 second delay. The scan and injection should be started at the same time and the delay is built in to the protocol. In this protocol, the need to do manual oblique sagittal reformats was removed, as well as the advice to have a radiologist check mid scan for any age; instead, all patients get the entire exam.

The Abd/Pelvis – R/O Hernia protocol has been removed from the scanner. Instead use the routine Abd/Pelvis protocol and follow the clinical instructions in this manual regarding the request to the patient to bear down (Valsalva maneuver).

The Pancreas protocols (pre-op and screening) were combined into a single protocol now called "Pancreas Cancer".

Chest Protocols

DMPR coronal and sagittal reformats were added on the Chest protocols (including the Trauma – Chest from the Abdominal protocols).

The oblique sagittal MIP reformat (i.e., "the candy cane view") was removed in the Trauma - Chest.

The large patient contrast volume in the CTA for PE protocol was updated to use Isovue 370 instead of a 300 mgI/cc strength agent.

An axial image of the heart was added to the PE protocol to show the smartprep location (i.e., we point out the location of the left ventricle).

Cardiovascular (CV) Protocols

For sites without the Bayer Medrad P3T PA option, a weight-based chart for Isovue 370 is available in the Protocol Resources section of the Manual.

All CV reformats were changed to mimic the routine chest reformats.

If your scanner has the option, it is recommended that you turn on MARS to the run off protocol (i.e., lower extremity CTA) to mitigate metal artifacts from orthopedic implants. This is a selectable box on the reconstruction options tab on your scanner.

A lung recon was added to coronaries (this uses a boneplus reconstruction kernel).

If your scanner has the option, it is recommended that you turn on MARS for CTA Chest/Abd/Pel to reduce artifact from stents and other high-contrast implanted devices.

Retro/Prospective Coronary CTA breathing instructions were updated for all phases to now be consistent with each other; before the instructions varied between the timing bolus and the CTA.

It is recommended to send ECG trace information on gated studies to PACS. This will facilitate troubleshooting when the study does not come out as intended. Instructions for doing this are included in the Protocols Manual.

The Upper and Lower Extremity CTA protocols have been changed from using a timing bolus to using a smart prep.

Thoracic Outlet instructions are provided in the Protocol Resources section of the Manual. This indication is commonly scanned using MRI when available. A CT version is included here for sites who do not have access to MRI.

Musculoskeletal (MSK) Protocols

New reformats for FAI (i.e. femoralacetabular impingement) were created as part of the routine bony pelvis protocol. FYI, "Femoral Anteversion" is a separate protocol.

For patients unable to raise their arms, instructions have been added throughout the MSK protocols for how to scan an extremity protocol with arms down at their sides.

If your scanner has the option, it is recommended that you turn on MARS for the metal extremity protocols.

Neuroradiology (Neuro) Protocols

To make it easier to understand the reformat needs of the Neuro protocols, tables for CTA head and neck reformats have been added throughout the Neuro Protocols.

The injection rate was changed to 4 cc/sec for the CTA head/neck protocols.

The Brain (Axial Mode) protocol was changed from 20 mm to 10 mm beam collimation. This was done to lessen the slab-to-slab artifact that sometimes occurs when doing angled axials scanning.

Pediatric axial heads were changed to be scanned at 5mm slice thickness.

Sagittal reformats were added for all routine head without scans throughout the Neuro Protocols.

The ASiR percentage on the Neuro protocols was changed to 60% on 5mm and 80% on 1.25mm soft tissue reconstructions. This change affects the majority of the Neuro non-spine and non-angio protocols.

If your scanner has the option, it is recommended that you turn on smart MARS for any Spine with metal, CTA Head, CTA head/neck, routine neck, and maxiface protocols. This will help with artifacts from coils/clips/stents etc.

The Adult Routine Neck protocol was changed to scan top down, and the injection timing and contrast amount were changed from 110 mls to 100 mls.

The Cervical, Thoracic, and Lumbar Spine protocols were changed from standard to soft recon for the soft tissue reconstructions.

The University of Wisconsin Madison uses RAPID (iSchemaView Inc, Redwood City, CA) software for perfusion map processing and we reference this in our protocol's networking section.

The CTA stroke deluxe CTA upper thorax/neck/head CTA phase was changed from 20 to 40mm beam collimation to speed up the scan and avoid venous contamination.

We added instructions to the neck protocol to use the small version (lower dose) on any sized patient that is being scanned as a follow up for lymphoma.

The slice thickness on the pediatric temporal bone protocol was changed to be the same as the adult.

The pediatric stereotactic head was changes from a 1 second to a 0.5 second rotation.

Pediatric Protocols

MSK guidance for pediatric scanning (i.e., how to change the protocol to lower the dose) was created based on the adult MSK protocols and is included in the Protocol Resources section of the Manual. In addition, guidance for scanning pediatric bony pelvis and bony pelvis with spica cast was also created and can also be found in that section.

The indications in the Pediatric Chest With and Without IV Contrast protocols were updated, and the two protocols were combined to match the Adult Chest protocol.

The expiration phase hi-res chest without was updated to match the adult routine chest protocol.

Guidance and criteria for pediatric contrast administration was added to the Manual in the Protocol Resources Section, including IV access, needle, gauge, flow rate, etc.

The Pediatric Trauma Head and the Pediatric Routine Head were combined. Detailed instructions for the special reformats needed for trauma cases (3D NAT) have been provided in the Brain - Routine and Pediatric NAT/Trauma (Helical Mode) Protocol.

Revolution EVO with ASiR 32-channel vs 64-channel Protocol Comparison

The 32-channel version of the Revolution EVO with ASiR scanner has a few limitations compared with the 64-channel machine with respect to the UW protocols, principally that the slice thickness can be no thinner than 1.25 mm when using the full 40 mm beam width. Thin, 0.625 mm slices can be obtained at a 20 mm beam width; however, with a corresponding increase in scan time relative to using a 40 mm beam width. Thin, 0.625 mm slices provide an improvement in through plane (z-axis) spatial resolution, which is particularly useful when making sagittal and coronal reformations.

For most studies, 1.25 mm slice thickness is sufficient, and is used in both 32- and 64-channel versions of our protocols. Many neuroradiology protocols use 0.625 mm slice thickness, but the beam width is limited to 20 mm on both 64- and 32-channel platforms to maximize image quality (reduce the possibility of cone-beam artifacts around bony anatomy).

There are a few protocols which are affected by this limitation, resulting in differences between the 32- and 64-channel versions:

- Many of the musculoskeletal protocols (knee, elbow, wrist/hand, and ankle/foot) and all of our spine protocols make use of 0.625 mm slice thickness recons to improve detectability of subtle fractures and trabecular distortion, and we use the full 40 mm beam width on the 64-channel scanner to minimize scan time. The 32-channel version prioritizes image quality, limiting the beam width to 20 mm in order to preserve spatial resolution, with the associated tradeoff of increased scan time.
- The trauma protocols also use 0.625 mm slice thickness and 40 mm beam width on the 64-channel scanner. In this case, however, we chose to prioritize image acquisition speed, given patient acuity and higher risk of motion. This requires a 1.25 mm slice thickness on the 32-channel scanner, which lowers spatial resolution on reformats. We believe this is an appropriate tradeoff, but we encourage you to share your thoughts and experiences with us.

Compatibility Revolution EVO 32ch with ASiR

Introduction:

Listed below are the minimum scanner options required to use this set of protocols on your Revolution EVO 32ch with ASiR 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

32 slice acquisition. User can select 20 mm detector coverage at 32 x 0.625 mm or 40 mm detector coverage at 32 x 1.25 mm.

Cardiac Options: SmartScore Pro, CardIQ SnapShot

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

100 kVA System (72 kW peak power):

- mA limits/kV for large focal spot (except pediatric body and pediatric head): 515 mA at 140 kV, 560 mA at 120 kV, 480 mA at 100 kV, and 400 mA at 80 kV
- mA limits/kV for small focal spot: 170 mA at 140 kV, 200 mA at 120 kV, 240 mA at 100 kV, and 300 mA at 80 kV
- mA limits/kV for pediatric head and pediatric body: 210 mA at 140 kV, 250 mA at 120 kV, 300 mA at 100 kV, and 375 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 **CO BODY** **SA BODY**	**CHEST - WW/WL 450/50** ***(created off of a C/A/P study)*** **SA** **CO**	**CHEST - WW/WL 1500/-700 off bone+ images** **MIPS**
PEDS BODY - WW/WL 550/100 **CO PEDS** **SA PEDS**	**PEDS CHEST - WW/WL 550/100** **SA PEDS CHEST** **CO PEDS CHEST**	**PEDS CHEST - WW/WL 2100/-450** **PEDS CO CHEST** **PEDS SA CHEST**

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

How to Create a Reformat Protocol for Use in a DMPR Session:

1. Load thin slices (make your reformat 0.625/1.25) into Reformat selected on the Image Works desktop.
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.

Refer to the User Manual for detailed instructions for creating Batch Reformat Protocols.

Introduction Document

University of Wisconsin - Madison CT Protocols

Introduction:

We are pleased to provide you with the University of Wisconsin-Madison Computed Tomography (CT) Protocols as part of your GE CT scanner purchase. We hope you take the time to learn and understand our protocol philosophy. For some of you it will be a significant change from your current practice.

Today's imaging literature and bulletins from imaging associations are full of directives to decrease patient dose. Unfortunately we are not given much detail, and the burden of executing these changes falls on our shoulders. For many of us, it has been a long time since our physics training and few of us have really kept up on our physics skills. Most of us hire a physics consultant, and they come in and help us get our protocols to qualify for ACR accreditation and ensure the X-ray equipment is properly calibrated, but not much more. With the unique relationship between medical physics and radiology at the University of Wisconsin-Madison, we combined our expertise and developed a very robust set of CT protocols. The technical parameters have been fine-tuned specifically for this scanner and then validated using a rigorous management system based on the ISO 9001 standard.

With the help of our physicists, we juggled all technical parameters that could be modified on this scanner with careful attention to not only how each individual parameter affects image quality, but the interplay of parameters. This was a complicated task aided by specially-written software that allowed us to model the effects on dose and quality.

We anticipate that most of you will find that these protocols generate acceptable image quality. A few of you may be more evolved and may be tolerant of slightly noisier images. It is likely that some of you will find these images noisy and possibly difficult to work with initially. We would like to discourage you from modifying our protocol settings. By changing one or more parameters, you defeat the purpose of balancing the effects of all parameters on image quality and dose. Please give your eye some time to accommodate before you make changes.

If you find that you would like to change some of the acquisition or reconstruction parameters in our protocol documents, please realize some modifications may drastically change the image dose and noise level. All changes should be reviewed by your medical physicist, GE application specialists, and/or your institution's CT protocol optimization and quality control team. In many cases, CT acquisition parameters are linked to reconstruction parameters in our protocols.

For example, halving the slice thickness for the first reconstruction, while keeping the same noise index, will increase the dose by a factor of two! There is interplay between the automatic exposure control setting and the slice thickness that needs to be understood in order to make proper protocol changes. In addition, we have done our best to ensure that the mA does not "max out" for large patient sizes (or for low noise studies which require extra dose) by monitoring the effective mAs used at our institution over a wide range of patient sizes. To maintain diagnostic image quality at the lowest doses, the kV, noise index, pitch, and tube rotation times all change for different protocols and different patient sizes within each protocol.

Other seemingly trivial changes like switching from a pitch of 0.516 to 0.969, changing from the “plus” to “full” recon option, or changing from “boneplus” to “bone” reconstruction types may also have significant negative impacts on image quality and patient dose due to special characteristics of these parameters in addition to those that are most obvious to the user. Changes of any individual protocol parameter must be performed while taking into account all of the parameters making up a single protocol. Therefore, we urge you to only make protocol changes after discussing them with your institution’s CT protocol optimization team or seeking expert advice from GE application specialists.

We recognize these protocols are not complete. There are some deficiencies. We hope to correct them with future releases. We encourage your feedback. We will be reaching out to radiologists, physicists, and technologists for feedback. Hopefully, with your input, we can create an industry-wide standard for CT protocols. These protocols will be reviewed on an annual basis, which should satisfy the ACR requirement.

Networking:

We have provided guidance in the "Networking" section of each protocol on what images to send to PACS. In some cases, all images should be sent to PACS. In many cases, however, thin reconstructions are not required to be sent to PACS. Thin reconstructions are primarily used for creating reformatted volumes. "ALI_Store" is the name we use to refer to sending images to PACS. "ALI_Source" is where we send thin images that are not routinely read by the radiologists. For studies requiring 3D lab work, we instruct you to send the images to "CTAW1", which refers to a GE Advantage Workstation. Note: if you send all thin images to PACS, this may slow down your network transfer times and the time needed for a reviewing radiologist to open the study. This is why our protocols have a networking section for each protocol that gives guidance on when thin images are needed for radiologist review.

Networking for "Series Auto Transfer":

Some reconstructions in our protocol set have "Series Auto Transfer" turned on. They refer to networking names as listed above. If you want to avoid having to re-map your networking locations for every protocol, you can make a single change to your scanner's host table. You need to change the host table name of your PACS to "ALI_Store" and of your 3D lab (if used) to "CTAW1". We do not auto transfer the thin series. If you wish to auto transfer them, you can send them to your regular PACS.

AutoVoice and Breathing Lights Selection:

Like the protocols, if you download AutoVoice to your scanner from a UW disc, you will loose any pre-recorded AutoVoice options. The only custom non GE default AutoVoice recordings include: English cardiac coronaries (retro and prospective). All other UW protocol references to an AutoVoice option are to default GE recordings.

Body:

We are aware that many facilities routinely scan patients with three sequences—1) without intravenous (IV) contrast, 2) with IV contrast, and 3) delayed. Although such robust scanning may add a little bit of information, it is rarely worth the additional dose. If most of your cases can be pre-protocoled to address specific clinical concerns, we believe these protocols will provide a diagnostic study with an appropriate number of series and at an appropriate dose.

We prefer to maintain a policy of giving patients positive oral contrast for many applications. We believe it adds diagnostic value. Although many centers are now performing studies without oral contrast to save time, we stand by our position that the small amount of extra time required to opacify the gut and a small inconvenience to the patient is well worth the increase in diagnostic accuracy.

For most patients, when time is not an issue, we administer iodinated contrast in water. For patients in whom time is critical, we add dilute polyethylene glycol to help distend the lumen and accelerate transit. With a one-hour drink, the vast majority of our Emergency Department patients have contrast in the cecum. This facilitates the diagnosis of appendicitis.

We prefer iodinated contrast to barium suspension. In the patient with a moderate to severe bowel obstruction, the barium eventually will flocculate and precipitate, causing a very dense artifact if further imaging is necessary.

Chest:

For Chest CT's, we refrain from using IV contrast material for most indications. IV contrast adds little or no value to diagnosis and follow-up of most lung diseases. In some cases, the image quality of the lungs can be hampered by streak artifact from undiluted contrast in the SVC and other mediastinal veins. Furthermore, subtle artifacts can occur in the lungs around contrast-filled, smaller vessels, especially with thin section (high-resolution) technique and lower dose imaging. Thoracic indications requiring IV contrast include acute and chronic pulmonary thromboembolism, thoracic trauma, and acute aortic pathology. IV contrast can be helpful for known mediastinal masses or for lung neoplasms that involve the mediastinum. Nodules, infections, aortic aneurysms, pleural disease, and lymphadenopathy can usually be imaged without IV contrast.

Cardiovascular:

Generally, approaches to body CTA fall into two camps: 1) attempt to scan the volume along with the passage of the contrast bolus, and 2) opacify the vasculature throughout the imaged volume and then scan as fast as possible to capture a "snapshot" of the vasculature in this pseudo-steady state. The tremendous variation in bolus transit times across patients and the technical difficulty of both assessing this transit time and appropriately adjusting the scan parameters (rotation speed and pitch) make the former approach difficult for CT technologists to perform consistently without direct physician supervision. We have therefore adopted the latter approach.

Most of our body CTA protocols involve the use of SmartPrep rather than a timing bolus to trigger the acquisition, with a diagnostic delay and overall contrast bolus intended to give consistent opacification throughout the imaged volume during the scan. This approach is very easy for technologists to perform in a reliable fashion without direct physician monitoring.

Musculoskeletal:

CT is an excellent way to visualize bones and joints, especially when reformatted in multiple planes relative to osseous or articular landmarks. However, the role of CT for visualizing the non-radiopaque tissues around bones and within joints is extremely limited, and for the most part has been supplanted by Magnetic Resonance Imaging (MRI) and/or Ultrasonography. To emphasize this, we refer to our applications as "Bone CT" rather than "Musculoskeletal CT", since we do not use CT to image muscles.

Appropriate applications of Bone CT can be divided into two distinct patient populations:

1. those presenting with severe acute trauma to the Emergency Department (ED), and
2. those presenting to primary care or urgent care clinics.

With regards to musculoskeletal imaging, outside of the ED, CT should never be the first study ordered. Conventional radiographs (commonly referred to as "x-rays") continue to be the primary modality used to visualize the bones and joints of the extremities and spine. Indeed, the use of CT is so limited in the evaluation of non-acute traumatic bone or joint pain that we suggest this modality not be ordered by primary care providers without first consulting with their radiologists. Certainly there are some specific indications for which scheduled outpatient CT is appropriate, but in general this is requested by specialty care providers.

In the ED, CT is the primary imaging modality when there is a concern for a spine fracture, especially in the cervical spine. (CT has been shown to be much more sensitive than radiographs for the detection of fractures in the cervical spine.) For other bones and joints, radiographs should be obtained whenever fractures or dislocations are suspected. With certain acute fractures, CT is an essential secondary imaging modality. For example, whenever an acute fracture is detected in the bony pelvis, CT is almost invariably obtained soon after to more fully evaluate the extent of pelvic ring disruption. In addition, orthopedic surgeons will often request CT for intra-articular fractures, particularly of the knee, to aid in surgical planning.

Bones and joints are complex 3-dimensional structures and their relationships are best demonstrated with 2-dimensional cross-sectional imaging reformatted in multiple planes. We have developed joint-specific reformatting protocols designed to address specific clinical needs.

Visualizing bony structures adjacent to orthopedic hardware with CT can be challenging, although metallic artifacts can be reduced by with use of 140 kV.

There are few, if any, indications for administering IV contrast for Bone CT. If there is a clinical concern for infection, an MR should be performed. If the patient is not MR compatible, the clinical service should have a discussion with their radiologist about the best way to answer the clinical questions.

The few indications for administering IV contrast for bone CTs, are as follows:

1. If there is a clinical concern for infection, an MR should be performed.
    - In cases where the clinical concern is specifically to look for soft tissue gas rather than for soft tissue abscess or osteomyelitis (e.g., necrotizing fasciitis), then CT would be the imaging modality of choice; although IV contrast would not be necessary for gas.
2. If the patient is not MR compatible, the protocoling radiologist should have a discussion with the clinical service about the best way to answer the clinical questions.
3. If it is agreed that CT is indeed the imaging modality of choice, the study can be performed without IV contrast.

4. In light of the above policy, it is appropriate for the CT technologist to confirm with the protocoling radiologist that they do indeed want to administer IV contrast.
5. Where IV contrast is deemed appropriate for a bone CT, the standard dosing guidelines should be followed:
    - Agent: Omnipaque 300
        1. If patient has an allergy to iodinate contrast, or has renal function issues, then no IV contrast should be administered.
    - Dose: Per body weight (up to 100ml)
    - Rate: As appropriate for IV access (up to 3ml/sec)
    - Delay: 90sec

Neuroradiology:

Dose reduction is an important facet to imaging that not only radiologists, but clinicians as well, need to keep in mind when protocoling or ordering studies. Certainly, the lowest dose study is the unnecessary one that is not performed. With that being said, given the complex and subtle anatomy present on neuroradiologic examinations, dose reduction is not as readily possible to the same degree as other regions of the body. Decreasing dose to the point that the study is minimally or non-diagnostic should be considered as overdosing, as the radiation delivered was essentially of no use. We have reduced the dose on our protocols as much as we feel is appropriate, while maintaining sufficient diagnostic quality.

We prefer to image the orbits on our head CTs because the orbit is an extension of the brain, and pathology, including the result of trauma, often occult, occurs there. Also, because of radiation overscan inherent in exam acquisition, the orbits receive radiation even on orbit sparing protocols. If your facility feels strongly about avoiding the orbits in scanning, we have included an orbit sparing protocol. Ultimately, it is each individual institution's and individual radiologist's decision.

Perfusion imaging is another area of some concern regarding radiation exposure. It has become important in stroke imaging and tumor imaging to help guide treatment, as well as help assess treatment response. Our protocols result in a dose that is less than FDA guidelines suggest, 0.5 Gy. Rather than the typical coverage of approximately 3-4 cm, the GE scanner with shuttle mode doubles that amount with near whole brain coverage. We are continuing to strive for even lower dose perfusion exams.

Pediatrics:

Ordering clinicians and radiologists should always consider whether or not alternative imaging modalities such as ultrasound or MR could answer the clinical question as radiation exposure would be avoided. When using CT to image children, the goal is to get diagnostic images at the lowest radiation dose possible. The scan should be confined to the region of interest so as to expose as little of the patient's body as possible. Due to their smaller size and the low radiation dose, positioning is of great importance in order to obtain adequate images for diagnosis.

Our standard pediatric CT protocols are indeed very low dose. Many of you may find these images difficult to interpret. For you, we have included a set of protocols with only moderate dose reduction to help you accommodate. We hope you will eventually transition to the lower-dose protocols.

Design Philosophy - Abdominal

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Abd/Pelvis	Abdominal	6.1/6.2/6.3	This is standard abdomen pelvis protocol. It is the default protocol for the vast majority of studies. This one is useful when a general screening protocol is needed.
Abd/Pelvis - R/O Hernia	Abdominal	(Use routine abd/pelvis protocol)	This protocol is intended for the evaluation of hernias. It asks the patient to perform a Valsalva maneuver during the scan to enhance the prominence of any hernia.
High Image Quality Cancer Follow-Up Abd/Pelvis	Abdominal	6.7/6.8/6.9	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).
Abd/Pelvis - Flank Pain	Abdominal	6.10/6.11/6.12	This protocol is primarily targeted for the first-time evaluation of obstructing renal calculus. It is a non-contrast study; therefore, not optimal for imaging other causes of abdominal pain. However, it may suffice in situations where the disease processes are not subtle. We discourage it for appendicitis.
Abd/Pelvis - Pre-IVC Filter Removal	Abdominal	6.73/6.74/6.75	This protocol is used to assess for both the position and for the presence of clot in an IVC filter prior to removal. IV contrast is used and images are obtained 180 seconds after contrast injection to optimize opacification of the inferior vena cava and iliac veins.
Low Dose Renal Stone (including limited follow-up)	Abdominal	6.13/6.14/6.15	This protocol is intended for follow-up of patients with known kidney stones; those status post lithotripsy; or those presenting to the emergency department with typical flank pain and are known to have kidney stones. Image resolution is satisfactory for identifying calculi, but not optimal for other pathology.
Abd/Pelvis - Colonography	Abdominal	6.16/6.17/6.18	This protocol is used to screen the colon for polyps or colonic mass disease. Patients undergo bowel preparation prior to the scan, and are then scanned in the supine and prone positions following colonic CO2 insufflation via rectal balloon-tipped catheter. The supine-prone positioning is meant to displace any retained fluid and fully expose all parts of the colon between the two views. A right lateral decubitus view can be added if distention is suboptimal in a colonic segment. The study is performed without IV contrast and at low dose as it is used in screening asymptomatic patients in most cases. If a patient has a known colon cancer and the referrer desires screening of the colon combined with assessment for metastatic disease, IV contrast can be administered on the supine view.
Chest/Abd/Pelvis with IV Contrast	Abdominal	5.4/5.5/5.6	This protocol is most commonly applied to patients with neoplasm that may affect the entire torso, but is not expected to affect the head and neck.
Chest/Abd/Pelvis without IV Contrast	Abdominal	5.7/5.8/5.9	This scan is usually performed for the evaluation of tumor or other conditions that may affect the entire torso in patients who cannot get IV contrast due to allergy or renal failure.
Abd/Pelvis - Urography	Abdominal	6.22/6.23/6.24	This protocol is optimized for viewing the kidneys and the renal collecting system. The most common indication is hematuria.

Urothelial tumor follow-up	**Abdominal**	**6.70/6.71/6.72**	**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.**
Abd-Liver - Biphasic	**Abdominal**	**6.25/6.26/6.27**	**This protocol is optimized to evaluate cirrhotic patients and suspected liver tumors. It is also applied for the evaluation of hypervascular metastatic disease to the liver.**
Abd-Liver - Triphasic	**Abdominal**	**6.28/6.29/6.30**	**This protocol is optimized for the work-up of a potential liver transplant recipient. It has a high resolution arterial phase for precise hepatic arterial anatomy; a late arterial phase for the detection of tumor; and a portal/ parenchymal phase for the demonstration of varices and other possible pathology. Finally, a three-minute delayed phase is performed to satisfy the UNOS requirement for HCC detection.**
Abd-Liver - Hepatocellular Carcinoma (HCC)	**Abdominal**	**6.82/6.83/6.84**	**This protocol, which is used to rule out HCC, is similar to the biphasic liver protocol, except it includes an additional delayed phase as mandated by UNOS.**
Abd-Adrenal Gland - Adenoma	**Abdominal**	**6.31/6.32/6.33**	**This protocol is optimized for the characterization of adrenal enlargement specifically for a suspect adenoma. It would not be protocol of choice to rule out pheocromocytoma.**
Abd-Pancreas - Pancreas Cancer (Neoplasm Screening)	**Abdominal**	**6.40/6.41/6.42**	**This scan is used in patients where there is suspicion of pancreas mass. The first phase is scanned in the late arterial phase. Since pancreatic adenocarcinoma is hypovascular, it is best detected at 40 seconds post contrast when the normal glandular tissue enhances optimally and the hypovascular tumor does not (optimizes contrast between the lesion and the background pancreas). The second phase is portal venous, to evaluate the solid organs, particularly the liver, for metastatic disease and for routine evaluation of the abdomen and pelvis.** **Also for preoperative evaluation of known pancreatic neoplasm. It is optimized to detect vascular compromise.**
Abd/Pelvis - Kidney Tumor	**Abdominal**	**6.49/6.50/6.51**	**This protocol is optimized to evaluate patients with suspicion or evaluation of small renal neoplasm.**
CTA Abd - Renal Donor	**Abdominal**	**6.52/6.53/6.54**	**This protocol is optimized to evaluate the potential renal transplant donor.**
Abd-Small Bowel - Enterography	**Abdominal**	**6.55/6.56/6.57**	**This protocol is optimized for the evaluation of the small bowel. It is specifically designed for inflammatory bowel disease.**
CTA Abd - Obscure GI Bleed	**Abdominal**	**6.58/6.59/6.60**	**This protocol is optimized to evaluate the source of obscure gastrointestinal bleeding.**
CTA Abd - Mesenteric Ischemia	**Abdominal**	**6.61/6.62/6.63**	**This protocol is optimized to evaluate for mesenteric ischemia.**
Trauma - Chest	**Abdominal**	**5.22/5.23/5.24**	**This protocol is optimized for the emergency evaluation for aortic injury, as well as any other sequel of trauma. This is tailored for rapid deceleration injury. Note: Routine creatinine cut-off for IV contrast administration does not apply in a trauma.**
Trauma - Chest/Abd/Pelvis	**Abdominal**	**5.25/5.26/5.27**	**Emergency evaluation for aortic injury and/or organ disruption. Note: Routine creatinine cut-off for IV contrast administration does not apply in a trauma.**
Trauma - Abd/Pelvis	**Abdominal**	**6.4/6.5/6.6**	**Emergency evaluation for traumatic organ disruption. This is usually reserved for a direct blow to the abdomen or low velocity MVA. Note: Routine creatinine cut-off for IV contrast administration does not apply in a trauma.**
Cystogram	**Abdominal**	**8.10/8.11/8.12**	**In the trauma setting, to evaluate bladder for trauma-induced leak. (Typically performed when the standard trauma scan is inconclusive for a bladder leak.)** **In the non-trauma setting, specifically for the evaluation of bladder tumor and to evaluate for non traumatic or post operative bladder leak.**
Body Pelvis	**Abdominal**	**8.16/8.17/8.18**	**This is a standard or routine examination of the pelvis meant to assess for pelvic pathologies that are not hypervascular.**

Design Philosophy - Chest

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Chest - Standard (Routine & High-Resolution)	Chest	5.1/5.2/5.3	This protocol is designed to address nearly all indications for chest CT while maintaining very low radiation exposure levels. It includes detailed information on the lungs, airways, and soft tissues. High-resolution images for evaluating the lungs are a central part of this protocol, avoiding the need to rescan patients who have diffuse lung disease. Although intravenous contrast material can be administered at the discretion of the protocolling radiologist, for the vast majority of indications, contrast is not needed.
Chest - Low Dose Follow-up	Chest	5.10/5.11/5.12	This protocol was designed for follow-up of nodules, pleural effusions, and other abnormalities using significantly lower dose than the standard CT. For nearly all patients, the effective dose will be below 3 mSv, typically in the 1 - 2 mSv range.
Chest - Low Dose Screening	Chest	5.13/5.14/5.15	This protocol is designed to be used exclusively for lung cancer screening. It meets the technical standards put forth by the American College of Radiology and the Centers for Medicare and Medicaid Services (CMS).
Chest - CTA for PE	Chest	5.16/5.17/5.18	This protocol is nearly identical to the routine chest CT protocol, and reconstructed axial images are identical. Multiplanar MIPs are included to meet CPT code requirements. The contrast injection protocol is designed to limit the number of bolus failures and maximize opacification of the pulmonary vasculature.
Chest - Dynamic 3D Airway	Chest	5.70/5.71/5.72	This protocol is designed to evaluate the central airways, particularly to assess for tracheobronchomalacia or excessive dynamic airway collapse. In addition to standard high-resolution images of the lungs, the forced expiratory images accentuate collapsibility of the trachea and central bronchi. This protocol includes additional reformations including minimum intensity projections (MinIPs) and optional 3-D virtual bronchoscopic images, which referring providers might find informative. For patients who have a recent volumetric thin-section CT of the chest, the expiratory sequence of this protocol performed alone may be sufficient, minimizing additional radiation exposure. Because the breathing technique is different than traditional end-expiratory chest CT, proper training of technologists and coaching of patients with close radiologist oversight will maximize the utility of this protocol.

Design Philosophy - Cardiovascular

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Non-Gated CTA (Chest/Abd/Pelvis)	CV	5.28/5.29/5.30	Evaluate for known or suspected type "B" (descending) aortic dissection, intramural hematoma (IMH), aneurysm, leak, tear, or vasculitis.
Retrospectively-Gated CTA Chest	CV	5.31/5.32/5.33	Used to evaluate the heart and great vessels (aorta and pulmonary arteries) in patients with higher rates or in patients in which cardiac function is also being assessed. This is frequently used in patients with congenital heart disease that have contra-indication for MRI.
Gated Chest and Non-Gated Abd/Pelvis CTA	CV	5.34/5.35/5.36	Used to evaluate patients with ascending aorta aneurysm in addition thoracoabdominal aortic aneurysms. Retrospective gating is used to minimize the delay between the gated chest and the non-gated abdomen and pelvis sections.
Prospectively-Gated Coronary CTA	CV	5.37/5.38/5.39	Used to evaluate the coronary arteries in patients with appropriate heart rates.
Retrospectively-Gated Coronary CTA	CV	5.40/5.41/5.42	Used to evaluate the coronary arteries in patients with higher rates or in patients in which cardiac function is also being assessed.
TAVI CTA	CV	5.43/5.44/5.45	Evaluation of patients being considered for trans-catheter aortic valve replacement (TAVR). This includes a retrospectively-gated CTA of the heart to evaluate the aortic root for implantation of the valve and a non-gated CTA chest abdomen and pelvis to evaluate the aorta and iliofemoral arteries to assess access.
Prospectively-Gated CTA Chest (Non-Coronary)	CV	5.46/5.47/5.48	Evaluate for ascending aortic aneurysm, dissection, or injury. Evaluate cardiac or vascular abnormality without cardiac motion. (Note: A prospectively-gated chest CTA cannot be combined with a non-gated CTA abdomen/pelvis. If gated chest is need along with CTA abdomen/pelvis, use retrospective gating.)
Upper Extremity CTA	CV	5.49/5.50/5.51	To evaluate upper extremity ischemia. The scan includes vascular imaging from the aortic arch to the finger tips.
Lower Extremity CTA	CV	5.52/5.53/5.54	For iliac occlusive disease, peripheral vascular disease, and patients with a "cold foot".
Post-Endostent Non-Con Volume Change (Abd/Pelvis only)	CV	5.58/5.59/5.60	Measure abdominal aortic aneurysm volume after endovascular repair. If the volume is stable or has decreased since the prior examination, no hemodynamically-significant endoleak is present.
Prospectively-Gated Left Atrial Appendage	CV	5.73/5.74/5.75	Evaluation for left atrial thrombus, pre-op for device (Watchman (TM)) implant. Includes two scan phases, a CTA on expiration and a 1 minute delay. Both phases are prospectively gated.

Design Philosophy - Musculoskeletal

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Bony Pelvis/Hips/SI/Femur/FAI (Without Metal) and Bony Pelvis/Hips/SI/Femur/FAI (With Metal)	MSK	8.1/8.2/8.3 and 8.4/8.5/8.6	This protocol is designed to examine the cortex of the pelvic ring and acetabuli. Scans of the Bony Pelvis are most often obtained in the setting of acute trauma, or in the evaluation of fracture, SI joints, and prosthesis. Orthopedic surgeons may request post-operative scans to assess healing, hardware, or osteolysis.
Knee/Tibia (Without Metal) and Knee/Tibia (With Metal)	MSK	9.3 and 9.4	The primary indication for a knee CT is to assess the alignment and degree of displacement of fracture fragments, particularly at the articular surfaces. These can also be used to assess the integrity of the bone around prosthesis. On rare occasions, a CT will be done immediately after an arthrogram of the knee.
Ankle/Foot/Distal Tibia (Without Metal) and Ankle/Foot/Distal Tibia (With Metal)	MSK	9.1 and 9.2	There is one single scanning protocol for all ankles and feet, which is typically used to evaluate for trauma. In most cases it is desirable to scan both ankles/feet at the same time.
Femoral Anteversion	MSK	9.8/9.9/9.10	This protocol is a non-contrast CT through bilateral hips, knees, and ankles (excluding the femur, tibia, and fibula shafts) to allow for measurement of the version angles of the femora and, if desired, tibiae.
Shoulder/Humerus (With or Without Metal)	MSK	4.1/4.2/4.3	A routine shoulder CT (non-arthogram) is used to evaluate for fractures of the scapula and/or proximal humerus, dislocation, shoulder prosthesis, or masses/infection in a patient who is not MR compatible. The primary indication for a shoulder arthrogram CT is to evaluate the rotator cuff and labrum in a patient who is not MR compatible.
Elbow/Forearm (Without Metal) and Elbow/Forearm (With Metal)	MSK	4.6 and 4.7	This primary indication is to evaluate for fracture, dislocation, or osteochrondritis. The elbow is the most difficult joint to scan as it is usually difficult to optimally position the elbow, particularly when it is in a cast.
Wrist (Without Metal) and Wrist (With Metal)	MSK	4.8 and 4.9	This scan is used to evaluate for wrist fracture, and similar to the elbow, it is important to position the arm over the head, with the arm as straight as possible.
Soft Tissue Extremity with IV Contrast	MSK	9.13/9.14/9.15	This protocol is used for detection or characterization of mass or infection. Bony detail is not important for these scans which use a dose level similar to an extremity CTA.
Chest Wall/Clavicle/AC Joint/SC Joint/Sternum/Ribs	MSK	4.11/4.12/4.13	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.

Design Philosophy - Neuroradiology

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Brain - Routine and Pediatric NAT/Trauma (Helical Mode)	Neuro	1.1/11.1/11.2	For routine head imaging and emergent imaging including trauma, hemorrhage, hydrocephalus, tumor, and preliminary stroke screening. May need to add contrast for more sensitive evaluation of tumor or infection.
Brain - Helical Scan with Angled Axial Reformations	Neuro	1.2/11.3/11.4	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). For routine head imaging and emergent imaging including trauma, hemorrhage, hydrocephalus, tumor, and preliminary stroke screening. May need to add contrast for more sensitive evaluation of tumor or infection.
Brain (Axial Mode)	Neuro	1.3/11.5/11.6	Helical mode should be used routinely for adult head CT scans. Only use axial mode when you cannot move the patient's head into proper position (trauma, cervical collar, rigid neck), and do not wish to perform a helical scan with angled axial reformats. This axial mode can also be used in unstable patients in the ED when the CT scan time must be expedited.
Stealth - Stereotactic Head (Whole Brain Treatment Planning)	Neuro	1.10/11.11/11.12	This is a protocol which delivers thin section images for use in whole brain radiation treatment planning, intraoperative neuronavigation, and cranioplasty planning. Image requirements for the software associated with these uses varies, and verification of compatibility is recommended.
Orbit - Routine	Neuro	2.1/12.1/12.2	For evaluation of infection, inflammatory, or neoplastic processes may add contrast as needed to increase sensitivity. May also be used for trauma, blunt or penetrating, localized to the orbit. Not to evaluate diffuse facial trauma or infection/inflammatory processes, as this requires a CT maxillofacial.
Facial Trauma - Routine	Neuro	2.5/12.9/12.10	Maxillofacial CT done for evaluation of facial trauma, blunt or penetrating, facial infections or inflammation, as well as assessment of congenital abnormalities. Contrast may be added for sensitivity, particularly in infection, as warranted. 3D reconstructions may be performed if requested by clinical service.
Sinuses - Diagnostic	Neuro	2.7/12.13/12.14	For evaluation of routine sinus inflammatory disease, assessment of bone involvement from infectious, inflammatory, or neoplastic processes, and sinonasal neoplasms. May add contrast as needed typically for non-routine sinus inflammatory disease. Not for evaluation of facial trauma or orbital processes.
Temporal Bone (without Contrast)	Neuro	2.10/12.18/12.19	For evaluation of hearing loss, congenital abnormalities, infection, trauma, and neoplasms. Contrast may be added as needed for infection or neoplasms. Used in conjunction with MRI to evaluate neoplasms typically unless contraindication to MRI.
Temporal Bone (with Contrast Only or with & without Contrast)	Neuro	2.11/12.20/12.21	This protocol adds contrast to the standard CT temporal bone, for use in cases of inflammation / infection or concern for sigmoid sinus compromise. This protocol is also used for cases in which there is a concern for a cerebellopontine angle mass causing sensorineural hearing loss.

Adult Neck - Routine	**Neuro**	**3.1/3.2/3.3**	**For evaluation of head and neck cancer (pre and post treatment), infection, soft tissue trauma, or inflammatory processes. Not for evaluation of cervical spine trauma or suspected vascular injury.**
Pediatric Neck - Routine	**Neuro**	**13.1.1/13.2.1/13.4.1/13.6.1/13.8.1**	**This is an age-specific protocol designed to give a diagnostic and appropriately low dose examination through the neck. This protocol is for evaluation of cervical lymphadenopathy, developmental anomalies (such a branchial cleft cysts), as well as infectious, and inflammatory conditions within the pediatric neck.**
Neck (Parathyroid Adenoma) Adult	**Neuro**	**3.5/3.6/3.7/13.1.9/13.1.10**	**Indications include hypercalcemia, parathryoid adenoma (suspected or confirmed), and parathyroid surgical planning. On early arterial and delayed contrast enhanced images the enhancement of parathyroid adenomas can be confused with the intrinsically CT hyperdense thyroid gland. This protocol includes an additional non contrast phase to enable more confident detection and discrimination of parathyroid adenomas from the adjacent thyroid tissue.**
Adult Cervical Spine (without Metal) and Adult Cervical Spine (With Metal)	**Neuro**	**3.16/3.17/3.18 and 3.19/3.20/3.21**	**For evaluation of spine trauma, degenerative disease, infection, and bone tumors. May add contrast as needed. Not for primary evaluation of soft tissues.**
Adult Thoracic Spine (without Metal) and Adult Thoracic Spine (with Metal)	**Neuro**	**7.4/7.5/7.6 and 7.19/7.20/7.21**	**For evaluation of trauma, degenerative disease, infection, and bone tumors. May add contrast as needed.**
Adult Lumbar Spine (without Metal) and Adult Lumbar Spine (with Metal)	**Neuro**	**7.1/7.2/7.3 and 7.16/7.17/7.18**	**For evaluation of trauma, degenerative disease, infection, and bone tumors. May add contrast as needed.**
Stroke Deluxe – Total Cerebrovascular	**Neuro**	**1.6/1.13/11.16/11.17**	**For evaluation of stroke, vascular trauma, aneurysm, vasospasm, and atherosclerotic disease. Requires administration of IV contrast.**
CTA Head Only (Stenosis, Aneurysm, Unknown Bleed)	**Neuro**	**1.7/11.18/11.19**	**For evaluation of intracranial stenosis, aneurysm, vascular malformation, unknown bleed, vasospasm.**
CTA Neck Only (Cerebrovascular Disease)	**Neuro**	**3.11/11.22/11.23**	**Assessment of atherosclerotic disease, trauma with suspected vascular injury, or vascular neoplasms. Requires administration of IV contrast.**
CT Venography	**Neuro**	**1.9/11.24/11.25**	**This protocol consists of a slightly delayed phase of vascular imaging, for use in cases of suspected venous sinus thrombosis or occlusion..**

Design Philosophy - Pediatrics

GE Protocol	Protocol Type	Protocol No. on Scanner	Design Philosophy
Routine Abdomen/Pelvis	Peds	16.1.1/16.2.1/16.4.1/16.6.1/16.8.1 --- for Higher Image Quality: 16.1.6/16.2.6/16.4.6/16.6.6/16.8.6	For evaluation of nonspecific abdominal pain, abscesses in postoperative patients or acutely ill inflammatory bowel disease patients, fever of unknown origin, as well as for appendicitis in outpatients. Additionally used for initial diagnosis and follow-up of abdominal neoplasm when concurrent chest CT imaging is not indicated.
Acute Appendicitis - Abdomen/Pelvis	Peds	16.1.1/16.2.1/16.4.1/16.6.1/16.8.1 --- for Higher Image Quality: 16.1.6/16.2.6/16.4.6/16.6.6/16.8.6	A low dose protocol for patients in whom the only clinical concern is to rule out appendicitis. This will not image the lung bases and will minimally image the inferior aspects of the solid organs.
Renal Stone/Flank Pain	Peds	16.1.2/16.2.2/16.4.2/16.6.2/16.8.2 --- for Higher Image Quality: 16.1.7/16.2.7/16.4.7/16.6.7/16.8.7	This protocol aims to evaluate patients with renal colic or hematuria in whom renal and bladder ultrasound has been unable to identify a source for the symptoms or on whom renal and bladder ultrasound cannot be performed.
Triphasic Liver	Peds	16.1.3/16.2.3/16.4.3/16.6.3/16.8.3 --- for Higher Image Quality: 16.1.8/16.2.8/16.4.8/16.6.8/16.8.8	This protocol should only be ordered by surgeons for liver tumor evaluation prior to surgical resection in order to fully assess the tumor's relationship to the hepatic arteries, portal veins, and hepatic veins. This will also assess for variant arterial or venous anatomy.
Trauma Abdomen/Pelvis	Peds	16.1.4/16.2.4/16.4.4/16.6.4/16.8.4 --- for Higher Image Quality: 16.1.9/16.2.9/16.4.9/16.6.9/16.8.9	This protocol is designed to evaluate patients who have suffered from blunt or penetrating trauma for possible internal injuries. Delayed images may be required at the radiologist's discretion to evaluate for active bleeding, but the field of view should be limited to the area of concern only so as to keep radiation dose as low as possible. This protocol should always be done following administration of IV contrast as evaluation for solid organ injuries, and to a lesser extent bowel/mesenteric injuries is significantly limited on non-contrast examinations. This is especially true in pediatric patients with little mesenteric fat.

Chest - Standard (Routine & High-Resolution)	**Peds**	**15.1.1/15.2.1/15.4.1/15.6.1/15.8.1 --- for Higher Image Quality: 15.1.8/15.2.8/15.4.8/15.6.8/15.8.8**	**This non-contrast protocol is performed to evaluate the lung parenchyma for evidence of interstitial lung disease, bronchiectasis, or aspiration. As pediatric patients have little mediastinal fat, evaluation for mediastinal or hilar lymphadenopathy, as well as mediastinal pathology in general, would be limited.**
Chest with IV Contrast	**Peds**	**XXX --- for Higher Image Quality: xxxxx**	**This protocol is designed to further evaluate patients with chest infections such as pneumonia with or without empyema, neoplasm, fever of unknown origin, vascular rings and slings, as well as mass lesions such as congenital cystic adenomatoid malformation and sequestration. Additionally, this could be used in evaluation of patients who have suffered blunt or penetrating trauma to the chest only.**
Chest Pectus	**Peds**	**15.1.3/15.2.3/15.4.3/15.6.3/15.8.3 --- for Higher Image Quality: 15.1.10/15.2.10/15.4.10/15.6.10/15.8.10**	**Technique for the pectus excavatum protocol was optimized for evaluating the bony thorax. These images allow for precise calculation of the Haller and correction indices, as well as for pre-surgical planning.**
CTA Chest for PE	**Peds**	**15.1.4/15.2.4/15.4.4/15.6.4/15.8.4 --- for Higher Image Quality: 15.1.11/15.2.11/15.4.11/15.6.11/15.8.11**	**This protocol is designed to evaluate patients who are suspected of having pulmonary embolism.**
Routine Chest/Abdomen/Pelvis	**Peds**	**15.1.5/15.2.5/15.4.5/15.6.5/15.8.5 --- for Higher Image Quality: 15.1.12/15.2.12/15.4.12/15.6.12/15.8.12**	**This protocol is intended to initially diagnose and follow-up malignancy and to evaluate for infection/fever of unknown origin in patients with nonspecific symptoms or who are immunocompromised.**
Trauma Chest/Abdomen/Pelvis	**Peds**	**15.1.6/15.2.6/15.4.6/15.6.6/15.8.6 --- for Higher Image Quality: 15.1.13/15.2.13/15.4.13/15.6.13/15.8.13**	**This protocol is designed to evaluate patients who have suffered from blunt or penetrating trauma for possible internal injuries. Delayed images may be required at the radiologist's discretion to evaluate for active bleeding, but the field of view should be limited to the area of concern only so as to keep radiation dose as low as possible. This protocol should always be done following administration of IV contrast as evaluation for vascular and solid organ injuries, and to a lesser extent bowel/ mesenteric injuries is significantly limited on non-contrast examinations. This is especially true in pediatric patients who have little mediastinal and mesenteric fat.**
Peds Chest Dynamic 3D Airway	**Peds**	**15.1.2/15.2.2/15.4.2/15.6.2/15.8.2 --- No higher image quality version of this protocol**	**This protocol is designed to evaluate the central airways, particularly to assess for tracheobronchomalacia or excessive dynamic airway collapse. In addition to standard high-resolution images of the lungs, the forced expiratory images accentuate collapsibility of the trachea and central bronchi. This protocol includes additional reformations including minimum intensity projections (MinIPs) and optional 3-D virtual bronchoscopic images, which referring providers might find informative. For patients who have a recent volumetric thin-section CT of the chest, the expiratory sequence of this protocol performed alone may be sufficient, minimizing additional radiation exposure. Because the breathing technique is different than traditional end-expiratory chest CT, proper training of technologists and coaching of patients with close radiologist oversight will maximize the utility of this protocol.**

Abd/Pelvis 6.1/6.2/6.3

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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.5
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(60-460)	(60-570)	(50-580)
Manual mA	230.0	290.0	350.0
Noise Index	23.0	29.5	37.0
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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).

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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.6	0.6	0.8
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(70-770)	(70-680)	(60-640)
Manual mA	270.0	340.0	390.0
Noise Index	17.5	22.0	28.0
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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)

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, except the thins send to ALI_Source. 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

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. 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.
- This is a monitored case,

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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-230)**	**(30-280)**	**(35-360)**
Manual mA	**110.0**	**140.0**	**220.0**
Noise Index	**32.5**	**42.0**	**52.5**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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**

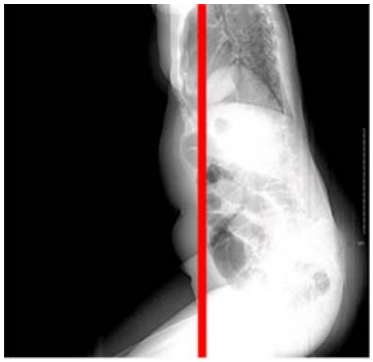
Just as patient positioning is critical in our routine supine and prone exams, it is also critical in the decubitus portion of our virtual colonoscopy screening exam. To provide the best image quality at the lowest dose, proper patient centering in the scanner gantry is critically important.
You cannot 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

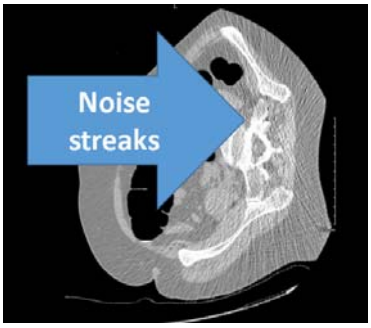
Bad Looking Scout

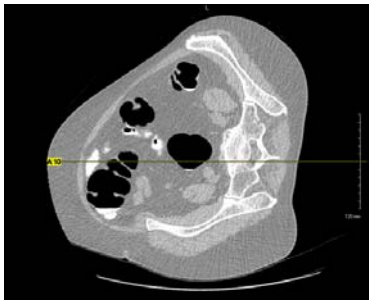
Good Position

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 - network the 1.25mm images from series 2 & 4 (& 5) to these 3 places V3D3_NEW, V3D_Backup, and ALI-Source. 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

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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**120**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-420)**	**(30-420)**	**(30-420)**
Manual mA	**150**	**150**	**150**
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	**40**	**40**	**50**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**None**	**None**	**None**
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	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**120**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-420)**	**(30-420)**	**(30-420)**
Manual mA	**150**	**150**	**150**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**120**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-420)**	**(30-420)**	**(30-420)**
Manual mA	**150**	**150**	**150**
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 Setup	**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

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. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.7**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-630)**	**(50-780)**	**(40-700)**
Manual mA	**310.0**	**390.0**	**420.0**
Noise Index	**28.5**	**36.0**	**41.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	1.375	1.375	1.375
Speed (mm/rot)	55.00	55.00	55.00
Rotation Time (s)	0.4	0.4	0.7
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(50-630)	(50-780)	(40-700)
Manual mA	310.0	390.0	420.0
Noise Index	28.5	36.0	41.0
Slice Thickness (mm)	1.25	1.25	1.25
Interval (mm)	0.625	0.625	0.625

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

Clinical Instructions

Indication

General renal imaging, hematuria work-up.

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).

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 both contrast 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, except the Parenchymal thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(40-340)	(40-420)	(50-530)
Manual mA	170.0	210.0	320.0
Noise Index	27.0	34.5	43.0
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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- Scan Phase
  - Start the injection and the scanner at the same time, there is a 60 sec delay built into the scanner.
  - Scan Phase: Start scan at the top of the diaphragm and end at pubic symphysis.
- Series 3 – Helical - Scan Phase
  - Wait 10 minutes before scanning this phase
  - 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 both contrast 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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.5	0.5	0.6
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(70-530)	(70-660)	(70-690)
Manual mA	260.0	330.0	420.0
Noise Index	19.0	24.5	31.0
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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. 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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	15	15	15

Series 2, Group 1, Scan Phase

	Small	Medium	Large
Scan Type	Helical	Helical	Helical
Beam Collimation	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.6	0.4	0.5
kV	80	100	120
AEC type	smart mA	smart mA	smart mA
mA Range	(50-440)	(70-710)	(60-660)
Manual mA	220.0	360.0	400.0
Noise Index	29.0	35.5	43.0
Slice Thickness (mm)	1.25	1.25	1.25
Interval (mm)	0.625	0.625	0.625

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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

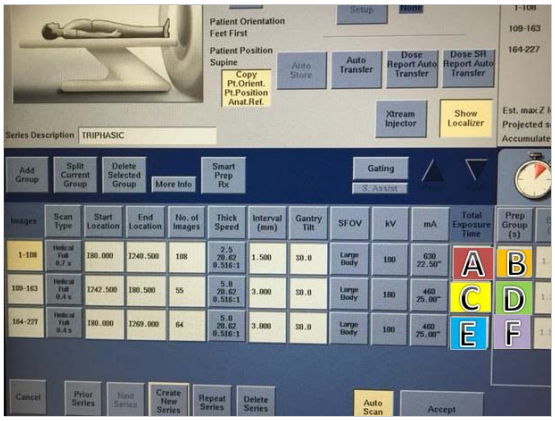
70 mL Sodium Chloride 0.9%

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.
- For series three timing bolus instructions, see Miscellaneous.
- Series 4 (3 groups) – Manually breath the patient for the arterial and late arterial.
  - 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: Start at the top of the liver and end at the iliac crests for the Abdomen or at pubic symphysis for the Abdomen/Pelvis
- Timing (you need to set-up the scan ranges for each group before adjusting the timing)
  - Timing Arterial phase: enter the timing bolus delay in the prep group
    - Timing bolus time to peak + timing bolus upfront delay = B
  - Timing Late arterial phase: Take 20 seconds - "total exposure time" number from the arterial phase
    - 20 – A = D
  - Timing Hepatic Venous phase: Add up all four numbers (total exposure time and prep group) for the arterial and late arterial phase, then subtract from 70 seconds, enter this number in the "prep group" for the hepatic venous phase
    - A+B+C+D = G, then take 70-G = F



Where to edit intergroup delays

- If doing a Chest with a Triphasic, include the chest with the 3rd 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

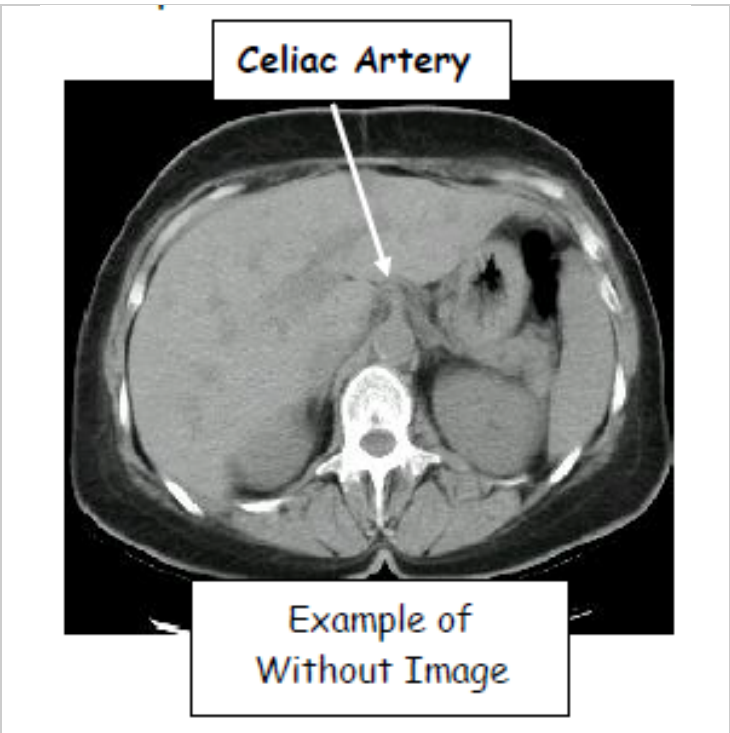
Networking

All images are networked to ALI_Store, except the thins send to ALI_Source and CTAW1. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

Miscellaneous

Timing bolus

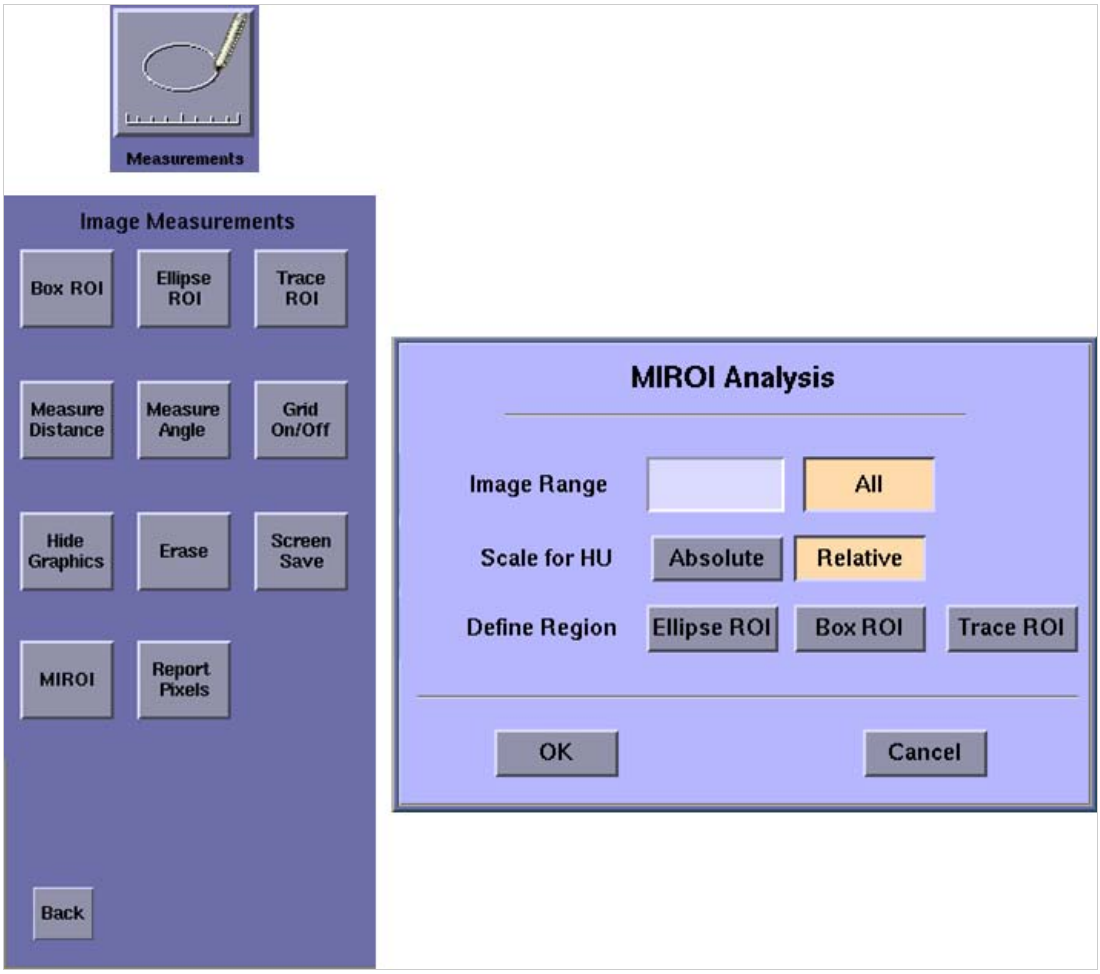
- From the without images, choose the level of the celiac artery



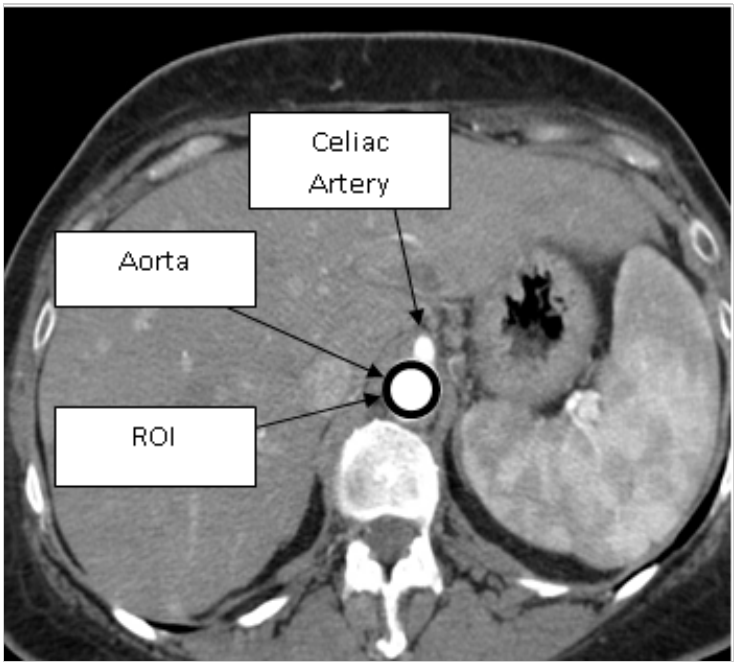
- Put level of the celiac artery under the start location and the same level for the end location (the table will not move)
- 5mm thick @ 1i
- 0 Interval
- Low mA - 80 (use the same kV as the subsequent scan, 80/100/120 for small/med/large)

Images	Scan Type	Start Location	End Location	No. of Images	Thick Speed	Interval (mm)	Gantry Tilt	SFOV	kV	mA	Total Exposure Time
1-14	Axial Full 1.0 sec.	I100.000	I100.000	14	5.0 1i	0.000	S0.0	Small Body	120	80	14.0

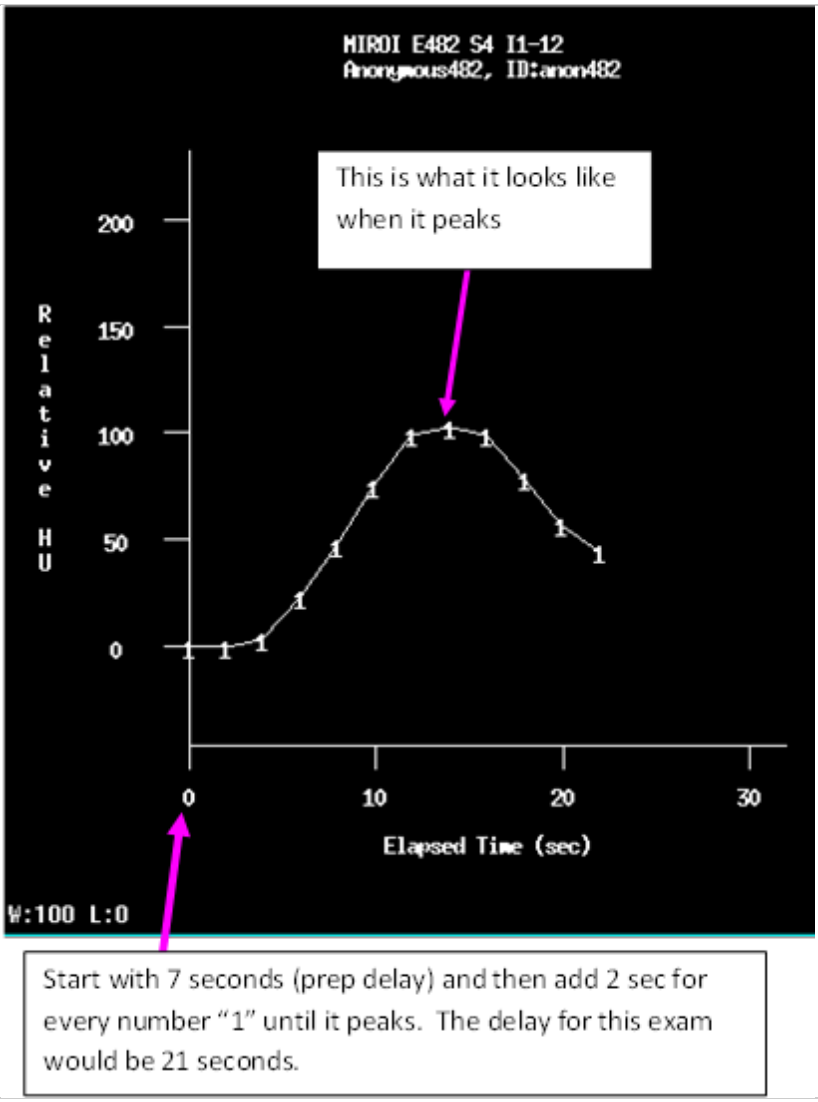
- Inject 5cc per second for 20cc
- Use 7 sec prep delay (if patient is large use a 10 sec delay) - must be confident of the IV
- Start the contrast and the scan at the same time
- Should be able to see the contrast enhance the artery. When the scan is completed - about 15-20 images, select measurement and choose MIROI- Relative should be selected and then choose elliptical ROI.



- Put circle in the aorta



- Select OK
- Read Graph
- Every number one equals 2 seconds



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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-230)**	**(30-280)**	**(35-360)**
Manual mA	**110.0**	**140.0**	**220.0**
Noise Index	**32.5**	**42.0**	**52.5**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**3.75**	**5.0**	**5.0**
Interval (mm)	**2.25**	**3.0**	**3.0**

Series 3

Timing Bolus

Series 4, Group 1, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**1**	**0.7**	**0.8**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(70-720)**	**(70-740)**
Manual mA	**230.0**	**360.0**	**440.0**
Noise Index	**22.0**	**26.5**	**32.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, 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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, Group 2, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(50-520)**	**(60-610)**
Manual mA	**240.0**	**260.0**	**370.0**
Noise Index	**34.0**	**41.5**	**50.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, 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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, Group 3, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(50-520)**	**(60-610)**
Manual mA	**240.0**	**260.0**	**370.0**
Noise Index	**34.0**	**41.5**	**50.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, 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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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. 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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	15	15	15

Series 2, Group 1, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.6**	**0.4**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-440)**	**(70-710)**	**(60-660)**
Manual mA	**220.0**	**360.0**	**400.0**
Noise Index	**29.0**	**35.5**	**43.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.6**	**0.4**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-440)**	**(70-710)**	**(60-660)**
Manual mA	**220.0**	**360.0**	**400.0**
Noise Index	**29.0**	**35.5**	**43.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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 – Without IV contrast: Start at the top of the pancreas and end at the bottom of the pancreas. T10 – L2.
- Series 3 With IV Contrast (This is performed in 2 groups.)
  - Smart Prep: None - 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 bottom of the pancreas.
  - 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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(30-260)	(30-320)	(40-410)
Manual mA	130.0	160.0	240.0
Noise Index	30.5	39.0	49.5
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**3.75**	**5.0**	**5.0**
Interval (mm)	**2.25**	**3.0**	**3.0**

Series 3, Group 1, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.6**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-770)**	**(70-680)**	**(60-640)**
Manual mA	**270.0**	**340.0**	**390.0**
Noise Index	**17.5**	**22.0**	**28.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-260)**	**(30-320)**	**(40-410)**
Manual mA	**130.0**	**160.0**	**240.0**
Noise Index	**30.5**	**39.0**	**49.5**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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 through pubic symphysis.
- 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 (including the thin CTA images) with an exception for the thins from the venous phase should be sent to ALI_Source.

Miscellaneous

- Place a copy of the angio request in the 3D request box in the CT control room

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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-260)**	**(30-320)**	**(40-410)**
Manual mA	**130.0**	**160.0**	**240.0**
Noise Index	**30.5**	**39.0**	**49.5**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**1**	**0.7**	**0.8**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(70-720)**	**(70-740)**
Manual mA	**230.0**	**360.0**	**440.0**
Noise Index	**22.0**	**26.5**	**32.0**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.6**	**0.4**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-440)**	**(70-710)**	**(60-660)**
Manual mA	**220.0**	**360.0**	**400.0**
Noise Index	**29.0**	**35.5**	**43.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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 images are networked to ALI_Store, except the thins send to ALI_Source. Unless there is a Chest, then all images are networked to ALI_Store. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-530)**	**(70-660)**	**(70-690)**
Manual mA	**260.0**	**330.0**	**420.0**
Noise Index	**19.0**	**24.5**	**31.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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%
- 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, except the thins send to ALI_Source and CTAW1. Unless there is a chest then all images networked to ALI_Store. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(30-260)	(30-320)	(40-410)
Manual mA	130.0	160.0	240.0
Noise Index	30.5	39.0	49.5
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.9**	**0.7**	**0.8**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-675)**	**(70-720)**	**(70-740)**
Manual mA	**260.0**	**360.0**	**440.0**
Noise Index	**22.0**	**26.5**	**32.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(50-520)**	**(60-610)**
Manual mA	**240.0**	**260.0**	**370.0**
Noise Index	**34.0**	**41.5**	**50.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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
  - Smart prep-Monitor Phase: at the level of the celiac on the aorta
  - Helical Scan- Scan Phase- Arterial phase: Start above the celiac artery and end at the level of the femoral heads.
- Series 3 - Portal phase: 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, except the thins send to ALI_Source and CTAW1. Unless there is a chest then all images networked to ALI_Store. 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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**1**	**0.7**	**0.8**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(70-720)**	**(70-740)**
Manual mA	**230.0**	**360.0**	**440.0**
Noise Index	**22.0**	**26.5**	**32.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-675)**	**(50-520)**	**(60-610)**
Manual mA	**240.0**	**260.0**	**370.0**
Noise Index	**34.0**	**41.5**	**50.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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. Start scan as soon as contrast is seen in the aorta.
  - 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 Include the spine and sternum.
CO	THIN BONE	DMPR	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

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	450/50	2	1	Coronal
CO BONE	THIN BONE	Manual	Average	3000/300	2	1	Coronal
SA ST	THIN ST	Manual	Average	450/50	2	1	Sagittal
SA BONE	THIN BONE	Manual	Average	3000/300	2	1	Sagittal

Networking

All Images to ALI store. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.7**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(80-770)**	**(60-680)**
Manual mA	**230.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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	**Detail**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**Detail**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Plus**		**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**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 Setup	**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	**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 Setup	**None**	**None**	**None**
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**0.312**	**0.312**	**0.312**

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

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. Start scan as soon as contrast is seen in the aorta.
  - 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 spines (if ordered) are manual. The rest of the reformats for the chest and abdomen/pelvis use DMPR.

Neuro is requiring a retro recon of the entire T-Spine and L-Spine off of a Trauma C/A/P. It has been explained that this has to be done after the fact of the scan, and it is not priority but has to be done within a few hours of the scan if asked for it. These will be in addition to your normal T-Spine and L-Spine exams given to neuro. Steps to Create these Retro Recons:

- Click on Retro Recon and find your C/A/P study.
- Open it; keep both the Recon 1 and Recon 2 buttons on Y.
- Change your FOV, R/L, A/P to match the spines.
- On Recon 2 make the start location the same as the start location of Recon 1.
- On Recon 2 make the end location your L-Spine end location.
- You want these all to go into the same Retro Recon Number.
- You will need to make THIN BONE to be able to do reformats.
- You will only need to do SA Bone reformats.
- The reformats will be the normal 2x1 Spine reformats.

You will add this to the Thoracic Spine order.

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.
- 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 Include the spine and sternum.
CO	BONE	DMPR	Average	1500/-700	1.5	0.75	coronal 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 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	450/50	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. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.7**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(80-770)**	**(60-680)**
Manual mA	**230.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**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 Setup	**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	**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 Setup	**None**	**None**	**None**
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**0.312**	**0.312**	**0.312**

Series 2, Group 2, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.7**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(80-770)**	**(60-680)**
Manual mA	**230.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 7			
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 8			
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 9			
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.7**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(80-770)**	**(60-680)**
Manual mA	**230.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**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 Setup	**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	**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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Cystogram 8.10/8.11/8.12

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
- 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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(60-460)**	**(60-570)**	**(50-580)**
Manual mA	**230.0**	**290.0**	**350.0**
Noise Index	**23.0**	**29.5**	**37.0**
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.5
kV	100	120	140
AEC type	smart mA	smart mA	smart mA
mA Range	(60-460)	(60-570)	(50-580)
Manual mA	230.0	290.0	350.0
Noise Index	23.0	29.5	37.0
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			
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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	BONE	DMPR	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	BONE	DMPR	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

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

	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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.7**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-630)**	**(50-780)**	**(40-700)**
Manual mA	**310.0**	**390.0**	**420.0**
Noise Index	**28.5**	**36.0**	**41.0**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**1.30**	**1.30**	**1.30**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-460)**	**(35-570)**	**(40-710)**
Manual mA	**230.0**	**280.0**	**430.0**
Noise Index	**28.5**	**36.0**	**41.0**
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	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**1500/-700**	**1500/-700**	**1500/-700**
Recon Option			
Recon Option			
ASIR Setup	**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	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**1.30**	**1.30**	**1.30**
Rotation Time (s)	**0.4**	**0.4**	**0.5**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-460)**	**(35-570)**	**(40-710)**
Manual mA	**230.0**	**280.0**	**430.0**
Noise Index	**28.5**	**36.0**	**41.0**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**20**	**20**	**20**

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

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

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	BONE	DMPR	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	BONE	DMPR	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

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

	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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**46.0**	**59.0**	**67.0**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Chest - Low Dose Screening 5.13/5.14/5.15

Clinical Instructions

Indication

Screening for Lung Cancer, This can only be done on CT 3 or 4.

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

None

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: 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	BONE	DMPR	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	BONE	DMPR	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

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

	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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**46.0**	**59.0**	**67.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**3.75**	**5.0**	**5.0**
Interval (mm)	**2.25**	**3.0**	**3.0**
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 Setup	**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

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 Valsalva which would push the contrast out of the area of interest. Ask the patient to not bear down, tense up or strenuously hold their breath.

IV Contrast Parameters

Patient weight < 140 kilos.

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

Patient weight > 140 kilos.

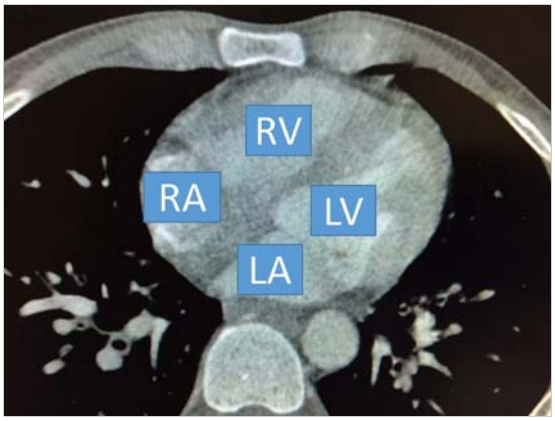
- 100 mL Iopamidol (Isovue 370) 76% @ 5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 5 mL/sec

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. Suspension breathing instructions are on, remind the patient not to bear down.



Smart Prep location should be the LA

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 Bone	Manual	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	THIN Bone	Manual	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.
MIPS	THIN ST	Manual	MIP	920/125	10	5	Axial

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

- 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.5**	**0.7**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-675)**	**(45-700)**	**(45-720)**
Manual mA	**330.0**	**350.0**	**440.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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

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

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

	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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.7**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-630)**	**(50-780)**	**(40-700)**
Manual mA	**310.0**	**390.0**	**420.0**
Noise Index	**28.5**	**36.0**	**41.0**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**46.0**	**59.0**	**67.0**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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

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. Enter scan duration and click ok. On Scanners 3 and the ER you must enter a scan duration of 16 seconds.

On Scanner 4 pick the appropriate programmed Medrad™ injection protocol and enter the weight. The Medrad™ injection protocol will then tell you how much contrast and how fast of an injection.

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: Smartprep on left ventricle
    - 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

Reformat Instructions

Perform manual reformats: Axial MIP, CO and SA of the chest.

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 ST	Manual	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	THIN ST	Manual	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

Networking

All the images are sent to ALI and CTAW1 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-700)**	**(35-720)**	**(35-680)**
Manual mA	**350.0**	**360.0**	**410.0**
Noise Index	**27.0**	**34.5**	**43.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.5**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(40-630)**	**(35-680)**	**(35-790)**
Manual mA	**310.0**	**340.0**	**480.0**
Noise Index	**26.5**	**32.5**	**39.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-675)**	**(30-630)**	**(35-740)**
Manual mA	**290.0**	**320.0**	**440.0**
Noise Index	**31.0**	**37.5**	**45.5**
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	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Retrospectively-Gated CTA Chest 5.31/5.32/5.33

Clinical Instructions

Indication

Heart rate guidelines: HR<70 BPM use prospective protocol, HR 70-80 BPM use retrospective protocol, HR>80 BPM nongated

- **Use PROSPECTIVELY gated protocol instead of this protocol if possible in order to decrease radiation dose!!** Evaluate for known or suspected type A (ascending) aortic dissection with possible involvement of aortic valve and/or coronary arteries. If cine images of the valves or heart are not needed, consider prospectively gated protocol to reduce radiation dose. Patient MUST be able to hold breath for 20 seconds. Patients must be 50 years or older. If younger, permission from radiologist is required. **If referred for cardiac CTA, follow separate cardiac CTA protocol, including beta-blockade and nitroglycerin protocol.**

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

Oral Contrast

None

Pre-Scan Instructions

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice Breathing Instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

18G IV started in right arm

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

To set up P3T= choose P3T, Thorax, PA then click on ok. Confirm contrast and load fluids. Enter scan duration and click ok. On Scanners 3 and the ER you must enter scan duration of 16 seconds.

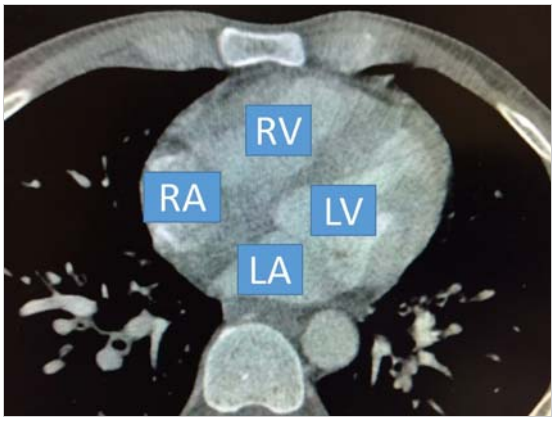
On Scanner 4 pick the appropriate programmed Medrad™ injection protocol and enter the weight. The Medrad™ injection protocol will then tell you how much contrast and how fast of an injection.

Field of View

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

Scan Description

- Series 1 – PA and lateral scout
  - During inspiration breath-hold.
  - Coverage: Lower neck to mid-abdomen
- Series 2 – Non-contrast (only when ordered)
  - During inspiration breath-hold
  - Coverage: Lung apex to below the sma
- Series 3 – CTA
  - Use smartprep with 6 s diagnostic delay, with ROI on left ventricle
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan
- Series 4 (optional) – Delayed (FOR POST ENDOGRAFT ONLY)
  - Begin scan 2 min after beginning of contrast injection
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan



Smart Prep location should be the LV

Reformat Instructions

Perform manual reformats: Axial MIP, CO and SA of the chest.

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 ST	Manual	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	THIN ST	Manual	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

Networking

All the images are sent to ALI and CTAW1 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.
- Due to longer scan times patient may need to start breathing after scanning through the Lung is completed. Very large patients are best scanned on CT4 or the ER CT if they can fit into the gantry

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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-700)**	**(35-720)**	**(35-680)**
Manual mA	**350.0**	**360.0**	**410.0**
Noise Index	**27.0**	**34.5**	**43.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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)	**4**	**4**	**4**
Monitoring ISD (sec)	**2.5**	**2.5**	**2.5**
Enhancement Threshold (HU)	**50**	**50**	**50**
Diagnostic Delay	**6**	**6**	**6**

Series 3, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA Range	**(100-400)**	**(120-500)**	**(150-600)**
Start-End Phase%	**65-85**	**65-85**	**65-85**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
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	**Snap shot segment**	**Snap shot segment**	**Snap shot segment**
Recon Option	**None**	**None**	**None**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-675)**	**(30-630)**	**(35-740)**
Manual mA	**290.0**	**320.0**	**440.0**
Noise Index	**31.0**	**37.5**	**45.5**
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	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Gated Chest and Non-Gated Abd/Pelvis CTA 5.34/5.35/5.36

Clinical Instructions

Indication

Known or suspected type A aortic dissection with possible involvement of aortic valve and/or coronary arteries, extending into abdomen/pelvis. Patients should be 50 years or older. If younger, permission from radiologist is required.

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

Oral Contrast

None

Pre-Scan Instructions

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice Breathing Instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

18G IV started in right arm

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

To set up P3T= choose P3T, Thorax, PA then click on ok. Confirm contrast and load fluids. Enter scan duration and click ok. On Scanners 3 and the ER you must enter scan duration of 16 seconds.

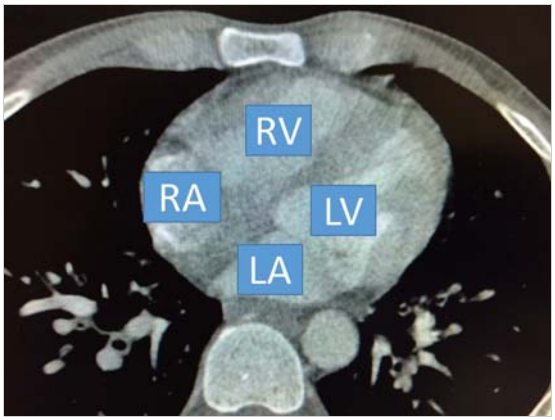
On Scanner 4 pick the appropriate programmed Medrad™ injection protocol and enter the weight. The Medrad™ injection protocol will then tell you how much contrast and how fast of an injection.

Field of View

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

Scan Description

- Series 1 – PA and lateral scout
  - During inspiration breath-hold.
  - Coverage: Lower neck to mid thighs
- Series 2 – Non-contrast (only when ordered)
  - During inspiration breath-hold
  - Coverage: Lung apex to lesser trochanters
- Series 3 – CTA
  - Use smartprep with ROI on left ventricle
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan
  - All scanning is all top down, and is divided into two segments:
  1. Gated chest
  2. Non-gated abdomen/pelvis.
  - Prescribe the abdomen/pelvis to follow immediately after gated chest, with prescription contiguous with chest portion, and no overlap. Turn breath-hold instructions off for the abdomen/pelvis portion and manually breathe.
- Series 4 (optional) – Delayed (FOR POST ENDOGRAFT ONLY)
  - Begin scan 2 min after beginning of contrast injection
  - During inspiration breath-hold
  - Coverage: Same as non-contrast scan



Smart Prep location should be the LV

Reformat Instructions

Perform manual reformats: Axial MIP, CO and SA of the chest.

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 ST	Manual	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	THIN ST	Manual	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

Networking

All the images are sent to ALI and CTAW1 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-700)**	**(35-720)**	**(35-680)**
Manual mA	**350.0**	**360.0**	**410.0**
Noise Index	**27.0**	**34.5**	**43.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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)	**4**	**4**	**4**
Monitoring ISD (sec)	**2.5**	**2.5**	**2.5**
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	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA Range	**(100-400)**	**(120-480)**	**(150-560)**
Start-End Phase%	**65-85**	**65-85**	**65-85**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
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	**Snap shot segment**	**Snap shot segment**	**Snap shot segment**
Recon Option	**None**	**None**	**None**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-675)**	**(40-770)**	**(45-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**26.5**	**32.5**	**39.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-675)**	**(30-630)**	**(35-740)**
Manual mA	**290.0**	**320.0**	**440.0**
Noise Index	**31.0**	**37.5**	**45.5**
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	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Prospectively-Gated Coronary CTA 5.37/5.38/5.39

Clinical Instructions

Indication

For imaging of the coronaries. Heart rate guidelines: HR<65 use prospective protocol, HR 65-75 use retrospective protocol, HR over 75 do not scan and consult physician.

Oral Contrast

None

Pre-Scan Instructions

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice Breathing Instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

Medrad™ Coronary Protocol

Timing bolus:

- 10 mL Iodixanol (Visipaque 320) 320 MG/ML injection @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

Coronary:

- 80 mL Iodixanol (Visipaque 320) 320 MG/ML injection @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

Field of View

25 cm

Scan Description

- Series 1- PA and Lateral Scout
- Coverage: Lower Neck to Below lung Base

- Series 2- Non - Contrast – Calcium Score
  - Coverage: Carina to below heart

- Series 3 – Timing Bolus = on the ascending aorta (use your without series to find the level)
  - Use 10 ml of Iodixanol and 50 ml of saline
  - Take 16 + Bolus time = Prep delay
  - If the timing for the prep delay is less that 20 seconds, please change the prep group to 20 seconds. We do not want to use anything less than 20 seconds for a delay.

- Series 4 – CTA
  - Use Timing Bolus
  - Coverage: Same as non - contrast scan

- Number 13 breathing instructions on the scanner (10 s breath in and out + 4 s pause)

Reformat Instructions

Recons:

- Always do lung window and open up FOV as big as possible (off the non-contrast series).
- Click on RX (in the top rt corner) to choose % interval.
- Do 65%-75% at 5% interval. Slice thickness.6 mm in standard (for both series).
- Do 4%-94% at 10% interval. Slice thickness 1.25 mm in standard (**for the retrospective scans only**).
- Ask whoever is monitoring case what they would like for other recons.

Reformats

None.

Networking

All the images are sent to ALI_Store. Do NOT need to send to 3D Lab. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

Miscellaneous

- Always make sure patients heart rate is below 65 before coming over from Cardiology.
- If Cardiology and Radiology are going to read the scan, please make sure to spilt the exam in PACS or on the scanner and assign it to the correct reading room.

- Have nurse give Nitro right before scouts.

- Cardiology # 5-7093
- To find out whom is reading from Cardiology that day, go to "amion.com" and type in password "uwcvm".
- Make sure to split the exam in PACS or on the scanner so there are two accession numbers on PACS.

Acquisition Parameters

Series 1, Scout

	Small	Medium	Large
Scout 1 kV	**120**	**120**	**120**
Scout 1 mA	**10**	**20**	**40**
Scout 1 Angle	**180**	**180**	**180**
Scout 2 kV	**120**	**120**	**120**
Scout 2 mA	**10**	**20**	**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	**Cine**	**Cine**	**Cine**
Cardiac Mode	**Segment**	**Segment**	**Segment**
Beam Collimation	**20**	**20**	**20**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**120**	**120**	**120**
AEC Type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(125-125)**	**(250-250)**	**(500-500)**
Smart Score Pro	**ON**	**ON**	**ON**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Slice Thickness (mm)	**2.5**	**2.5**	**2.5**
Interval (mm)	**20**	**20**	**20**

Series 2, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Segment**	**Segment**	**Segment**
Recon Option			
ASIR Setup	**None**	**None**	**None**
Slice Thickness (mm)	**2.5**	**2.5**	**2.5**
Interval (mm)	**20**	**20**	**20**
Recon 2			
DFOV	**30**	**40**	**50**
Recon Type	**Lung**	**Lung**	**Lung**
WW/WL	**1500/-700**	**1500/-700**	**1500/-700**
Recon Option	**Segment**	**Segment**	**Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Bolus Tracking

For non Revolution CT 256, do a timing bolus. For Revolution CT 256 use the following:

	Small	Medium	Large
mA	**40**	**40**	**40**
Monitoring Delay (sec)	**7.0**	**7.0**	**7.0**
Monitoring ISD (sec)	**1.0**	**1.0**	**1.0**
Enhancement Threshold (HU)	**150**	**150**	**150**
Diagnostic Delay	**Auto Minimum**	**Auto Minimum**	**Auto Minimum**

Series 4, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA	**400**	**500**	**600**
Cardiac Gating	**ON**	**ON**	**ON**
Padding Override	**OFF**	**OFF**	**OFF**
R to R interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Adaptive Gating	**ON**	**ON**	**ON**
Max #Beats to avoid	**2**	**2**	**2**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**

Series 4, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Snap Shot Segment**	**Snap Shot Segment**	**Snap Shot Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**n/a**	**n/a**	**n/a**

Retrospectively-Gated Coronary CTA 5.40/5.41/5.42

Clinical Instructions

Indication

For imaging of the coronaries. Heart rate guidelines: HR<65 use prospective protocol, HR 65-75 use retrospective protocol, HR over 75 do not scan and consult physician.

Oral Contrast

None

Pre-Scan Instructions

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice Breathing Instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

Medrad™ Coronary Protocol

Timing bolus:

- 10 mL Iodixanol (Visipaque 320) 320 MG/ML injection @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

Coronary:

- 80 mL Iodixanol (Visipaque 320) 320 MG/ML injection @ 5 mL/sec
- 50 mL Sodium Chloride 0.9% @ 5 mL/sec

Field of View

25 cm

Scan Description

- Series 1- PA and Lateral Scout
- Coverage: Lower Neck to Below lung Base

- Series 2- Non - Contrast – Calcium Score
  - Coverage: Carina to below heart

- Series 3 – Timing Bolus = on the ascending aorta (use your without series to find the level)
  - Use 10 ml of Iodixanol and 50 ml of saline
  - Take 16 + Bolus time = Prep delay
  - If the timing for the prep delay is less that 20 seconds, please change the prep group to 20 seconds. We do not want to use anything less than 20 seconds for a delay.

- Series 4 – CTA
  - Use Timing Bolus
  - Coverage: Same as non - contrast scan

- Number 13 breathing instructions on the scanner (10 s breath in and out + 4 s pause)

Reformat Instructions

Recons:

- Always do lung window and open up FOV as big as possible (off the non-contrast series).
- Click on RX (in the top rt corner) to choose % interval.
- Do 65%-75% at 5% interval. Slice thickness.6 mm in standard (for both series).
- Do 4%-94% at 10% interval. Slice thickness 1.25 mm in standard (**for the retrospective scans only**).
- Ask whoever is monitoring case what they would like for other recons.

Reformats

None.

Networking

All images are sent to ALI and VCTAW1. Send CTA to AW1. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

Miscellaneous

- Always make sure patients heart rate is below 65 before coming over from Cardiology.
- If Cardiology and Radiology are going to read the scan, please make sure to spilt the exam in PACS or on the scanner and assign it to the correct reading room.

- Have nurse give Nitro right before scouts.

- Cardiology # 5-7093
- To find out whom is reading from Cardiology that day, go to "amion.com" and type in password "uwcvm".
- Make sure to split the exam in PACS or on the scanner so there are two accession numbers on PACS.

Acquisition Parameters

Series 1, Scout

	Small	Medium	Large
Scout 1 kV	**120**	**120**	**120**
Scout 1 mA	**10**	**20**	**40**
Scout 1 Angle	**180**	**180**	**180**
Scout 2 kV	**120**	**120**	**120**
Scout 2 mA	**10**	**20**	**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	**Cine**	**Cine**	**Cine**
Cardiac Mode	**Segment**	**Segment**	**Segment**
Beam Collimation	**20**	**20**	**20**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**120**	**120**	**120**
AEC Type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(125-125)**	**(250-250)**	**(500-500)**
Smart Score Pro	**ON**	**ON**	**ON**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Slice Thickness (mm)	**2.5**	**2.5**	**2.5**
Interval (mm)	**20**	**20**	**20**

Series 2, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Segment**	**Segment**	**Segment**
Recon Option			
ASIR Setup	**None**	**None**	**None**
Slice Thickness (mm)	**2.5**	**2.5**	**2.5**
Interval (mm)	**20**	**20**	**20**
Recon 2			
DFOV	**30**	**40**	**50**
Recon Type	**Lung**	**Lung**	**Lung**
WW/WL	**1500/-700**	**1500/-700**	**1500/-700**
Recon Option	**Segment**	**Segment**	**Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 3, Timing Bolus

Timing Bolus

Series 4, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA Range	**(100-400)**	**(120-500)**	**(150-600)**
Start-End Phase%	**65-85**	**65-85**	**65-85**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**0.625**	**0.625**	**0.625**

Series 4, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Snap Shot Segment**	**Snap Shot Segment**	**Snap Shot Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**0.4**	**0.4**	**0.4**

TAVI CTA 5.43/5.44/5.45

Clinical Instructions

Indication

Pre scan before a TAVI procedure.

Oral Contrast

None

Pre-Scan Instructions

Note, the Optima 660 (CT3) should not be used for TAVI scans if possible.

Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.

Patient will be scanned with arms up. Practice breathing instructions. Remind the patient not to bear down. You will need to manually breath the patient.

IV Contrast Parameters

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

100 mL Sodium Chloride 0.9% @ 5 mL/sec

NOTE: TAVR's ordered without contrast need to be gated.

Field of View

30cm (Small Adult), 36cm (Medium Adult), 50cm (Large Adult)

Scan Description

- Series 1 – PA and lateral scout
  - Ask patient to stop breathing.
  - Coverage: Lower neck to symphysis pubis.
- Series 2 – CTA
  - Use smartprep with a minimum diagnostic delay, with ROI on ascending aorta at the level of the carina
  - Ask patient to stop breathing.
  - Coverage: Lung apices through lesser trochanters.
  - All scanning is all top down, and is divided into two segments:
  1. Gated chest
  2. Non-gated abdomen/pelvis
  - Prescribe the abdomen/pelvis to follow immediately after gated chest, with prescription contiguous with chest portion, and no overlap. Turn breath-hold instructions off for the abdomen/pelvis portion and manually breathe.
    - For Recon 2 4-94% you must cone down to just the heart. Just above the arch to the bottom of the heart in a 25 FOV. You cannot have more than 3000 images or it will not work for 3D.
    - Recon 2 must be entered on the cardiac reconstruction screen and should be preprogrammed onto the scanner with the following parameters: no cardiac filter, 0.625 mm slice thickness, 0.625 mm interval, and reconstructed from 4 to 94% phase in 10 % steps.
    - For Recon 3 35-65% (otherwise same as Recon 2) you must cone down to just the heart. Just above

the arch to the bottom of the heart in a 25 FOV. You cannot have more than 3000 images or it will not work for 3D.

- Recon 3 must be entered on the cardiac reconstruction screen and should be preprogrammed onto the scanner with the following parameters: no cardiac filter, 0.625 mm slice thickness, 0.625 mm interval, and reconstructed from 35 to 65% phase.

For patients with variable heart rates below 70BPM "Override the monitor heart rate"

On the Discovery HD 750 /Revolution HD

When the heart rate varies by more than 10 BPM, the HR should be manually entered. To calculate what HR should be entered, use the table below. The override HR you enter will be the first number listed in the heart rate range group that is lower than your minimum heart rate observed.

For example, if a patient's HR varies from 53 to 66, the override HR should be in the 43-49 range. We always pick the smallest HR within the range, so you would enter 43 for the override HR.

Another example: If a patient's HR ranged from 45 to 57, you would enter 30 as the override HR as 30 is the smallest HR within the grouping below a HR of 45.

For the HD 750 (CT4) and VCT (ERCT) Scanner

Heart rate range	Gantry speed	Pitch
30 to 42 BPM	0.4 sec	0.18
43 to 49 BPM	0.4 sec	0.20
50 to 59 BPM	0.4 sec	0.23
60 to 69 BPM	0.4 sec	0.26

For the Optima 660 (CT3) Scanner (Note, the Optima 660 should not be used for TAVR scans if possible)

Heart rate range	Gantry speed	Pitch
30 to 39 BPM	0.5 sec	0.2
40 to 49 BPM	0.5 sec	0.24
50 to 59 BPM	0.5 sec	0.3
60 to 74 BPM	0.5 sec	0.325

1.From the ViewEdit screen, view the BPM displayed on the Gating button.

2. From the CardIQ SnapShot screen, toggle Heart Rate Override On.

3. In the Heart Rate text field, type a minimum HR value that covers the lowest expected to occur during the scan (as described above) and press Enter. This insures a low enough pitch is used for the acquisition.

Reformat Instructions

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

Reformats

None.

Networking

Send the entire study to ALI_Store including the Dose Information Slide and the smart prep image. 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**	**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)	**4**	**4**	**4**
Monitoring ISD (sec)	**2.5**	**2.5**	**2.5**
Enhancement Threshold (HU)	**80**	**80**	**80**
Diagnostic Delay	**Auto Minimum**	**Auto Minimum**	**Auto Minimum**

Series 2, Group 1, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**	**Snap Shot Segment (Helical)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA Range	**(500-500)**	**(600-600)**	**(680-680)**
Start-End Phase%	**65-85**	**65-85**	**65-85**
Gating	**ON**	**ON**	**ON**
R-R Interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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	**Snap shot segment**	**Snap shot segment**	**Snap shot segment**
Recon Option	**None**	**None**	**None**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 2			
Recon 3			

See text instructions in scan description for recons 2 and 3.

Series 2, Group 2, Scan Phase

	Small	Medium	Large
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-675)**	**(40-770)**	**(45-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**26.5**	**32.5**	**39.5**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Prospectively-Gated CTA Chest (Non-Coronary) 5.46/5.47/5.48

Clinical Instructions

Indication

Heart rate guidelines: HR<70 BPM use prospective protocol, HR 70-80 BPM use retrospective protocol, HR >80 BPM nongated chest. Evaluate for ascending aortic aneurysm, dissection, or injury. Evaluate cardiac or vascular abnormality without cardiac motion.

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

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice breathing instructions. Remind the patient not to bear down. Suspension breathing is turned on

IV Contrast Parameters

18G IV started in right arm

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

To set up P3T= choose P3T, Thorax, PA then click on ok. Confirm contrast and load fluids. Enter scan duration and click ok. On Scanners 3 and the ER you must enter scan duration of 16 seconds.

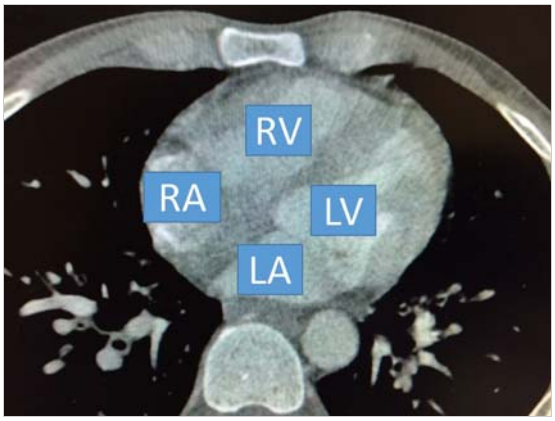
On Scanner 4 pick the appropriate programmed Medrad™ injection protocol and enter the weight. The Medrad™ injection protocol will then tell you how much contrast and how fast of an injection.

Field of View

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

Scan Description

- Series 1 – PA and lateral scout
  - Remind the patient not to bear down. Suspension breathing is turned on
  - Coverage: Mid abdomen to lower neck
- Series 2 – Non-contrast (only when ordered)
  - Coverage: diaphragm to lung apex. (Scanning bottom up)
- Series 3 – CTA (IF the Without series is skipped, make sure to switch the Start and End Location of your CTA to scan bottom up)
  - Use smartprep with minimum diagnostic delay, with ROI on left ventricle
  - Ask the patient to "stop breathing"
  - Coverage: Same as non-contrast scan



Smart Prep location should be the LV

Reformat Instructions

Perform manual reformats: Axial MIP, CO and SA of the chest.

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 ST	Manual	Average	1500/-700	1.5	0.75	sagittal Include the spine and sternum.
CO	THIN ST	Manual	Average	1500/-700	1.5	0.75	coronal Include the spine and sternum.

Networking

All the images are sent to ALI and CTAW1 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**	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-700)**	**(35-720)**	**(35-680)**
Manual mA	**350.0**	**360.0**	**410.0**
Noise Index	**27.0**	**34.5**	**43.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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)	**50**	**50**	**50**
Diagnostic Delay	**Auto Minimum**	**Auto Minimum**	**Auto Minimum**

Series 3, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA	**400**	**500**	**600**
Cardiac Gating	**ON**	**ON**	**ON**
Padding Override	**OFF**	**OFF**	**OFF**
R to R interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Adaptive Gating	**ON**	**ON**	**ON**
Max #Beats to avoid	**2**	**2**	**2**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**

Series 3, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Snap Shot Segment**	**Snap Shot Segment**	**Snap Shot Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**n/a**	**n/a**	**n/a**

Upper Extremity CTA 5.49/5.50/5.51

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 overhead in "superman" position and positioned in the center of the scanner. Non-affected extremity (with IV) at patient's side. Practice breathing instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

18-20G antecubital IV started in unaffected arm

100 mL Iopamidol (Isovue 370) 76% @ 5-6mL/sec

100 mL Sodium Chloride 0.9% @ 5-6 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)

Reformat Instructions

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 CTAW1 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-590)**	**(30-590)**	**(30-620)**
Manual mA	**300.0**	**300.0**	**370.0**
Noise Index	**23.0**	**29.5**	**37.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.984**	**0.984**	**0.984**
Speed (mm/rot)	**39.40**	**39.40**	**39.40**
Rotation Time (s)	**0.5**	**0.5**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(120-675)**	**(110-770)**	**(120-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**14.5**	**17.5**	**21.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.984**	**0.984**	**0.984**
Speed (mm/rot)	**39.40**	**39.40**	**39.40**
Rotation Time (s)	**0.5**	**0.5**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(120-675)**	**(110-770)**	**(120-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**14.5**	**17.5**	**21.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Lower Extremity CTA 5.52/5.53/5.54

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 - 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 slower delay. If the smart prep has not peaked after 30 seconds, please scan.
    - Scan Phase
        - Coverage is the same as your Non-Contrast scan.
- Series 4 - CTA knees down
    - Immediately follow with 2nd scan from popliteal fossa to tips of toes (all in one series, but two groups)

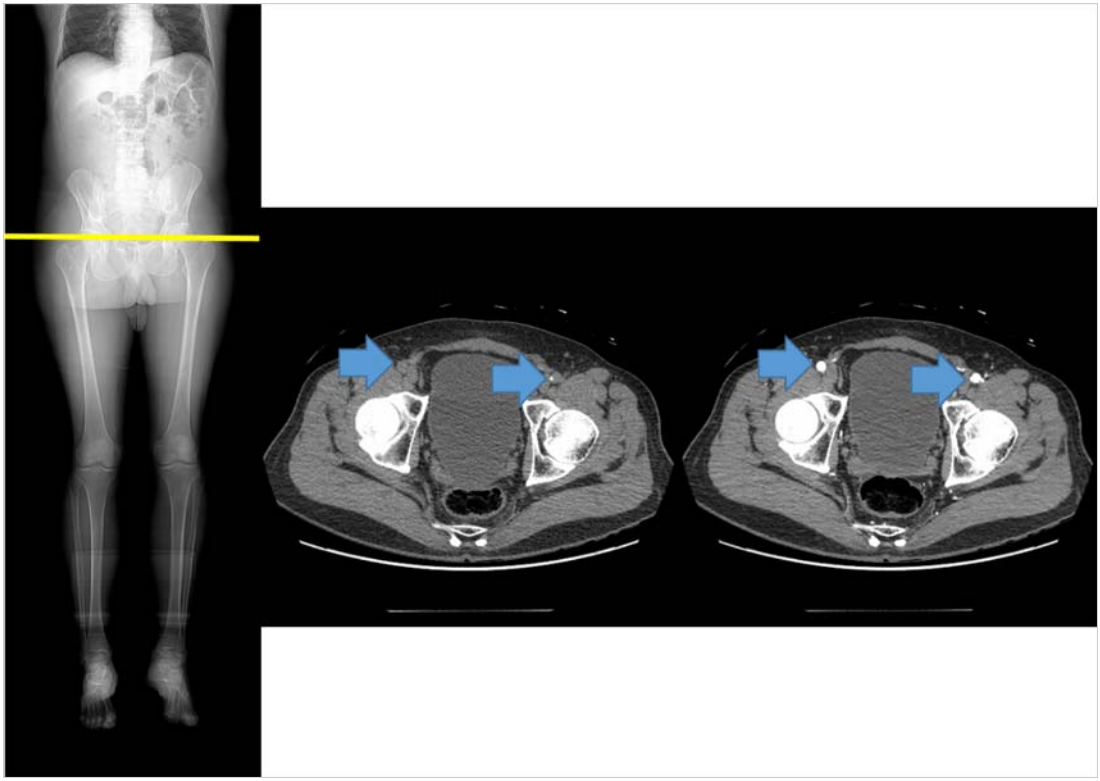


Image showing where the smart prep location is located on a scout. The image also shows the location of the femoral arteries and their appearance on a non contrast and with contrast (CTA) scan.

Reformat Instructions

Do coronal reformats at three different levels overlapping from skin to skin.

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 and all other series (including the Dose Information Slide) to ALI-Store. Send Angio series to CTAW1. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.4**	**0.5**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(35-590)**	**(30-590)**	**(30-620)**
Manual mA	**300.0**	**300.0**	**370.0**
Noise Index	**23.0**	**29.5**	**37.0**
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	**40**	**40**	**50**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.984**	**0.984**	**0.984**
Speed (mm/rot)	**39.40**	**39.40**	**39.40**
Rotation Time (s)	**0.5**	**0.5**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(120-675)**	**(110-770)**	**(120-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**14.5**	**17.5**	**21.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.984**	**0.984**	**0.984**
Speed (mm/rot)	**39.40**	**39.40**	**39.40**
Rotation Time (s)	**0.5**	**0.5**	**0.5**
kV	**80**	**100**	**120**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(120-675)**	**(110-770)**	**(120-800)**
Manual mA	**390.0**	**420.0**	**590.0**
Noise Index	**14.5**	**17.5**	**21.5**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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) 5.58/5.59/5.60

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 CTAW1 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**1.375**	**1.375**	**1.375**
Speed (mm/rot)	**55.00**	**55.00**	**55.00**
Rotation Time (s)	**0.5**	**0.6**	**0.8**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-700)**	**(35-720)**	**(35-680)**
Manual mA	**350.0**	**360.0**	**410.0**
Noise Index	**27.0**	**34.5**	**43.0**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Prospectively-Gated Left Atrial Appendage 5.73/5.74/5.75

Clinical Instructions

Indication

Evaluation for left atrial thrombus, pre-op for device (Watchman (TM)) implant.

Oral Contrast

None

Pre-Scan Instructions

- Tilt Gantry to S10,then back to zero, when it gets back to zero press both tilt buttons at the same time to "reset" the scanner.
- Practice Breathing Instructions. Ask patient to cough just prior to the scan.

IV Contrast Parameters

- Inject 80 mL of Iodixanol contrast and 50 mL Sodium Chloride 0.9% chaser at a rate of 5cc/second.
- 18g IV in Right Arm preferably, okay in left.

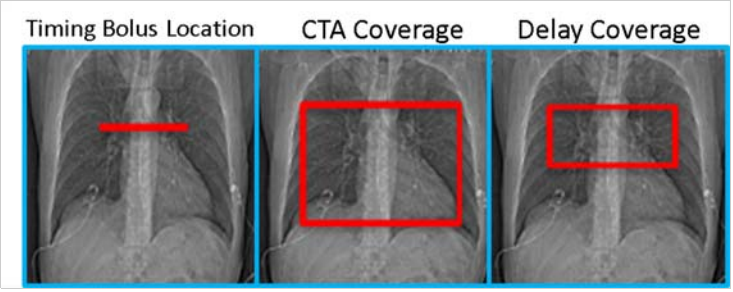
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

25 cm

Scan Description

- Series 1 – PA and lateral scout
  - Coverage: Lower Neck to Below lung Base
  - Expiration breathing instructions
- Series 2 - CTA
  - Scan on expiration, this is a gated study
  - SmartPrep on the ascending aorta at the level of the carina
  - Coverage: You need to cover the LA and the pulmonary vein (i.e. 1 cm above the carina bifurcation to the diaphragm). Use 4 slabs only.
- Series 3 - Delay (1 minute post contrast)
  - Coverage: You need to cover just the LAA. Use just 3 slabs, pull the bottom up one slab.



Scan coverages

Reformat Instructions

Both prospective series need to be reconstructed at 30% R-R with a 0% interval. The slice thickness should be 0.625 mm.

For the Delayed series, please create a 2.5 mm thickness by 1.25 mm interval axial reformat with a skin to to skin FOV. You will need to do a retro recon for this in order to change the FOV larger than the 25 cm we used for the delay RFOV.

Reformats

None.

Networking

All the images are sent to ALI_Store. Do NOT need to send 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	**120**	**120**	**120**
Scout 1 mA	**10**	**20**	**40**
Scout 1 Angle	**180**	**180**	**180**
Scout 2 kV	**120**	**120**	**120**
Scout 2 mA	**10**	**20**	**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)	**4**	**4**	**4**
Monitoring ISD (sec)	**2.5**	**2.5**	**2.5**
Enhancement Threshold (HU)	**80**	**80**	**80**
Diagnostic Delay	**Auto Minimum**	**Auto Minimum**	**Auto Minimum**

Series 2, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA	**400**	**500**	**600**
Cardiac Gating	**ON**	**ON**	**ON**
Padding Override	**OFF**	**OFF**	**OFF**
R to R interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Adaptive Gating	**ON**	**ON**	**ON**
Max #Beats to avoid	**2**	**2**	**2**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**

Note: for the LAA protocol change the gating center to 30% from 70%.

Series 2, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Snap Shot Segment**	**Snap Shot Segment**	**Snap Shot Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**n/a**	**n/a**	**n/a**

Series 3, Scan Phase

	Small	Medium	Large
Scan Type	**Cardiac**	**Cardiac**	**Cardiac**
Cardiac Mode	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**	**Snap Shot Pulse (Cine)**
Beam Collimation	**40**	**40**	**40**
Scan FOV	**Medium Cardiac**	**Large Cardiac**	**Large Cardiac**
Rotation Time (s)	**0.35**	**0.35**	**0.35**
kV	**80**	**100**	**120**
AEC Type	**ECG Modulated**	**ECG Modulated**	**ECG Modulated**
mA	**400**	**500**	**600**
Cardiac Gating	**ON**	**ON**	**ON**
Padding Override	**OFF**	**OFF**	**OFF**
R to R interval	**BPM**	**BPM**	**BPM**
Center R-Peak%	**70%**	**70%**	**70%**
Adaptive Gating	**ON**	**ON**	**ON**
Max #Beats to avoid	**2**	**2**	**2**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**

Note: for the LAA protocol change the gating center to 30% from 70%.

Series 3, Recons

	Small	Medium	Large
Recon 1			
DFOV	**25**	**25**	**25**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**450/50**	**450/50**	**450/50**
Recon Option	**Snap Shot Segment**	**Snap Shot Segment**	**Snap Shot Segment**
Recon Option			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**n/a**	**n/a**	**n/a**

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

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

IV Contrast Parameters

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

Delay: 90sec

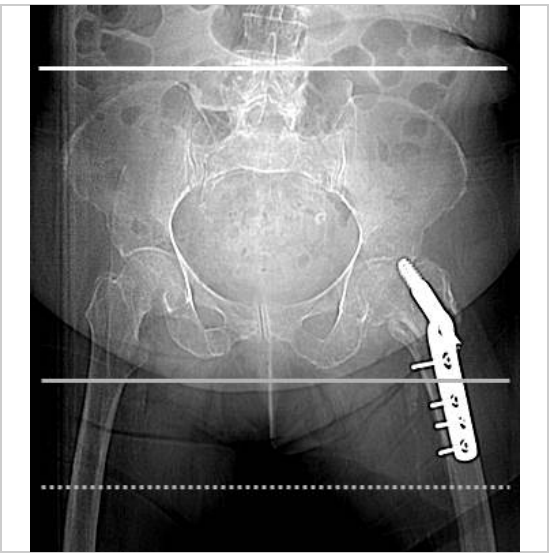
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

36 cm

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)

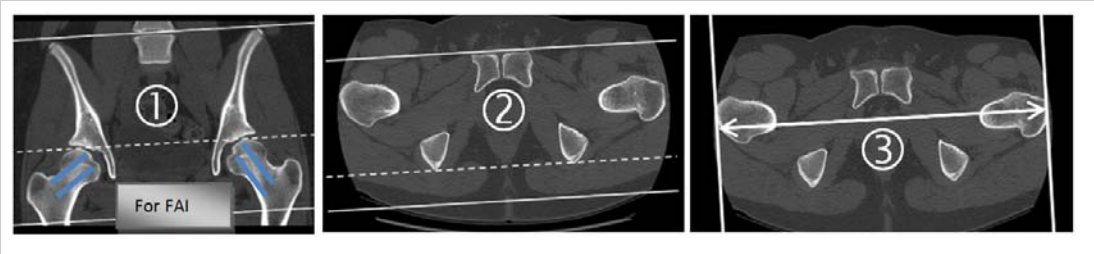


Bony Pelvis Scan Range

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.

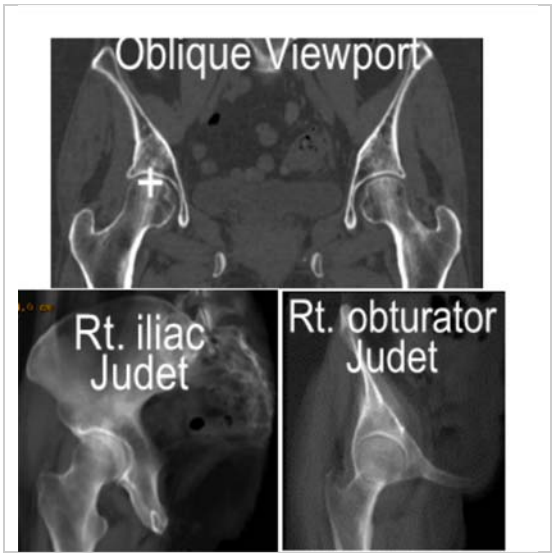


Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes
For "FAI" add oblique reformats parallel to femoral necks (blue lines)

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

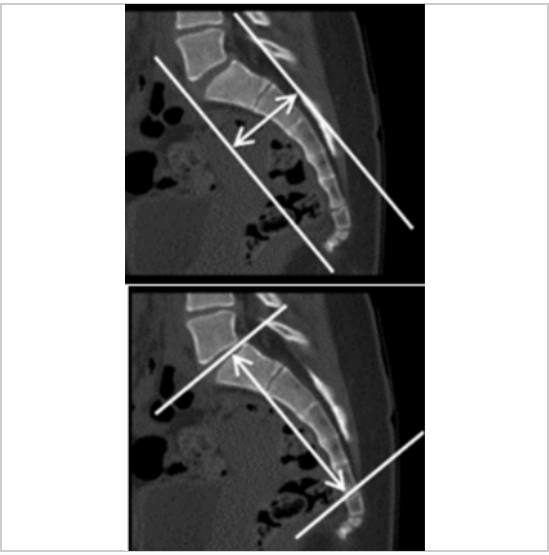
- Hide Annotations (right mouse button)
- Click “Rotate/Translate” button; set to 45 degrees
    - Scanner 1, 4, & ER: To locate the Rotate/Translate button, click on “Display button” (blue box with the letter A)
- Click to “Rotate to Left”
- Save Image (right mouse button)
- Click TWICE to rotate to 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 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 decipher the two.

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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.6**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(70-590)**	**(70-740)**	**(60-620)**
Manual mA	**300.0**	**370.0**	**380.0**
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 Setup	**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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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

IV Contrast Parameters

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

Delay: 90sec

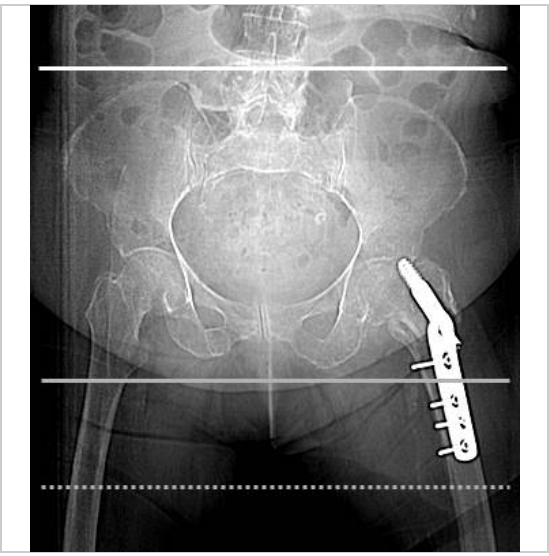
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

36 cm

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)

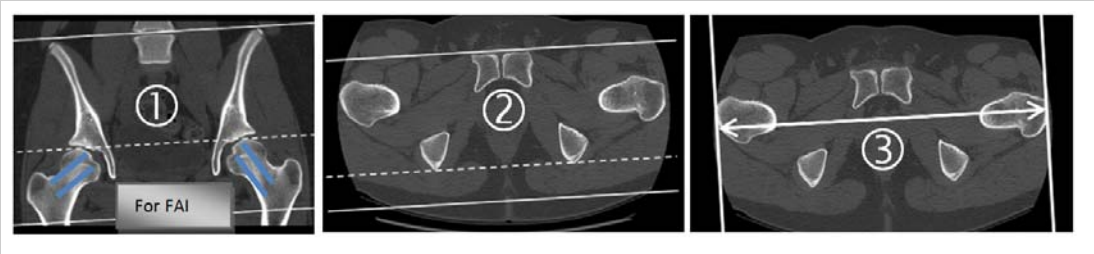


Bony Pelvis Scan Range

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.

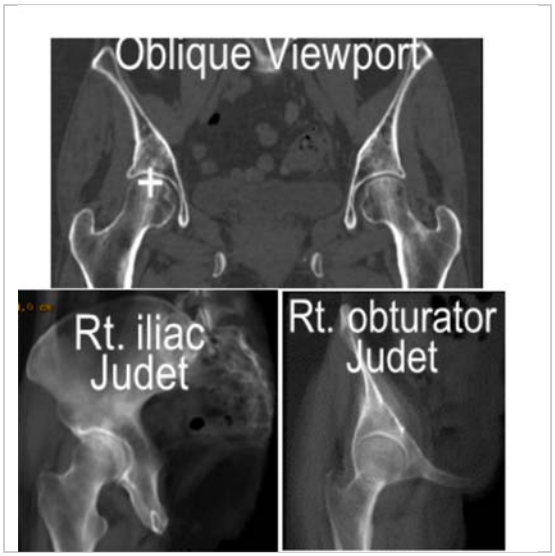


Reformat slices 3mm Thick at 1.5mm Intervals in all 3 planes
For "FAI" add oblique reformats parallel to femoral necks (blue lines)

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

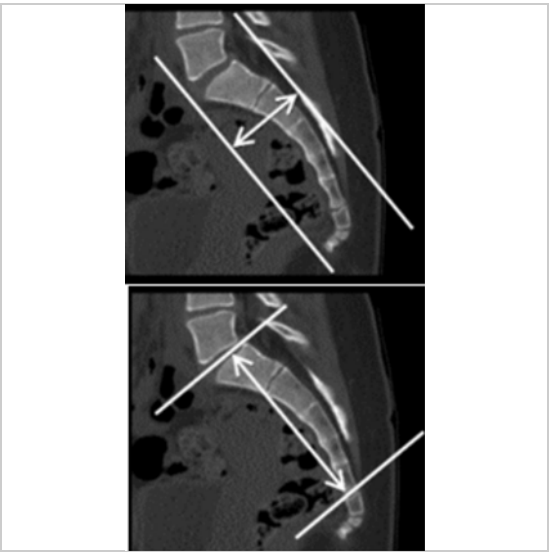
- Hide Annotations (right mouse button)
- Click “Rotate/Translate” button; set to 45 degrees
    - Scanner 1, 4, & ER: To locate the Rotate/Translate button, click on “Display button” (blue box with the letter A)
- Click to “Rotate to Left”
- Save Image (right mouse button)
- Click TWICE to rotate to 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 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 decipher the two.

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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.6**	**0.9**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(80-680)**	**(70-700)**	**(60-680)**
Manual mA	**340.0**	**350.0**	**410.0**
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 Setup	**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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Knee/Tibia (Without Metal) 9.3

Clinical Instructions

Indication

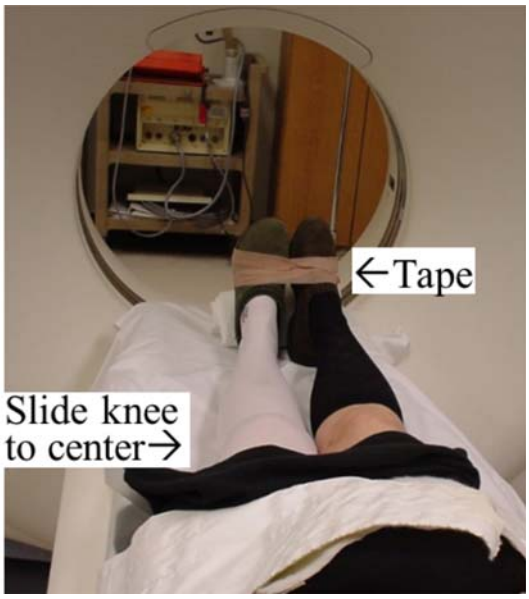
Assess the alignment and degree of displacement of fracture fragments, particularly at the articular surfaces. Also for the evaluation of arthritis, mineralized lesions, and to evaluate the bone surrounding metallic implants.

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

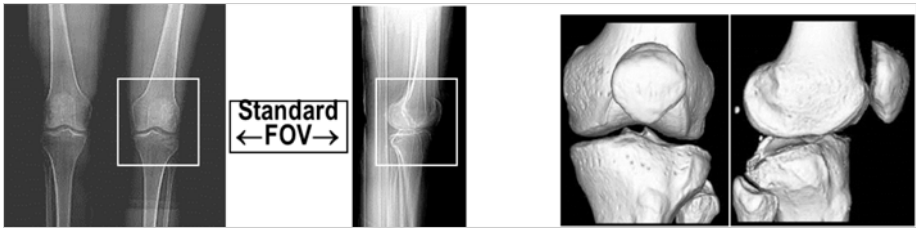
25 cm

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)

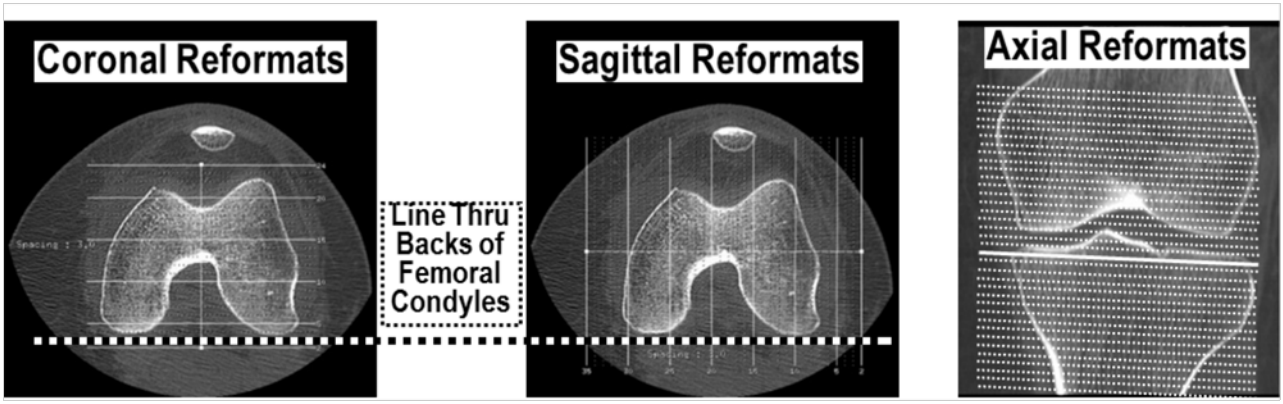


Knee FOV

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.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**120**
AEC type	**Manual mA**
mA Range	**(40-335)**
Manual mA	**210.0**
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 Setup	
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 Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Knee/Tibia (With Metal) 9.4

Clinical Instructions

Indication

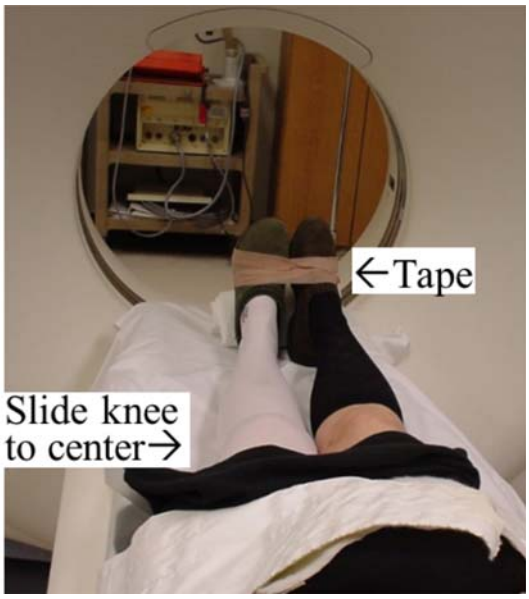
Assess the alignment and degree of displacement of fracture fragments, particularly at the articular surfaces. Also for the evaluation of arthritis, mineralized lesions, and to evaluate the bone surrounding metallic implants.

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

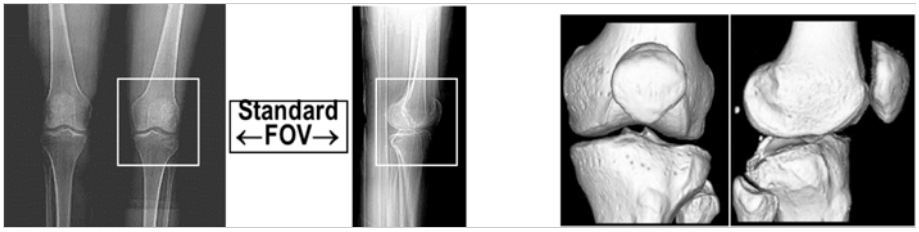
25 cm

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)

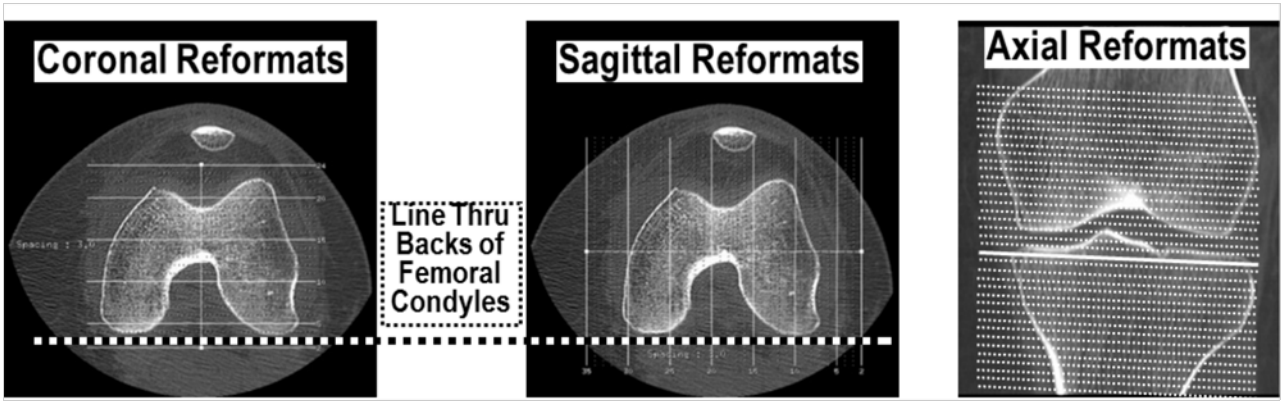


Knee FOV

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.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**140**
AEC type	**Manual mA**
mA Range	**(70-700)**
Manual mA	**360.0**
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 Setup	
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 Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Ankle/Foot/Distal Tibia (Without Metal) 9.1

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

Delay: 90sec

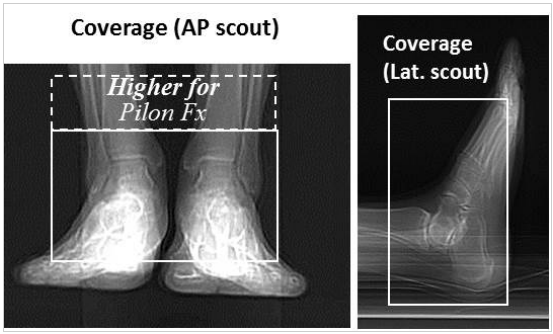
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

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

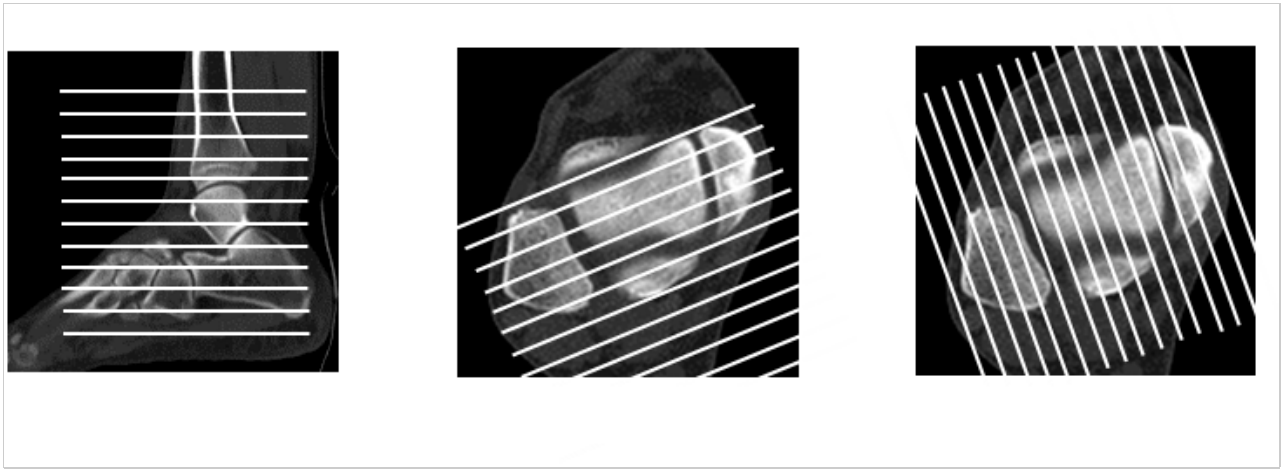
Reformat Instructions

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



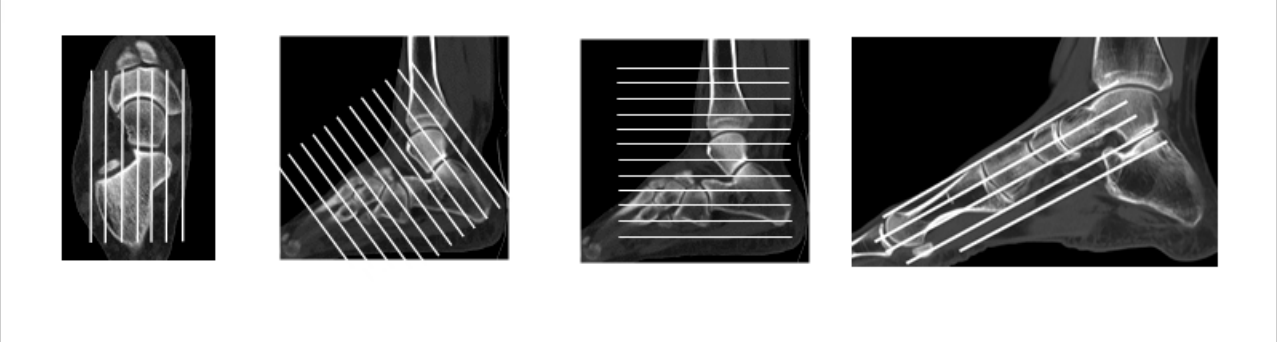
Three different looks at an ankle joint

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



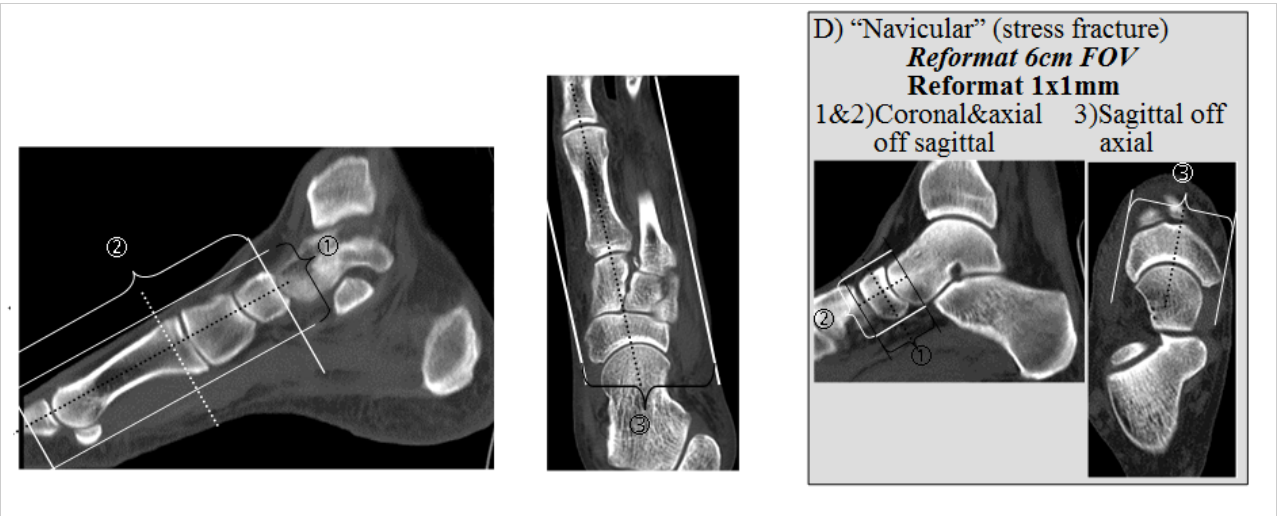
Four different reformats of the mid foot

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



hree different looks at the forefoot

- **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.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**120**
AEC type	**Manual mA**
mA Range	**(40-335)**
Manual mA	**210.0**
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 Setup	
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	
ASIR Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Ankle/Foot/Distal Tibia (With Metal) 9.2

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

Delay: 90sec

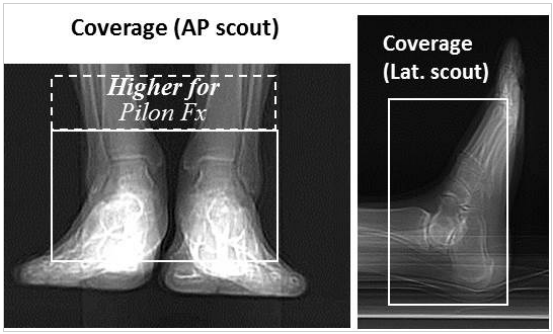
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

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

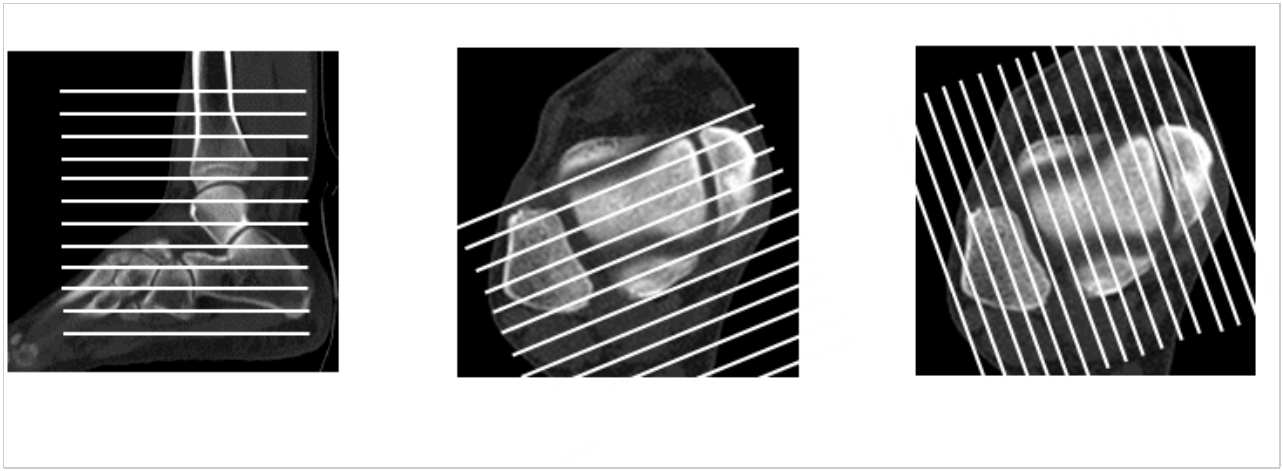
Reformat Instructions

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



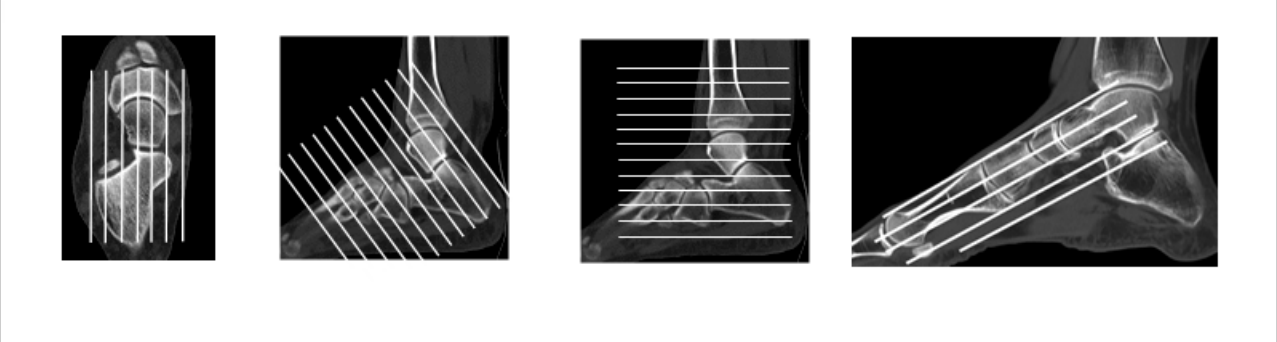
Three different looks at an ankle joint

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



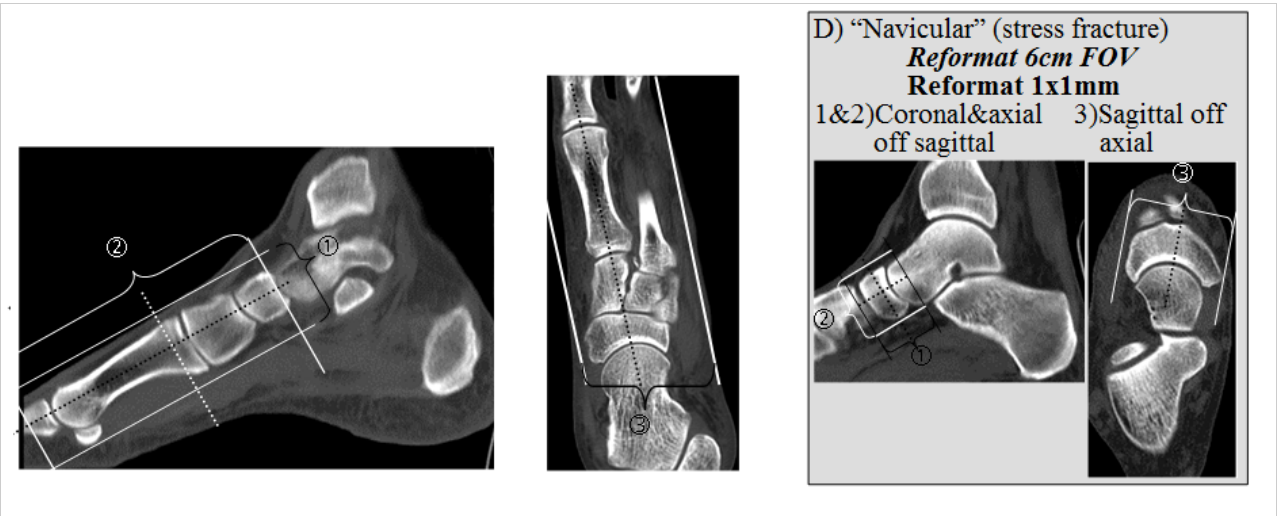
Four different reformats of the mid foot

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



hree different looks at the forefoot

- **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.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**140**
AEC type	**Manual mA**
mA Range	**(70-700)**
Manual mA	**360.0**
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 Setup	
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	
ASIR Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Femoral Anteversion 9.8/9.9/9.10

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

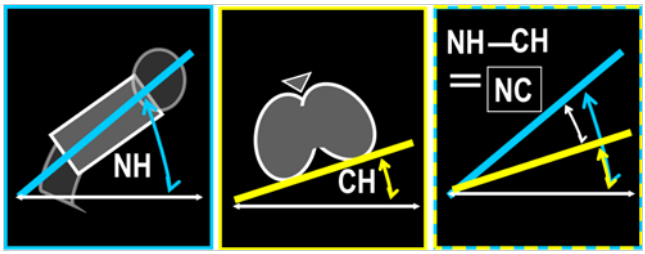
- Series 1 – PA and lateral scout
- Series 2 – CT Femoral Anteversion
  - Scan ankles ONLY if Tibias are clinically requested
  - Acquire 3 small slabs covering bilateral hips, knees, and ankles
    - Just above femoral heads through lesser trochanters
    - From the distal femoral metaphysis through tops of tibias
    - Just above syndesmosis, through talar domes

Femoral Anteversion

Reformat Instructions

Measurements To Be Made off of a CT Scanogram Femoral Anteversion

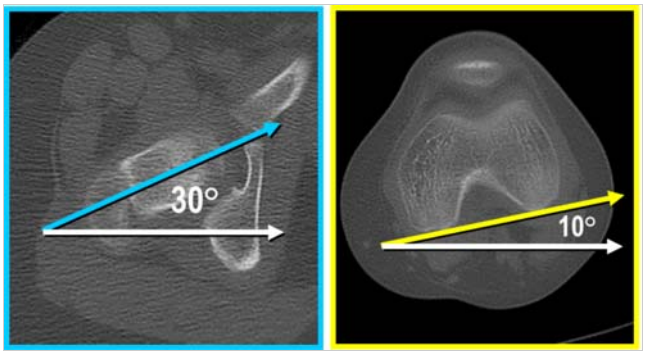
- Measure right and left sides individually
- Find the axial slice that best reveals the angle of the femoral neck.
- Measure the Neck-Horizontal Angle (NH).
- Find the slice that best reveals the angle of the femoral condyles.
- Measure the Condyle-Horizontal Angle (CH).
- Calculate the angle of the Neck relative to the Condyles (NC=NH-CH).



Relative measurement guidelines

- For the example below, the Neck-Horizontal angle=30 degrees, the Condyle-Horizontal=10 degrees, thus the relative angle between the Femoral Neck and Condyles =20 degrees.

This is the Femoral Anteversion angle.

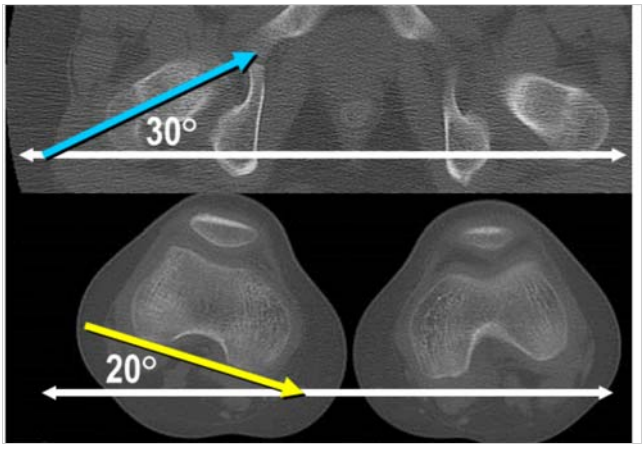


Example of Femoral Anteversion Angle

- In cases when the femoral condyles are internally rotated (as shown below), then the CH angle is added to the NH angle. (In the example to the below,

NC=NH+CH=30º+20º=50º).

- The key to visualizing the Anteversion angle is to imagine rotating the femoral shaft such that the condyles are straight horizontal (CH=0). The Anteversion angle is now equal to the angle between the femoral neck and horizontal (NH).



Example of Femoral Anteversion Angle

Femoral Length

- Measure right and left sides individually.
- Determine table positions at tops of femoral heads and bottom of femoral condyles.
- Report difference to the nearest 0.5cm.

Reformats

None.

Networking

All images are networked to ALI_Store, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(30-250)**	**(30-310)**	**(35-390)**
Manual mA	**120.0**	**150.0**	**230.0**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(10-80)**	**(10-100)**	**(10-130)**
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 Setup	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(10-80)**	**(10-100)**	**(10-130)**
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 Setup	**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

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

Delay: 90sec

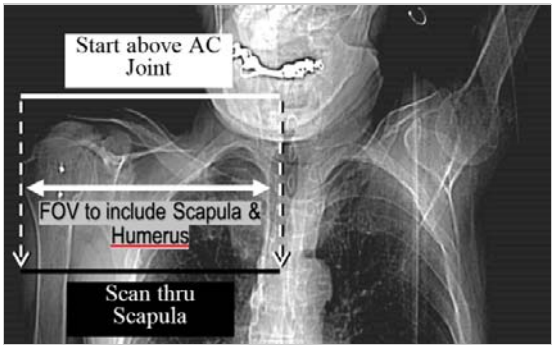
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

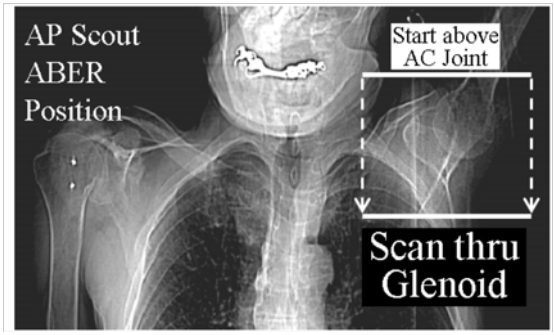
24 cm

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.



Schoulder Scan Range (routine)

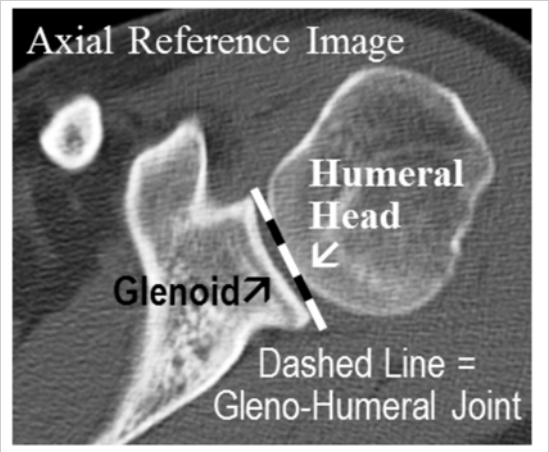


ABER Position

Reformat Instructions

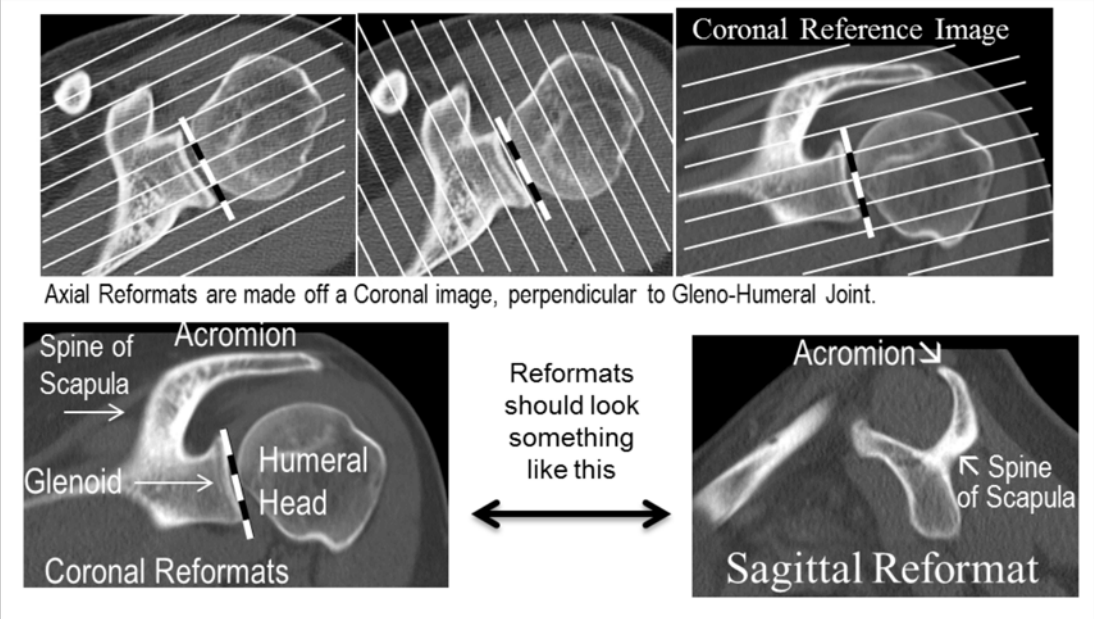
Non-Arthrogram:

- 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

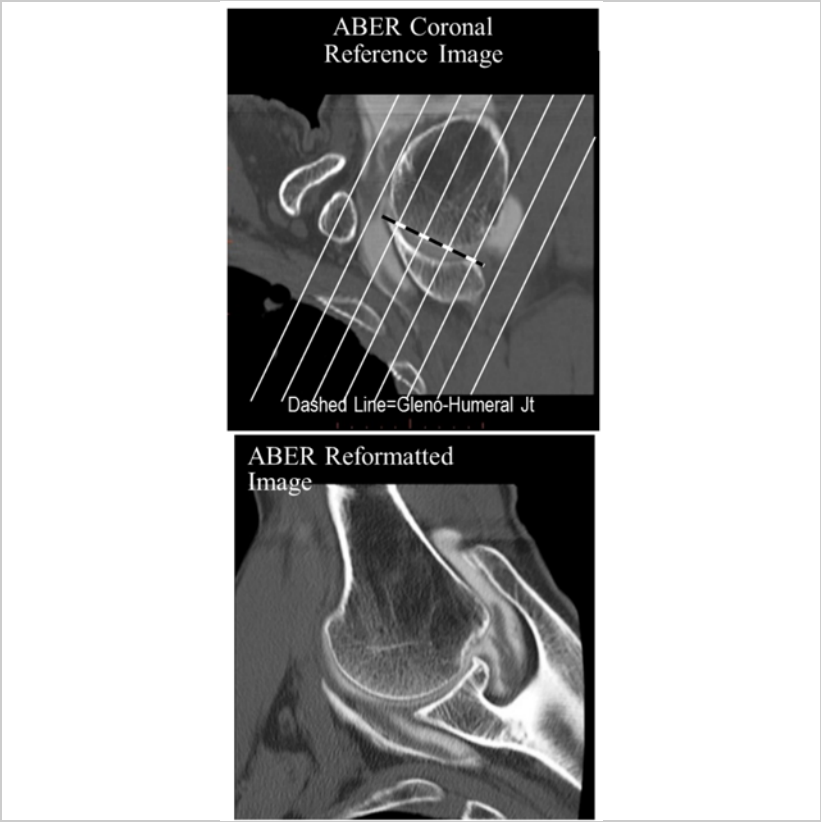
- Coronal & Sagittal Reformats are made off an Axial reference image, perpendicular & parallel to the Gleno-Humeral Joint.



Images of what the reformats should looklike

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 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 (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, except the thins send to ALI_Source. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.6**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-410)**	**(60-640)**	**(60-620)**
Manual mA	**210.0**	**320.0**	**380.0**
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 Setup			
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 Setup			
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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.6**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(50-410)**	**(60-640)**	**(60-620)**
Manual mA	**210.0**	**320.0**	**380.0**
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 Setup			
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 Setup			
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Elbow/Forearm (Without Metal) 4.6

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

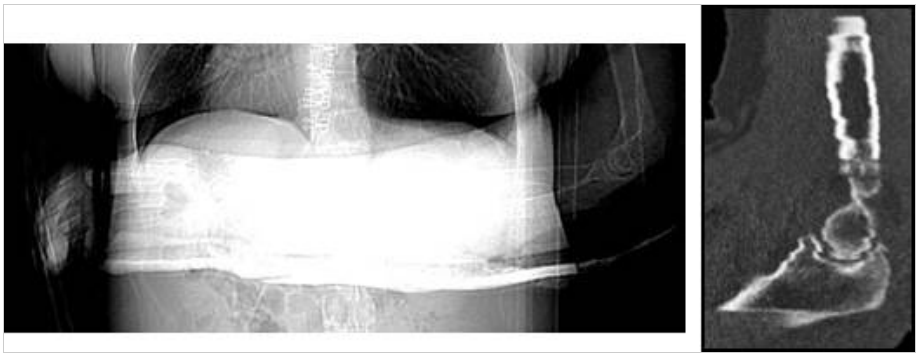
Pre-Scan Instructions

<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)

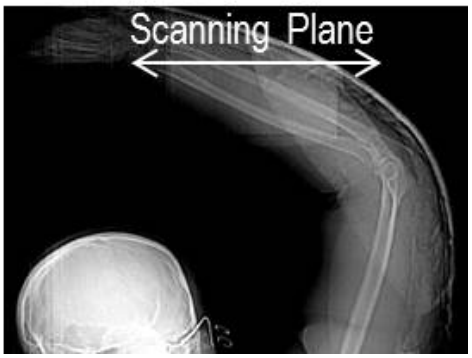


Effects of beam hardening and respiratory motion

- 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.

Try to avoid this positioning →

This positioning is better →



IV Contrast Parameters

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

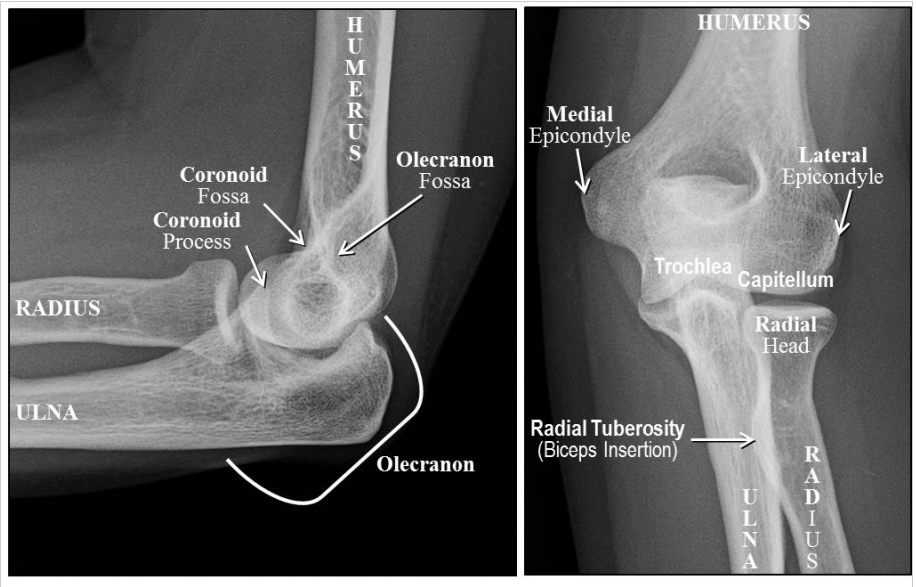
Scan Description

- Series 1 - PA and lateral scouts
- Series 2 - CT Elbow cover distal humerus through proximal forearm

Reformat Instructions

Elbow Anatomy:

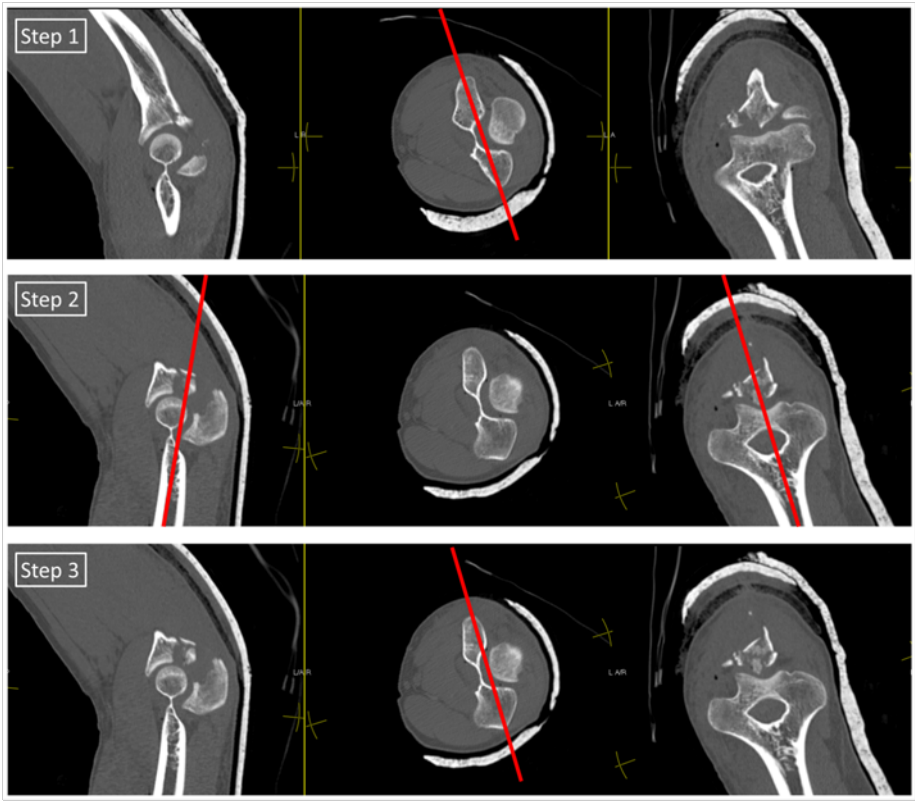
- Lateral and AP views respectively



Elbow Anatomy

Reformatting: 3x1.5 mm standard All While Using the Multi-Oblique Reformatting Tool:

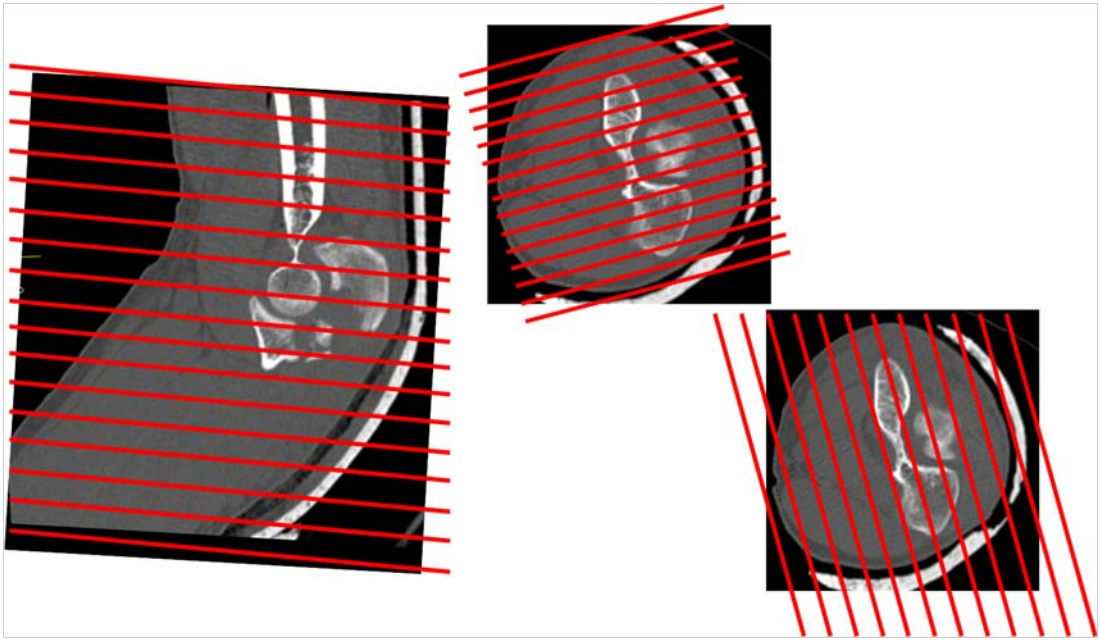
1. Using the axial images, align the coronal plane so that it is parallel to the transepicondylar axis of the distal humerus (diagram below)
2. Align both the sagittal and coronal planes to be parallel to the shaft of the distal humerus
3. Again use the axial images to fine tune the coronal plane to 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 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 decipher the two.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**120**
AEC type	**Manual mA**
mA Range	**(40-335)**
Manual mA	**210.0**
Noise Index	**15.5**
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 Setup	
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 Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Elbow/Forearm (With Metal) 4.7

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

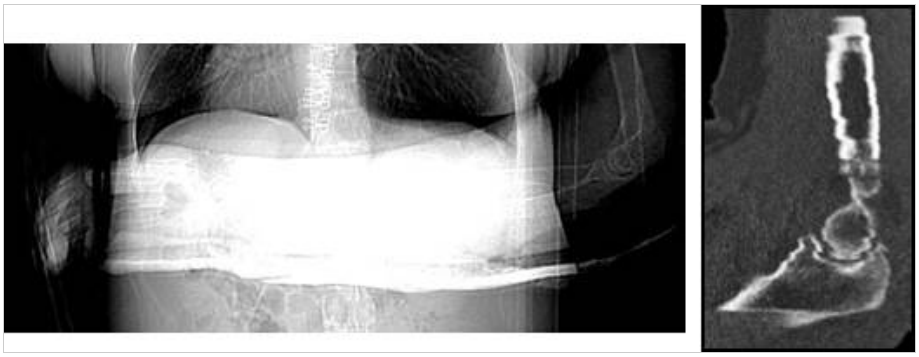
Pre-Scan Instructions

<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)

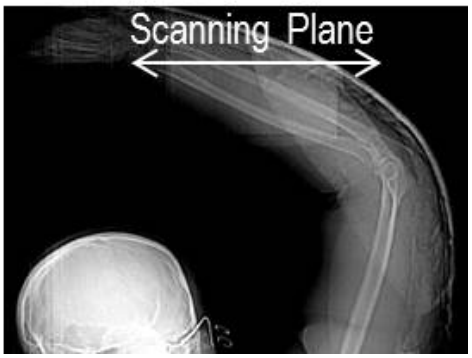


Effects of beam hardening and respiratory motion

- 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.

Try to avoid this positioning →

This positioning is better →



IV Contrast Parameters

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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

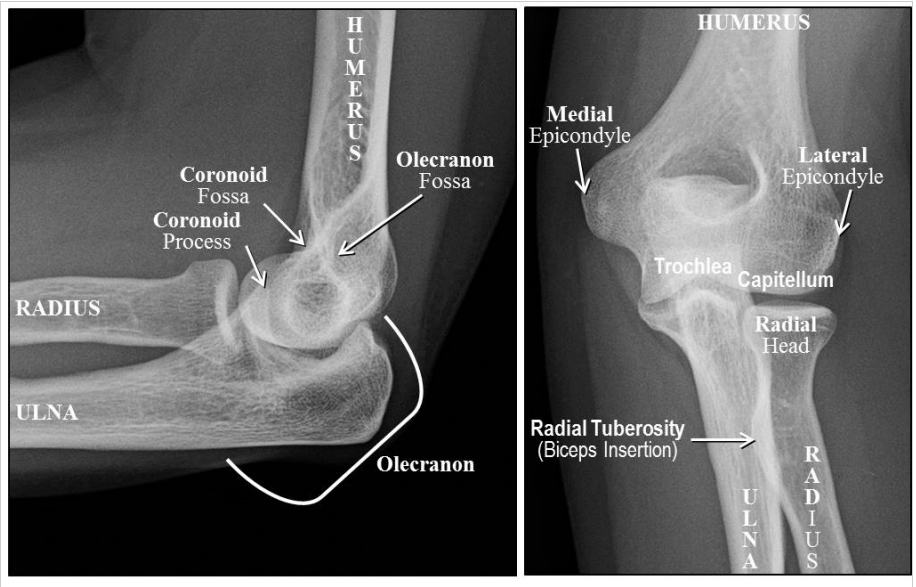
Scan Description

- Series 1 - PA and lateral scouts
- Series 2 - CT Elbow cover distal humerus through proximal forearm

Reformat Instructions

Elbow Anatomy:

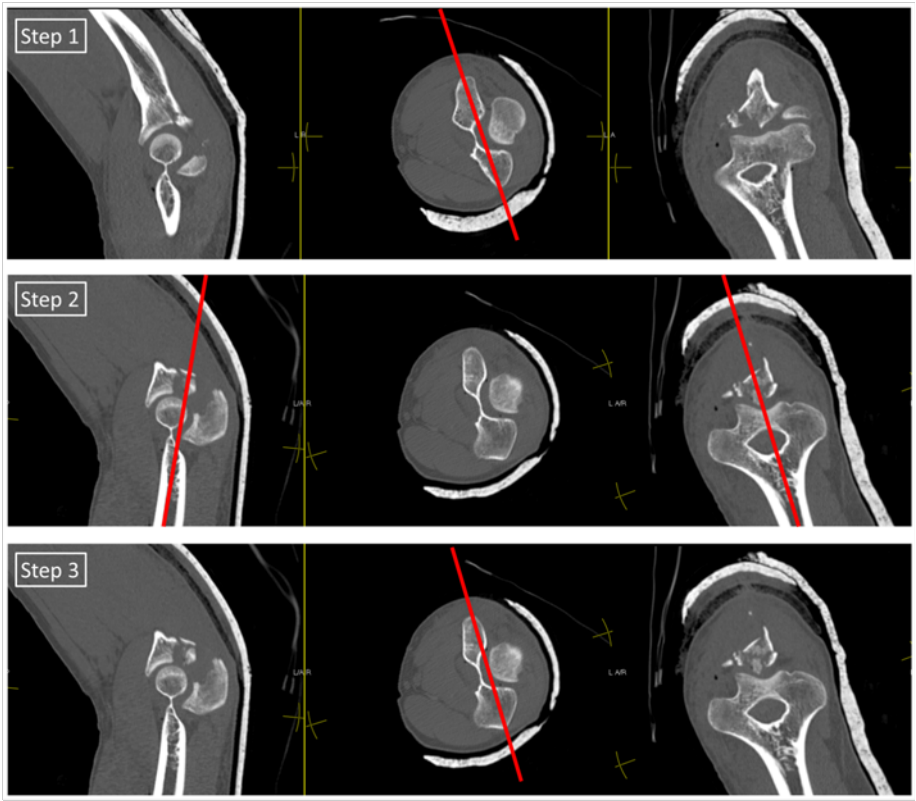
- Lateral and AP views respectively



Elbow Anatomy

Reformatting: 3x1.5 mm standard All While Using the Multi-Oblique Reformatting Tool:

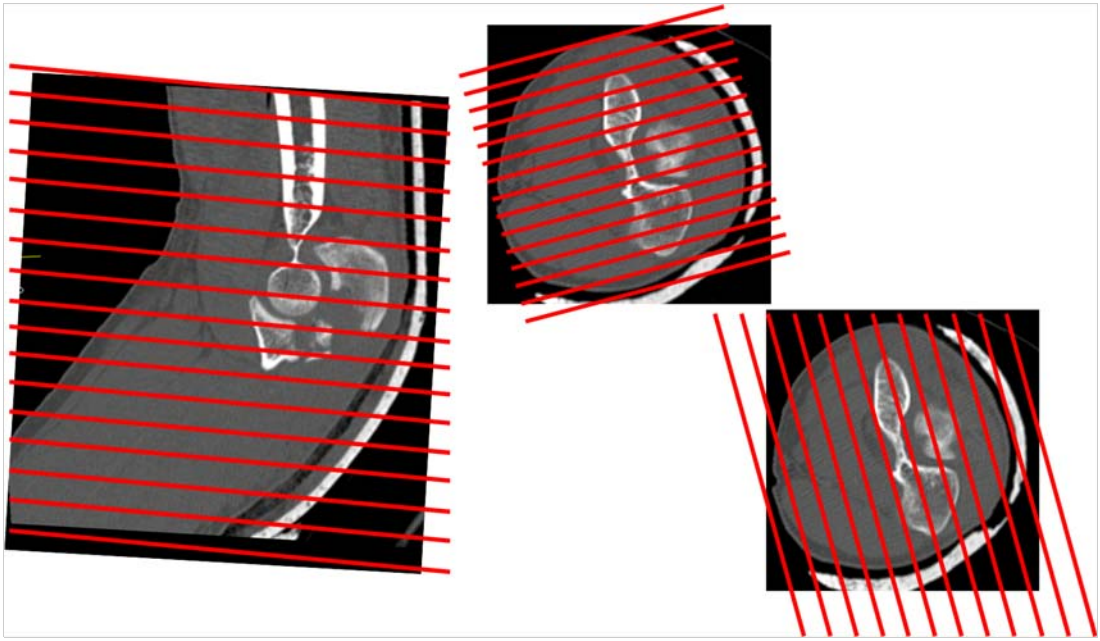
1. Using the axial images, align the coronal plane so that it is parallel to the transepicondylar axis of the distal humerus (diagram below)
2. Align both the sagittal and coronal planes to be parallel to the shaft of the distal humerus
3. Again use the axial images to fine tune the coronal plane to 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 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 decipher the two.

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, except the thins send to ALI_Source. 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	**40**
Detector Rows	**64.0**
Detector Configuration	**64x0.625**
Scan FOV	**Medium Body**
Pitch	**0.531**
Speed (mm/rot)	**21.20**
Rotation Time (s)	**1**
kV	**140**
AEC type	**Manual mA**
mA Range	**(70-700)**
Manual mA	**360.0**
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 Setup	
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 Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Wrist (Without Metal) 4.8

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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,”

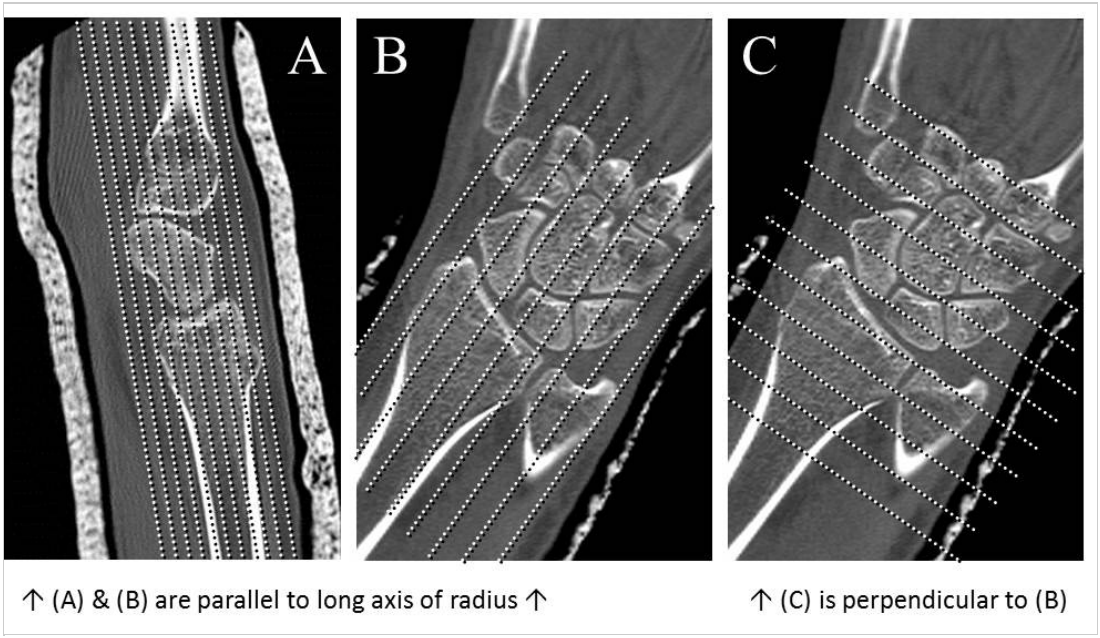
then also reformat in the 4th plane, the oblique sagittal plane – D.

- 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:

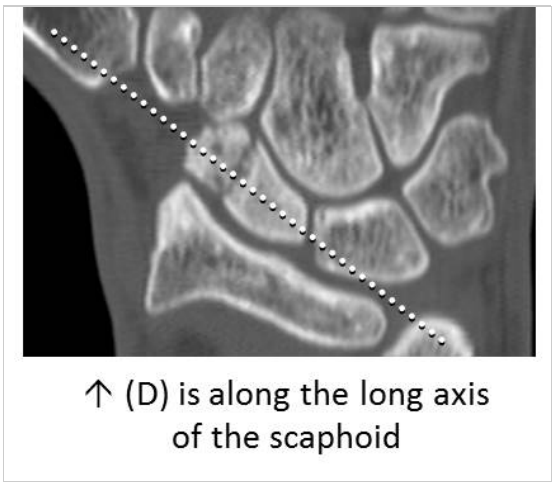
- Coronal with a standard of 2x1mm, made off a true sagittal

- 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

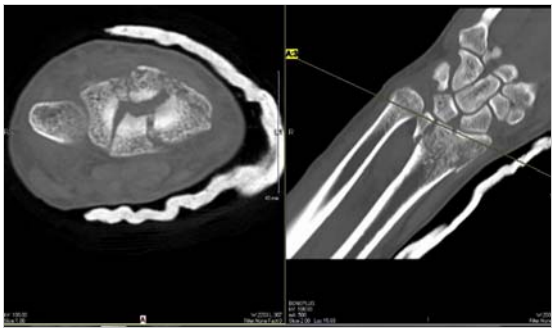


Special (limited) Protocol: DRUJ Instability

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 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.

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, except the thins send to ALI_Source. 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	40
Detector Rows	64.0
Detector Configuration	64x0.625
Scan FOV	Small Body
Pitch	0.531
Speed (mm/rot)	21.20
Rotation Time (s)	0.9
kV	100
AEC type	Manual mA
mA Range	(35-290)
Manual mA	150.0
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 Setup	
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	
ASIR Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Wrist (With Metal) 4.9

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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,”

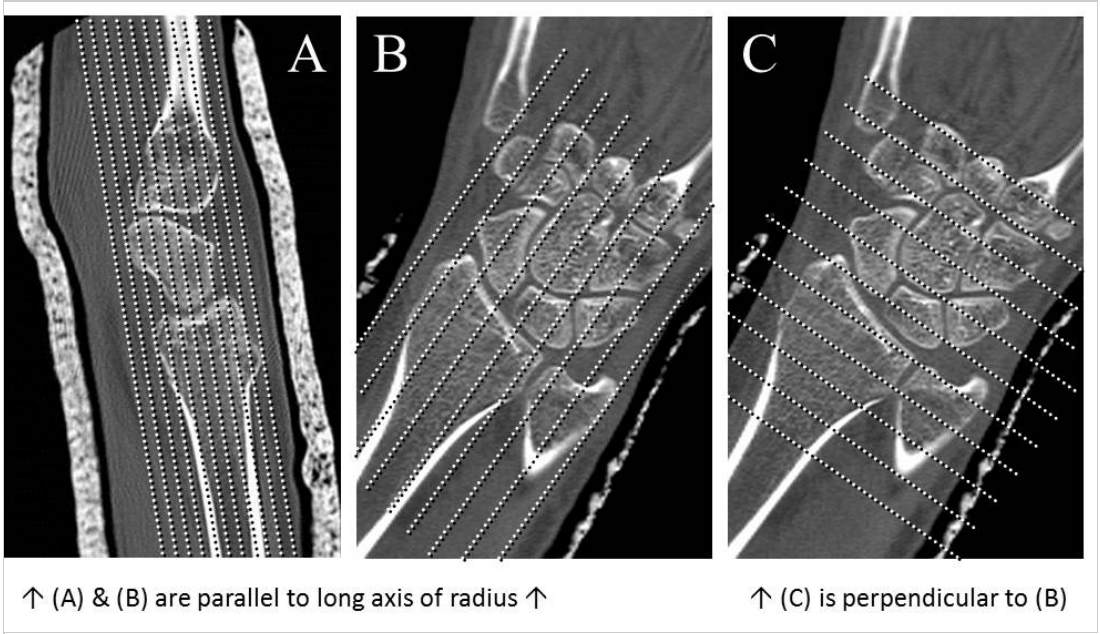
then also reformat in the 4th plane, the oblique sagittal plane – D.

- 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:

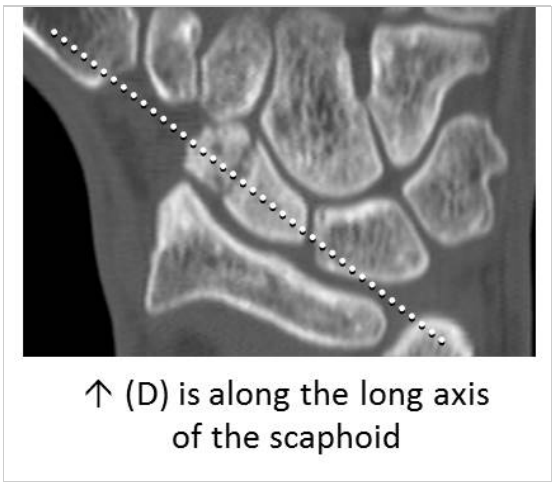
- Coronal with a standard of 2x1mm, made off a true sagittal

- 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

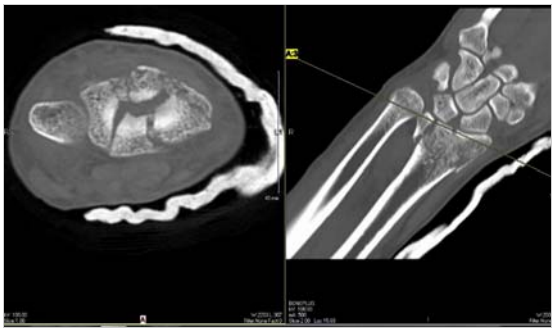


Special (limited) Protocol: DRUJ Instability

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 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.

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, except the thins send to ALI_Source. 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	40
Detector Rows	64.0
Detector Configuration	64x0.625
Scan FOV	Small Body
Pitch	0.531
Speed (mm/rot)	21.20
Rotation Time (s)	1
kV	140
AEC type	Manual mA
mA Range	(60-700)
Manual mA	290.0
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 Setup	
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	
ASIR Setup	
Slice Thickness (mm)	**0.625**
Interval (mm)	**0.312**

Chest Wall/Clavicle/AC Joint/SC Joint/Sternum/Ribs 4.11/4.12/4.13

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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.

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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	21.20	21.20	21.20
Rotation Time (s)	0.4	0.4	0.6
kV	140	140	140
AEC type	smart mA	smart mA	smart mA
mA Range	(50-410)	(60-640)	(60-620)
Manual mA	210.0	320.0	380.0
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 Setup			
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 Setup			
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Soft Tissue Extremity with IV Contrast 9.13/9.14/9.15

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

Contrast as directed by order (Iohexol 300) Dose: Per body weight (up to 100mL)

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.
  - Timing: 90 seconds from the start of the injection.

Reformat Instructions

No special instructions for the standard reformats for this protocol.

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.

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, except the thins send to ALI_Source. 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	40	40	40
Detector Rows	64.0	64.0	64.0
Detector Configuration	64x0.625	64x0.625	64x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.984	0.984	0.984
Speed (mm/rot)	39.40	39.40	39.40
Rotation Time (s)	0.5	0.5	0.5
kV	80	100	120
AEC type	smart mA	smart mA	smart mA
mA Range	(120-675)	(110-770)	(120-800)
Manual mA	390.0	420.0	590.0
Noise Index	14.5	17.5	21.5
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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

Clinical Instructions

Indication

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

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.

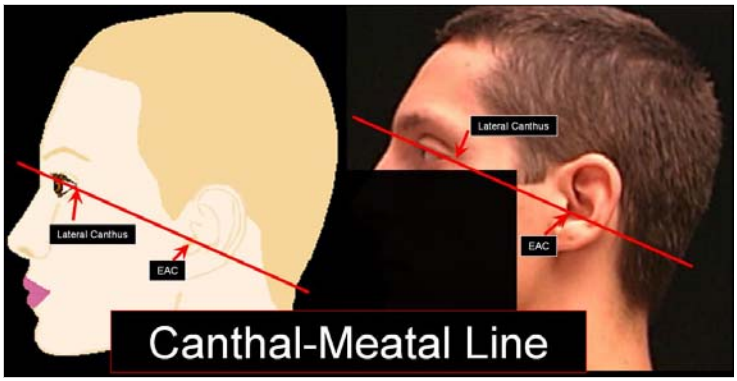
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

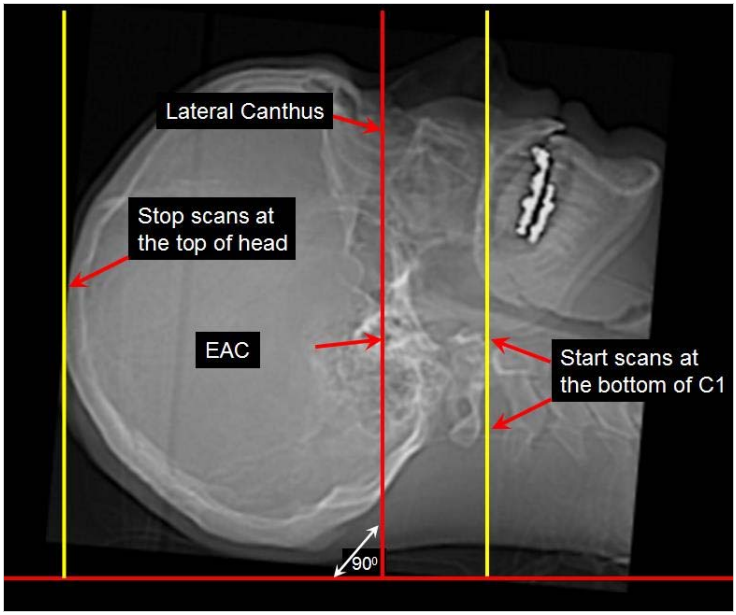
Preferred 22 cm

Scan Description

- Series 1-Scouts PA and Lateral
- Series 2-CT Head:start scans at the bottom of C1 and scan through the top of the head



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 and two additional reformats.

- 3D Exam: Please perform three 360 degree rotations at 10 degree intervals as follows
  - From a right lateral view = rotate the head horizontally for 360 degrees
  - From an AP view = rotate vertically for 360
  - From a Water's type view = rotate horizontally for 360 degrees (note: to get a Water's type projection rotate the patient's nose upward about 20 degrees)
- Networking 3D images to ALI Store
- Place the 3D request in the 3D slot on the wall in the E3/3 control room!

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

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	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625
Scan FOV	Head	Small Head	Small Head
Pitch	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60
Rotation Time (s)	0.4	0.4	0.4
kV	120	100	80
AEC type	smart mA	smart mA	smart mA
mA Range	(170-600)	(170-600)	(170-600)
Manual mA	280.0	280.0	280.0
Noise Index	6.5	6.8	6.8
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	**80/25**	**80/25**	**80/25**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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	**80/25**	**80/25**	**80/25**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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

Clinical Instructions

Indication

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

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

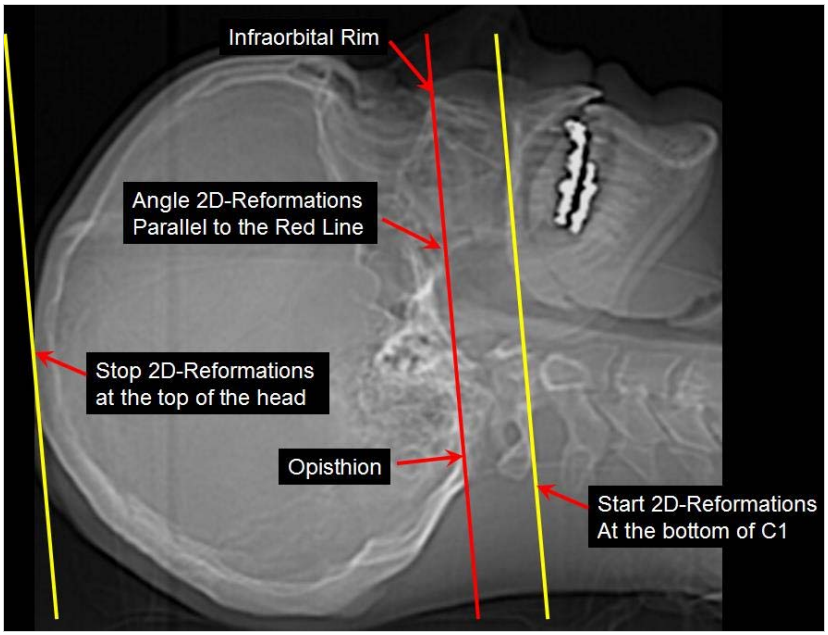
Preferred 22 cm

Scan Description

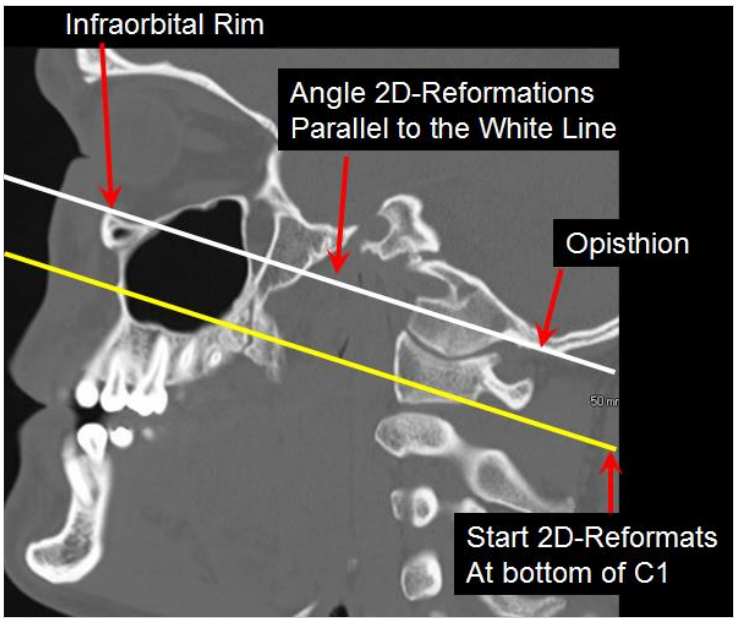
- Series 1 - Scouts PA and Lateral
- Series 2 – Start the scans at C1 and scan through the top of the head

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	180/25	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	150/30	5	2.5	Axial
AX BONE	BONE	Manual	Average	2500/350	2.5	1.25	Axial
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. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

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	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625
Scan FOV	Head	Small Head	Small Head
Pitch	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60
Rotation Time (s)	0.4	0.4	0.4
kV	120	100	80
AEC type	smart mA	smart mA	smart mA
mA Range	(170-600)	(170-600)	(170-600)
Manual mA	280.0	280.0	280.0
Noise Index	6.5	6.8	6.8
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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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 Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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 Setup	**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

Clinical Instructions

Indication

Mental status change, trauma, stroke, fall, intracranial hemorrhage, hydrocephalus

Videos for this protocol

Routine head imaging

Head with contrast

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.

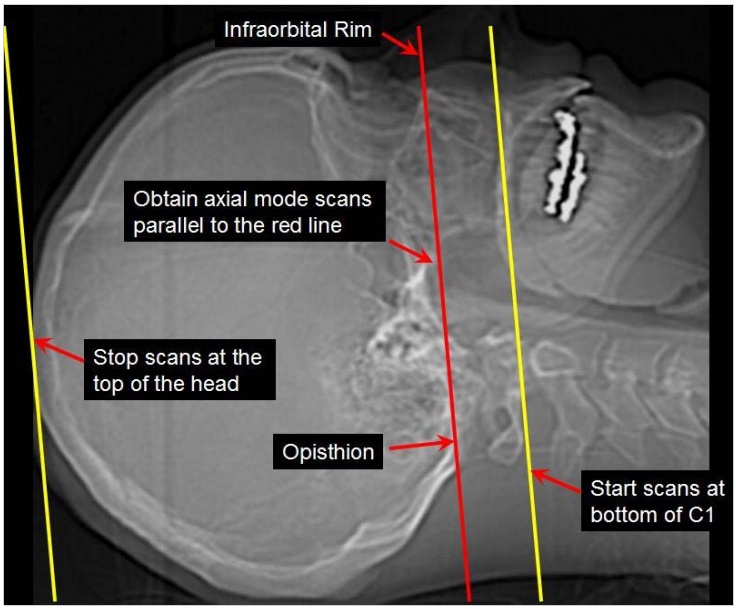
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

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

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	**16.0**	**16.0**	**16.0**
Detector Configuration	**16x0.625**	**16x0.625**	**16x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**10.00**	**10.00**	**10.00**
Rotation Time (s)	**0.6**	**0.6**	**0.6**
kV	**120**	**100**	**80**
AEC type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(220-750)**	**(220-750)**	**(220-675)**
Manual mA	**530.0**	**530.0**	**530.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**Soft**	**Soft**	**Soft**
WW/WL	**80/25**	**80/25**	**80/25**
Recon Option	**Full**	**Full**	**Full**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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	**16.0**	**16.0**	**16.0**
Detector Configuration	**16x0.625**	**16x0.625**	**16x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**10.00**	**10.00**	**10.00**
Rotation Time (s)	**0.7**	**0.7**	**0.6**
kV	**100**	**80**	**80**
AEC type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(230-790)**	**(230-675)**	**(220-675)**
Manual mA	**590.0**	**590.0**	**530.0**
Noise Index	**7.7**	**8.0**	**6.8**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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

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

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 Setup	**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 Setup	**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

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

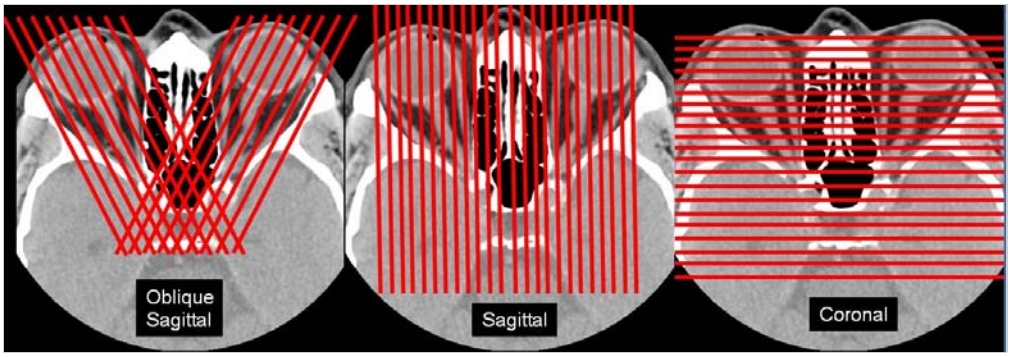
Preferred 18 cm

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 THIN 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 THIN 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. Do not send the thin bone anywhere. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**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 Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**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 Setup	**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

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

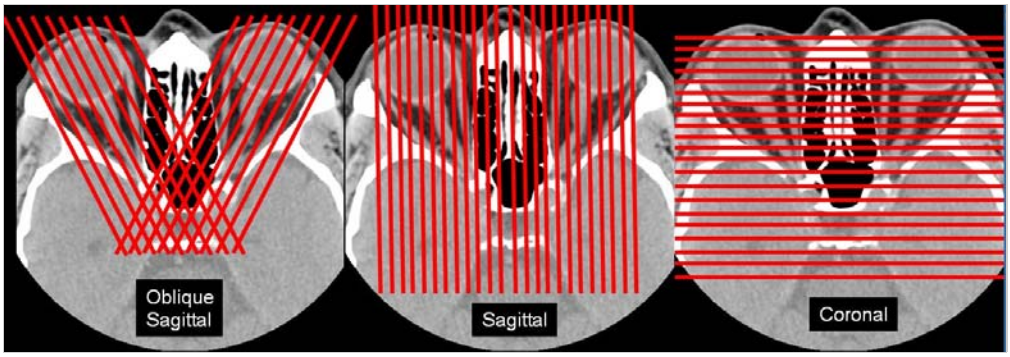
Preferred 18 cm

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

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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**	**350/20**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 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 Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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	**Soft**	**Soft**	**Standard**
WW/WL	**450/50**	**450/50**	**350/20**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 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 Setup	**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

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:

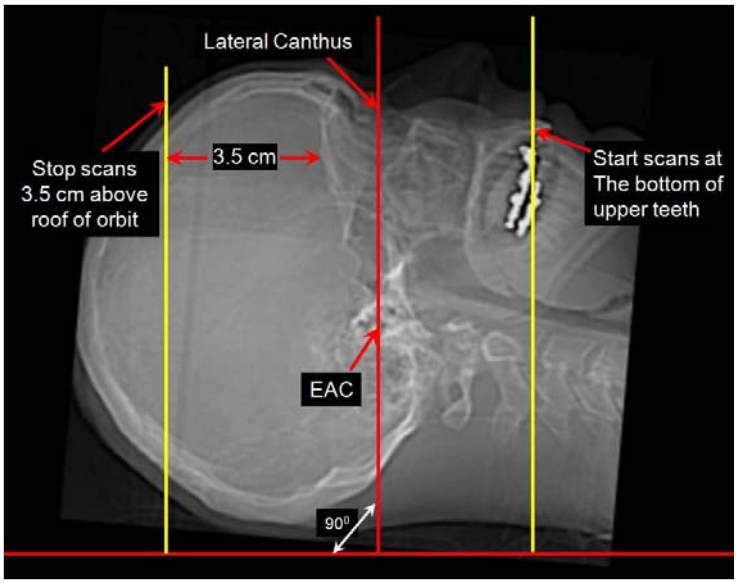
- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- Delay: Adults: 60 sec after start of injection; Pediatrics: 45 sec after start of injection

Field of View

Preferred 14 cm

Scan Description

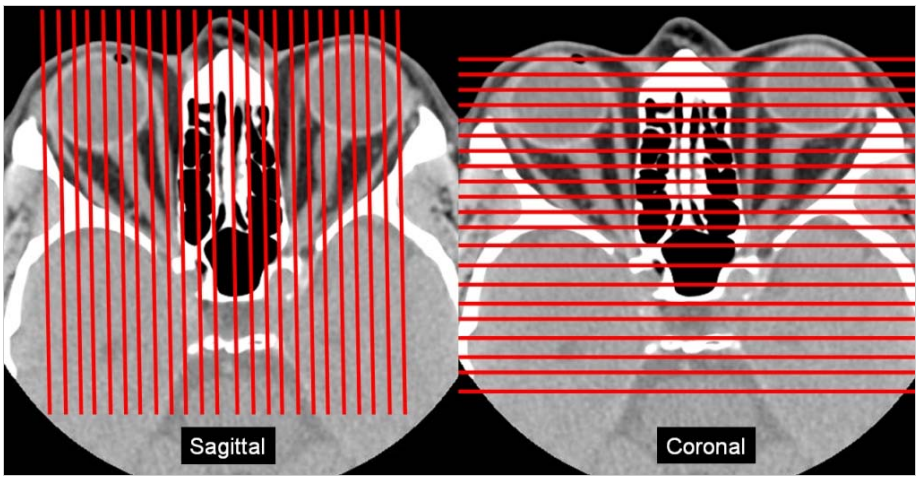
- Series 1 – Scouts PA and Lateral
- Series 2 – CT Sinus Without Contrast:
  - Adults: Scan from bottom of upper teeth to 3.5 cm above the orbital roof (see below)
  - Peds: Scan from bottom of upper teeth to top of frontal sinuses
- Series 3 – (If Indicated to do with contrast) Delay: Adults: 60 sec 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. Note: if smartprep is used, please also send the screen save (Series 99) of the smartprep locations and enhancement curve.

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(90-300)**	**(90-300)**	**(90-300)**
Manual mA	**140.0**	**140.0**	**140.0**
Noise Index	**9.2**	**9.7**	**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	**14**	**14**	**14**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**400/30**	**400/30**	**400/30**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	
ASIR Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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 Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(110-370)**	**(110-370)**	**(90-300)**
Manual mA	**180.0**	**180.0**	**140.0**
Noise Index	**10.9**	**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	**14**	**14**	**14**
Recon Type	**Standard**	**Standard**	**Standard**
WW/WL	**400/30**	**400/30**	**400/30**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	
ASIR Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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 Setup	**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

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

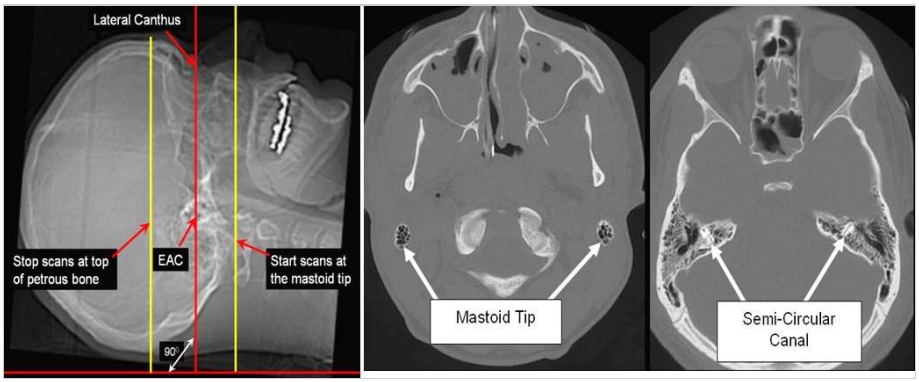
None

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)

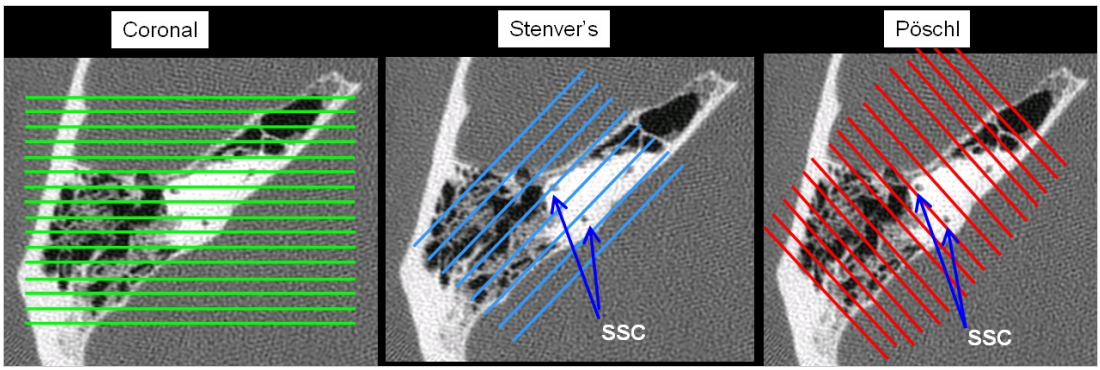


scan range for tbone

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

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**	**2500/350**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**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 Setup	**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 Setup	**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	**400/30**	**400/30**	**400/30**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 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

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

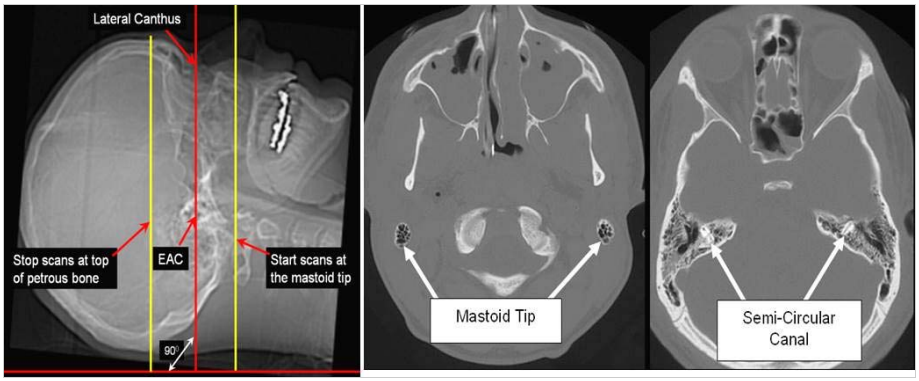
For sites without the Medrad™ P3T or P3T PA option, refer to the weight based contrast tables we provide in the protocol booklet.

Field of View

1. Recon 1 and Retro Recons: Preferred 22 cm
2. Recon 2 and 3 of TB: 9.6 cm

Scan Description

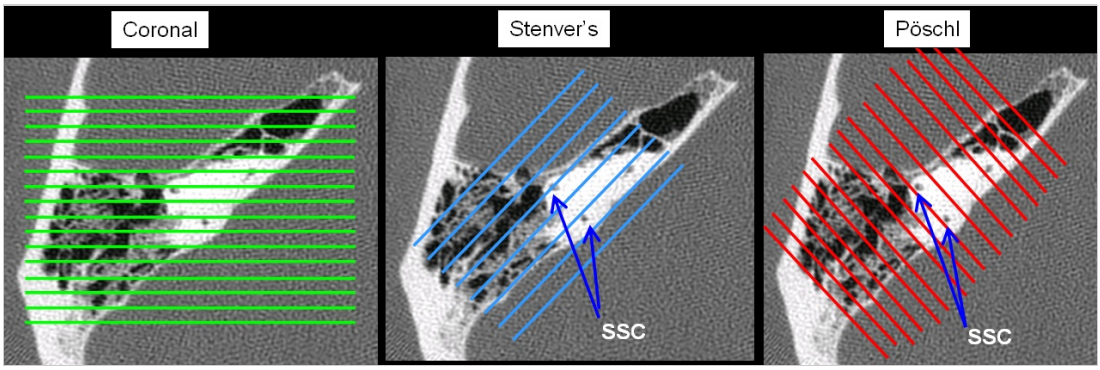
- Series 1 – Scout PA and Lateral
- Series 2 – Tbone without: Start scans at the mastoid tip and finish at the top of the petrous bone (see below)
- Series 3 – Tbone with: Begin scanning 60 seconds (adult) 45 seconds (peds) after the start of contrast: Start scans at the mastoid tip and finish at the top of the petrous bone (see below)



scan range for tbone

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. 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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**	**2500/350**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**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 Setup	**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 Setup	**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	**400/30**	**400/30**	**400/30**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**	**2500/350**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**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 Setup	**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 Setup	**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	**400/30**	**400/30**	**400/30**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 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

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 60 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 60 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:

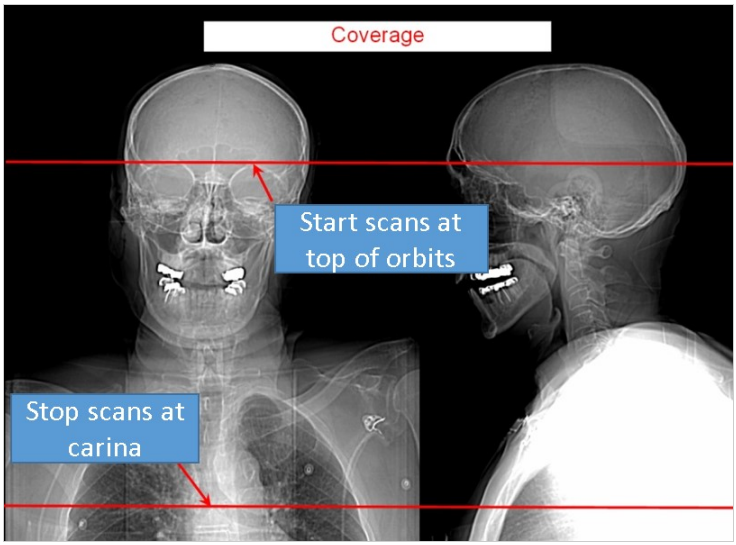
- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 1.5 mL/sec
- 20 mL Sodium Chloride 0.9% @ 1.5 mL/sec

Field of View

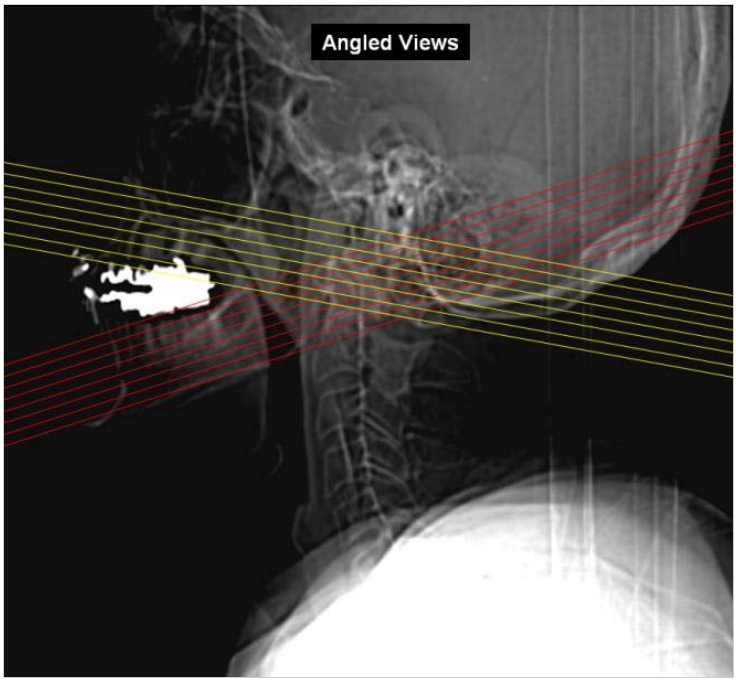
Preferred 30 cm

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.
- 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

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. 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.

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	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60
Rotation Time (s)	0.4	0.6	1
kV	120	140	140
AEC type	smart mA	smart mA	smart mA
mA Range	(230-620)	(200-660)	(210-715)
Manual mA	470.0	500.0	430.0
Noise Index	14.7	17.9	23.4
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Large Body**	**Large Body**	**Large Body**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**20.00**	**20.00**	**20.00**
Rotation Time (s)	**0.6**	**0.6**	**0.6**
kV	**120**	**120**	**120**
AEC type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(220-750)**	**(220-750)**	**(220-750)**
Manual mA	**530.0**	**530.0**	**530.0**
Noise Index	**4.6**	**4.6**	**4.6**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**N/A**	**N/A**	**N/A**

Neck (Parathyroid Adenoma) 3.5/3.6/3.7

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 3 series. Series 1 are the PA and Lateral Scouts. Series 2 is an arterial neck. Series 3 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

Pediatrics:

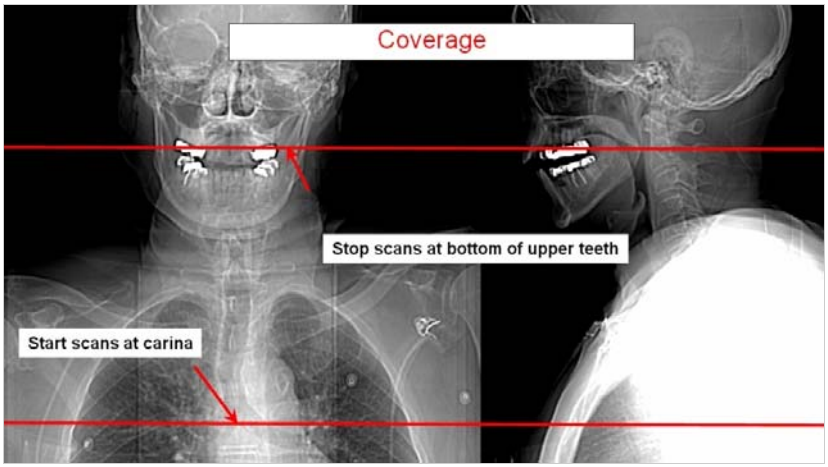
- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2.5 mL/sec
- 15 mL Sodium Chloride 0.9% @ 2.5 mL/sec

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
  - 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
    - Initiate next series immediately and begin Series 3 as quickly as possible without doing a smart prep.
- Series 3 – Routine Neck: Start the scan at the carina and scan to the top of the orbit
  - Do not use any CT scan delay but start scanning the routine neck CT immediately after Series 2 is finished.
  - Do angled views if necessary



Series 2 Coverage

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

Miscellaneous

None

Acquisition Parameters

Adults

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, Smart Prep

	Small	Medium	Large
mA	**80**	**80**	**80**
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 2, Scan Phase

	Small Adult	Medium Adult	Large Adult
Scan Type	**Helical**	**Helical**	**Helical**
Beam Collimation	**20**	**20**	**20**
Detector Rows	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.6**	**1**
kV	**120**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(230-620)**	**(200-660)**	**(210-715)**
Manual mA	**470.0**	**500.0**	**430.0**
Noise Index	**14.7**	**17.9**	**23.4**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.6**	**1**
kV	**120**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(230-620)**	**(200-660)**	**(210-715)**
Manual mA	**470.0**	**500.0**	**430.0**
Noise Index	**14.7**	**17.9**	**23.4**
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			
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**0.625**	**0.625**	**0.625**
Interval (mm)	**0.312**	**0.312**	**0.312**

Series 3, Axial Scan

	Small	Medium	Large
Scan Type	**Axial**	**Axial**	**Axial**
Beam Collimation	**20**	**20**	**20**
Detector Rows	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Large Body**	**Large Body**	**Large Body**
Pitch	**1**	**1**	**1**
Speed (mm/rot)	**20.00**	**20.00**	**20.00**
Rotation Time (s)	**0.6**	**0.6**	**0.6**
kV	**120**	**120**	**120**
AEC type	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(220-750)**	**(220-750)**	**(220-750)**
Manual mA	**530.0**	**530.0**	**530.0**
Noise Index	**4.6**	**4.6**	**4.6**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**N/A**	**N/A**	**N/A**

Peds

Series 1, Scout

	Child	Infant
Scout 1 kV	**100**	**80**
Scout 1 mA	**10**	**10**
Scout 1 Angle	**180**	**180**
Scout 2 kV	**100**	**80**
Scout 2 mA	**20**	**20**
Scout 2 Angle	**90**	**90**
WW/WL for Scout	**500/50**	**500/50**

Series 2, Scan Phase

	Child	Infant
Scan Type	**Helical**	**Helical**
Beam Collimation	**20**	**20**
Detector Rows	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**
Scan FOV	**Small Body**	**Small Body**
Pitch	**0.531**	**1.375**
Speed (mm/rot)	**10.60**	**27.50**
Rotation Time (s)	**0.4**	**0.4**
kV	**100**	**80**
AEC type	**smart mA**	**smart mA**
mA Range	**(170-520)**	**(190-600)**
Manual mA	**490.0**	**570.0**
Noise Index	**16.0**	**15.8**
Slice Thickness (mm)	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**

Series 2, Recons

	Child	Infant
Recon 1		
DFOV	**18**	**18**
Recon Type	**Detail**	**Detail**
WW/WL	**400/60**	**400/60**
Recon Option	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**

Series 3, Scan Phase

	Child	Infant
Scan Type	**Helical**	**Helical**
Beam Collimation	**20**	**20**
Detector Rows	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**
Scan FOV	**Small Body**	**Small Body**
Pitch	**0.531**	**1.375**
Speed (mm/rot)	**10.60**	**27.50**
Rotation Time (s)	**0.4**	**0.4**
kV	**100**	**80**
AEC type	**smart mA**	**smart mA**
mA Range	**(170-520)**	**(190-600)**
Manual mA	**490.0**	**570.0**
Noise Index	**11.3**	**11.1**
Slice Thickness (mm)	**2.5**	**2.5**
Interval (mm)	**1.5**	**1.5**

Series 3, Recons

	Child	Infant
Recon 1		
DFOV	**18**	**18**
Recon Type	**Detail**	**Detail**
WW/WL	**350/40**	**300/35**
Recon Option	**Plus**	**Plus**
Recon Option		
ASIR Setup	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**2.5**	**2.5**
Interval (mm)	**1.5**	**1.5**
Recon 2		
DFOV	**18**	**18**
Recon Type	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**
Recon Option	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**
Recon 3		
DFOV	**18**	**18**
Recon Type	**Detail**	**Detail**
WW/WL	**400/60**	**400/60**
Recon Option	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**
Slice Thickness (mm)	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**
Recon 4		
DFOV	**18**	**18**
Recon Type	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**
Recon Option	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**None**	**None**
Slice Thickness (mm)	**0.625**	**0.625**
Interval (mm)	**0.312**	**0.312**

Series 4, Axial Scan

	Child	Infant
Scan Type	**Axial**	**Axial**
Beam Collimation	**20**	**20**
Detector Rows	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**
Scan FOV	**Medium Body**	**Small Body**
Pitch	**1**	**1**
Speed (mm/rot)	**20.00**	**20.00**
Rotation Time (s)	**0.6**	**0.7**
kV	**100**	**80**
AEC type	**Manual mA**	**Manual mA**
mA Range	**(220-750)**	**(190-640)**
Manual mA	**530.0**	**450.0**
Noise Index	**4.8**	**4.8**
Slice Thickness (mm)	**2.5**	**2.5**
Interval (mm)	**0**	**0**

Series 4, Recons

	Child	Infant
Recon 1		
DFOV	**22**	**22**
Recon Type	**Detail**	**Detail**
WW/WL	**400/45**	**400/45**
Recon Option	**Full**	**Full**
Recon Option		
ASIR Setup	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**2.5**	**2.5**
Interval (mm)	**N/A**	**N/A**
Recon 2		
DFOV	**22**	**22**
Recon Type	**Bone Plus**	**Bone Plus**
WW/WL	**2500/350**	**2500/350**
Recon Option	**Full**	**Full**
Recon Option		
ASIR Setup	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**
Interval (mm)	**N/A**	**N/A**

Pediatric Neck - Routine 13.1.1/13.2.1/13.4.1 /13.6.1/13.8.1

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 60 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 60 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

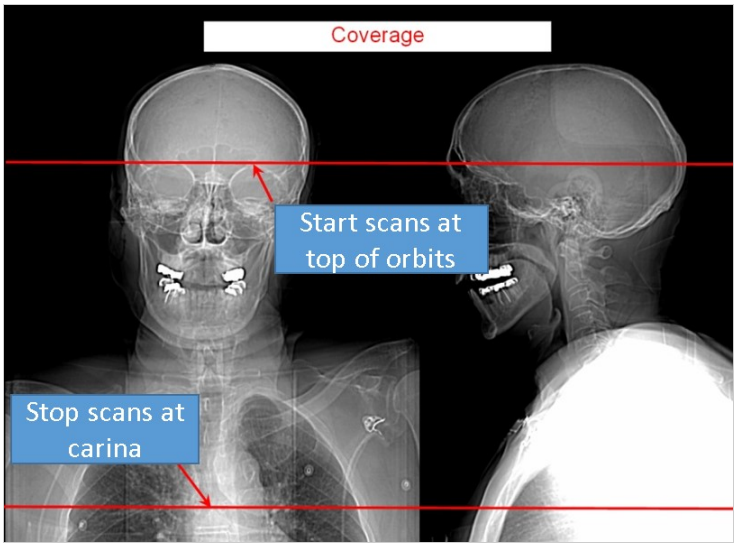
Field of View

Preferred 30 cm

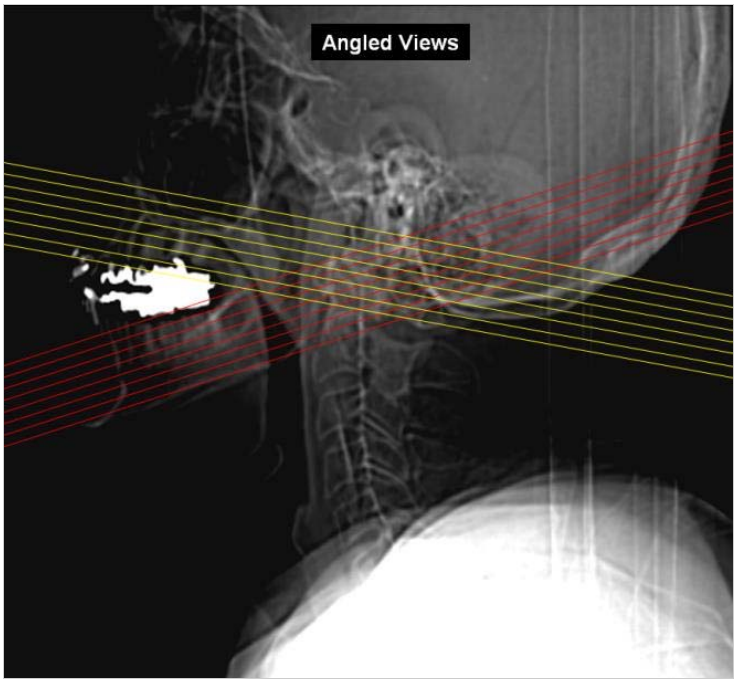
Scan Description

- 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.

- 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

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. 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	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	32.0	32.0	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625	32x0.625	32x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	0.531	0.531	0.531
Speed (mm/rot)	27.50	27.50	10.60	10.60	10.60
Rotation Time (s)	0.4	0.4	0.4	0.4	0.4
kV	80	80	80	100	120
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(150-470)	(190-600)	(120-360)	(170-520)	(240-760)
Manual mA	450.0	570.0	350.0	490.0	730.0
Noise Index	9.8	11.1	12.5	11.3	11.5
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 Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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 Setup	**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	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**460/60**	**460/60**	**460/60**	**460/60**	**460/60**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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	**32.0**	**32.0**	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Medium Body**	**Medium Body**
Pitch	**1**	**1**	**1**	**1**	**1**
Speed (mm/rot)	**20.00**	**20.00**	**20.00**	**20.00**	**20.00**
Rotation Time (s)	**0.7**	**0.7**	**0.7**	**0.6**	**0.6**
kV	**80**	**80**	**80**	**100**	**100**
AEC type	**Manual mA**	**Manual mA**	**Manual mA**	**Manual mA**	**Manual mA**
mA Range	**(190-640)**	**(190-640)**	**(190-640)**	**(220-750)**	**(220-750)**
Manual mA	**450.0**	**450.0**	**450.0**	**530.0**	**530.0**
Noise Index	**4.8**	**4.8**	**4.8**	**4.8**	**4.8**
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	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**400/45**	**400/45**	**400/45**	**400/45**	**400/45**
Recon Option	**Full**	**Full**	**Full**	**Full**	**Full**
Recon Option					
ASIR Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**	**Slice 30%**	**Slice 30%**
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 Setup	**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

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

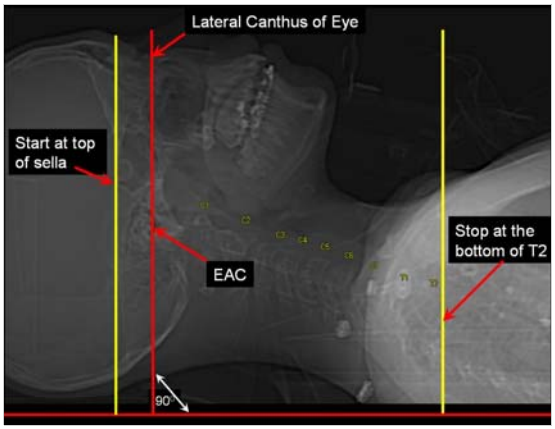
80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

Field of View

Preferred 18 cm

Scan Description

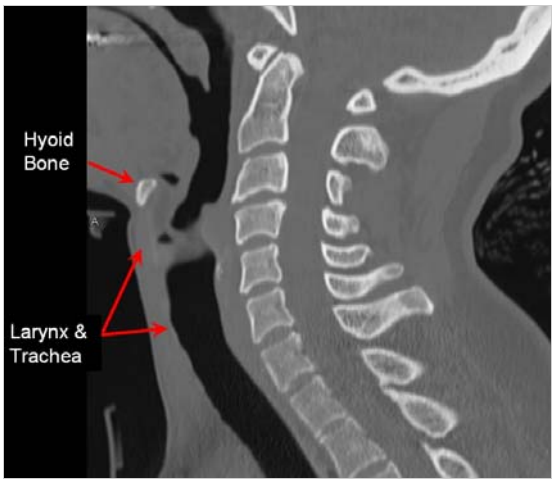
- Series 1 – Scouts PA and Lateral
- Series 2 – CT Cspine without: Scan from the top of the sella to the bottom of T2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Cspine with: Scan from the top of the sella to the bottom of T2



scan range for cspine

Reformat Instructions

- 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	450/60	3	1.5	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	1.5	0.75	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	3	1.5	Coronal
CO BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	1.5	0.75	Coronal
SA ST	THIN ST (with contrast phase)	Manual	Average	450/60	3	1.5	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	1.5	0.75	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60
Rotation Time (s)	0.4	0.6	1
kV	120	140	140
AEC type	smart mA	smart mA	smart mA
mA Range	(230-620)	(200-660)	(210-715)
Manual mA	470.0	500.0	430.0
Noise Index	14.7	17.9	23.4
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**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	**80**	**80**	**80**
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	**20**	**20**	**20**
Detector Rows	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.6**	**1**
kV	**120**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(230-620)**	**(200-660)**	**(210-715)**
Manual mA	**470.0**	**500.0**	**430.0**
Noise Index	**14.7**	**17.9**	**23.4**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**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

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

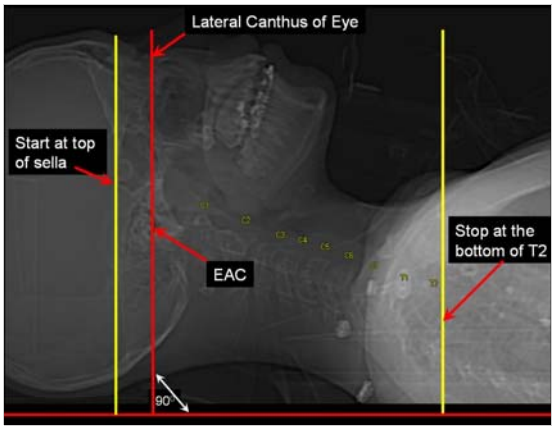
80 mL Iohexol (Omnipaque) 300 MG/ML @ 3.5 mL/sec (use 120 mL if a CT of the head will also be obtained)

Field of View

Preferred 18 cm

Scan Description

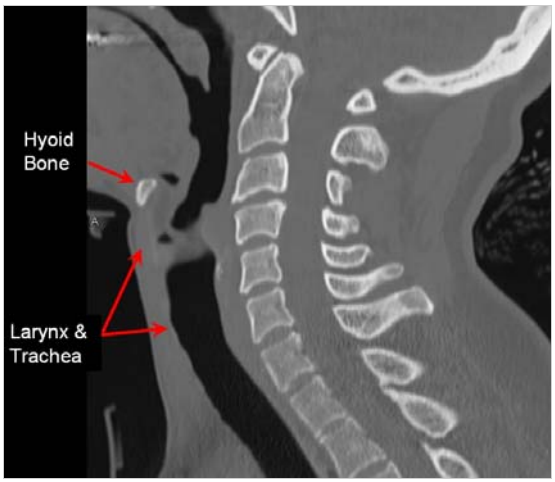
- Series 1 – Scouts PA and Lateral
- Series 2 – CT Cspine without: Scan from the top of the sella to the bottom of T2
- Series 3
  - Smart Prep over the aortic arch.
    - CT scan delay after arrival of contrast in aortic arch:
    - 15 sec (16 slice scanners), 20 sec (64 slice scanners)
  - CT Cspine with: Scan from the top of the sella to the bottom of T2



scan range for cspine

Reformat Instructions

- 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	450/60	3	1.5	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	1.5	0.75	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	3	1.5	Coronal
CO BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	1.5	0.75	Coronal
SA ST	THIN ST (with contrast phase)	Manual	Average	450/60	3	1.5	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	1.5	0.75	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	32.0	32.0	32.0
Detector Configuration	32x0.625	32x0.625	32x0.625
Scan FOV	Medium Body	Large Body	Large Body
Pitch	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60
Rotation Time (s)	0.4	0.7	1
kV	140	140	140
AEC type	smart mA	smart mA	smart mA
mA Range	(240-650)	(200-680)	(250-715)
Manual mA	490.0	510.0	510.0
Noise Index	11.5	16.4	21.4
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**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	**80**	**80**	**80**
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	**20**	**20**	**20**
Detector Rows	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.7**	**1**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(240-650)**	**(200-680)**	**(250-715)**
Manual mA	**490.0**	**510.0**	**510.0**
Noise Index	**11.5**	**16.4**	**21.4**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**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

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	450/60	2	1	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	2	1	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	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	450/60	2	1	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	2	1	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(80-650)**	**(80-770)**	**(60-680)**
Manual mA	**320.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(80-650)**	**(80-770)**	**(60-680)**
Manual mA	**320.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Adult Thoracic Spine (with Metal) 7.19/7.20/7.21

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	450/60	2	1	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	2	1	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	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	450/60	2	1	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	2	1	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.8**	**1**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(90-680)**	**(70-700)**	**(80-715)**
Manual mA	**340.0**	**350.0**	**490.0**
Noise Index	**11.5**	**15.0**	**22.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.8**	**1**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(90-680)**	**(70-700)**	**(80-715)**
Manual mA	**340.0**	**350.0**	**490.0**
Noise Index	**11.5**	**15.0**	**22.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Adult Lumbar Spine (without Metal) 7.1/7.2/7.3

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	450/60	2	1	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	2	1	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	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	450/60	2	1	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	2	1	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(80-650)**	**(80-770)**	**(60-680)**
Manual mA	**320.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.7**	**1**
kV	**100**	**120**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(80-650)**	**(80-770)**	**(60-680)**
Manual mA	**320.0**	**390.0**	**410.0**
Noise Index	**17.5**	**19.0**	**24.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Adult Lumbar Spine (with Metal) 7.16/7.17/7.18

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	450/60	2	1	Coronal
CO BONE	Thin Bone	Manual	Average	2500/350	2	1	Coronal
SA ST	Thin ST	Manual	Average	450/60	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	450/60	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	450/60	2	1	Sagittal
SA BONE	THIN BONE (with contrast phase)	Manual	Average	2500/350	2	1	Sagittal

Networking

All Images to ALI store. Do not send the thin bone anywhere. 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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.8**	**1**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(90-680)**	**(70-700)**	**(80-715)**
Manual mA	**340.0**	**350.0**	**490.0**
Noise Index	**11.5**	**15.0**	**22.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
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)	**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	**40**	**40**	**40**
Detector Rows	**64.0**	**64.0**	**64.0**
Detector Configuration	**64x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Medium Body**	**Large Body**	**Large Body**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**21.20**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.8**	**1**
kV	**140**	**140**	**140**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(90-680)**	**(70-700)**	**(80-715)**
Manual mA	**340.0**	**350.0**	**490.0**
Noise Index	**11.5**	**15.0**	**22.0**
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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**None**	**None**	**None**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

Stroke Deluxe – Total Cerebrovascular 1.6/1.13 /11.16/11.17

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 Head Only Contrast Adult:

- 80 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

CTA Head Only Contrast Ped:

- 1.0 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2.5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 2.5 mL/sec
- (If performing a perfusion in addition to CTA head use 0.25 mg/kg Isovue 370 instead)

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:

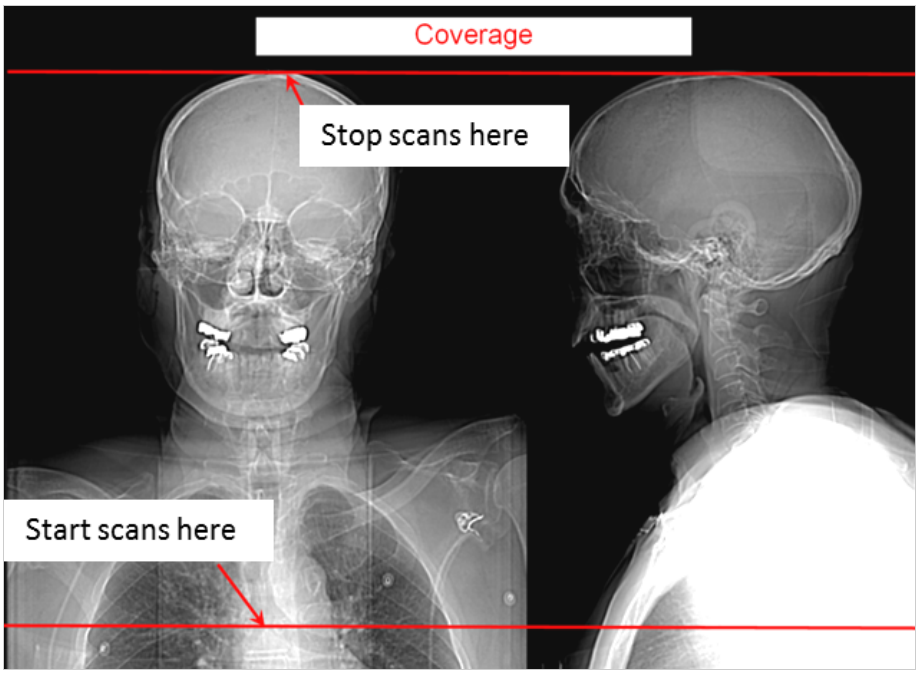
- 0.25 mL/kg Isovue 370 with 10 mL saline chase
- 3-4 mL per sec (Depends on size of needle and age of patient)

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.



Scan Range

Reformat Instructions

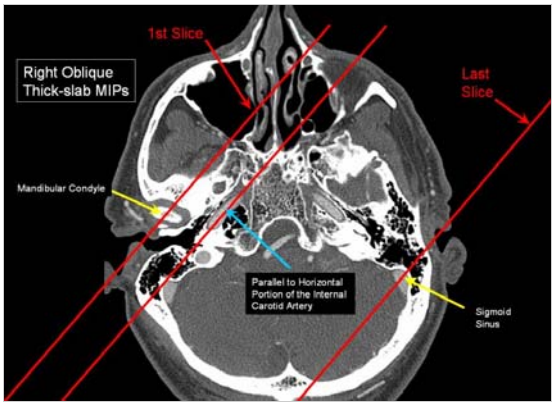
Please send all images to PACS before starting reformats. See table below for reformat instructions.

Reformats

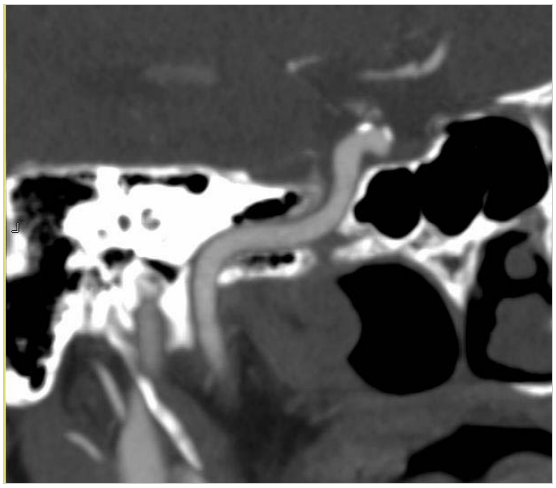
Thin MIP 2D-Reformations through the vertebral and carotid arteries

- 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



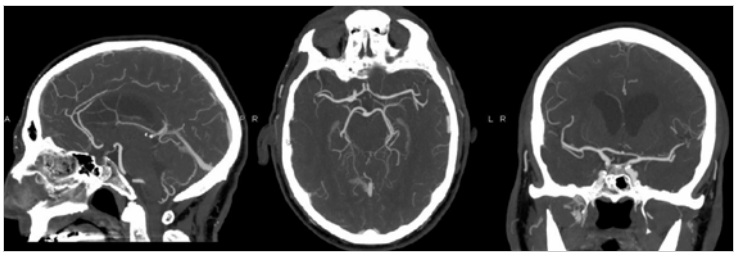
What reformats should look like

Name	Source Recon	DMPR or Manual	Type (MIP, Average, etc.)	WW/WL	Slice Thickness (mm)	Interval (mm)	Orientation
RT OBL	Thin ST	Manual	Average	800/200	1	1	Axial
LT OBL	Thin ST	Manual	Average	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).

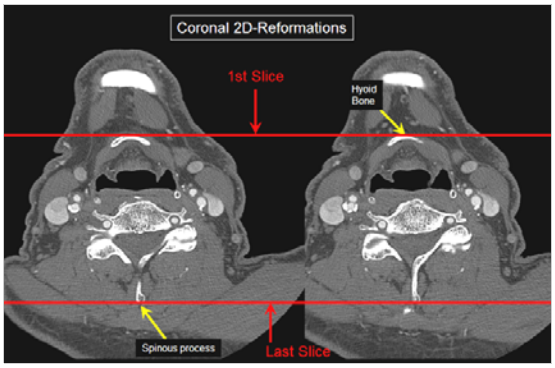


What reformats should look like

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	2	sagittal
CO	Thin ST	Manual	MIP	800/200	2	2	coronal

Networking

All Images to ALI store.

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**80/25**	**80/25**	**80/25**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**10.9**	**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	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 2			
DFOV	**25**	**25**	**25**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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

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 Head Only Contrast Adult:

- 80 mL Iopamidol (Isovue 370) 76% @ 4 mL/sec
- 50 mL Sodium Chloride 0.9% @ 4 mL/sec

CTA Head Only Contrast Ped:

- 1.0 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2.5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 2.5 mL/sec
- (If performing a perfusion in addition to CTA head use 0.25 mg/kg Isovue 370 instead)

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:

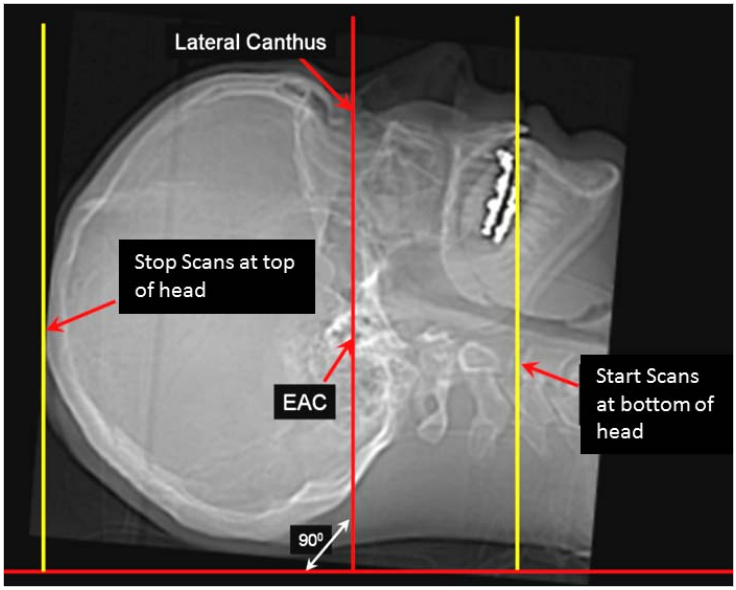
- 0.25 mL/kg Isovue 370 with 10 mL saline chase
- 3-4 mL per sec (Depends on size of needle and age of patient)

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

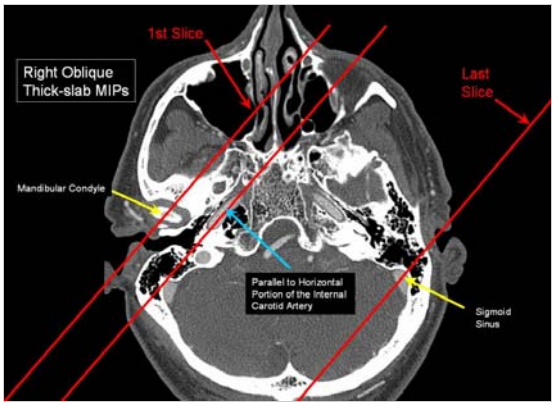
Please send all images to PACS before starting reformats. See table below for reformat instructions.

Reformats

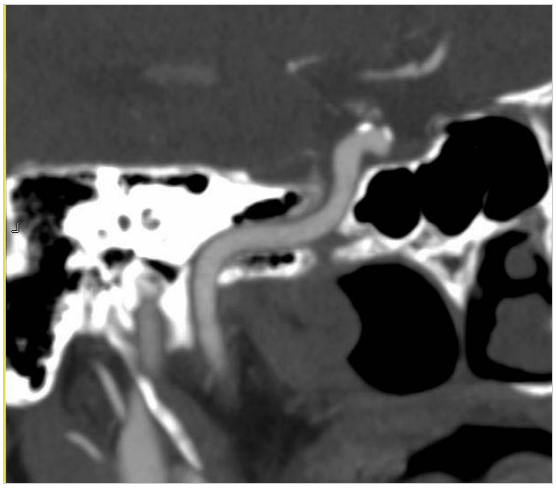
Thin MIP 2D-Reformations through the vertebral and carotid arteries

- 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



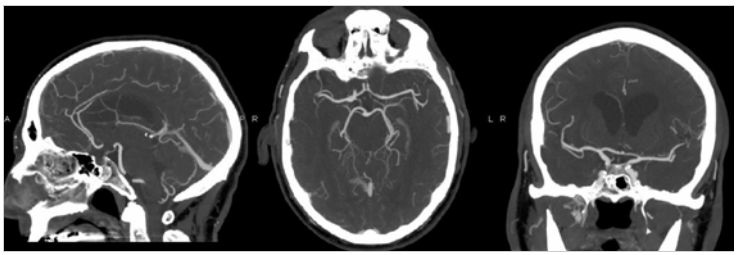
What reformats should look like

Name	Source Recon	DMPR or Manual	Type (MIP, Average, etc.)	WW/WL	Slice Thickness (mm)	Interval (mm)	Orientation
RT OBL	Thin ST	Manual	Average	800/200	1	1	Axial
LT OBL	Thin ST	Manual	Average	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.

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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**80/25**	**80/25**	**80/25**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 2			
DFOV	**25**	**25**	**25**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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

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:

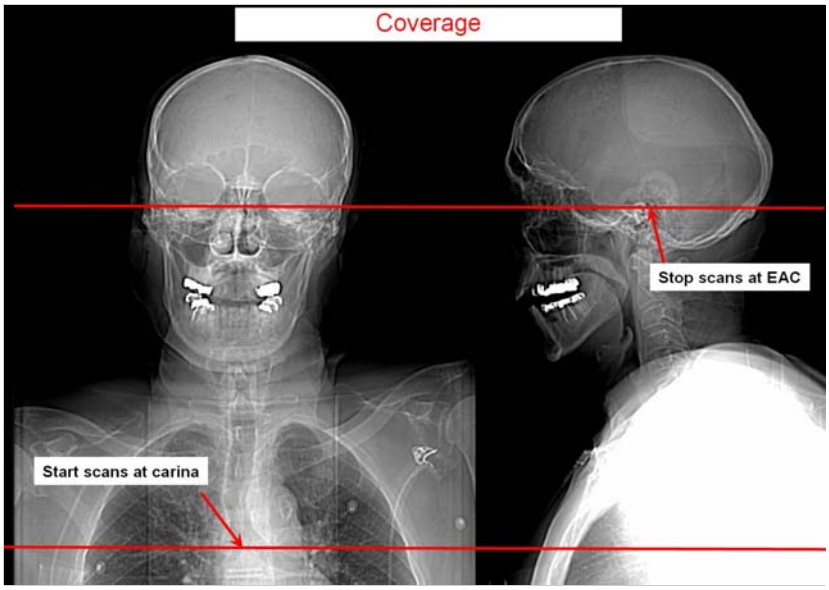
- 1.5 mL/kg (1.5 ml/kg) Iohexol (Omnipaque) 300 MG/ML @ 2.5 mL/sec
- 25 mL Sodium Chloride 0.9% @ 2.5 mL/sec

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

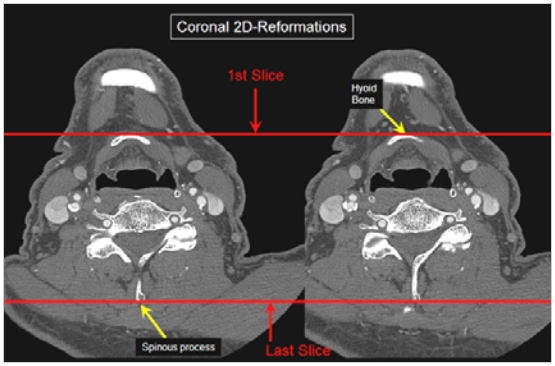
Reformat Instructions

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	2	sagittal
CO	Thin ST	Manual	MIP	800/200	2	2	coronal

Networking

All Images to ALI store. 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, 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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**10.9**	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 2			
DFOV	**25**	**25**	**25**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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:

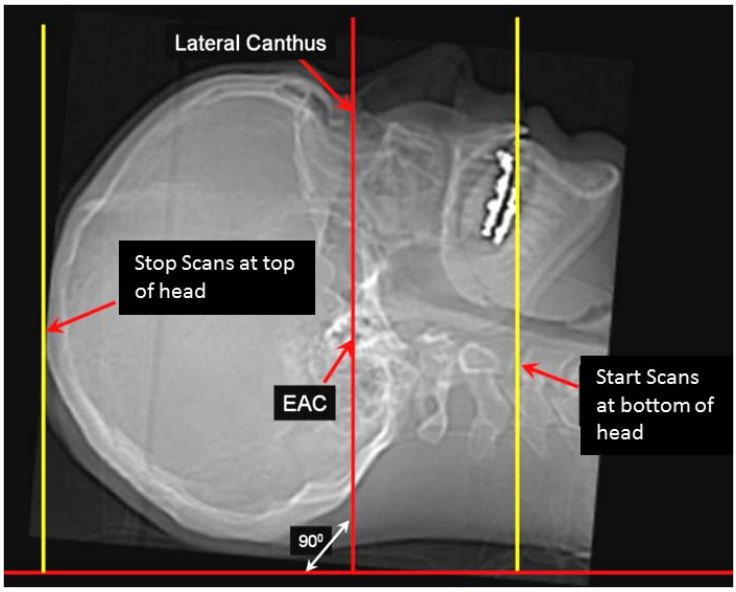
- 1.5 mL/kg Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- 25 mL Sodium Chloride 0.9% @ 1.5 mL/sec

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) (initiate the scan 5 seconds after entry of contrast in aortic arch)
  - CTV Head and Neck: Scan from carina to top of head (bottom up) (initiate scan 10 seconds after entry of contrast in aortic arch)
- 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

Table not yet provided, please see reformat instructions above.

Networking

All Images to ALI store. 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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
kV	**120**	**100**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(170-600)**	**(170-600)**	**(170-600)**
Manual mA	**280.0**	**280.0**	**280.0**
Noise Index	**6.5**	**6.8**	**6.8**
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	**80/25**	**80/25**	**80/25**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option			
ASIR Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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 Setup	**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 Setup	**Slice 80%**	**Slice 80%**	**Slice 80%**
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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.4**	**0.4**
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	**10.9**	**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 Setup	**Slice 30%**	**Slice 30%**	**Slice 30%**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**
Recon 2			
DFOV	**25**	**25**	**25**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**32.0**	**32.0**	**32.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**
Scan FOV	**Head**	**Small Head**	**Small Head**
Pitch	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**
Rotation Time (s)	**0.4**	**0.5**	**0.4**
kV	**100**	**80**	**80**
AEC type	**smart mA**	**smart mA**	**smart mA**
mA Range	**(220-740)**	**(170-590)**	**(170-600)**
Manual mA	**370.0**	**290.0**	**280.0**
Noise Index	**7.7**	**8.0**	**6.8**
Slice Thickness (mm)	**1.25**	**1.25**	**1.25**
Interval (mm)	**0.625**	**0.625**	**0.625**

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 Setup	**Slice 60%**	**Slice 60%**	**Slice 60%**
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

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	44-55

- 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, 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. 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(20-280)**	**(30-675)**	**(45-675)**	**(35-440)**	**(45-560)**
Manual mA	**180.0**	**220.0**	**360.0**	**280.0**	**360.0**
Noise Index	**10.5**	**12.0**	**13.5**	**15.0**	**14.5**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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	44-55

- 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 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. 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

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. 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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	1.375	0.531	0.531
Speed (mm/rot)	27.50	27.50	27.50	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4	0.4	0.4
kV	80	80	80	80	100
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(20-280)	(30-675)	(45-675)	(35-440)	(45-560)
Manual mA	180.0	220.0	360.0	280.0	360.0
Noise Index	10.5	12.0	13.5	15.0	14.5
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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	44-55

- 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

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– Timing bolus- see Miscellaneous
- Series 3 – manually breath patient for the arterial and late arterial phase
  - Early arterial phase – use timing bolus for the delay. Scan from top of liver to bottom of liver; be sure to include proximal SMA
  - Late 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).
- See Pre-Scan section for timing bolus information

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

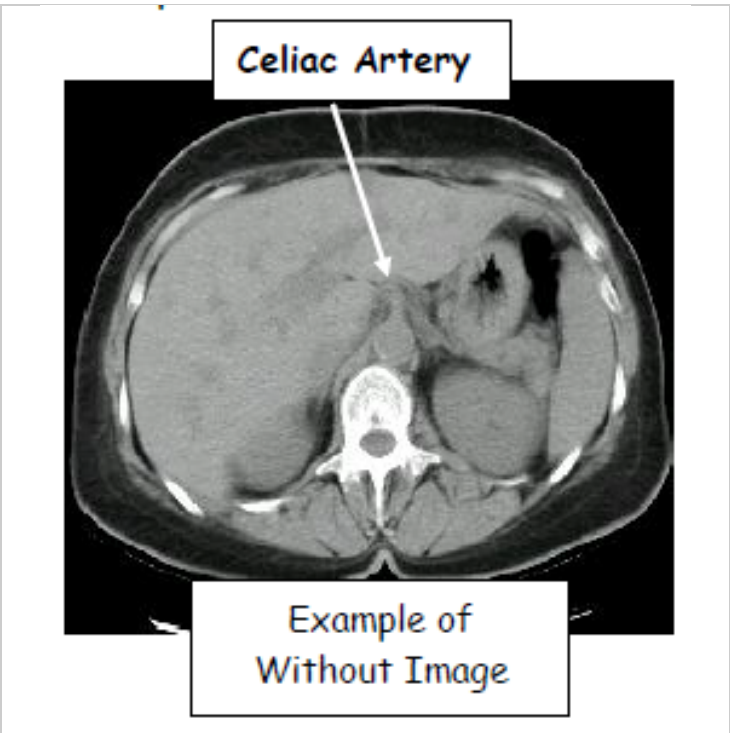
Networking

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

Miscellaneous

Timing bolus

- From the without images, choose the level of the celiac artery

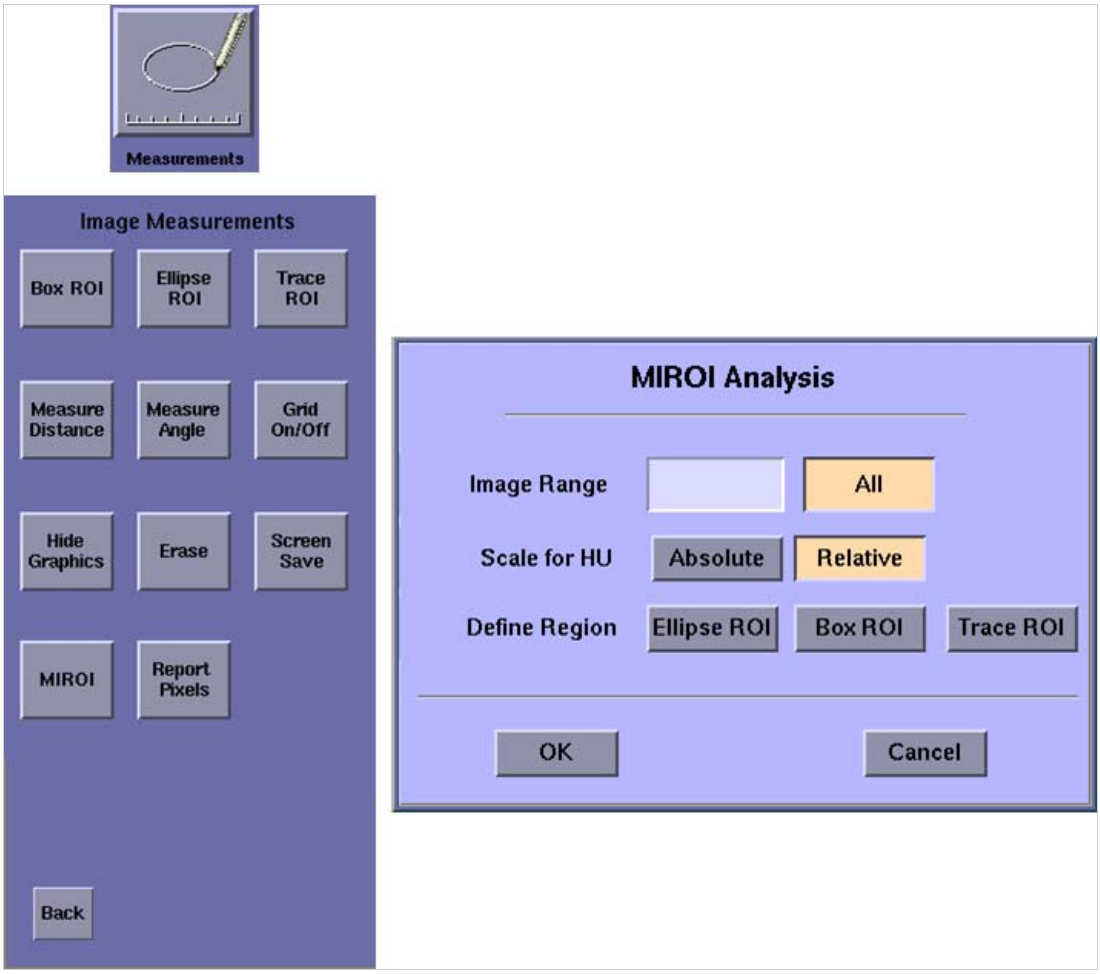


- Put level of the celiac artery under the start location and the same level for the end location (the table will not

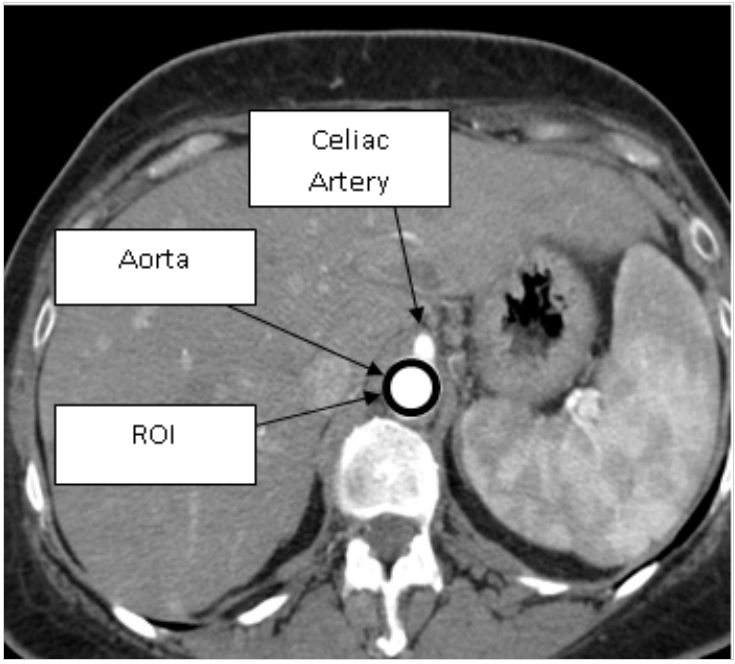
move)
- 5mm thick @ 1i
- 0 Interval
- Low mA - 80 (use the same kV as the subsequent scan, 80/100/120 for small/med/large)

Images	Scan Type	Start Location	End Location	No. of Images	Thick Speed	Interval (mm)	Gantry Tilt	SFOV	kV	mA	Total Exposure Time
1-14	Axial Full 1.0 sec.	I100.000	I100.000	14	5.0 1i	0.000	S0.0	Small Body	120	80	14.0

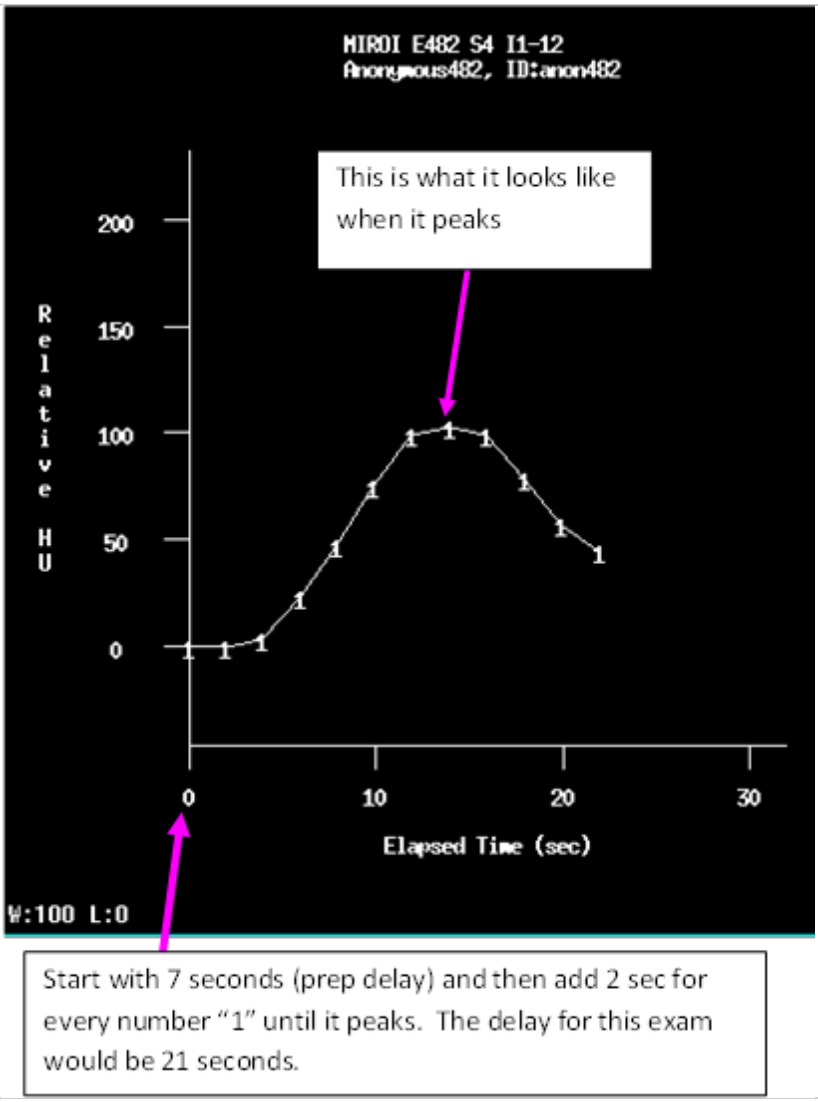
- Inject 5cc per second for 20cc
- Use 7 sec prep delay (if patient is large use a 10 sec delay) - must be confident of the IV
- Start the contrast and the scan at the same time
- Should be able to see the contrast enhance the artery. When the scan is completed - about 15-20 images, select measurement and choose MIROI- Relative should be selected and then choose elliptical ROI.



- Put circle in the aorta



- Select OK
- Read Graph
- Every number one equals 2 seconds



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, Timing Bolus

Timing Bolus

Series 3, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**0.531**	**0.531**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-190)**	**(20-240)**	**(30-380)**	**(50-620)**	**(50-650)**
Manual mA	**120.0**	**150.0**	**240.0**	**390.0**	**410.0**
Noise Index	**8.0**	**9.0**	**10.0**	**11.5**	**11.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(20-280)**	**(30-675)**	**(45-675)**	**(35-440)**	**(45-560)**
Manual mA	**180.0**	**220.0**	**360.0**	**280.0**	**360.0**
Noise Index	**10.5**	**12.0**	**13.5**	**15.0**	**14.5**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(20-280)**	**(30-675)**	**(45-675)**	**(35-440)**	**(45-560)**
Manual mA	**180.0**	**220.0**	**360.0**	**280.0**	**360.0**
Noise Index	**10.5**	**12.0**	**13.5**	**15.0**	**14.5**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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

Patients 40 kilos and under:

- 1.5 mL/kilo Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- 20 mL Sodium Chloride 0.9% @ 2 mL/sec

Patients 40-65 kilos:

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Patients greater than 65 kilos:

- Use the Medrad™ P3T

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 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. 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**0.531**	**0.531**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-190)**	**(20-240)**	**(30-380)**	**(50-620)**	**(50-650)**
Manual mA	**120.0**	**150.0**	**240.0**	**390.0**	**410.0**
Noise Index	**8.0**	**9.0**	**10.0**	**11.5**	**11.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	25	25
Recon Type	Bone Plus	Bone Plus	Bone Plus	Bone Plus	Bone Plus
WW/WL	3000/300	3000/300	3000/300	3000/300	3000/300
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	1.375	0.531	0.531
Speed (mm/rot)	27.50	27.50	27.50	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4	0.4	0.4
kV	80	80	80	80	100
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(20-280)	(30-675)	(45-675)	(35-440)	(45-560)
Manual mA	180.0	220.0	360.0	280.0	360.0
Noise Index	10.5	12.0	13.5	15.0	14.5
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	550/80	550/80	550/80	550/80	490/70
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option					
ASIR Setup	Slice 40%	Slice 40%	Slice 40%	Slice 40%	Slice 40%
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	550/80	550/80	550/80	550/80	490/70
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	Slice 40%	Slice 40%	Slice 40%	Slice 40%	Slice 40%
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

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	44-55

- 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 Scout: from base of neck through lung bases with inspiration
- Series 2 – Helical Scan
  - Smart Prep – Monitor Phase: center over the pulmonary artery. 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.

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. 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	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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-200)**	**(20-260)**	**(30-410)**	**(25-330)**	**(30-410)**
Manual mA	**130.0**	**160.0**	**260.0**	**200.0**	**260.0**
Noise Index	**12.0**	**14.0**	**15.5**	**17.5**	**17.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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**

Peds Chest Dynamic 3D Airway 15.1.2/15.2.2/15.4.2/15.6.2/15.8.2

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

None

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.
- 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, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-200)**	**(20-260)**	**(30-410)**	**(25-330)**	**(30-410)**
Manual mA	**130.0**	**160.0**	**260.0**	**200.0**	**260.0**
Noise Index	**12.0**	**14.0**	**15.5**	**17.5**	**17.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-200)**	**(20-260)**	**(30-410)**	**(25-330)**	**(30-410)**
Manual mA	**130.0**	**160.0**	**260.0**	**200.0**	**260.0**
Noise Index	**12.0**	**14.0**	**15.5**	**17.5**	**17.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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	44-55

- 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

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.

Billing
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. 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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	1.375	1.375	1.375
Speed (mm/rot)	27.50	27.50	27.50	55.00	55.00
Rotation Time (s)	0.4	0.4	0.4	0.4	0.4
kV	80	80	80	80	100
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(10-140)	(15-180)	(25-280)	(45-590)	(60-730)
Manual mA	90.0	110.0	180.0	370.0	470.0
Noise Index	14.5	16.5	18.5	21.5	20.5
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**1900/-475**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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

Patients 50 kilos and under:

- 1.5 mL/kilo Iohexol (Omnipaque) 300 MG/ML @ 4-5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 4-5 mL/sec

Patients greater than 50 kilos:

- 100 mL Iohexol (Omnipaque) 300 MG/ML @ 4-5 mL/sec
- 10 mL Sodium Chloride 0.9% @ 4-5 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

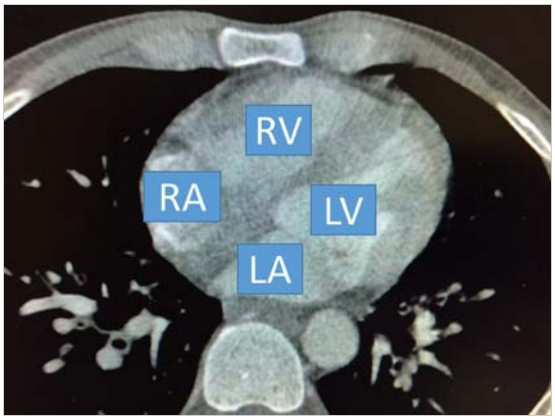
Small as possible, including all of chest wall

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. Suspension breathing instructions are on, remind the patient not to bear down.



Smart Prep location should be the LA

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. 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-200)**	**(20-260)**	**(30-410)**	**(25-330)**	**(30-410)**
Manual mA	**130.0**	**160.0**	**260.0**	**200.0**	**260.0**
Noise Index	**12.0**	**14.0**	**15.5**	**17.5**	**17.0**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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	44-55

- If the patient is bigger than 60 cm scan in a Medium Adult protocol and perform the adult reformats.

IV Contrast Parameters

Patients 40 kilos and under:

- 1.5 mL/kilo Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec
- 20 mL Sodium Chloride 0.9% @ 2 mL/sec

Patients 40-65 kilos:

- 80 mL Iohexol (Omnipaque) 300 MG/ML @ 2 mL/sec

Patients greater than 65 kilos:

- Use the Medrad™ P3T

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 – 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: 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.

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	Manual	Average	550/80	4	2	sagittal
CO PEDS	Thin ST	Manual	Average	550/80	4	2	coronal

Networking
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**	**30.0**	**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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(20-280)**	**(30-675)**	**(45-675)**	**(35-440)**	**(45-560)**
Manual mA	**180.0**	**220.0**	**360.0**	**280.0**	**360.0**
Noise Index	**10.5**	**12.0**	**13.5**	**15.0**	**14.5**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**1900/-475**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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	Manual	Average	550/80	4	2	sagittal
CO PEDS CHEST	Thin ST	Manual	Average	550/80	4	2	coronal
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
SA PEDS	Thin ST	Manual	Average	550/80	4	2	sagittal
CO PEDS	Thin ST	Manual	Average	550/80	4	2	coronal

Networking

All Images to ALI store. 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**0.531**	**0.531**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**10.60**	**10.60**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.5**	**0.6**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-190)**	**(20-240)**	**(30-380)**	**(50-620)**	**(50-650)**
Manual mA	**120.0**	**150.0**	**240.0**	**390.0**	**410.0**
Noise Index	**8.0**	**9.0**	**10.0**	**11.5**	**11.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	3000/300	3000/300	3000/300	3000/300	3000/300
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	0.531	0.531	0.531	0.531	0.531
Speed (mm/rot)	10.60	10.60	10.60	21.20	21.20
Rotation Time (s)	0.4	0.4	0.4	0.5	0.6
kV	80	80	80	80	100
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(15-190)	(20-240)	(30-380)	(50-620)	(50-650)
Manual mA	120.0	150.0	240.0	390.0	410.0
Noise Index	8.0	9.0	10.0	11.5	11.0
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(20-280)**	**(30-675)**	**(45-675)**	**(35-440)**	**(45-560)**
Manual mA	**180.0**	**220.0**	**360.0**	**280.0**	**360.0**
Noise Index	**10.5**	**12.0**	**13.5**	**15.0**	**14.5**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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, Timing Bolus

Timing Bolus

Series 3, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.6**	**0.4**	**0.8**	**0.8**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-580)**	**(50-675)**	**(45-675)**	**(45-675)**	**(60-730)**
Manual mA	**370.0**	**390.0**	**360.0**	**360.0**	**470.0**
Noise Index	**6.5**	**7.5**	**8.0**	**9.5**	**9.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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, 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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.6**	**0.4**	**0.8**	**0.8**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-580)**	**(50-675)**	**(45-675)**	**(45-675)**	**(60-730)**
Manual mA	**370.0**	**390.0**	**360.0**	**360.0**	**470.0**
Noise Index	**6.5**	**7.5**	**8.0**	**9.5**	**9.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	25	25
Recon Type	Bone Plus	Bone Plus	Bone Plus	Bone Plus	Bone Plus
WW/WL	3000/300	3000/300	3000/300	3000/300	3000/300
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	1.375	0.531	0.531
Speed (mm/rot)	27.50	27.50	27.50	21.20	21.20
Rotation Time (s)	0.4	0.4	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	(35-420)	(40-675)	(50-670)	(45-675)	(50-670)
Manual mA	270.0	330.0	430.0	330.0	430.0
Noise Index	8.5	9.5	11.0	12.5	12.0
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	550/80	550/80	550/80	550/80	490/70
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option					
ASIR Setup	Slice 40%	Slice 40%	Slice 40%	Slice 40%	Slice 40%
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	550/80	550/80	550/80	550/80	490/70
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	Slice 40%	Slice 40%	Slice 40%	Slice 40%	Slice 40%
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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(25-310)**	**(30-390)**	**(50-610)**	**(40-490)**	**(50-610)**
Manual mA	**200.0**	**240.0**	**390.0**	**310.0**	**390.0**
Noise Index	**10.0**	**11.5**	**12.5**	**14.5**	**14.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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 (Higher Image Quality) 15.1.10/15.2.10/15.4.10/15.6.10/15.8.10

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(15-210)**	**(20-270)**	**(35-430)**	**(25-340)**	**(35-430)**
Manual mA	**140.0**	**170.0**	**270.0**	**210.0**	**270.0**
Noise Index	**12.0**	**13.5**	**15.0**	**17.5**	**17.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**1900/-475**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(25-310)**	**(30-390)**	**(50-610)**	**(40-490)**	**(50-610)**
Manual mA	**200.0**	**240.0**	**390.0**	**310.0**	**390.0**
Noise Index	**10.0**	**11.5**	**12.5**	**14.5**	**14.0**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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

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**	**30.0**	**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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**1900/-475**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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

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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**0.531**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**10.60**	**21.20**	**21.20**
Rotation Time (s)	**0.5**	**0.6**	**0.4**	**0.8**	**0.8**
kV	**80**	**80**	**80**	**80**	**100**
AEC type	**smart mA**	**smart mA**	**smart mA**	**smart mA**	**smart mA**
mA Range	**(45-580)**	**(50-675)**	**(45-675)**	**(45-675)**	**(60-730)**
Manual mA	**370.0**	**390.0**	**360.0**	**360.0**	**470.0**
Noise Index	**6.5**	**7.5**	**8.0**	**9.5**	**9.0**
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**	**2100/-450**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	3000/300	3000/300	3000/300	3000/300	3000/300
Recon Option	Plus	Plus	Plus	Plus	Plus
Recon Option	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance	IQ Enhance
ASIR Setup	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	40	40
Detector Rows	32.0	32.0	32.0	64.0	64.0
Detector Configuration	32x0.625	32x0.625	32x0.625	64x0.625	64x0.625
Scan FOV	Small Body	Small Body	Small Body	Small Body	Medium Body
Pitch	1.375	1.375	0.531	0.531	0.531
Speed (mm/rot)	27.50	27.50	10.60	21.20	21.20
Rotation Time (s)	0.5	0.6	0.4	0.8	0.8
kV	80	80	80	80	100
AEC type	smart mA	smart mA	smart mA	smart mA	smart mA
mA Range	(45-580)	(50-675)	(45-675)	(45-675)	(60-730)
Manual mA	370.0	390.0	360.0	360.0	470.0
Noise Index	6.5	7.5	8.0	9.5	9.0
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, 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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Detail**	**Detail**	**Detail**	**Detail**	**Detail**
WW/WL	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**12**	**12**	**12**	**15**	**15**
Recon Type	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**	**Bone Plus**
WW/WL	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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	**3000/300**	**3000/300**	**3000/300**	**3000/300**	**3000/300**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**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**	**40**	**40**
Detector Rows	**32.0**	**32.0**	**32.0**	**64.0**	**64.0**
Detector Configuration	**32x0.625**	**32x0.625**	**32x0.625**	**64x0.625**	**64x0.625**
Scan FOV	**Small Body**	**Small Body**	**Small Body**	**Small Body**	**Medium Body**
Pitch	**1.375**	**1.375**	**1.375**	**0.531**	**0.531**
Speed (mm/rot)	**27.50**	**27.50**	**27.50**	**21.20**	**21.20**
Rotation Time (s)	**0.4**	**0.4**	**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	**(35-420)**	**(40-675)**	**(50-670)**	**(45-675)**	**(50-670)**
Manual mA	**270.0**	**330.0**	**430.0**	**330.0**	**430.0**
Noise Index	**8.5**	**9.5**	**11.0**	**12.5**	**12.0**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option					
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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	**550/80**	**550/80**	**550/80**	**550/80**	**490/70**
Recon Option	**Plus**	**Plus**	**Plus**	**Plus**	**Plus**
Recon Option	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**	**IQ Enhance**
ASIR Setup	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**	**Slice 40%**
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**

Peds Bony Pelvis Protocol Selection

If you get an order for a pediatric bony pelvis:

Is the pediatric a teen/obese with an AP + LAT size over 55 cm?

No

Is the order for a spica casting for developmental dysplasia of the hips (probably on a kid < 1 yo)?

Yes

Use the pediatric chest pectus protocol but change the coverage to top of the illiac crests to the lesser trochanters

Why use a chest protocol on the pelvis? This is our lowest dose pediatric protocol so it has the right technique for spica planning

No

The order should be for a trauma or avascular necrosis (AVN), if it is not please consult the pediatric attending. Use the pediatric trauma abd/pelvis protocol with a coverage of top of the illiac crests to the lesser trochanters

Yes

Use the appropriate adult protocol (probably the adult small without metal)

Note: you will need to adjust the scout landmark and scan ranges based on the flow chart above to cover the desired anatomy.
Note: please provide the radiologist with 3 mm by 3 mm coronal and sagittal reformats using a boneplus recon.

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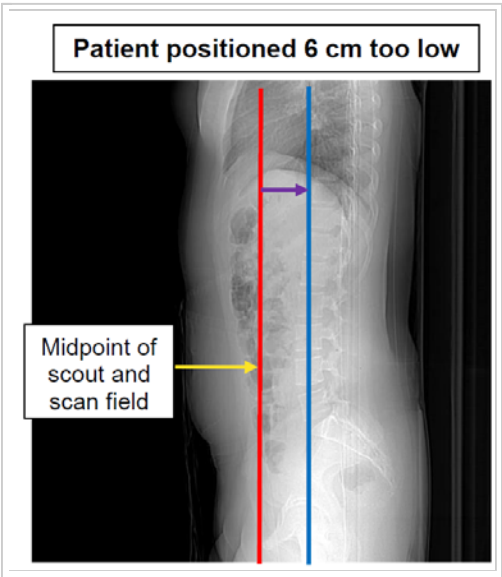
SCHOOL OF MEDICINE AND PUBLIC HEALTH

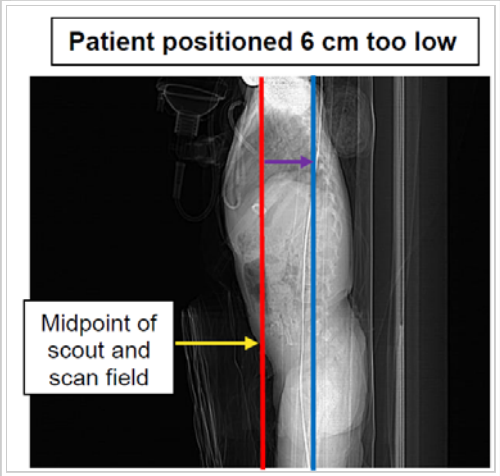
Position Tutorial

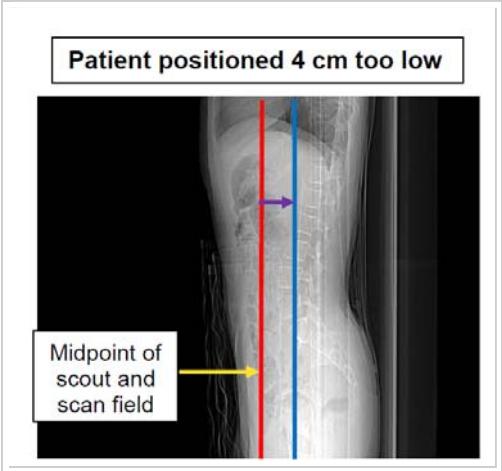
Body Positioning

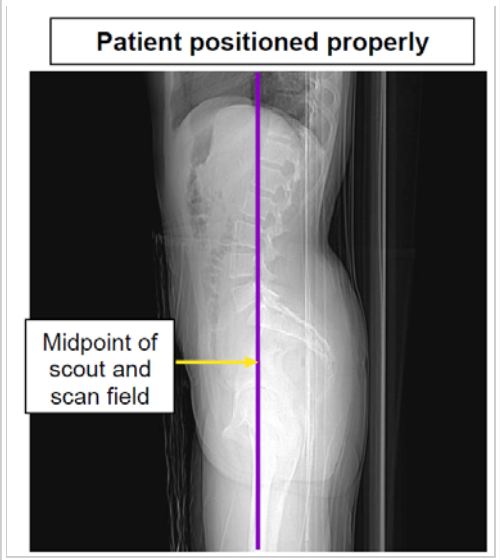
- **Particularly important for Pediatrics and Small Adults**

To provide the best image quality at the lowest dose, proper patient positioning is always important. It is particularly important with the smaller patients scanned as small adults and in pediatric imaging using low kV techniques. Positioning errors usually occur with the patient being positioned too low. This error causes significant problems with pediatric protocols in which the patient may actually need to be positioned a bit high to outward appearances: Ideally the most attenuating part of the patient should be centered in the scan. To accomplish this, one should position the patient high enough so that the horizontal laser light is centered on the lumbar spine and is just anterior to the thoracic spine. This is demonstrated in the scout images below, where the red line is the actual midpoint of the scout image and the blue line is where the patient should have been centered on the scout. Only the scout on the upper right shows correct positioning; the midpoint of this scout is shown as a purple line. All the rest are centered too low.









Decubitus Positioning

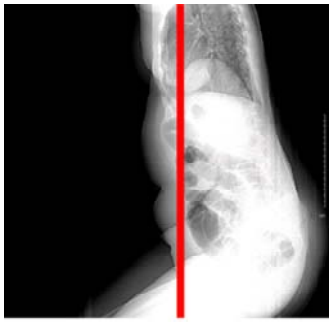
- **Proper positioning for the decubitus portion of the CTC screening exam**

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.

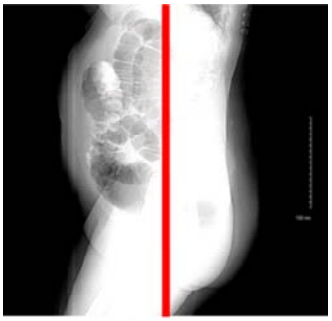
Poor Position

Good Position

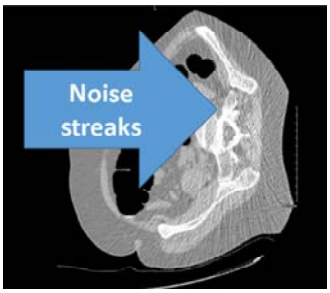
Bad Looking Scout



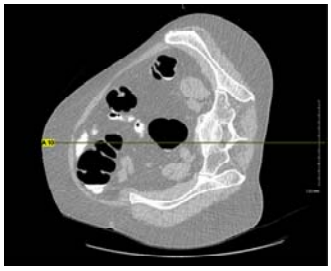
Good Looking Scout



Resulting Bad Looking Image

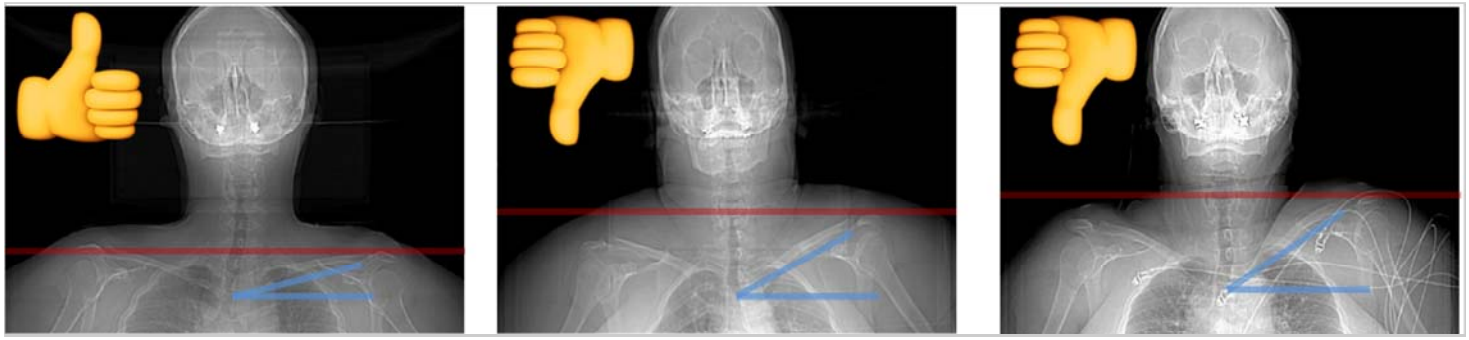


Resulting Good Looking Image



Shoulder Relaxation

- Lowering the position of the shoulders is important in both allowing adequate visualization of the cervicothoracic junction and in lowering the dose required for the exam.
- Fastening the CT table strap around the torso only, as compared to around the torso and arms, decreases the level of the shoulders by one vertebral body level.
- Simply encouraging appropriate patients to “pull” their shoulders down has also been found to be effective.
- Having patients “walk” their hands down a folded bedsheet wrapped around the feet is also helpful for challenging cases.



Examples of good and bad shoulder position relative to the neck. The techniques listed above can get a patient from having a poor positioning of the shoulder to a good position. Note: try to recognize improper shoulder relaxation before you scout. If, however, you only notice this after you scout, there is no need to re-scout the patient after they move their shoulders.

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.

The pediatric color coding scheme divides pediatric 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.

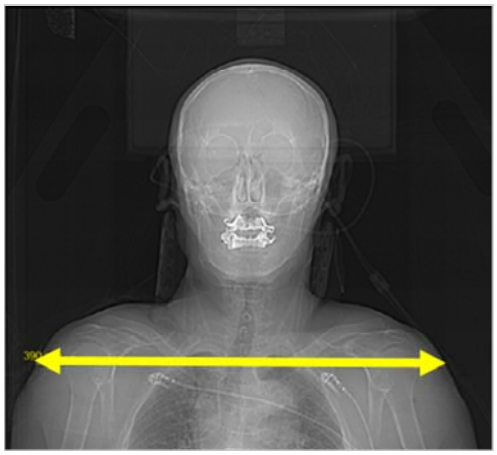
Neuro: Adult/Child/Infant

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

1. 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.
2. Check BMI in EPIC (under SnapShot)
3. Select small, medium and large based on the table below.

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



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**

Instructions for Adjusting Protocols for Pediatric Extremities and Bariatric Patients

Pediatric Extremity Adjustments

We do not have separate pediatric protocols for extremity imaging in the MSK section of our manual. To image pediatric extremities **for patients less than 13 years old**, please select the adult extremity protocol and lower the kV 1 step. These protocols are all set to use manual mA, so decreasing the kV will decrease the patient dose by roughly 50%.

These instructions apply to the following protocols

1. Knee/Tibia (Without Metal) 9.3
2. Knee/Tibia (With Metal) 9.4
3. Ankle/Foot/Distal Tibia (Without Metal) 9.1
4. Ankle/Foot/Distal Tibia (With Metal) 9.2
5. Elbow/Forearm (Without Metal) 4.6
6. Elbow/Forearm (With Metal) 4.7
7. Wrist (Without Metal) 4.8
8. Wrist (With Metal) 4.9

For example, you get an order for a pediatric ankle scan. There is no metal in the field of view so you select the protocol: Ankle/Foot/Distal Tibia (Without Metal) 9.1 . When you get to the tomographic phases of the exam (helical scan series), simply change the kV from 120 kV to 100 kV.

kV Steps

By 1 step, we mean the following:

If the adult is kV	Then change the kV to
140	120
120	100
100	80

Note: we do not have any MSK extremity protocols that use 80 kV for adults.

Note: you do not have to change the kV for the scouts.

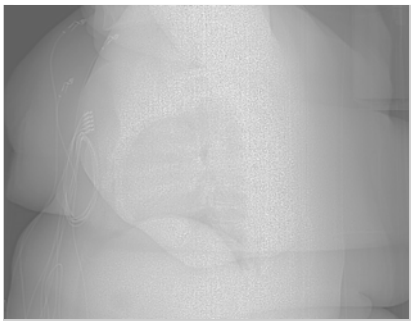
Adjustments for Bariatric PE Studies

We do not have a bariatric protocol for chest PE 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 PE patients who 1. **fill the scout view** or 2. **max out the mA table** please increase the kV from 120 kV to 140 kV.

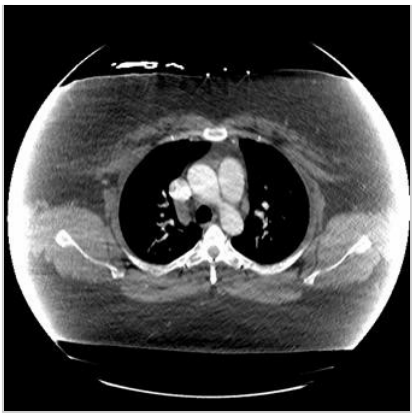
Note: If you know the patient is likely to max out the mA table before taking the scout, you should increase the scout kV from 120 to 140.

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**

Weight-Based Contrast Instructions

Contrast volume for users without the Medrad P3T Option (what UW uses for most routine non angio imaging)

This table assumes use of contrast strength at 300 mg I/cc and an injection rate of 3 ml/sec

Patient Weight (lbs)	Contrast Volume (ml or cc)
130 and less	80 (minimum amount to load)
140	86
150	92
160	98
165	101
170	104
175	107
180	110
190	116
200	122
210	129
220	135
230	141
240	147
250 and larger	150 (max amount to load)

Contrast volume for users without the Medrad P3T PA Option (what UW uses for angios)

This table assumes use of contrast strength at 370 mg I/cc and an injection rate of 5 ml/sec

Patient Weight (lbs)	Contrast Volume (ml or cc)	Saline chaser Volume (ml or cc)
150 and less	100	60
150-200	125	60
200 and higher	150	60

Creatinine Guidelines (with values for eGFR)

If a patient has 1 Kidney, partial Nephrectomy, kidney transplant, or RCC and they are borderline for our non-diabetic criteria identify creatinine trend. If the creatinine has been stable follow our current guidelines without changing to Iodixanol.

Diabetic	Creatinine	eGFR
Iohexol	<1.4	>50
Iodixanol	1.4-1.8	40-50
No Contrast	>1.8	<40

Non- Diabetic	Creatinine	eGFR
Iohexol	<1.8	>40
Iodixanol	1.8-2.4	30-40
No Contrast	>2.4	<30

Pediatric Contrast Guidelines

Purpose: To identify appropriate intravenous (IV) access for CT studies requiring intravenous contrast. Achieving appropriate contrast injection rates is critical to achieving a quality diagnostic study.

- In order to decrease delays from injection to image acquisition, a power-injector will be used by the CT technologists.
- If a patient arrives for the CT and has an IV or central line that is not functioning appropriately for contrast injection at the

required rate, the patient will not be scanned until a new IV is placed.

- Preferably IV access should be obtained in an upper extremity.

PIV = peripheral IV

Type of Exam	IV Catheter Requirements	Power Injector Rate	RN to Accompany to CT for Injection
CT Angio Exams	PIV (<1 year): 22G	22G: 3mL/sec	No
	PIV (>1 year): 18G-20G	18G-20G: 4mL/sec	No
	Power injectable central catheter (tunneled or non-tunneled)	Power injectable catheter: 4mL/sec	No
Routine CT Exam	PIV: 22G or larger	> 22G: 2mL/sec	No
	24G catheter (must flush well)	24G: HAND INJECT0.8-1mL/sec	Yes
	Power injectable central catheter (tunneled or non-tunneled)	Power injectable catheter: 2mL/sec	No
	Non-power injectable central catheter (tunneled or non-tunneled): <4 Fr	Place PIV > 22G: 2mL/sec	No
	Non-power injectable central catheter (tunneled or non-tunneled): >5 Fr	Non-power injectable catheter: HAND INJECT1-1.5 mL/sec	*Yes

Hand Injection by RN: Patient's RN must accompany patient or CT if a non-power-injectable line is to be used for hand injection of contrast for a CT. The RN will be in the room and inject the contrast. The CT tech can then start the scan at the appropriate time following contrast administration. If there are clinical concerns regarding IV/central line size or function limiting our ability to perform a diagnostic CT scan, a discussion should be had between the patient's attending physician and the attending pediatric radiologist.

Radiation Safety Guidelines for RNs in room during the start of CT exams:

- The RN should be wearing a lead apron (wrap around type) and thyroid shield.
- The RN should try to stand as far as possible from the patient while still being able to administer the contrast agent during the time when the CT scanner is on (the scanner has a notification light on the front and back sides to show people in the room when it is creating x-rays).
- After the injection is complete, the RN should back/step away from the patient/scanner and leave the room if time allows
- For pregnant RN's in the room, refer to your sites own internal policy guidelines.

Contraindications for Using the Power-Injector

- Tunneled catheters that are not power-injectable (silicone Hickman or Broviac catheter): Due to the inability to inject at an appropriate rate.
  - Patient will need to have a peripheral line placed for any CTA
  - If the tunneled catheter is smaller than 5 French or does not flush well, a peripheral line will need to be placed
- Umbilical venous catheters: due to the possibility of injecting the contrast bolus directly into the liver.
  - Patients will need to have a peripheral line placed.
  - If no other venous access can be attained, the patient's attending physician needs to speak with the attending pediatric radiologist prior to the scan being performed to discuss options.

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 Revolution	Adult and Child Revolution
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

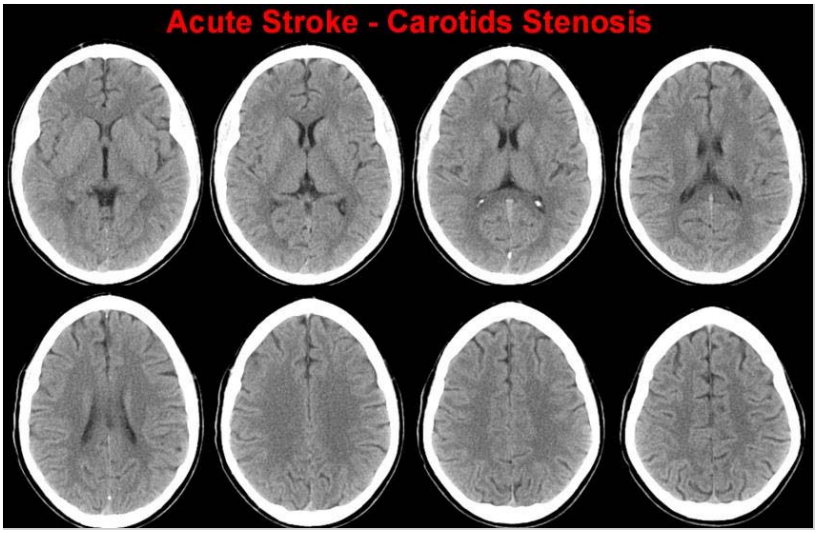
Note: Apply 30% ASiR/ASiR-V to the perfusion recons.

CT Perfusion Coverage

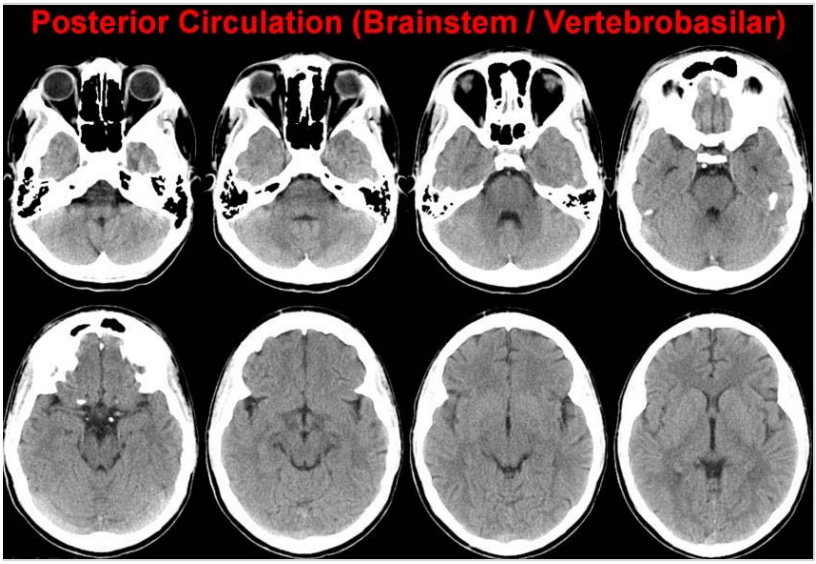
32 and higher slice scanners (shuttle mode)

Obtain 16 contiguous 5 mm slices from EAC Upward

32 and higher slice scanners (cine mode)

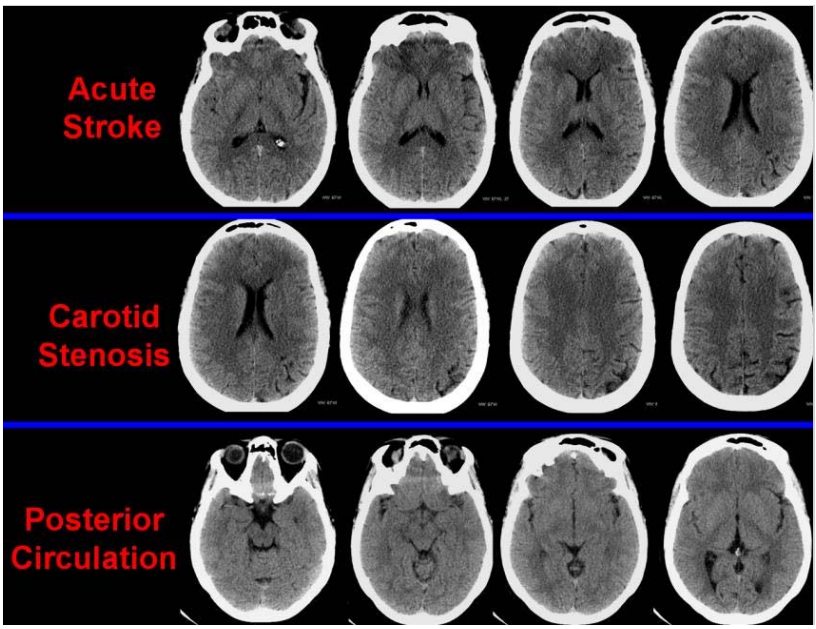


64 Channel CT Perfusion: Non-shuttle Mode (8x5 mm slice coverage)



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

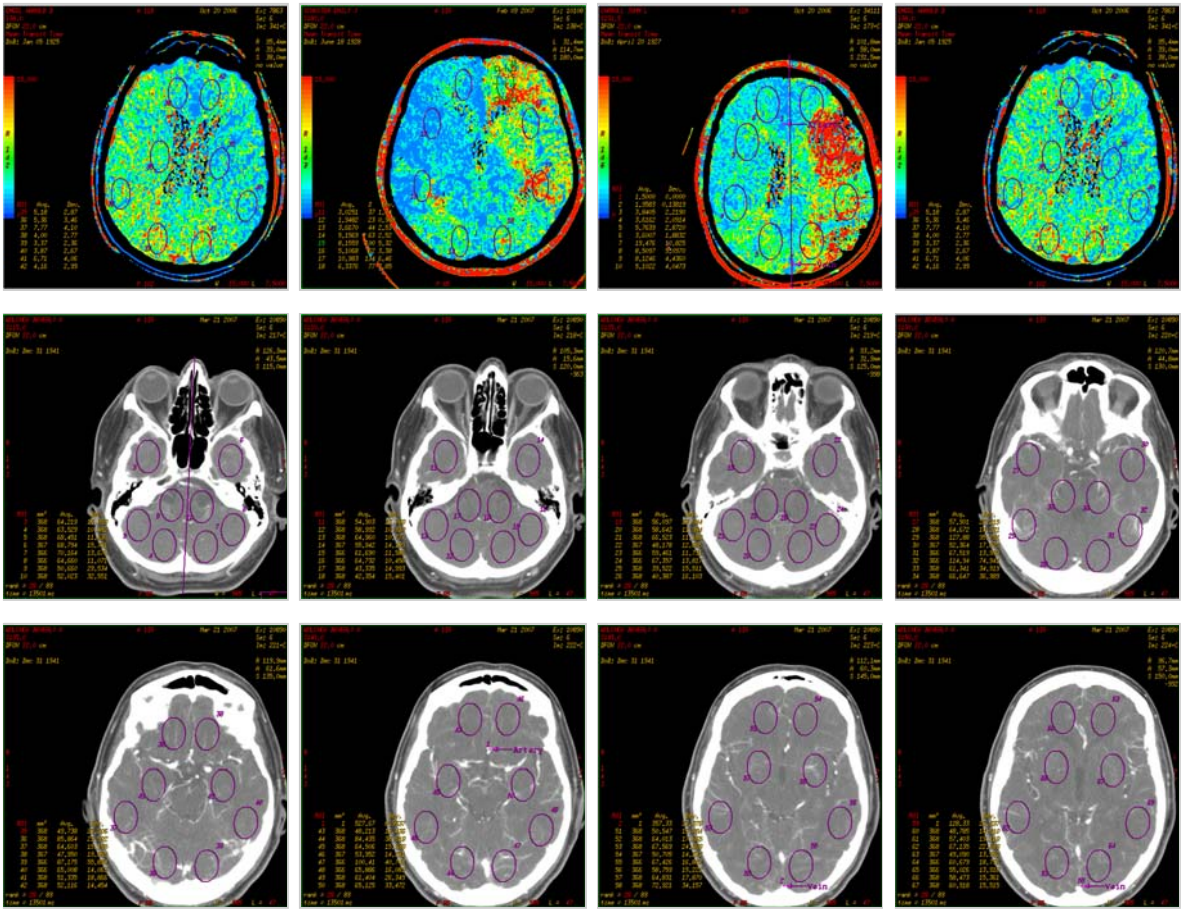
8-16 Slice scanners (cine mode)



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

CT Perfusion Analysis Instructions

Suggestions for ROI placement shown below



Thoracic Outlet Instructions

Indication

Evaluation for suspected unilateral thoracic outlet obstruction.

Oral Contrast

None

Pre-Scan Instructions

Two CTA scans, one with both arms down and one with affected arm up. Make sure hand in affected arm is warm. If ordered as a bilateral scan: Do two CTA scans, (A) one with right arm down and left arm up and (B) one with right arm up and left arm down. Make sure hands are warm.

IV Contrast Parameters

Load 135 cc contrast Isovue 370 and 80 cc saline.

Field of View

Same as previous study or as small as appropriate

Scan Description

- Part 1
  - Scan Description: Arms Down
    - Series 1: PA and Lateral Scout
      - Coverage:From lower neck to diaphragm on inspiration. Scan with the scouts from the routine neck protocol.
    - Series 2: Smart Prep
      - Coverage: Center over the aortic arch and place the ROI on the proximal aortic arch. Starts canning at 100 HU trigger level.
    - Series 2: Scan Phase CTA
      - Coverage: From below the carina to lower neck on inspiration.
      - IV: 50 mL IV contrast at 5 mL/sec followed by 40 mL saline at 5 mL/sec
- Part 2
  - Scan Description: Affected Arm Up
    - Series 3: PA and Lateral Scout
      - Coverage: From carina through finger tips on inspiration.
    - Series 4: Smart Prep
      - Coverage: Center over the aortic arch and place the ROI on the proximal aortic arch. Start scanning at 100 HU trigger level.
    - Series 4: Scan Phase CTA
      - Coverage: From aortic arch through finger tips on inspiration.
      - IV: 25 mL IV contrast at 5 mL/sec followed by 60 mL IV contrast at 4 mL/sec then 40 mL saline at 4 mL/sec
- Part 3
  - Scan Description: Delayed CTA (Have the patient keep their arm raised as it was in the previous series)
    - Series 5: Scan Phase CTA
      - Timing: This scan should be started 70 seconds after the contrast injection from the previous series.
      - Coverage: Scan from the carina to the elbow.

Acquisition Parameters

Scan the scouts from the routine neck protocol when the arms are down and the upper extremity run off protocol when the arms are up. Scan the tomographic portions with the upper extremity run off protocol (turn the smart prep option on).

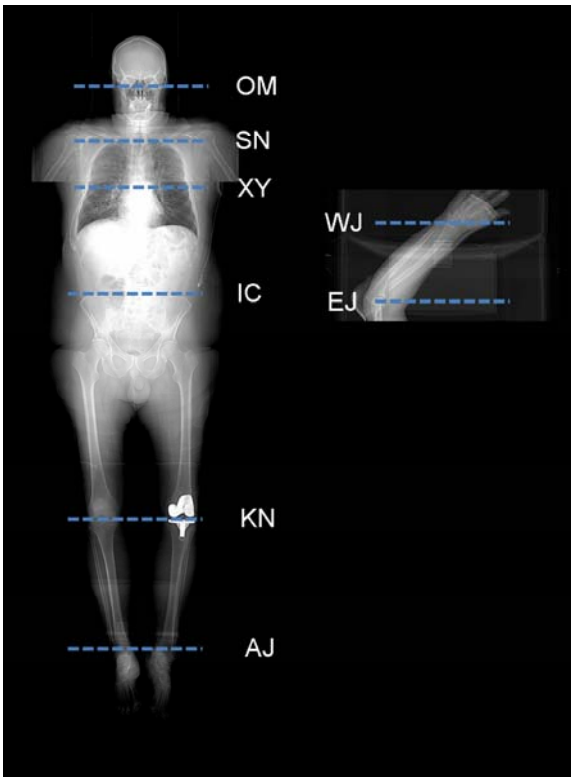
Scout Ranges and Anatomical Landmarks

The table below lists scout start and end ranges appropriate for most adults. For pediatrics, adjustment of these values should be based on patient height.

Protocol Name/Type	Anatomical Landmark	Scout Start Location	Scout End Location
Head (Brain), Orbits, Facial Trauma, Sinus, Temporal Bone, Stereotactic head	OM	S 150	I 150
CTA head, AND any of the following that need to smart prep over the aortic arch: Head (Brain), Orbits, Facial Trauma, Sinus, Temporal Bone	OM	S 150	I 300
Stroke Deluxe, Head/Neck Venography	SN	S 300	I 200
Neck, CTA neck, Cervical Spine	SN	S 200	I 200
Shoulder/Humerus	SN	S 150	I 150
Elbow/Forearm	EJ	S 150	I 150
Wrist/Hand	WJ	S 150	I 150
Chest, Lung Cancer Screening, Pulmonary Embolism, All Cardiac Protocols (gated/non-gated), Dynamic Airway	SN	S 50	I 350
Subclavian venogram, Pectus	SN	S 75	I 350
Abdomen/Pelvis (this includes all protocols starting with Abd-Pelvis unless otherwise noted), Lumbar Spine	XY	S 50	I 500
Chest Abdomen Pelvis, TAVI/TAVR, PE/Abd/Pelvis Combo, Thoracic Spine	SN	S 50	I 600
Bony Pelvis, Cystogram, Body Pelvis	IC	S 50	I 300
MAKO Hip	IC	S 50	I 650
MAKO Knee	KN	S 350	I 350
Knee/Tibia	KN	S 150	I 150
Femoral Anteversion	IC	S 100	I 1000
Ankle Foot, Distal Tibia	AJ	S 150	I 150
Upper Extremity CTA (run off)	SN	S 800	I 300
Lower Extremity CTA (run off)	SN	S 100	I 1700*

*Note, some scanners may only be capable of going to I1450.

OM = orbital meatal, SN = sternal notch, EJ = elbow joint, WJ = wrist joint, XY = xyphoid process, IC = iliac crest, KN = knee, AJ = ankle joint



Window Width and Window Level

Note: ST refers to *soft tissue*, ww refers to *window width*, wl refers to *window level*, PE refers to *pulmonary embolism*.

All scouts (CT localizer radiographs)

WW/WL = 500/50

Abdominal

Anatomy being scanned	WW/WL
ST	450/50

Chest

Anatomy being scanned	WW/WL
Lungs	1500/-700
ST	450/50
PE AX MIPS	920/125

Cardiovascular

Anatomy being scanned	WW/WL
ST	450/50

Neuro

Anatomy being scanned	WW/WL
Bone (temporal and spines)	2500/350
Thick ST (general head/brain)	80/25
Generic ST images, CTA head and neck	450/50
Thin ST Head, Perfusion	180/25
Neck ST	300/35
Orbits ST	300/0

MSK

Anatomy being scanned	WW/WL
Bone	2500/350
ST	450/50

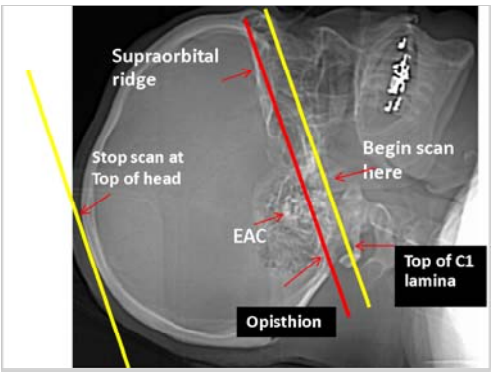
Peds

Anatomy being scanned	WW/WL
Chest/Body	550/80
Lung	2100/-450

Instructions for Avoiding the Lens of the Eye on Head Exams

For routine head exams where one desires to avoid the lens of the eye:

1. Positioning: Tilt the patients chin toward their chest "tucked position" (or tilt gantry alternatively) to produce a scan angle that is parallel to a line created by the supraorbital ridge and the inner table of the posterior margin of the foramen magnum (opisthion).
2. Helical mode should be used routinely for adult head CT scans. If you cannot move the patient's head into proper position (trauma, cervical collar, rigid neck) then perform a helical scan with angled axial reformats or perform an axial scan with gantry tilt.
3. Start scans at the top of the C1 lamina and scan through the top of the calvarium.
4. The figure below details the scan ranges



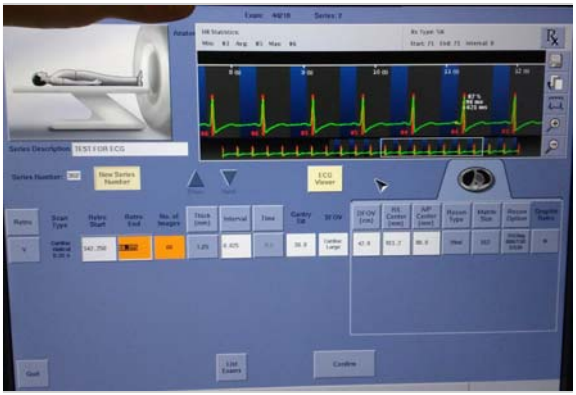
Scan range for routine head imaging if the eye lens is to be avoided (scan from yellow line to yellow line, the red line denotes the bony landmarks you want to get aligned with the scan plane)

How to Send the ECG Trace to PACS

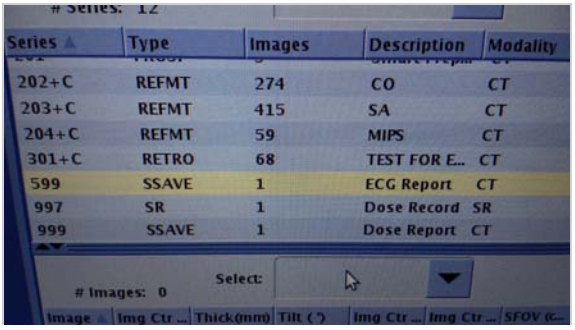
For all gated exams (prospective and retrospective for all indications/contrast phases/body regions (non contrast chest, CTA non coronaries, CTA coronaries, etc.) please send the ECG trace to PACS. This will help document the patients heart rate, heart rate variability, and the presence of any irregular beats during the scan. If you perform any trigger editing, it will also document how that editing was performed.

To send the ECG trace to PACS

1. After completing all of the needed reformats and pushing the study to PACS, open the retro reconstruction screen and select the gated series. Do not select the smart prep or bolus tracking series if present. For coronary CTA, pick the coronary CTA, not calcium scoring.
2. Adjust the scan reconstruction range to as small as possible (we will be doing a retro recon only to save the ECG trace, not to actually send the images so the range doesn't matter and therefore should be as small as possible to save space on the scanner). For example, if the scan started at S40 and ended at I250, you could just do a retro recon from S40 to S39.
3. Make sure the button that says "ECG Viewer" is selected (you should see the ECG trace when it is selected in the top right hand corner of the screen)
4. Hit the save icon on the ECG trace (it is in the upper right and corner of the screen and looks like a floppy disc).
5. Name the series "Recon for ECG Trace".
6. Click confirm.
7. Two new series will show up for the patient, the one you just made named "Recon for ECG Trace" and one named "ECG Report". Only send the "ECG Report" to PACS.



ECG trace shown on retro recon viewer



How the ECG report shows up on the image browser tab

Frequently-Asked Questions (FAQ's)

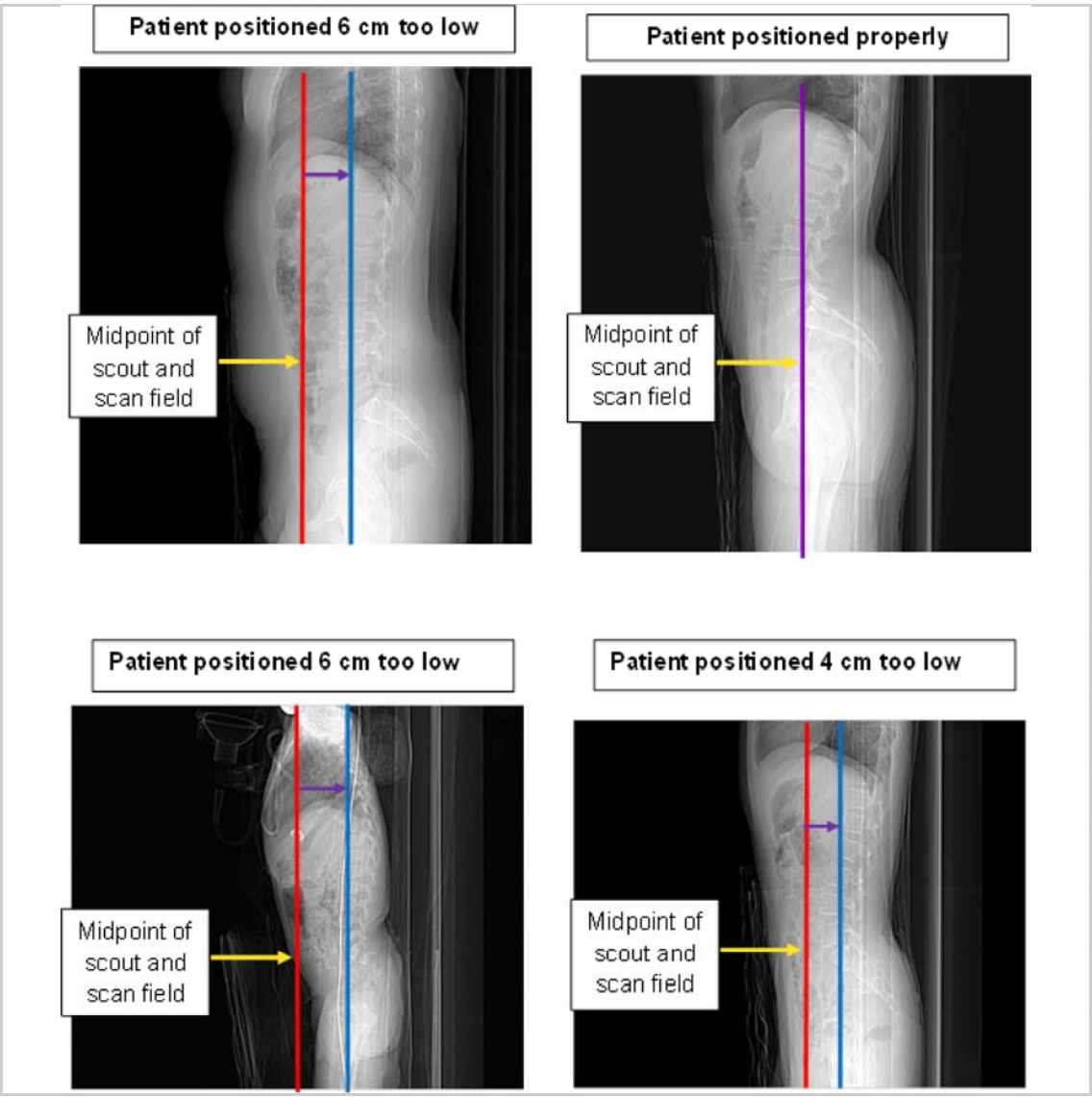
Critical Comments on Proper Patient Centering

1. **Using the UW protocols, I sometimes find that parts of the image are too noisy, particularly towards the posterior part of the patient. Why?**
   To ensure uniform image quality at the lowest dose, proper patient positioning is very important. Current scanner technology incorporates bowtie filters. Their purpose is to decrease radiation to the periphery of the patient. This results in a sweet spot for patient positioning. Improper positioning will result in degraded image quality. It is particularly important in pediatric imaging and the small adults specifically, whenever the smaller bowtie filter is used relative to the selected Scan Field of View (SFOV). The small bowtie filter is used for all pediatric SFOV's, for the Small Body and Small Head SFOV's on the LightSpeed VCT and the Discovery CT750 HD; and for the Small Body and Head SFOV's on the Revolution EVO and the Optima CT660. Proper centering is also more important when using low kV technique.

   Patients of all sizes are frequently positioned too low in the gantry, primarily because it can be difficult to correctly estimate the AP center of the patient since part of the patient is effectively hidden by the curve of the table. Generally it is better to have the patient centered a bit high rather than low, since it is optimal to place the most attenuating part of the patient at the center of the scan. The patient's center of mass is usually a bit posterior to the measured center point of the patient from skin line to skin line. Thus, make sure that the table is properly elevated. (To accomplish this with smaller and pediatric patients, one should position the patient high enough so that the horizontal laser light is centered on the lumbar spine and is just anterior to the thoracic spine. This is demonstrated by the figures on the next page.)

   If the patient is positioned too low in the gantry, several detrimental effects occur. They are most problematic when using the smaller SFOV bowtie filter or lower kV settings. First the image noise will increase, particularly toward the posterior part of the patient. Second the patient dose will increase. The proper solution is NOT to avoid the use of the smaller SFOV bowtie filter or to avoid the use of lower kV when appropriate. Rather the best solution is proper patient positioning – to obtain the best overall image quality at the lowest dose.

   The principals of properly centering small and pediatric patients are demonstrated in the scout images below, where the red line is the actual midpoint of the scout image and the blue line is where the patient should have been centered on the scout. Only the scout on the upper right shows correct positioning; the midpoint of this scout is shown as a purple line. All the rest are centered too low.



Positioning Examples

General

1. **Why did GE partner with the University of Wisconsin-Madison?**
   University of Wisconsin-Madison has one of the largest medical physics departments of any major institution offering this type of program, and their Department of Radiology has years of experience in refining and improving CT protocols. Together, these two departments have developed clinically relevant and technically sound CT protocols. The University of Wisconsin-Madison and GE Healthcare have had a long-standing working relationship and strategic alliance. This is partly due to geographic proximity.
2. **When I buy a new GE scanner, must I use these protocols?**
   We encourage you to take the time to review the protocols and apply them as they are written. These protocols have been refined to provide optimal imaging for a numerous set of conditions. They have been fine-tuned to each specific CT scanner and refined for the varying size of our population. But you may choose to use your own protocols. Just please take the time to optimize them for your new scanner. That's the right thing to do to make sure your patients get the best scan at the safest dose.
3. **Why are there so many different protocols?**
   The protocols are refined for certain disease states. Modifications in patient positioning, oral and intravenous contrast administration, and timing of series acquisition can help to optimize visualization of the suspect clinical condition.
4. **Will these protocols change?**
   It is inevitable that with further improvements in CT technology and/or a growing understanding of disease conditions, the University of Wisconsin-Madison protocols will evolve. Our intention is to release new versions of improved protocols on an annual basis; however, an earlier release may be provided if a major medical advance or a protocol issue comes to light.

5. **Is there a reason why Dose Reduction Guidance is not used in the protocols?**
    1. When the Dose Reduction Guidance is used, there is a limit imposed on the min mA allowed, which poses a problem for our protocols.
    2. Dose Reduction Guidance is not available on the Discovery CT750 HD scanner, and we wished to be consistent in our protocols across GE CT platforms.
    3. Our radiologists have approved the use of a certain percent ASiR for the different exams and do not want to have it altered by the Dose Reduction Guidance.
6. **These protocols incorporate oral contrast. How do we use the protocols if our institution has gotten away from using oral contrast in our emergency department?**
   The University of Wisconsin-Madison firmly believes that imaging of certain disease states is enhanced by the addition of oral contrast. If your institution is comfortable with scanning the abdomen in the absence of oral contrast, that's fine. However, you are encouraged to consider one unique aspect of the oral contrast cocktail that we recommend. The University of Wisconsin-Madison routinely adds polyethylene glycol (PEG) to the oral contrast mix. This accelerates transit through the intestine. When our patients drink this contrast mixture for one hour, we routinely see opacification of the gut to the level of the cecum. This significantly increases confidence and interpretation, especially for enteric conditions.
7. **I just scanned a small patient and the image quality is not very good. Why?**
   Patient centering is critically important to achieve uniform image quality. Please refer to the Proper Patient Centering in this section for more information.
8. **Why do you use Smart mA instead of Auto mA or Manual mA?**
   The UW protocols always rely on the Smart mA function when the Auto mA is turned on. We do not see any situation in which it would be advantageous to turn the Smart mA function off. Smart mA includes both mA modulation as the patient attenuation changes along the length of the patient and also mA modulation as the tube rotates around the patient. This is always advantageous and is essential in areas of the anatomy where patient size / attenuation varies dramatically with direction, such as the shoulders and pelvis. It is even useful in scanning the head, since the AP and lateral dimensions of the head are not the same.
9. **Why don't the protocols use Dynamic Transition on Smart Prep?**
   Dynamic Transition triggers the scan automatically when IV contrast enhancement in the selected region of interest reaches a predetermined HU value. Some patients, however, are startled by the influx of contrast and may move or breathe differently. This could shift the region of interest and result in an attenuation spike which may prematurely trigger the scan to start before optimal contrast opacification.

Abdominal CT Protocols

1. **Why are there two flank pain protocols?**
   The standard dose flank pain protocol is appropriate for the patient presenting for the first time to the emergency room with suspicion of renal calculi or appendicitis (although we encourage oral contrast for suspect enteric pathology). The low-dose flank pain protocol is more appropriate for the follow-up of patients with known kidney stones who are receiving numerous scans. It is tailored to provide a level of resolution good enough to visualize renal calculi, but not to characterize other renal abnormalities.
2. **Why is there an hepatocellular carcinoma protocol in addition to the biphasic CT?**
   The United Network for Organ Sharing (UNOS) has mandated that prior to listing a patient for transplantation, the CT scan evaluating the possibility of neoplasm must include a delayed phase. Therefore, a special protocol was created to accommodate this mandate. The biphasic CT, however, is preferred for evaluation of hypervascular metastases to the liver.
3. **Why are there so many reformatted images on a trauma study?**
   The University of Wisconsin-Madison trauma CT of the chest is performed with angiographic technique. However, many centers do not provide in-house 3-D services off-hours. Therefore this protocol includes an oblique MIP reconstruction of the great vasculature. It provides a candy cane projection of the aortic arch, ideal to rule out aortic injury.
4. **Why do you scan the trauma chest from bottom up?**
   By the time the scan arrives at the apex of the chest, most of the intravenous contrast has been washed out of the veins of the upper thorax by the saline chaser. This decreases the streak artifacts from veins. If scanned top down, these veins would be filled with very dense contrast as it is being actively injected at the time of acquisition.
5. **The dose for the trauma chest abdomen pelvis appears relatively high compared to a standard chest abdomen pelvis study. Why is that so?**
   A trauma study routinely results in additional reformatted images of the spine. To obtain appropriate resolution for imaging of fractures, the technique must be relatively robust. This is major reason why trauma imaging is performed at a higher dose than standard body imaging.
6. **Why is a 0.5xx:1 pitch used?**
   University of Wisconsin-Madison uses the 0.5xx:1 pitch for several reasons: (1) it provides optimized helical reconstructions, compared to higher pitches; and (2) for the same image noise, it produces a 20% lower dose than does the 0.9 pitch (which is why that pitch is avoided). University of Wisconsin-Madison uses 0.4s or 0.5s rotation times when possible to reduce scan times

with the lower pitch. When that is not sufficient, as in PE studies, the pitch is increased to 1.375. The use of a lower pitch is possible with the GE 64-slice scanners because of the wider beam collimation of 40mm compared to 20mm, which doubles the table speed for any particular pitch and rotation time. This also allows the scanning of larger patients without hitting max mA and degrading image quality.

Chest CT Protocols

1. **Please explain why Bone Plus (thin cuts) are prescribed in Recon4?**
   Bone Plus is used as a "lung algorithm". We prefer its diagnostic image quality compared to the "Lung" or "Bone" algorithm. Thin cuts for both soft tissue and lung images are performed to create the Sagittal and Coronal reformatted images.
2. **Why is a 0.5xx:1 pitch used except for PE studies?**
   See same question under "Abdominal CT Protocols.

CV CT Protocols

1. **Why is a separate non-contrast scan included with the CTA studies?**
   It allows us to differentiate contrast from calcium when looking for extravasation or a leak. Also, the non-contrast scan is essential for detection of intramural hematoma in acute aortic syndrome.
2. **Why is the time-of-arrival of the timing bolus measured at the popliteal arteries during run-offs instead of in the aorta?**
   There are 2 general approaches to performing extremity CTA run-off studies
   1. The first attempts to scan at roughly the same rate as the contrast bolus passes through the extremity in order to "follow" the bolus from the aorta through the distal extremity. Before the advent of multidetector fast scanners, this was the only real option. However, the tremendous variability in the contrast bolus transit time through the extremity, especially in the presence of atherosclerotic disease, made timing difficult.
   2. The second approach (which the University of Wisconsin-Madison has adopted) aims to opacify all of the larger arteries of the extremities and then scan as quickly as possible. Since the contrast transit time varies markedly among patients, using arteries in the extremity (e.g., popliteal arteries for lower extremity runoffs) enables better determination of the appropriate delay between injection and scan. Performing an immediate repeat of the very distal extremity (beginning at the knees or elbow) also helps ensure that the distal arteries are adequately evaluated.
3. **Why doesn't University of Wisconsin-Madison use prospective gating on the chest portion of a combined CTA chest/abdomen/pelvis in which gating is needed in the chest?**
   GE scanners are not currently able to combine a prospectively gated chest with a non-gated abdomen/pelvis in a single acquisition. Therefore, when it is essential to use ECG-gating on the chest portion of a CTA chest/abdomen/pelvis, retrospective gating must be used.

MSK CT Protocols

1. **Why does the wrist/elbow need to be over the head?**
   This positioning eliminates both exposure to and scatter from the rest of the body.
2. **When positioning the patient with their arm over their head, does it matter if they are prone, supine, or decubitus?**
   No. Use whatever position makes the patient most comfortable.
3. **When scanning ankles/feet, why are both ankles/feet included in the scanning FOV?**
   Because there is no appreciable scatter from the normal contralateral side, and sometimes it is useful to have the contralateral side for comparison.
4. **If, when scanning a knee/ankle/foot, there is metal in the contralateral side, what should be done?**
   The contralateral knee should be bent to move the metal knee/ankle/foot out of the scanning FOV.
5. **How should the arm be positioned when there is a cast in place?**
   The ideal position for scanning the elbow/forearm/wrist is with the arm and elbow straight so that the arm is perpendicular to the CT gantry. When there is a cast across the elbow, then the forearm should be positioned so it is oblique to the CT gantry.
6. **Why shouldn't the patient be positioned with the forearm parallel to the CT gantry?**
   This creates an unacceptable amount of streaking along the length of the forearm due to greatly increased x-ray attenuation. The forearm should be positioned perpendicular (preferred) or oblique to the CT gantry.
7. **Why are some of my bone images too blurry, especially those of the shoulders?**
   There are two important requirements to retain the image sharpness that can be provided by the sharper image algorithms such as "bone", "bone plus", "edge", and "ultra". The first requirement is the use of a **small DFOV**, ideally of less than 20 cm. This produces a pixel size that is capable of reproducing the full resolution of the sharp algorithms. The larger pixel size that results with the use of larger DFOV's will limit the resolution of which the sharp algorithms are capable.

   The second requirement is that the anatomy for which you need high resolution be positioned close to the **center of the scan field of view**. Due to the effects of focal spot size and detector size, the maximum limiting resolution degrades significantly as

you move farther from the center of the scan field. For example, when using any of the sharp algorithms, the actual resolution near the outer edge of the scan field can degrade to that of a "soft" algorithm. To avoid this blurring, the best policy is to position the anatomy within a central area with a diameter of 15 cm or less.

Another recommendation, which will increase size of this central sharp area a bit, is to use a small focal spot. To make sure that the scanner is actually using a small focal spot, the mA in manual mA mode must be no more than a value that depends on the kV setting and that can be found in the Technical Reference Manual for the scanner being used. In auto or smart mA mode the maximum mA setting must be limited to no more than that same value. Here are example values for the Revolution EVO/Optima CT660 and for the Revolution Discovery CT/Discovery CT750 HD, indicating the maximum mA allowed for the small focal spot:

	Revolution EVO/Optima CT660 mA limits for small focal spot	Revolution Discovery CT/Discovery CT750 HD mA limits for small focal spot
kV	Normal Scan Mode	Normal/Hi Res Scan Mode
80	300 mA	620/610 mA
100	240 mA	650/490 mA
120	200 mA	540/405 mA
140	170 mA	460/350 mA

As you can see from the above table, the Revolution Discovery CT/Discovery CT750 HD scanners have an additional scan mode--"Hi Res". This allows an even greater increase in the size of the sharp central "sweet spot" in the scan. This scan mode can be used with either the large or small focal spot, but the greatest advantage is with the use of the small focal spot. Please note that to take advantage of this benefit of using the "Hi Res" scan mode, you DO NOT need to use the additional "HD" reconstruction algorithms that are available when using this scan mode. In fact, you may prefer the normal, non-HD algorithms since the HD algorithms may cause an unacceptable increase in image noise and artifacts. The HD algorithms used in the Hi Res scan mode can produce a resolution limit in the center of the scan field that is up to 50% greater than achievable with the normal scan mode, but this greater resolution is seldom needed or desirable considering the increase in image noise and artifacts that can result.

Neuro CT Protocols

Adult Brain

1. **Why is helical mode used?**
    1. Helical scanning allows recon intervals at less than the slice thickness. The best z-resolution, along with the fullest display of the clinical information obtained in the scan, is obtained at recon intervals of one-half of the actual slice thickness. The source images that are used for any reformatted images must be thin slices (1.25 mm for soft tissue and 0.625mm for bone) with recon intervals of one-half the slice thickness for optimal image quality. The nearly isotropic voxel volumetric data that this provides can then be used to generate axial images at any angle through the brain or straighten the images through the brain if the patient is not properly positioned. It also allows for the ability to create 2-D reconstructions.
    2. When the patient's head can be positioned and angled properly for the scan, use helical mode and the axial images can be read without reformatting.
    3. A helical scan mode followed by angled recons can be used when one cannot adequately position the patient's head (e.g., cervical collar).
2. **Why is axial mode used?**
   This is used when the patient's head cannot be positioned properly and also when helical scans would produce artifact from metal projecting over the posterior fossa.
3. **Why not use an even lower dose than what's in the protocol?**
   This would result in decreased contrast resolution and a worse signal-to-noise ratio making subtle lesions imperceptible. Grey-white matter differentiation would also become more difficult.
4. **Do you scan the head CT to include orbits or tip the head down to exclude orbits?**
   The head is scanned to include the orbits since we consider it to be an important part of the exam. It is acknowledged that some facilities do not wish to image the orbits because of fear of inducing cataracts. Many of these facilities may not realize that by just missing the orbits, they are still exposing them to the radiation beam. University of Wisconsin-Madison does not believe that the very small level of possible risk for inducing cataracts is sufficient to exclude the diagnostic information obtained in this method of imaging.
5. **Why is Auto/Smart mA used on heads?**
   Auto mA or Smart mA is used to optimize image quality at the lowest dose. The brain is not a uniform cylinder—obviously it is smaller toward the top and its cross-section is oval and not circular. Head attenuation is also not the same for all patients (bone density and thickness). Thus there is definitely an advantage to using Smart mA, and it does not cause any imaging problems. When the axial mode is used to perform head scans, then Manual mA is used. The problem here is the noticeable change in noise texture between axial slabs if the mA were to change. This problem is not seen with helical scanning. Helical scanning allows one to reconstruct at intervals of ½ the actual slice thickness, which improves diagnostic information in the axial scans and improves Sagittal and Coronal reformats.

6. **Why is the noise index different between the adult brain routine and adult brain helical scan with angled axial reformats?**
   Effectively they are the same. One noise index is set for an initial slice thickness of 5.0mm while the other is set for a slice thickness of 1.25mm and therefore needs to be twice the setting used for 5.0mm.

Adult Orbit

1. **When is intravenous contrast used?**
   IV contrast is useful in suspected or known tumor, infection, or vascular malformation.
2. **Why is the bone plus algorithm utilzied?**
   This helps in assessing bony changes from tumor (e.g., smooth remodeling versus aggressive destruction) or infection.
3. **Why can't one simply use soft tissue algorithm with bone windows?**
   This would have diminished bony detail compared to true bone plus algorithm, and subtle destructive lesions could be obscured.
4. **Why use Auto/Smart mA?**
   Except for scanning using the axial mode, for all standard scanning helical mode is used with Smart mA. This includes the protocols for the orbit, sinus, facial bones and temporal bones. Using Smart mA simply gives more consistent image quality at the lowest dose and does not produce any image quality problems. We are unaware of any situation in which it would be advantageous to turn the Smart mA function off when using Auto mA.

Adult Maxillofacial

1. **Do I need to scan the mandible, as well as the face?**
   Yes. Up to 10% of patients with facial trauma will have coexistent mandibular fractures.
2. **Why do I need 0.625 mm slices?**
   This slice thickness is needed for isotropic voxel resolution allowing for high quality multiplanar reconstructions.
3. **Why isn't a lower dose used?**
   Soft tissue evaluation is also mandatory with facial trauma and higher dose is needed for adequate soft tissue imaging.
4. **Why do I need so many different reconstructions?**
   Different planes may better demonstrate subtle fractures, allowing for more accurate diagnosis.
5. **Do I need to do soft tissue reconstructions in facial trauma patients?**
   Facial trauma also affects the soft tissues of the orbit and face. These lesions will not be adequately visualized on the bone algorithm images.
6. **Why use Auto/Smart mA?**
   See same question under 'Adult Orbit' subsection of "Neuro CT Protocols".

Adult Sinuses

1. **When is contrast needed?**
   For evaluation of suspected tumors, atypical infections, suspected extra-sinus spread of infections, or possible vascular lesions.
2. **Is CT as good as MRI for evaluating the sinuses?**
   It depends on the problem that is being evaluated. They are often complimentary studies, especially for assessment of sino-nasal masses, and both may be required in some instances.
3. **Why use Auto/Smart mA?**
   See same question under 'Adult Orbit' subsection of "Neuro CT Protocols".

Adult Temporal Bone

1. **What is the optimal slice thickness?**
   For temporal bone imaging, in general, the thinner the slice, the better.
2. **When is contrast needed?**
   For evaluation of infection or inflammatory processes. In addition, it can be used in evaluation of possible tumors in patients who cannot have an MRI, although it is not typically as sensitive as MRI. Please note that adequate mAs must be utilized for soft tissue resolution.
3. **Why aren't direct coronal images obtained?**
   If adequate slice thickness (i.e., 0.625 mm) is obtained, then multiplanar reconstructions will be comparable in quality without the additional patient dose. It saves a great deal of time and shortens the exam considerably. The coronal plane can be correct for each patient and not limited by tilt or ability to position patient in direct coronal position.
4. **Why use Auto/Smart mA?** See same question under 'Adult Orbit' subsection of "Neuro CT Protocols".

Adult Neck

1. **Why is 140 kV used?**
   This higher kV is needed for adequate penetration of the shoulders. The use of a lower kV setting would result in streaking artifacts through the shoulders and reduced image quality including increased image noise.
2. **Why is the scan started at the aortic arch?**
   1. The scan follows the contrast bolus.
   2. Needed for evaluation of left true vocal fold palsy.
   3. Allows assessment of mediastinal nodal disease, which is often present in head and neck cancer.
   4. Allows for evaluation for the lower limit of retropharyngeal pathology.
3. **Why is only a 0.5xx:1 pitch used for a CTA neck?**The low pitch reduces helical artifacts, particularly when the anatomy is changing so rapidly as in the neck/shoulder region. Also, the low pitch avoids reaching the scanner's maximum mA value in the lateral direction through the shoulder, which would compromise the image quality.
4. **Please explain the rationale for 140 kV and 0.5xx:1 pitch.**
   140 kV is used to assure proper penetration through the shoulders, which can otherwise be an annoying source of noise and artifact. The 0.5xx:1 pitch is to minimize artifacts due to the substantial attenuation changes from the transitions from the shoulders and to allow enough effective mAs to penetrate the shoulders. For the same image noise the dose is lower using the 0.5xx:1 pitch compared to the 0.9xx:1 pitch on the GE 64-slice scanners, as noted previously.

Adult Cervical Spine

1. **Why is 140 kV used?**
   This higher kV is needed for adequate penetration of the shoulders. The use of a lower kV setting would result in streaking artifacts through the shoulders and reduced image quality including increased image noise.
2. **Why are images so grainy in the lower cervical spine with soft tissue windows?**
   The exam is obtained with a noise index, which allows for good visualization of the bones for fractures and adequate evaluation of most significant soft tissue pathology with this dose. Adjustments can be made for dosing per preference.
3. **Why are soft tissue reconstructions obtained in trauma?**
   These are used to detect additional trauma such as soft tissue hematomas, epidural or subdural hematoma, traumatic disc herniation, and possible spinal cord injury.
4. **Why are 2-D multiplanar bone reformations obtained?**
   Because 1) some fractures may be more adequately seen in different planes than others; and 2) multiplanar 2-D reformations allow for improved visualization of subluxation.

Pediatric Routine Cervical Spine

1. **Why use 0.8s rotation time on a child, age 3 to 6 years?**
   To avoid reaching the scanner's maximum mA in the lateral direction through the shoulder, which would compromise the image quality.

Adult Thoracic Spine

1. **Why are reformats created on trauma CT chest/abdomen/pelvis?**
   1. This option can be used with unstable patients who need multiple body parts to be quickly scanned and there is not adequate time to obtain standard thoracic spine CT images.
   2. Additionally, in patients with low likelihood of trauma, this helps to reduce radiation dose. If there is a high likelihood of significant thoracic spine fracture, a dedicated thoracic spine CT should obtained.
2. **Why are the axial soft tissue reconstructions and sagittal 2D reformatted thoracic spine images that are obtained from secondary reconstructions of trauma CT chest/abdomen/pelvis studies so grainy?**
   A lower mA is utilized with this option to limit radiation dose. If there is a high likelihood of thoracic spinal injury, a dedicated thoracic spine study should be performed. Individual institutions may also increase the dose per preference.

Vascular CTA

1. **Why are images obtained cranial to caudal with a head and neck CT angiography protocol?**
   This is designed to reduce venous contamination intracranially, allowing for improved sensitivity for aneurysm detection.
2. **Why is smart prep used instead of a timing bolus?**
   Less contrast is utilized. Venous contamination is also avoided.

3. **Why are so many reconstructions obtained?**
   This allows for improved pathology detection. Individual institutions may modify the reconstructions created per preference.

Intracranial Perfusion

1. **Can I modify the radiation dose?**
   The FDA has strict regulations regarding dose with perfusion imaging, and therefore, it is not recommended. Future updates to these protocols may utilize even lower dose parameters.
2. **Why is VolumeShuttle mode used?**
   This increases the area of brain that can be covered.

Axial vs. Helical Pediatric Head

1. **In pediatric protocols for the head, does the University of Wisconsin-Madison use Manual mA or Automatic Exposure Control? If Automatic Exposure Control, is the max mA listed in the protocols too high for a 3-6 year old compared to that listed for a 0-3 year old?**
   The University of Wisconsin-Madison uses Smart mA for all scans performed with helical scanning. In the unusual circumstance that Manual mA is used, the scan parameters are selected to give a comparable dose and image quality as compared to the helical scanning. With helical scanning, the Noise Index is slightly higher with the 0-3 year old protocol compared with the 3-6 year old protocol, but the image quality is similar since the 0-3 year old protocol is performed using a lower kV (better contrast). In protocols that use Manual mA, the mA settings are adjusted to give comparable image quality with a lower kV, reducing dose and increasing image contrast for the 0-3 year old protocol compared to the 3-6 year old protocol.

Pediatric CT Protocols

1. **Why are there only five different size-based protocols from the University of Wisconsin-Madison whereas GE has nine?**
   GE has set up nine separate protocols based on the Broselow color-based system. This system is predominantly used for the purposes of emergent medication dosing and equipment selection such as catheter and endotracheal tube size during pediatric resuscitation. There is not enough difference between each of these nine categories in terms of scan parameters and dose to warrant this many gradations. University of Wisconsin-Madison uses AP + lateral measurements to place the pediatric patients into 5 categories, correlating with approximate ages of newborn (Broselow pink); 6 months-2.5 years (Broselow red and purple); 3-7 years (Broselow yellow and white); 8-12 years (Broselow blue and orange); and 13-18 years (Broselow green and black).
2. **The University of Wisconsin-Madison pediatric protocols have doses that are actually higher than what our institution has been using lately. What is the rationale behind the pediatric parameters?**
   We at the University of Wisconsin-Madison applaud your dose reduction in pediatric imaging. As these protocols are being introduced they are going to a wide spectrum of imaging centers, some of which have not yet reduced pediatric CT dose. In order to provide imaging quality to the unaccustomed eye of a radiology group scanning at a higher dose, we have provided two different sets of pediatric protocols. One set contains the relatively low dose protocols that we use at the University of Wisconsin-Madison. A second set contains higher image quality, higher dose protocols for those more comfortable with this image quality level. If you would like to continue using your existing pediatric protocols, we encourage you to confirm that they are at an appropriately low dose with adequate image quality, across the spectrum of pediatric sizes.
3. **Why are some pediatric images so noisy?**
   It is mandatory to keep the dose low for pediatric patients. However, image quality should be interpretable. If you are intermittently having poor quality pediatric studies, we encourage you to reevaluate patient centering in the gantry. In our experience, it is the most frequent cause of poor image quality. Proper centering is critical to image quality in small patients.
4. **Why is the protocol different for outpatients versus ER patients in the evaluation of appendicitis?**
   Outpatients are generally not as sick. They are less likely to have appendicitis, but may be more likely to have another reason for their abdominal pain, thus we should image the entire abdomen and pelvis rather than decrease the FOV to include only the lower abdomen and pelvis where the appendix lives.
5. **Why is there no protocol for pediatric patients with bowel obstruction?**
   The most common cause of bowel obstruction in a child is intussusception, for which ultrasound is the appropriate test to perform. Unlike adults, most children have not had surgery and therefore do not have adhesions causing obstruction. If a child has had prior surgery, then the routine abdomen and pelvis protocol should be used.
6. **Why do pediatric CTA's not include a non-contrast enhanced set of images?**
   These most often do not provide additional information in children and only add to the total radiation dose.
7. **When evaluating the chest for metastatic disease in patients with osteosarcoma, why do you not give contrast?**
   Osteosarcoma metastases often calcify, making them easy to detect. Unlike other types of tumors, osteosarcoma does not

metastasize to lymph nodes, so contrast is not necessary to delineate normal mediastinal structures from abnormal lymph nodes.

8. **When evaluating for infection and/or empyema in a child, why is contrast given?**
   Contrast is helpful in evaluation of pleural thickening and septations. Additionally, the presence or absence of enhancement in the involved lung is helpful in determining the presence of necrotizing pneumonia.
9. **Why is there a separate protocol for non-contrast chest CT in evaluation of pectus excavatum?**
   A routine non-contrast CT of the chest does not include the entire rib cage. Additionally, since the concern is only about the osseous structures, dose can be reduced even farther.
10. **Why is a routine chest CT with contrast performed rather than a CTA when evaluating patients with clinical suspicion of a vascular ring?**
    Vascular rings can involve the aortic arch or pulmonary veins, so both need to be opacified during image acquisition. Performing a CTA would only opacify the aorta and branch vessels. Additional scans might be required to evaluate for pulmonary sling, adding to the total radiation dose.
11. **Why is a 0.5xx:1 pitch used on the 13-18 age group?**
    This allows sufficient mA range with the fastest rotation time. The 0.5xx:1 pitch provides the best helical image quality and also a lower dose than the 0.9xx:1 pitch at a given image quality.

<u>Physics/Technical Comments on Scan & Reconstruction Parameters</u>

1. **Is there a reason why Dose Reduction Guidance is not used in the protocols?**
   1. When the Dose Reduction Guidance is used, there is a limit imposed on the min mA allowed, which poses a problem for our protocols.
   2. Dose Reduction Guidance is not available on the Discovery CT750 HD scanner, and we wished to be consistent in the protocols across GE CT platforms.
   3. Our radiologists have approved the use of a certain percent ASiR for the different exams and do not want to have it altered by the Dose Reduction Guidance.
2. **Why do you use Smart mA instead of Auto mA or Manual mA?**
   The UW protocols always rely on the Smart mA function when the Auto mA is turned on. We do not see any situation in which it would be advantageous to turn the Smart mA function off. Smart mA includes both mA modulation as the patient attenuation changes along the length of the patient and also mA modulation as the tube rotates around the patient. This is always advantageous and is essential in areas of the anatomy where the patient size / attenuation varies dramatically with direction, such as the shoulders and pelvis. It is even useful in scanning the head, since the AP and lateral dimensions of the head are not the same.
3. **Why use Auto/Smart mA?**
   Except for scanning using the axial mode, for all standard scanning helical mode is used with Smart mA. This includes the protocols for the orbit, sinus, facial bones and temporal bones. Using Smart mA simply gives consistent image quality at the lowest dose and has not produced any image quality problems. Also, no situation has been identified in which it would be advantageous to turn the Smart mA function off when using Auto mA.
4. **Why is a 0.5xx:1 pitch used for most of the UW protocols?**
   University of Wisconsin-Madison uses the 0.5xx:1 pitch for several reasons: (1) it provides optimized helical reconstructions, compared to higher pitches; and (2) for the same image noise, it produces a 20% lower dose than does the 0.9 pitch (which is why that pitch is avoided). University of Wisconsin-Madison uses 0.4s or 0.5s rotation times when possible to reduce scan times with the lower pitch. When that is not sufficient, as in PE studies, the pitch is increased to 1.375. The use of a lower pitch is possible with the GE 64-slice scanners because of the wider beam collimation of 40mm compared to 20mm, which doubles the table speed for any particular pitch and rotation time. This also allows the scanning of larger patients without hitting max mA and degrading image quality.
5. **Why do you use a Helical Scan Type instead of Axial for nearly all your protocols?**
   The use of Helical scanning has several advantages over Axial. Faster area coverage, with less chance of patient motion during the scan, is an obvious advantage. Helical scanning decreases the effects of cone-beam artifacts with multi-slice scanning. One great advantage of helical scanning is the ability to prescribe Recon Intervals at less than the slice thickness. The best z-resolution, along with the fullest display of the clinical information obtained in the scan, is obtained at intervals of one-half of the actual slice thickness. In addition, the source images that are used to create any reformatted images must be thin slices (1.25mm for soft tissue and 0.625mm for bone) with recon intervals of one-half the slice thickness for optimal image quality. This is an advantage of helical scanning that is often not utilized.
6. **Why do you consistently use a Recon Interval that is smaller than the slice thickness? Doesn't a Recon Interval equal to the slice thickness provide all the available clinical information?**
   The University of Wisconsin-Madison uses a reconstruction Interval that is half of the actual slice thickness because using a Recon Interval equal to the slice thickness does not in fact provide all the available clinical information from the patient scan. Both mathematics and clinical experience show that the full display of the clinical information obtained in the scan is obtained

by using intervals of one-half of the actual slice thickness. You DO NOT want to waste any information obtained from the radiation exposure of a patient.

7. **Why do you not use the Pediatric Scan Field of View (SFOV) for any of your pediatric protocols?**

   The Pediatric Head and Body protocols substantially limit the maximum allowed mA that can be used in manual or Auto/ Smart mA modes. At 140, 120, 100, and 80 kV, the maximum mA is limited to 210, 250, 300, and 375, respectively. The rationale is to limit the dose to pediatric patients. However, the actual result is to limit the use of faster rotation times or higher pitches that will allow a faster exam with less motion artifact. Thus we avoid the use of the pediatric SFOV's for this reason. We would prefer to obtain a given patient dose and image quality with a higher mA and shorter rotation time.
8. **Why are some of my bone images too blurry, especially those of the shoulders?**
   See same question under "MSK CT Protocols".
9. **Why do you tend to use a fast rotation time with a low pitch? Would not a pitch of 0.9xx:1 and a rotation time of 1.0 s be equivalent to a pitch of 0.5xx:1 and a rotation time of 0.5 sec?**
   While it is true that a pitch of 0.9xx:1 and a rotation time of 1.0 s would produce an exam time essentially equal to a pitch of 0.5xx:1 and a rotation time of 0.5 s, and would also require about the same mA values, it would NOT result in the same image quality. The 0.5xx:1 pitch will have less helical artifact than the 0.9xx:1 pitch and the 0.5 s rotation time will have less motion artifact than the 1.0 s rotation time. Additionally, the 0.5xx:1 pitch is about 20% more dose efficient in the GE 64 slice scanners than the 0.9xx:1 pitch. For these reasons a pitch of 0.5xx:1 and a rotation time of 0.5 sec is much preferable to a pitch of 0.9xx:1 and a rotation time of 1.0 s. With scanners that have this option, we even prefer to use the shortest rotation time of 0.4 s when possible.
   For obese patients, the use of a 0.5xx:1 pitch allows an appropriate technique to be used to obtain a satisfactorily diagnostic image. If needed, the rotation time can be increased up to 1.0 s for these patients.
10. **When is a pitch higher than 0.5xx:1 used and why is the 1.375 pitch then generally used instead of a pitch of 0.9xx.1?**
    University of Wisconsin-Madison principally uses the 0.5xx:1 pitch for several reasons: (1) it provides optimized helical reconstructions, compared to higher pitches; and (2) for the same image noise, it produces a 20% lower dose than does the 0.9xx.1 pitch (which is why that pitch is avoided). University of Wisconsin-Madison uses 0.4s or 0.5s rotation times when possible to reduce scan times with the lower pitch. When that is not sufficient, as in PE studies and others requiring a very short exam time, the pitch is increased to 1.375. This is often preferred to the 0.9xx:1 pitch because of better dose efficiency at the 1.375 pitch. The use of a lower pitch is possible with the GE 64-slice scanners because of the wider beam collimation of 40mm compared to 20mm, which doubles the table speed for any particular pitch and rotation time. This also allows the scanning of larger patients without hitting max mA and degrading image quality.
11. **What is your strategy for selection of kV?**

    The selection of optimal kV is dependent on the patient size and the importance of the visualization of iodine contrast in the images. As an example, for abdominal non-contrast scans the kV will vary from 80 for the small pediatric patient to 140 kV for a very obese patient. If the visualization of iodine contrast is important in the imaging, such as for angiography, the same range of patient size will have a kV variation of 80 to 120 kV. 140 kV is never optimal for visualizing iodine contrast, even in the largest patients.
12. **Why do you consistently use a "Plus" Recon Option for Helical Scanning instead of "Full"?**

    The "Plus" Recon Option provides better image quality than "Full" by reducing Helical artifacts in the images. It also reduces image noise by about 10% by increasing the actual slice thickness by about 20% from the nominal slice thickness. If a specific noise index is used, then a change from "Full" to "Plus" will reduce patient dose by about 20%. The following table provides approximate changes in actual slice thickness in "Plus" mode:

Normal Slice Thickness	Actual Slice Thickness using "Plus" Recon Option	Optimal Recon Interval
5.0mm	6.0mm	3.0mm
3.75mm	4.5mm	2.25mm
2.5mm	3.0mm	1.5mm
1.25mm	1.5mm	0.625mm
0.625mm	0.8mm	0.312mm

The 20% increase in slice thickness generally has little negative clinical effect compared to the advantages of using the "Plus" option. In fact, it is possible to improve z-resolution even with the greater slice thickness by using a reconstruction interval that is one-half of the actual slice thickness, as shown in the table above. The reconstruction interval for the 1.25 and 0.625 mm nominal slice thickness remains at half of the nominal slice thickness. This allows the use of "IQ Enhance" to further improve image quality by reducing helical artifacts in thin slices.