

Head Sequence

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Head

Objective: Routine Cerebral CT with (looking for tumors) or without contrast medium

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; head holder;

Topogram: 256 mm LAT, caudocranial

Contrast

Injection: 22 G IV; 350 mgJ/cc Concentration; 1-5 min delay;

Contrast	
Contrast	
Volume	Rate
60 cc	1 cc/s

Range 1: caudocranial, from base of skull to vertex; gantry tilt parallel to base of skull; 60 sec diagnostic delay;

Recons: Range 1: 3 mm through entire head
FoV: skull

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Head Sequence

Stanford University

Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	LAT/cau/cra	256
1	HeadSeq	cau/cra	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Feed	Rotation	Scantime
		35	120						
1		410	120			30x0.6	18 mm	1 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window
1		axial	3 mm	3 mm	H41f	80/40

responsible

S. Atlas

last change

05/31/2005

Head Spiral 3D

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Head

Objective: Head CT with thin slice reconstruction, Soft Tissue and Bone Algorithm

Patient

Preparation: n.a.


Positioning: head first; supine position; arms down; head holder;

Topogram: 256 mm LAT, caudocranial

Range 1: caudocranial, from base of skull to vertex;

Recons: Range 1: 1 mm at 0.5 Intervall through entire head
FoV: skull

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
<h1 style="color: #8B0000;">Head Spiral 3D</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	LAT/cau/cra	256
1	HeadSpi	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1		410	120			20x0.6	0.8	1 sec	

2D/3D/4D Recon						
#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	1 mm	0.5 mm	H41f	80/40
1b		axial	1 mm	0.5 mm	H60f	2000/200

responsible	S. Atlas	last change	05/31/2005
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Neck

Protocol: Siemens Sensation 64 / Neck

Objective: Routine Neck CT with contrast medium, looking for masses or lymph nodes;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; shoulders down; head holder; remove any kind of metal out of scan range;

Topogram: 256 mm LAT, caudocranial, from shoulders though mid of skull;

Contrast

Injection: 22 G IV; 350 mgJ/cc Concentration; 50 sec fixed delay; for Re-bolus study use 30 sec fixed delay;

Neck only:

Contrast	
Contrast	
Volume	Rate
90 cc	2 cc/s

Neck and CAP:

Contrast Re-bolus	
Contrast	
Volume	Rate
60 cc	2 cc/s

Range 1: caudocranial, from shoulders to mid of skull; 50 sec (30 sec for re-bolus study) fixed delay; CD4D on;

Recons: Range 1: 3 mm through entire head and neck;
FoV: skull, include mandibula;

3D Recon: 3 mm at 3mm Interval coronal MPR

3D Recon: 3 mm at 3mm Interval sagittal MPR

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol
Neck

Stanford University
Medical Center

Blake Wilbur Clinic

Chronical			
#	Range	Direction	cm
	Topogram	LAT cra/cau	256
1	Neck	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD4 D	CD	Collimati on	Pitch	Rotation	Scantime
		60	120						
1	250		120	x		20x1.2	0.55	1.0 sec	

2D/3D/4D Recon						
#	Type	Orientati on	SW	Increment	Kernel	Window
1a		axial	3 mm	3 mm	B25f	250/50
1b	MPR	coronal	3 mm	3 mm	B25f	250/50
1c	MPR	sagittal	3 mm	3 mm	B25f	250/50

responsible S. Atlas	last change 05/31/2005
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LTD Sinus

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Head

Objective: Sequence Low Dose Examination to looking for Sinusitis

Patient

Preparation: n.a.


Positioning: head first; prone position; arms down; remove any kind of metal out of scan range;

Topogram: 256 mm LAT, craniocaudal, from forehead through sphenoid sinus

Range 1: craniocaudal, from forehead through sphenoid sinus; gantry tilt parallel to forehead;

Recons: Range 1: 3 mm through entire scan range
FoV: frontal and maxilla sinus;

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
<h1 style="color: #8B0000;">LTD Sinus</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	LAT/cra/cau	256
1	LTD Sinus	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Feed	Rotation	Scantime
		35	120						
1		120	120			30x0.6	18 mm	1 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1		coronal	3 mm	3 mm	H60f	2000/200

responsible	S. Atlas	last change	05/31/2005
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T Bones

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Head

Objective: Thin slice examination with High Resolution reconstruction in two orientations

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; remove any kind of metal out of scan range;

Topogram: 256 mm LAT, craniocaudal, head

Range 1: Spiral Scan craniocaudal, from base of skull through entire pyramids;

! Change patients' position !

Positioning: head first; prone position; arms down;

Topogram: 256 mm LAT, craniocaudal, head

Range 2: Sequence Scan craniocaudal, through entire pyramids; gantry tilt perpendicular to base of pyramids;
This Range should be done only if the patient tolerates the prone position; if not, do coronal reformats out of Range 1;


Recons: Range 1: 1 mm at 0.7 mm Interval, soft tissue and bone
FoV: bilateral, ears

1 mm at 0.7 mm Interval, bone, right and left
FoV: 100 mm ! move box to pyramids !

Range 2: 1.2 mm, soft tissue and bone
FoV: bilateral, ears

1.2 mm, bone, right and left
FoV: 100 mm ! move box to pyramids !

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	T-Bones	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
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Chronical			
#	Range	Direction	cm
	Topogram	LAT/cra/cau	256
1	T-Bone	cra/cau	
	Topogram prone	LAT/cra/cau	256
2	T-Bone prone	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1		280	120			12x0.6	0.75	1 sec	
		35	120						
2		200	120			6x0.6	3.5 feed	1 sec	

2D/3D/4D Recon						
#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	1 mm	0.7 mm	U70u	4000/700
1b		axial	1 mm	0.7 mm	U30u	400/40
1c		axial	1 mm	0.7 mm	U70u	4000/700
1d		axial	1 mm	0.7 mm	U70u	4000/700
2a		coronal	1.2 mm		U70u	4000/700
2b		coronal	1.2 mm		U30u	400/40
2c		coronal	1.2 mm		U70u	4000/700
2d		coronal	1.2 mm		U70u	4000/700

bilateral
bilateral
left FoV 100 mm
right FoV 100 mm
bilateral
bilateral
left FoV 100 mm
right FoV 100 mm

responsible S. Atlas	last change 05/31/2005
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Head and Neck Angio

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the entire territory of the carotid, vertebral and cerebral arteries, looking for aneurysm, stenosis, occlusions

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; remove any kind of metal out of scan range;

Topogram: 512 mm LAT, from vertex to aortic arch, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; minimum diagnostic delay; Trigger Level at 50 HU

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
100 cc	4 cc/s	40 cc	4 cc/s

Range 1: Non Contrast series from aortic arch to vertex; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in aortic arch; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 50 HU

Range 4: HN CTA; from aortic arch to vertex; breath hold in inspiration; minimum diagnostic delay;

Recons: Range 1: 3 mm at 3 mm Interval;
FoV: head

Range 4: 1 mm at 0.7 mm Interval;
FoV: head

3D Recon: 3 mm at 1mm Interval coronal ThinMIP

3D Recon: 3 mm at 1mm Interval sagittal ThinMIP

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Head and Neck Angio

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	LAT/cra/cau	512
1	non contrast	cau/cra	
2	premonitoring	ROI Aortic Arch	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 50 HU	
4	HN Angio	cau/cra	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		60	120						
1		150	120			64x0.6	1	0.5 sec	
4		200	120			64x0.6	0.7	0.37 sec	

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window
1		axial	3 mm	3 mm	B31f	400/40
4a		axial	1 mm	0.7 mm	B25f	600/80
4b	ThinMIP	coronal	3 mm	1 mm	B25f	700/200
4c	ThinMIP	sagittal	3 mm	1 mm	B25f	700/200

responsible

S. Atlas

last change

05/31/2005

C-Spine

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Spine

Objective: Spiral Scan

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; remove any kind of metal out of scan range;

Topogram: 256 mm LAT, craniocaudal, from vertex to shoulders


Range 1: craniocaudal, from vertex to shoulders;

Recons: Range 1: 1 mm by 1 mm Interval through entire scan range
FoV: Spine;

1 mm by 1 mm MPR coronal

1 mm by 1 mm MPR sagittal

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	C-Spine	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
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Chronical			
#	Range	Direction	cm
	Topogram	LAT/cra/cau	256
1	C-Spine	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	140						
1	250		120	x		64x0.6	1	1 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1a		axial	1 mm	1 mm	B60s	2000/500
1b	MPR	coronal	1 mm	1 mm	B60s	2000/500
1c	MPR	sagittal	1 mm	1 mm	B60s	2000/500

responsible	last change	05/31/2005
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L-Spine

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Spine

Objective: Spiral Scan

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm LAT, craniocaudal, from diaphragm to sacrum;


Range 1: craniocaudal, from diaphragm to sacrum;

Recons: Range 1: 2 mm by 1.5 mm Interval through entire scan range
FoV: Spine;

2 mm by 1.5 mm MPR coronal

2 mm by 1.5 mm MPR sagittal

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	L-Spine	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
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Chronical			
#	Range	Direction	cm
	Topogram	LAT/cra/cau	512
1	L-Spine	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	140						
1	350		120	x		20x1.2	1	1 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1a		axial	2 mm	1.5 mm	B60s	2000/500
1b	MPR	coronal	2 mm	1.5 mm	B60s	2000/500
1c	MPR	sagittal	2 mm	1.5 mm	B60s	2000/500

responsible	last change	05/31/2005
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Stroke

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Head

Objective: Combined protocol to assess brain perfusion in Stroke Patients

Patient

Preparation: n.a.

Positioning: head first; supine position; arms down; remove any kind of metal out of scan range;

Topogram: 256 mm LAT, from base of skull to vertex, caudocranial

Contrast

Injection: 18-20 G IV; 350 mgJ/cc Concentration; no delay;

Injection Protocol for Multiscan:

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
40 cc	8 cc/s	40 cc	8 cc/s

Injection Protocol for Head and Neck Angio:

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
100 cc	4 cc/s	40 cc	4 cc/s

Range 1: Non Contrast Head Sequence from base of skull to vertex;

Range 2: Multiscan 1 at level of Cerebral media artery territory with Contrast Injection Protocol

Range 3: Multiscan 2 at level of Cerebral media artery territory with Contrast Injection Protocol

Topogram: 512 mm LAT, from vertex to aortic arch, craniocaudal

Range 4+5: Bolus Tracking; ROI in aortic arch; 30 Scans; Cycle Time 1.12 sec;
Trigger Level at 100 HU

Range 6: HN CTA; from aortic arch to vertex; breath hold in inspiration;
minimum diagnostic delay;

Range 7: Post Contrast Head Sequence from base of skull to vertex;

Recons: Range 1: 3 mm at 3 mm Interval;
FoV: head

Range 2: 12 mm at 12 mm Interval
FoV: head
Perfusion evaluation on Perfusion Taskcard

Range 3: 12 mm at 12 mm Interval
FoV: head
Perfusion evaluation on Perfusion Taskcard

Range 6: 1 mm at 0.7 mm Interval;
FoV: head

3D Recon: 5 mm at 3 mm Interval coronal ThinMIP
3D Recon: 5 mm at 3 mm Interval oblique ThinMIP
3D Recon: 5 mm at 3 mm Interval oblique ThinMIP
3D Recon: 5 mm at 3 mm Interval coronal ThinMIP

Range 7: 3 mm at 3 mm Interval;
FoV: head

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Stroke

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	LAT/cau/cra	256
1	HeadSeq	cau/cra	
2	DynMulti 1	cau/cra	
3	DynMulti 2	cau/cra	
	Topogram	LAT/cra/cau	512
4	premonitoring	ROI Aortic Arch	
5	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
6	HN Angio	cau/cra	
7	HeadSeqpost	cau/cra	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Feed	Rotation	Scantime
		35	120						
1		410	120			64x0.6	18 mm	1 sec	
2		270	80			20x1.2	0 mm	1 sec	40 sec
3		270	80			20x1.2	0 mm	1 sec	40 sec
4		20	120						
5		20	120						
6		200	120			64x0.6	0.7	0.37 sec	
7		410	120			64x0.6	18 mm	1 sec	

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window
1		axial	3 mm	3 mm	H41f	80/40
2		axial	12 mm	12 mm	H30s	80/40
3		axial	12 mm	12 mm	H30s	80/40
6a		axial	1 mm	0.7 mm	B25f	600/80
6b	ThinMIP	coronal	5 mm	3 mm	B25f	700/200
6c	ThinMIP	oblique	5 mm	3 mm	B25f	700/200
6d	ThinMIP	oblique	5 mm	3 mm	B25f	700/200
6e	ThinMIP	coronal	5 mm	3 mm	B25f	700/200
7		axial	3 mm	3 mm	H41f	80/40

responsible S. Atlas

last change 05/31/2005

Chest Routine

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Thorax

Objective: Thorax CT with or without contrast medium, looking for masses, lymph nodes or lung nodules;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Contrast

Injection: 22 G IV; 350 mgJ/cc Concentration; 40 sec fixed delay;

Contrast	
Contrast	
Volume	Rate
100 cc	2,5 cc/s

Range 1: caudocranial (to avoid contrast agent artefacts), from diaphragm to shoulders; 40 sec fixed delay; CD4D on;

Recons: Range 1: 5 mm at 5 mm Interval
FoV: chest wall

1 mm at 1 mm Interval
FoV: chest wall

3D Recon: 2 mm at 2 mm Interval coronal MPR
2 mm at 2 mm Interval sagittal MPR
7 mm at 2 mm Interval axial ThinMIP

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Chest Routine

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	Thorax	cau/cra	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	300		120	x		64x0.6	0.9	0.5 sec	

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	5 mm	5 mm	B31f	400/40
1b		axial	1 mm	1 mm	B45f	1500/-700
1c	MPR	coronal	2 mm	2 mm	B45f	1500/-700
1d	MPR	sagittal	2 mm	2 mm	B45f	1500/-700
1e	ThinMIP	axial	7 mm	2 mm	B45f	1500/-700

responsible A. Leung

last change 07/07/2005

CAP

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Abdomen

Objective: Thorax/Abdomen/Pelvis CT with contrast medium, looking for masses, lymph nodes or lung nodules;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 768 mm AP, craniocaudal, from shoulders to symphysis; breath hold in inspiration;

Contrast

Injection: 22 G IV; 350 mgJ/cc Concentration; 40 sec fixed delay;

Contrast	
Contrast	
Volume	Rate
120 cc	2,5 cc/s

Range 1: Thorax, caudocranial (to avoid contrast agent artefacts), from diaphragm to shoulders; 40 sec fixed delay; breath hold in inspiration; CD4D on;

Range 2: Abdomen/Pelvis, craniocaudal from diaphragm to symphysis in portalvenous phase (70 sec absolute delay); breath hold in inspiration; CD4D on;

Range 3: delays through kidneys; 5-10 min absolute delay;

Recons: Range 1: 5 mm at 5 mm Interval
FoV: chest wall

1 mm at 1 mm Interval
FoV: chest wall

3D Recon: 2 mm at 2 mm Interval coronal MPR
2 mm at 2 mm Interval sagittal MPR

7 mm at 2 mm Interval axial ThinMIP

Range 2: 5 mm at 5 mm Interval
FoV: same as range 1

Range 3: 5 mm at 5 mm Interval
FoV: Kidneys

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol
CAP

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical			
#	Range	Direction	cm
	Topogram	AP/cra/cau	756
1	Thorax	cau/cra	
2	Abd/Pel	cra/cau	
3	Delays	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	300		120	x		64x0.6	0.9	0.5 sec	
2	250		120	x		64x0.6	1	0.5 sec	
3	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon						
#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	5 mm	5 mm	B31f	400/40
1b		axial	1 mm	1 mm	B45f	1500/-700
1c	MPR	coronal	2 mm	2 mm	B45f	1500/-700
1d	MPR	sagittal	2 mm	2 mm	B45f	1500/-700
1e	ThinMIP	axial	7 mm	2 mm	B45f	1500/-700
2		axial	5 mm	5 mm	B31f	400/40
3		axial	5 mm	5 mm	B31f	400/40

responsible	A. Leung B. Jeffrey	last change	07/07/2005
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HRCT normal (120 kV)

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Thorax

Objective: Thorax Sequence CT to assess interstitial lung disease;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP supine position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Range 1: Thorax supine position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration; CD4D off; clustering on; Incremental table movement 10 mm;

!Change position in Patient Model Dialogue!


Topogram: 512 mm PA prone position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Range 2: Thorax prone position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration; CD4D off; clustering on; ; Incremental table movement 10 mm;

Recons: Range 1: 1 mm
FoV: pleura

Range 2: 1 mm
FoV: pleura

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<p>HR CT normal</p>	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
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Chronical			
#	Range	Direction	cm
1	Topogram	AP/cra/cau	512
	HRCTSEQ	cra/cau	
	new Pat Pos		
2	Topogram	PA/cra/cau	512
	HRCTSEQProne	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Feed	Rotation	Scantime
		35	120						
1		280	120			2x1	10	0.5 sec	
		35	120						
2		280	120			2x1	10	0.5 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1		axial	1 mm		B45f	1500/-700
2		axial	1 mm		B45f	1500/-700

responsible A. Leung	last change 07/07/2005
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HRCT obese (140 kV)

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Thorax

Objective: Thorax Sequence CT to assess interstitial lung disease;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP supine position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Range 1: Thorax supine position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration; CD4D off; clustering on; Incremental table movement 10 mm;

!Change position in Patient Model Dialogue!

Topogram: 512 mm PA prone position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Range 2: Thorax prone position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration; CD4D off; clustering on; ; Incremental table movement 10 mm;

Recons: Range 1: 1 mm
FoV: pleura

Range 2: 1 mm
FoV: pleura

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol
HR CT obese

Stanford University
Medical Center

Blake Wilbur Clinic

Chronical			
#	Range	Direction	cm
1	Topogram	AP/cra/cau	512
	HRCTSEQ	cra/cau	
	new Pat Pos		
2	Topogram	PA/cra/cau	512
	HRCTSEQProne	cra/cau	



Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Feed	Rotation	Scantime
		50	140						
1		250	140			2x1	10	0.5 sec	
		50	140						
2		250	140			2x1	10	0.5 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1		axial	1 mm		B45f	1500/-700
2		axial	1 mm		B45f	1500/-700

responsible	A. Leung	last change	07/07/2005
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PE and Legs

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination of the entire Thorax, looking for Pulmonary Embolism and DVT (deep vein thrombosis)

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 1500 mm AP, from shoulders to knees, craniocaudal; breath hold in inspiration;

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 15 sec diagnostic delay; Trigger Level at 100 HU

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
150 cc	4 cc/s	40 cc	4 cc/s

Range 1+2: Bolus Tracking; ROI in right ventricle; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 3: entire Thorax, caudocranial; breath hold in inspiration; 15 sec diagnostic delay; CD4D on;


Range 4: Legs; from knees to diaphragm; 145 sec interscandelay; breath hold in inspiration; CD4D on;

Recons: Range 3: 1 mm at 1 mm Interval;
FoV: chest wall

Range 4: 5 mm at 5 mm Interval;
FoV: greater trochanter

1.5 mm at 1.2 mm Interval
FoV: greater trochanter

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
<h1 style="color: #8B0000;">PE and Legs</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	premonitoring	ROI right ventricle	
2	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
3	PE	cau/cra	
4	Legs	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli- mation	Pitch	Rotation	Scantime
		35	120						
3	300		120	x		64x0.6	1	0.5 sec	
4	250		120	x		20x1.2	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien- tation	SW	Increment	Kernel	Window			
3		axial	1 mm	1 mm	B25f	600/80			
4a		axial	5 mm	5 mm	B25f	400/40			
4b		axial	1.5 mm	1.2 mm	B25f	400/40			

responsible	A. Leung	last change	05/31/2005
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PE in Pregnancy

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination of the entire Thorax, looking for Pulmonary Embolism

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from shoulders to diaphragm, craniocaudal; breath hold in inspiration;

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 15 sec diagnostic delay; Trigger Level at 100 HU

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
150 cc	4 cc/s	40 cc	4 cc/s

Range 1+2: Bolus Tracking; ROI in right ventricle; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 3: entire Thorax, caudocranial; breath hold in inspiration; 15 sec diagnostic delay; CD4D on;

Recons: Range 3: 1 mm at 1 mm Interval;
FoV: chest wall

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">PE in Pregnancy</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	premonitoring	ROI right ventricle	
2	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
3	PE	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
3	300		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
3		axial	1 mm	1 mm	B25f	600/80			

responsible A. Leung	last change 05/31/2005
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Pulmonary Hypertension

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination of the entire Thorax, looking for Pulmonary Embolism

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from shoulders to diaphragm, craniocaudal; breath hold in inspiration;

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 15 sec diagnostic delay; Trigger Level at 100 HU

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
150 cc	4 cc/s	40 cc	4 cc/s

Range 1: HRCT: Thorax supine position, craniocaudal, from shoulders to diaphragm; breath hold in inspiration; CD4D off; clustering on; Incremental table movement 10 mm;


Range 2+3: Bolus Tracking; ROI in right ventricle; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 3: entire Thorax, caudocranial; breath hold in inspiration; 15 sec diagnostic delay; CD4D on;

Recons: Range 1: 1 mm
FoV: pleura

Range 3: 1 mm at 1 mm Interval;
FoV: chest wall

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
Pulmonary Hypertension	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	HRCTSEQ	cra/cau	
2	premonitoring	ROI in right ventricle	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	PE	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli- mation	Pitch	Rotation	Scantime
		35	120						
1		300	120			2x1	10	0.5 sec	
4	300		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien- tation	SW	Increment	Kernel	Window			
1		axial	1 mm		B45f	1500/-700			
4		axial	1 mm	1 mm	B25f	600/80			

responsible A. Leung	last change 07/07/2005
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Airways

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Thorax

Objective: Thorax CT without contrast medium, looking for airways abnormalities;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, craniocaudal, from shoulders to diaphragm; breath hold in inspiration;

Range 1: caudocranial, from diaphragm to shoulders; 40 sec fixed delay; CD4D on;

Recons: Range 1: 5 mm at 5 mm Interval
FoV: chest wall

1 mm at 1 mm Interval
FoV: chest wall

3D Recon: 2 mm at 2 mm Interval coronal MPR
2 mm at 2 mm Interval sagittal MPR
7 mm at 2 mm Interval axial ThinMIP

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Airways

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	Thorax	cau/cra	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	300		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	5 mm	5 mm	B31f	400/40
1b		axial	1 mm	1 mm	B45f	1500/-700
1c	MPR	coronal	2 mm	2 mm	B45f	1500/-700
1d	MPR	sagittal	2 mm	2 mm	B45f	1500/-700
1e	ThinMIP	axial	7 mm	2 mm	B45f	1500/-700

responsible A. Leung

last change 07/07/2005

CTREY5

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination with CaScoring prior to CorCTA and followed by late enhanced scan from base of skull through knees for overall calcium evaluation

Patient

Preparation: oral β -Blocker

Positioning: head first; supine position; CaScoring Phantom (leave the phantom through the entire examination); arms up (through the entire examination); ECG-Leads;

Topogram: 1500 mm AP, from base of skull to knees, craniocaudal

Range 1+2: Spiral CaScoring 2 x, for evaluating interscan variability
From carina to diaphragm; ECG-Pulsing; ACV; Synthetic Sync;
Breath hold in Inspiration; phantom;


Range 3+4: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 120 HU

Contrast

Injection: 20 G IV; 370 mgJ/cc Concentration; Rate due to patients weight; Volume is calculated as Scan time + 8 multiplied by Flow rate; 8 sec diagnostic delay;

Weight	Contrast for Scan time (10+8) 18 sec				Contrast for Scan time (12+8) 20 sec				Contrast for Scan time (14+8) 22 sec			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	72 cc	4 cc/sec	50 cc	4 cc/sec	80 cc	4 cc/sec	50 cc	4 cc/sec	88 cc	4 cc/sec	50 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	81 cc	4.5 cc/sec	50 cc	4.5 cc/sec	90 cc	4.5 cc/sec	50 cc	4.5 cc/sec	99 cc	4.5 cc/sec	50 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	90 cc	5 cc/sec	50 cc	5 cc/sec	100 cc	5 cc/sec	50 cc	5 cc/sec	110 cc	5 cc/sec	50 cc	5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	99 cc	5.5 cc/sec	50 cc	5.5 cc/sec	110 cc	5.5 cc/sec	50 cc	5.5 cc/sec	121 cc	5.5 cc/sec	50 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	108 cc	6 cc/sec	50 cc	6 cc/sec	120 cc	6 cc/sec	50 cc	6 cc/sec	132 cc	6 cc/sec	50 cc	6 cc/sec

- Range 5:** Coronary CTA; from carina to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; diagnostic delay 8 sec
- Range 6:** late enhanced scan from base of skull through knees; CD4D; Breath hold at Inspiration; interscan delay 50 sec; hit “move” and “start” manually
- Recons:**
- Range 1+2: 3 mm at 3 mm Interval; 50% trigger delay
FoV: ~350 to 400 to include phantom;
 - 1.5 mm at 1.5 mm Interval; 50% trigger delay
FoV: ~350 to 400 to include phantom;
 - Range 5: 1 mm at 0.7 mm Interval; 65% trigger delay
FoV: eccentrically to pericard ~220
 - 1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220
 - Range 6: 1.5 mm at 0.8 mm Interval
FoV: to chest wall
- Transfer:** Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	CTREY5	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
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Chronical			
#	Range	Direction	cm
	Topogram	AP/cra/cau	1500
1	CaScoring	cra/cau	
2	CaScoring	cra/cau	
3	premonitoring	ROI Ascending Aorta	
4	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 120 HU	
5	CorCTA	cra/cau	
6	skull to knees	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1		220	120			20x1.2	0.2	0.33 sec	
2		220	120			20x1.2	0.2	0.33 sec	
3		20	120						
4		20	120						
5		850	120			64x0.6	0.2	0.33 sec	
6	250		120	x		20x1.2	0.9	0.5 sec	

2D/3D/4D Recon									
#	Type	Orientation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1a		axial	3 mm	3 mm	B35f	400/40	50%	x	
1b		axial	1.5 mm	1.5 mm	B35f	400/40	50%	x	
2a		axial	3 mm	3 mm	B35f	400/40	50%	x	
2b		axial	1.5 mm	1.5 mm	B35f	400/40	50%	x	
5a		axial	1 mm	0.7 mm	B25f	600/80	65%		
5b		axial	1 mm	0.7 mm	B25f	600/80	0-90%		
6		axial	1.5 mm	0.8 mm	B25f	400/40			

responsible	G. Rubin	last change	07/07/2005
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CaScoring and Coronary CTA

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination with CaScoring prior to CorCTA to assess Coronary Arteries

Patient

Preparation: β -Blocker IV and Nitro-glycerine oral as by protocol

Positioning: head first; supine position; CaScoring Phantom (leave the phantom through the entire examination); arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1: Spiral CaScoring from carina to diaphragm; ECG-Pulsing; AVC; Synthetic Sync; Breath hold in Inspiration; no phantom;

Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 120 HU

Contrast

Injection: 20 G IV; 350 mgJ/cc Concentration; Rate due to patients weight; Volume is calculated as Scan time + 8 multiplied by Flow rate; 8 sec diagnostic delay;

Weight	Contrast for Scan time (10+8) 18 sec				Contrast for Scan time (12+8) 20 sec				Contrast for Scan time (14+8) 22 sec			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	72 cc	4 cc/sec	50 cc	4 cc/sec	80 cc	4 cc/sec	50 cc	4 cc/sec	88 cc	4 cc/sec	50 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	81 cc	4.5 cc/sec	50 cc	4.5 cc/sec	90 cc	4.5 cc/sec	50 cc	4.5 cc/sec	99 cc	4.5 cc/sec	50 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	90 cc	5 cc/sec	50 cc	5 cc/sec	100 cc	5 cc/sec	50 cc	5 cc/sec	110 cc	5 cc/sec	50 cc	5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	99 cc	5.5 cc/sec	50 cc	5.5 cc/sec	110 cc	5.5 cc/sec	50 cc	5.5 cc/sec	121 cc	5.5 cc/sec	50 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	108 cc	6 cc/sec	50 cc	6 cc/sec	120 cc	6 cc/sec	50 cc	6 cc/sec	132 cc	6 cc/sec	50 cc	6 cc/sec

Range 4: Coronary CTA; from carina to diaphragm; breath hold in inspiration;
Synthetic Sync; ACV; diagnostic delay 8 sec


Recons: Range 1: 3 mm at 3 mm Interval; 50% trigger delay
FoV: ~350 to 400

1.5 mm at 1.5 mm Interval; 50% trigger delay
FoV: ~350 to 400

Range 4: 1 mm at 0.7 mm Interval; 65% trigger delay
FoV: eccentrically to pericard ~220

1 mm at 0.7 mm Interval; 0-90% trigger delay at 10%
Interval
FoV: eccentrically to pericard ~220

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
CaScoring and Coronary CTA	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CaScoring	cra/cau	
2	premonitoring	ROI Ascending Aorta	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 120 HU	
4	CorCTA	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		220	120			20x1.2	0.2	0.33 sec	
2		20	120						
3		20	120						
4		850	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon								
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing
1a		axial	3 mm	3 mm	B35f	400/40	50%	x
1b		axial	1.5 mm	1.5 mm	B35f	600/80	50%	x
4a		axial	1 mm	0.7 mm	B25f	600/80	65%	
4b		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%	

responsible G. Rubin	last change 07/07/2005
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CaScoring and Coronary CTA 0_50 bpm

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination with CaScoring prior to CorCTA to assess Coronary Arteries

Patient

Preparation: β -Blocker IV and Nitro-glycerine oral as by protocol

Positioning: head first; supine position; no Phantom; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1: Spiral CaScoring from carina to diaphragm; ECG-Pulsing; ACV; Synthetic Sync; Breath hold in Inspiration;

Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 120 HU

Contrast

Injection: 20 G IV; 350 mgJ/cc Concentration; Rate due to patients weight; Volume is calculated as Scan time + 8 multiplied by Flow rate; 8 sec diagnostic delay;

Weight	Contrast for Scan time (10+8) 18 sec				Contrast for Scan time (12+8) 20 sec				Contrast for Scan time (14+8) 22 sec			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	72 cc	4 cc/sec	50 cc	4 cc/sec	80 cc	4 cc/sec	50 cc	4 cc/sec	88 cc	4 cc/sec	50 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	81 cc	4.5 cc/sec	50 cc	4.5 cc/sec	90 cc	4.5 cc/sec	50 cc	4.5 cc/sec	99 cc	4.5 cc/sec	50 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	90 cc	5 cc/sec	50 cc	5 cc/sec	100 cc	5 cc/sec	50 cc	5 cc/sec	110 cc	5 cc/sec	50 cc	5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	99 cc	5.5 cc/sec	50 cc	5.5 cc/sec	110 cc	5.5 cc/sec	50 cc	5.5 cc/sec	121 cc	5.5 cc/sec	50 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	108 cc	6 cc/sec	50 cc	6 cc/sec	120 cc	6 cc/sec	50 cc	6 cc/sec	132 cc	6 cc/sec	50 cc	6 cc/sec

Range 4: Coronary CTA; from carina to diaphragm; breath hold in inspiration;
Synthetic Sync; ACV; diagnostic delay 8 sec


Recons: Range 1: 3 mm at 3 mm Interval; 50% trigger delay
FoV: ~350 to 400

1.5 mm at 1.5 mm Interval; 50% trigger delay
FoV: ~350 to 400

Range 4: 1 mm at 0.7 mm Interval; 65% trigger delay
FoV: eccentrically to pericard ~220

1 mm at 0.7 mm Interval; 0-90% trigger delay at 10%
Interval
FoV: eccentrically to pericard ~220

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
<h1 style="color: #8B0000;">CaScoring and Coronary CTA 0_50 bpm</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CaScoring	cra/cau	
2	premonitoring	ROI Ascending Aorta	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 120 HU	
4	CorCTALow	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		220	120			20x1.2	0.2	0.33 sec	
2		20	120						
3		20	120						
4		850	120			64x0.6	0.18	0.37 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1a		axial	3 mm	3 mm	B35f	400/40	50%	x	
1b		axial	1.5 mm	1.5 mm	B35f	600/80	50%	x	
4a		axial	1 mm	0.7 mm	B25f	600/80	65%		
4b		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%		

responsible G. Rubin	last change 07/07/2005
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Gated Chest

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated CTA to assess the Thoracic Aorta

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to celiac axis, craniocaudal

Range 1: Non contrast through entire chest; CD4D; craniocaudal; Breath hold in Inspiration;

Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 120 HU

Contrast

Injection: 20 G IV; 350 mgJ/cc Concentration; Rate due to patients weight; Volume is calculated as Scan time + 5 multiplied by Flow rate; 5 sec diagnostic delay;

Weight	Contrast for Scan time (20+5) 25 sec				Contrast for Scan time (22+5) 27 sec				Contrast for Scan time (24+5) 29 sec			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	100 cc	4 cc/sec	50 cc	4 cc/sec	108 cc	4 cc/sec	50 cc	4 cc/sec	116 cc	4 cc/sec	50 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	112 cc	4.5 cc/sec	50 cc	4.5 cc/sec	121 cc	4.5 cc/sec	50 cc	4.5 cc/sec	130 cc	4.5 cc/sec	50 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	125 cc	5 cc/sec	50 cc	5 cc/sec	135 cc	5 cc/sec	50 cc	5 cc/sec	145 cc	5 cc/sec	50 cc	5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	137 cc	5.5 cc/sec	50 cc	5.5 cc/sec	148 cc	5.5 cc/sec	50 cc	5.5 cc/sec	159 cc	5.5 cc/sec	50 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	150 cc	6 cc/sec	50 cc	6 cc/sec	162 cc	6 cc/sec	50 cc	6 cc/sec	174 cc	6 cc/sec	50 cc	6 cc/sec

Weight	Contrast for Scan time (26+5) 31 sec				Contrast for Scan time (28+5) 33 sec				Contrast for Scan time (30+5) 35 sec			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	124 cc	4 cc/sec	50 cc	4 cc/sec	132 cc	4 cc/sec	50 cc	4 cc/sec	140 cc	4 cc/sec	50 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	139 cc	4.5 cc/sec	50 cc	4.5 cc/sec	148 cc	4.5 cc/sec	50 cc	4.5 cc/sec	157 cc	4.5 cc/sec	50 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	155 cc	5 cc/sec	50 cc	5 cc/sec	165 cc	5 cc/sec	50 cc	5 cc/sec	175 cc	5 cc/sec	50 cc	5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	170 cc	5.5 cc/sec	50 cc	5.5 cc/sec	181 cc	5.5 cc/sec	50 cc	5.5 cc/sec	192 cc	5.5 cc/sec	50 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	186 cc	6 cc/sec	50 cc	6 cc/sec	198 cc	6 cc/sec	50 cc	6 cc/sec	210 cc	6 cc/sec	50 cc	6 cc/sec


Range 4: CTA thoracic aorta from above the arch to celiac axis; breath hold in inspiration; Synthetic Sync; ACV; diagnostic delay 5 sec

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: to chest wall

Range 4: 1 mm at 0.7 mm Interval; 65% trigger delay
FoV: eccentrically to aorta and heart

1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to aorta and heart

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	<h1 style="color: #8B0000;">Gated Chest</h1>	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
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Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Ascending Aorta	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 120 HU	
4	CTA ThorAorta	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1.2	0.5 sec	
2		20	120						
3		20	120						
4		700	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80	65%		
4b		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%		

responsible G. Rubin	last change 07/07/2005
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Chest Abdomen Pelvis Gated

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac and Vascular

Objective: Gated CTA of the entire Aorta in patients with dissections; combined examination of gated and non-gated series;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 768 mm AP, from clavicles to symphysis, craniocaudal

Range 1: Non contrast through entire body; CD4D; craniocaudal; Breath hold in Inspiration;


Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 120 HU

Contrast

Injection: 20 G IV; 350 mgJ/cc Concentration; multiple rate injection protocol due to patients weight; Volume is calculated as a triple-rate duration time of ~45 sec; minimum diagnostic delay;

Weight	Contrast for Scan time ~ 45 sec							
	Contrast rate 1		Contrast rate 2		Contrast rate 3		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	56 cc	2.8 cc/sec	40 cc	2 cc/sec	40 cc	2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	63 cc	3.2 cc/sec	45 cc	2.3 cc/sec	40 cc	2.3 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	70 cc	3.5 cc/sec	50 cc	2.5 cc/sec	40 cc	2.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	77 cc	3.9 cc/sec	55 cc	2.8 cc/sec	40 cc	2.8 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	84 cc	4.2 cc/sec	60 cc	3 cc/sec	40 cc	3 cc/sec

- Range 4:** CTA thoracic aorta from above the arch to celiac axis; breath hold in inspiration; Synthetic Sync; ACV; minimum diagnostic delay;
- Range 5:** Abdominal CTA from end of Range 4 to greater trochanter; minimum interscandelay, press “move” and “start” manually; whole study should be done in ~ 45 sec (including 10 sec interscandelay)
- Recons:**
- Range 1: 5 mm at 5 mm Interval;
FoV: to body wall
 - Range 4: 1 mm at 0.7 mm Interval; 65% trigger delay
FoV: to aorta and heart
 - 1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: to aorta and heart
 - Range 5: 1 mm at 0.7 mm Intervall;
FoV: same as Range 4, so that the series can be merged
 - 5 mm at 5 mm Interval;
FoV: to body wall
- Transfer:** Auto transfer of all data to GEPACS as usual
Range 5 send merged
Send EKG-file to GEPACS manually

Scanprotocol	<p>CAP Gated</p>	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
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Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	768
1	non contrast	cra/cau	
2	premonitoring	ROI Ascending Aorta	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 120 HU	
4	CTA ThorAorta	cra/cau	
5	CTA AbdAorta	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1.2	0.5 sec	
2		20	120						
3		20	120						
4		700	120			64x0.6	0.2	0.33 sec	
5	250		120	x		64x0.6	1	0.33 sec	~ 10 sec

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80	65%		
4b		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%		
5a		axial	1 mm	0.7 mm	B25f	600/80			
5b		axial	5 mm	5 mm	B31f	600/80			

responsible G. Rubin	last change 07/07/2005
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CaScoring Spiral

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess coronary calcifications in Coronary Screening patients

Patient

Preparation: n.a.

Positioning: head first; supine position; CaScoring Phantom; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1: Spiral CaScoring from carina to diaphragm; ECG-Pulsing; ACV; Synthetic Sync; Breath hold in Inspiration;

Recons: Range 1: 3 mm at 3 mm Interval; 50% trigger delay
FoV: ~350 to 400

1.5 mm at 1.5 mm Interval; 50% trigger delay
FoV: ~350 to 400

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
<h1 style="color: #8B0000;">CaScoring Spiral</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CaScoring	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		50	80						
1		190	120			20x1.2	0.2	0.33 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1a		axial	3 mm	3 mm	B35f	400/40	50%	x	
1b		axial	1.5 mm	1.5 mm	B35f	600/80	50%	x	

responsible G. Rubin	last change 05/31/2005
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Research CaScoring

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess coronary calcification in research patients (HHH)

Patient

Preparation: n.a.

Positioning: head first; supine position; CaScoring Phantom; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1+2: Sequence CaScoring 2x, from carina to diaphragm; ECG-Pulsing; ACV; Synthetic Sync; Breath hold in Inspiration;

Recons: Range 1+2: 3 mm at 3 mm Interval; 50% trigger delay
FoV: ~350 to 400

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol

Research CaScoring

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CaScSeq	cra/cau	
2	CaScSeq	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Feed	Rotation	Scantime
		50	80						
1		100	120			64x0.6	18	0.33 sec	
2		100	120			64x0.6	18	0.33 sec	

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing
1		axial	3 mm	3 mm	B35f	400/40	50%	x
2		axial	3 mm	3 mm	B35f	600/80	50%	x

responsible G. Rubin last change 05/31/2005

Cardiac Function

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Cardiac Function

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1: Test bolus to assess Time Attenuation Curves of SVC, Pulmonary Trunk and Aorta Ascending; 30 scans, Cycle Time 1.5 sec; Inject delay same as x-ray delay; free breathing;

Curves with DynEva Taskcard

Range 2: Cardiac CT; from diaphragm to carina, caudocranial; breath hold in inspiration; Synthetic Sync; ACV; fixed delay 35 sec

Contrast

Injection: 20 G IV; 350 mgJ/cc Concentration; reduced concentration for Contrast rate 2 (30% Contrast, 70% Saline); 35 sec fixed delay;

Test bolus			
Contrast		Saline	
Volume	Rate	Volume	Rate
15 cc	3 cc/sec	50 cc	3 cc/sec

Contrast for Range 2			
Contrast rate 1		Contrast rate 2	
Volume	Rate	Volume	Rate
100 cc	3 cc/sec	60 cc/30%	3 cc/sec


Range 3: **occasionally!**
Late enhancement scan; 10 min after contrast injection; gated
Cardiac CT from carina to diaphragm; 1.2 collimation, half the mAs
from Range 2

Recons: Range 2: 1 mm at 1 mm Interval; 65% trigger delay
FoV: eccentrically to pericard ~220

1 mm at 1 mm Interval; 0-90% trigger delay at 10%
Interval
FoV: eccentrically to pericard ~220

Range 3: 2 mm at 1 mm Interval; 65% trigger delay

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
<h1 style="color: #8B0000;">Cardiac Function</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	Testbolus	25 Scans, CycleTime at 2 sec;	
2	Cardiac CT	cau/cra	
occasionally:			
3	Late Enhanc	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		60	120			20x1.2		0.5 sec	
2		850	120			64x0.6	0.2	0.33 sec	
occasionally:									
3		400	120	x		64x0.6	0.2	0.33 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
1		axial	5 mm	5 mm	B41f	400/40			
2a		axial	1 mm	1 mm	B25f	600/80	65%		
2b		axial	1 mm	1 mm	B25f	600/80	0-90% at 10%		
occasionally:									
3		axial	2 mm	1 mm	B25f	400/40	65%		

responsible G. Rubin	last change 07/07/2005
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Left Atrial Mapping 0_88 bpm

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Pulmonary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

ECG-Signal: ECG-Signal should show T-wave; if not, try to replace leads

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1+2: Bolus Tracking; ROI in left atrium; 30 Scans; Cycle Time 1.16 sec;
Trigger Level at 150 HU

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Rate and Volume due to patients weight and scan time; Injection Rate is calculated as $2 \times$ weight kg (Volume) div. by Injection Duration (Scan time + 15 sec)

Weight	Scantime 31 sec (16+15)				Scantime 33 sec (18+15)				Scantime 35 sec (20+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	3.3 cc/s	30 cc	3.3 cc/s	100 cc	3.0 cc/s	30 cc	3.0 cc/s	100 cc	2.8 cc/s	30 cc	2.8 cc/s
> or equal 132 lbs	120 cc	4.0 cc/s	30 cc	4.0 cc/s	120 cc	3.6 cc/s	30 cc	3.6 cc/s	120 cc	3.4 cc/s	30 cc	3.4 cc/s

Weight	Scantime 37 sec (22+15)				Scantime 39 sec (24+15)				Scantime 41 sec (26+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	2.7 cc/s	30 cc	2.7 cc/s	100 cc	2.6 cc/s	30 cc	2.6 cc/s	100 cc	2.4 cc/s	30 cc	2.4 cc/s
> or equal 132 lbs	120 cc	3.2 cc/s	30 cc	3.2 cc/s	120 cc	3.1 cc/s	30 cc	3.1 cc/s	120 cc	2.9 cc/s	30 cc	2.9 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 3: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; no diagnostic delay;

Recons: Range 3: 1 mm at 0.5 mm Interval; 30% trigger delay
FoV: eccentrically to pericard ~220


1.5 mm at 1 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

1.5 mm at 1 mm Interval; (only in case of atrial fibrillation);
FoV: eccentrically to pericard ~220

change to ms (absolute trigger delay time); adjust the recon boxes to the T-wave manually and reconstruct a multiphase series to

- T-wave delay minus 40 ms
- T-wave delay minus 20 ms
- T-wave delay
- T-wave delay plus 20 ms
- T-wave delay plus 40 ms

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually
Export 30% series to CDR for Frandics Chan

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
Left Atrial Mapping 0_88 bpm	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	premonitoring	ROI Ascending Aorta	
2	monitoring	30Scans, CycleTime at 1.16 s; TriggerLevel at 150 HU	
3	LAM	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		20	120						
2		20	120						
3		500	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
3a		axial	1 mm	0.5 mm	B25f	600/80	30%		
3b		axial	1.5 mm	1 mm	B25f	600/80	0-90% at 10%		
3c		axial	1.5 mm	1 mm	B25f	600/80	T-wave minus 40 ms		
							T-wave minus 20 ms		
							T-wave		
							T-wave plus 20 ms		
							T-wave plus 40 ms		

responsible	last change	05/31/2005
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Left Atrial Mapping 88_98 bpm

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Pulmonary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

ECG-Signal: ECG-Signal should show T-wave; if not, try to replace leads

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1+2: Bolus Tracking; ROI in left atrium; 30 Scans; Cycle Time 1.16 sec;
Trigger Level at 150 HU

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Rate and Volume due to patients weight and scan time; Injection Rate is calculated as $2 \times$ weight kg (Volume) div. by Injection Duration (Scan time + 15 sec)

Weight	Scantime 31 sec (16+15)				Scantime 33 sec (18+15)				Scantime 35 sec (20+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	3.3 cc/s	30 cc	3.3 cc/s	100 cc	3.0 cc/s	30 cc	3.0 cc/s	100 cc	2.8 cc/s	30 cc	2.8 cc/s
> or equal 132 lbs	120 cc	4.0 cc/s	30 cc	4.0 cc/s	120 cc	3.6 cc/s	30 cc	3.6 cc/s	120 cc	3.4 cc/s	30 cc	3.4 cc/s

Weight	Scantime 37 sec (22+15)				Scantime 39 sec (24+15)				Scantime 41 sec (26+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	2.7 cc/s	30 cc	2.7 cc/s	100 cc	2.6 cc/s	30 cc	2.6 cc/s	100 cc	2.4 cc/s	30 cc	2.4 cc/s
> or equal 132 lbs	120 cc	3.2 cc/s	30 cc	3.2 cc/s	120 cc	3.1 cc/s	30 cc	3.1 cc/s	120 cc	2.9 cc/s	30 cc	2.9 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 3: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; no diagnostic delay;

Recons: Range 3: 1 mm at 0.5 mm Interval; 30% trigger delay
FoV: eccentrically to pericard ~220

1.5 mm at 1 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

1.5 mm at 1 mm Interval; only in case of atrial fibrillation
FoV: eccentrically to pericard ~220

change to ms (absolute trigger delay time); adjust the recon boxes to the T-wave manually and reconstruct a multiphase series to

- T-wave delay minus 40 ms
- T-wave delay minus 20 ms
- T-wave delay
- T-wave delay plus 20 ms
- T-wave delay plus 40 ms

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually
Export 30% series to CDR for Frandics Chan

Scanprotocol

Left Atrial Mapping 88_98 bpm



Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	premonitoring	ROI Ascending Aorta	
2	monitoring	30Scans, CycleTime at 1.16 s; TriggerLevel at 150 HU	
3	LAM	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		20	120						
2		20	120						
3		500	120			64x0.6	0.24	0.37 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
3a		axial	1 mm	0.5 mm	B25f	600/80	30%		
3b		axial	1.5 mm	1 mm	B25f	600/80	0-90% at 10%		
3c		axial	1.5 mm	1 mm	B25f	600/80	T-wave minus 40 ms		
							T-wave minus 20 ms		
							T-wave		
							T-wave plus 20 ms		
							T-wave plus 40 ms		

responsible G. Rubin last change 05/31/2005

Left Atrial Mapping 98_120bpm



Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Pulmonary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

ECG-Signal: ECG-Signal should show T-wave; if not, try to replace leads

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Range 1+2: Bolus Tracking; ROI in left atrium; 30 Scans; Cycle Time 1.16 sec; Trigger Level at 150 HU

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Rate and Volume due to patients weight and scan time; Injection Rate is calculated as $2 \times \text{weight kg (Volume) div. by Injection Duration (Scan time + 15 sec)}$

Weight	Scantime 31 sec (16+15)				Scantime 33 sec (18+15)				Scantime 35 sec (20+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	3.3 cc/s	30 cc	3.3 cc/s	100 cc	3.0 cc/s	30 cc	3.0 cc/s	100 cc	2.8 cc/s	30 cc	2.8 cc/s
> or equal 132 lbs	120 cc	4.0 cc/s	30 cc	4.0 cc/s	120 cc	3.6 cc/s	30 cc	3.6 cc/s	120 cc	3.4 cc/s	30 cc	3.4 cc/s

Weight	Scantime 37 sec (22+15)				Scantime 39 sec (24+15)				Scantime 41 sec (26+15)			
	Contrast		Saline		Contrast		Saline		Contrast		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate	Volume	Rate
< 132 lbs	100 cc	2.7 cc/s	30 cc	2.7 cc/s	100 cc	2.6 cc/s	30 cc	2.6 cc/s	100 cc	2.4 cc/s	30 cc	2.4 cc/s
> or equal 132 lbs	120 cc	3.2 cc/s	30 cc	3.2 cc/s	120 cc	3.1 cc/s	30 cc	3.1 cc/s	120 cc	2.9 cc/s	30 cc	2.9 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 3: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; no diagnostic delay;

Recons: Range 3: 1 mm at 0.5 mm Interval; 30% trigger delay
FoV: eccentrically to pericard ~220

1.5 mm at 1 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

1.5 mm at 1 mm Interval; only in case of atrial fibrillation;
FoV: eccentrically to pericard ~220

change to ms (absolute trigger delay time); adjust the recon boxes to the T-wave manually and reconstruct a multiphase series to

- T-wave delay minus 40 ms
- T-wave delay minus 20 ms
- T-wave delay
- T-wave delay plus 20 ms
- T-wave delay plus 40 ms

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually
Export 30% series to CDR for Frandics Chan

Scanprotocol**Left Atrial Mapping 98_120 bpm**Stanford University
Medical Center

Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	premonitoring	ROI Ascending Aorta	
2	monitoring	30Scans, CycleTime at 1.16 s; TriggerLevel at 150 HU	
3	LAM	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		20	120						
2		20	120						
3		500	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing
3a		axial	1 mm	0.5 mm	B25f	600/80	30%	
3b		axial	1.5 mm	1 mm	B25f	600/80	0-90% at 10%	
3c		axial	1.5 mm	1 mm	B25f	600/80	T-wave minus 40 ms	
							T-wave minus 20 ms	
							T-wave	
							T-wave plus 20 ms	
							T-wave plus 40 ms	

responsible G. Rubin

last change 05/31/2005

Coronary Vein Mapping 0_88bpm

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Coronary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 50 sec fixed delay;

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
135 cc	3 cc/s	33 cc	3 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 1: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; 50 sec fixed delay;

Recons: Range 1: 1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol

**Coronary Vein Mapping
0_88 bpm**

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CVM	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		700	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing
3		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%	

responsible G. Rubin last change 05/31/2005

Coronary Vein Mapping 88_98bpm

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Coronary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 50 sec fixed delay;

Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
135 cc	3 cc/s	33 cc	3 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 1: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; 50 sec fixed delay;

Recons: Range 1: 1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol

Coronary Vein Mapping

88_98 bpm

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CVM	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		700	120			64x0.6	0.24	0.37 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing
3		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%	

responsible G. Rubin

last change 05/31/2005

Coronary Vein Mapping

98_120bpm

Protocol: Siemens Sensation 64 / Cardiac

Objective: Gated examination to assess Coronary Veins

Patient

Preparation: n.a. ; no β -Blocker

Positioning: head first; supine position; arms up; ECG-Leads;

Topogram: 512 mm AP, from clavicles to diaphragm, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; 50 sec fixed delay;


Contrast for every patient			
Contrast		Saline	
Volume	Rate	Volume	Rate
135 cc	3 cc/s	30 cc	3 cc/s

Dose: Protocol is saved with CD4D on, but should be scanned without CD4D at 500 eff mAs; please record mAs proposal and CTDIvol given by the system and then switch off CD4D and type in 500 eff mAs; then load the scan again;

Range 1: Coronary CTA; from above aortic arch to diaphragm; breath hold in inspiration; Synthetic Sync; ACV; 50 sec diagnostic delay;

Recons: Range 1: 1 mm at 0.7 mm Interval; 0-90% trigger delay at 10% Interval
FoV: eccentrically to pericard ~220

Transfer: Auto transfer of all data to GEPACS as usual
Send EKG-file to GEPACS manually

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Coronary Vein Mapping</h1> <h2 style="color: #8B0000;">98_120 bpm</h2>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	CVM	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		700	120			64x0.6	0.2	0.33 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window	Trigger Delay	ECG Pulsing	
3		axial	1 mm	0.7 mm	B25f	600/80	0-90% at 10%		

responsible G. Rubin	last change 05/31/2005
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Abdomen and Pelvis

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Abdomen

Objective: Abdomen and Pelvis CT with contrast medium and a delayed series through kidneys, looking for masses, metastasis or lymph nodes;

**Patient
Preparation:**

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, craniocaudal, from diaphragm to symphysis; breath hold in inspiration;

Contrast

Injection: 22 G IV; 350 mgJ/cc Concentration; 70 sec fixed delay;

Contrast	
Contrast	
Volume	Rate
120 cc	2 cc/s

Range 1: Abdomen/Pelvis, craniocaudal from diaphragm to symphysis in portalvenous phase; 70 sec fixed delay; breath hold in inspiration; CD4D on;

Range 2: delays through kidneys; 5-10 min absolute delay;

Recons: Range 1: 5 mm at 5 mm Interval
FoV: body

Range 2: 5 mm at 5 mm Interval
FoV: kidney

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
<h1 style="color: #8B0000;">Abdomen Pelvis</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	Abd/Pel	cra/cau	
2	Delays	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	250		120	x		64x0.6	1	0.5 sec	
2	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon						
#	Type	Orien-tation	SW	Increment	Kernel	Window
1		axial	5 mm	5 mm	B31f	400/40
2		axial	5 mm	5 mm	B31f	400/40

responsible	B. Jeffrey	last change	05/31/2005
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Pancreas

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Abdomen

Objective: Contrast enhanced examination to assess pancreatic masses, calcifications and cysts;

Patient Preparation:

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to crest, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate and Volume due to patients' size; 22 sec diagnostic delay; Trigger Level at 100 HU

Normal Patient	
Contrast	
Volume	Rate
120 cc	4 cc/s

Obese Patient	
Contrast	
Volume	Rate
150 cc	5 cc/s

Dose: CD4D on in series 1, 4, 5 and 6

Range 1: Non Contrast series from diaphragm to crest; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Arterial phase; from diaphragm to crest; breath hold in inspiration; 22 sec diagnostic delay;

Range 5: Venous phase; from diaphragm to crest; breath hold in inspiration; 30 sec interscan delay;

Range 6: Delayed series through kidneys; breath hold in inspiration; 5 to 10 min after injection;

Recons: Range 1: 3 mm at 3 mm Interval;
FoV: Abdomen

Range 4: 3 mm at 1.5 mm Interval;
FoV: Abdomen

1 mm at 0.7 mm Interval;
FoV: 200; pancreas (eccentrically)

3D Recon: 3 mm at 1.5 mm Interval MPR coronal
FoV: Abdomen

Range 5: 3 mm at 1.5 mm Interval;
FoV: Abdomen

3D Recon: 3 mm at 1.5 mm Interval MPR coronal
FoV: Abdomen

Range 6: 5 mm at 5 mm Interval;
FoV: Kidneys

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<p>Pancreas</p>	<p><i>Stanford University Medical Center</i></p>  <p><i>Blake Wilbur Clinic</i></p>
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Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at diaphragm	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	arterial	cra/cau	
5	venoes	cra/cau	
6	delays	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	250		120	x		20x1.2	1.2	0.5 sec	
2		20	120						
3		20	120						
4	300		120	x		64x0.6	0.9	0.5 sec	
5	250		120	x		64x0.6	1	0.5 sec	
6	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	3 mm	3 mm	B31f	400/40			
4a		axial	3 mm	1.5 mm	B25f	600/80			
4b		axial	1 mm	0.7 mm	B20f	600/80			
4c	MPR	coronal	3 mm	1.5 mm	B20f	600/80			
5a		axial	3 mm	1.5 mm	B25f	400/40			
5b	MPR	coronal	3 mm	1.5 mm	B20f	400/40			
6		axial	5 mm	5 mm	B31f	400/40			

responsible B. Jeffrey	last change 05/31/2005
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Biphasic Liver

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Abdomen

Objective: Contrast enhanced biphasic examination to assess liver lesions and metastasis;

Patient Preparation:

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to symphysis, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate and Volume due to patients' size; 16 sec diagnostic delay; Trigger Level at 100 HU

Normal Patient	
Contrast	
Volume	Rate
120 cc	4 cc/s

Obese Patient	
Contrast	
Volume	Rate
150 cc	5 cc/s

Dose: CD4D on in series 3, 4 and 5

Range 1+2: Bolus Tracking; ROI in abdominal aorta at diaphragm; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 3: Arterial phase; from diaphragm to crest; breath hold in inspiration; 16 sec diagnostic delay;

Range 4: Venous phase; from diaphragm to crest; breath hold in inspiration; 25 sec inter scan delay;

Range 5: Delayed phase through liver; breath hold in inspiration;

Recons: Range 3: 3 mm at 2 mm Interval;
FoV: Abdomen

Range 4: 5 mm at 5 mm Interval;
FoV: Abdomen

Range 5: 3 mm at 2 mm Interval;
FoV: Abdomen

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
<h1 style="color: #8B0000;">Biphasic Liver</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	premonitoring	ROI Aorta at diaphragm	
2	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
3	arterial	cra/cau	
4	venoes	cra/cau	
5	delayed	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1		20	120						
2		20	120						
3	250		120	x		64x0.6	1	0.5 sec	
4	250		120	x		64x0.6	1	0.5 sec	
5	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
3		axial	2 mm	2 mm	B25f	400/40			
4		axial	5 mm	5 mm	B31f	400/40			
5		axial	2 mm	2 mm	B25f	400/40			

responsible B. Jeffrey	last change 05/31/2005
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Renal Colic

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Abdomen

Objective: non contrast examination to look for stones in kidneys and ureters;

**Patient
Preparation:**

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to symphysis, craniocaudal

Dose: CD4D on;

Range 1: from upper Pole of kidneys to symphysis; breath hold in inspiration;

Recons: Range 1: 3 mm at 2 mm Interval;
FoV: Abdomen

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Renal Colic

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	Abd/Pel	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window
1		axial	3 mm	2 mm	B31f	400/40

responsible

B. Jeffrey

last change

05/31/2005

Bellino Pelvis

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Pelvis

Objective: non contrast examination of the pelvis to assess soft tissue and bone structures;

**Patient
Preparation:**

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from crest to symphysis, craniocaudal

Dose: CD4D on;

Range 1: from crest to symphysis; breath hold in inspiration;

Recons: Range 1: 3 mm at 1.5 mm Interval; soft tissue and bone kernel;
FoV: Abdomen

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol**Bellino Pelvis**Stanford University
Medical Center

Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	Pelvis	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	280		120	x		20x1.2	1	0.5 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window
1a		axial	3 mm	1.5 mm	B31f	400/40
1b		axial	3 mm	1.5 mm	B60f	2000/500

responsible

B. Jeffrey

last change

05/31/2005

CT IVP

Protocol: Siemens Sensation 64 / Abdomen

Objective: Contrast enhanced multiple phase examination to assess lesions in kidneys and collecting system;

Patient Preparation:

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to symphysis, craniocaudal; breath hold in inspiration

Range 1: non contrast; craniocaudal from diaphragm to symphysis; breath hold in inspiration;

Contrast Injection: 20-22 G IV; 350 mgJ/cc Concentration;

prior to scanning	
Contrast	
Volume	Rate
40 cc	2 cc/s

Wait 4 minutes; apply compression;

with compression	
Contrast	
Volume	Rate
80 cc	2 cc/s

Wait 2 minutes

Dose: CD4D on in series 1, 2 and 3

Range 2: Post contrast with compression; from diaphragm to crest; breath hold in inspiration;

Topogram: with compression

Release compression

Topogram: post compression

roll the patient on the table;

Topogram: post logroll

Range 3: Delayed phase; from crest to symphysis; breath hold in inspiration;

Recons: Range 1: 3 mm at 2 mm Interval;
FoV: Abdomen

Range 2: 3 mm at 2 mm Interval;
FoV: Abdomen

1.5 mm at 0.8 mm Interval;
FoV: Abdomen

3D Recon: 3 mm at 2 mm Interval coronal MPR

Range 3: 3 mm at 2 mm Interval;
FoV: Abdomen

1.5 mm at 0.8 mm Interval;
FoV: Abdomen

3D Recon: 3 mm at 2 mm Interval coronal MPR

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	CT IVP	<i>Stanford University Medical Center</i>  <i>Blake Wilbur Clinic</i>
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Chronical			
#	Range	Direction	cm
	Topogram	AP/cra/cau	512
1	non contrast	cra/cau	
2	post cons with comp	cra/cau	
	Topogram with comp	AP/cra/cau	512
	Topogram release comp	AP/cra/cau	512
	Topogram logroll	AP/cra/cau	512
3	Delayed	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	180		120	x		64x0.6	1	0.5 sec	
2	250		120	x		64x0.6	1	0.5 sec	
		100	120						
		100	120						
		100	120						
3	220		120	x		20x1.2	1	0.5 sec	

2D/3D/4D Recon						
#	Type	Orientation	SW	Increment	Kernel	Window
1a		axial	3 mm	2 mm	B31f	400/40
2a		axial	1.5 mm	0.8 mm	B20f	400/40
2b		axial	5 mm	5 mm	B31f	400/40
2c	MPR	coronal	3 mm	2 mm	B 31f	400/40
3a		axial	1.5 mm	0.8 mm	B20f	400/40
3b		axial	5 mm	5 mm	B31f	400/40
3c	MPR	coronal	3 mm	2 mm	B31f	400/40

responsible B. Jeffrey	last change 05/31/2005
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CAP Angio not gated

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the entire aorta and its major branches, looking for aortic aneurysm, stenosis, chronic dissections;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 768 mm AP, from clavicles to greater trochanter, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Multiple Flow Rate Injection; Flow Rate due to patients' size; ROI in Ascending Aorta; 5 sec diagnostic delay; Trigger Level at 100 HU

Weight	Contrast for Scan time 20s (20+5)					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	64 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	70 cc	3.5 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	80 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	88 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	96 cc	4.8 cc/sec	40 cc	3.5 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate

Dose: CD4D for Range 1 and Range 4;

Range 1: Non Contrast series from clavicles to greater trochanter; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Entire Aorta CTA; from 3 cm above aortic arch to greater trochanter; set scan range first, then change scan time to 20 sec; breath hold in inspiration; 5 sec diagnostic delay;

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: Body

Range 4: 1 mm at 0.7 mm Interval;
FoV: greater trochanter

5 mm at 5 mm Interval;
FoV: Body

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">CAP Angio not gated</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	768
1	non contrast	cra/cau	
2	premonitoring	ROI in Aortic Arch	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	CAPAngio	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 20 sec

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80			
4b		axial	5 mm	5 mm	B31f	600/80			

responsible G. Rubin	last change 05/31/2005
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CAP Angio Stent not gated

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the entire aorta and its major branches followed by a delayed series, looking for leaks or stent abnormalities;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 768 mm AP, from clavicles to greater trochanter, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Multiple Flow Rate Injection; Flow Rate due to patients' size; ROI in Ascending Aorta; 5 sec diagnostic delay; Trigger Level at 100 HU; injection duration is 10 sec longer than scan time because of delayed series;

Weight	Contrast for scan time 20s (20+5+10)					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	96 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	105 cc	3.5 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	120 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	132 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	144 cc	4.8 cc/sec	40 cc	3.5 cc/sec

Dose: CD4D for Range 1, Range 4 and Range 5;

Range 1: Non Contrast series from clavicles to greater trochanter; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in Ascending Aorta; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Entire Aorta CTA; from 3 cm above aortic arch to greater trochanter; set scan range first, then change scan time to 20 sec; breath hold in inspiration; minimum diagnostic delay;

Range 5: delayed series covering the stent only; 30 sec interscandelay

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: Body

Range 4: 1 mm at 0.7 mm Interval;
FoV: greater trochanter

5 mm at 5 mm Interval;
FoV: greater trochanter

Range 5: 5 mm at 5 mm Interval;
FoV: stent

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

CAP Angio Stent not gated

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	768
1	non contrast	cra/cau	
2	premonitoring	ROI in Aortic Arch	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	AbdAngio	cra/cau	
5	StentDelay	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 20 sec
5	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window		
1		axial	5 mm	5 mm	B31f	400/40		
4a		axial	1 mm	0.7 mm	B25f	600/80		
4b		axial	5 mm	5 mm	B31f	600/80		
5		axial	5 mm	5 mm	B31f	400/40		

responsible G. Rubin

last change 05/31/2005

Abdomen Angio

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the abdominal aorta and its major branches, looking for abdominal aortic aneurysm, stenosis, chronic dissections

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to greater trochanter, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate due to patients' size; 8 sec diagnostic delay; Trigger Level at 100 HU

Weight	Contrast for scan time ~ 10s (10+8)			
	Contrast		Saline	
	Volume	Rate	Volume	Rate
<121 lbs	72 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate
121 to 143 lbs	81 cc	4.5 cc/sec	40 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate
143 to 187 lbs	90 cc	5 cc/sec	40 cc	5 cc/sec
	Volume	Rate	Volume	Rate
187 to 209 lbs	99 cc	5.5 cc/sec	40 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate
>209 lbs	108 cc	6 cc/sec	40 cc	6 cc/sec

Dose: CD4D for Range 1 and Range 4;

Range 1: Non Contrast series from diaphragm to greater trochanter; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU


Range 4: Abdominal CTA; from above celiac trunk to greater trochanter;
breath hold in inspiration; set scan range first, then change scan
time to 10 sec; 8 sec diagnostic delay;

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: greater trochanter

Range 4: 1 mm at 0.7 mm Interval;
FoV: greater trochanter

5 mm at 5 mm Interval;
FoV: greater trochanter

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Abdomen Angio</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at Celiac Axis	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	AbdAngio	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 10 sec

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80			
4b		axial	5 mm	5 mm	B31f	600/80			

responsible G. Rubin	last change 05/31/2005
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Abdomen Angio Stent

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the abdominal aorta and its major branches followed by a delayed series, looking for leaks or stent abnormalities;

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to greater trochanter, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate due to patients' size; 8 sec diagnostic delay; Trigger Level at 100 HU; injection duration is 10 sec longer than scan time because of delayed series;

Weight	Contrast for scan time ~10s (10+8+10)			
	Contrast		Saline	
	Volume	Rate	Volume	Rate
<121 lbs	112 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate
121 to 143 lbs	126 cc	4.5 cc/sec	40 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate
143 to 187 lbs	140 cc	5 cc/sec	40 cc	5 cc/sec
	Volume	Rate	Volume	Rate
187 to 209 lbs	154 cc	5.5 cc/sec	40 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate
>209 lbs	168 cc	6 cc/sec	40 cc	6 cc/sec

Dose: CD4D for Range 1, Range 4 and Range 5;

Range 1: Non Contrast series from diaphragm to greater trochanter; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Abdominal CTA; from above celiac trunk to greater trochanter;
breath hold in inspiration; set scan range first, then change scan
time to 10 sec; 8 sec diagnostic delay;

Range 5: delayed series covering the stent only; 30 sec interscandelay;

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: greater trochanter

Range 4: 1 mm at 0.7 mm Interval;
FoV: greater trochanter

5 mm at 5 mm Interval;
FoV: greater trochanter

Range 5: 5 mm at 5 mm Interval;
FoV: stent

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol

Abdomen Angio Stent

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at Celiac Axis	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	AbdAngio	cra/cau	
5	StentDelay	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 10 sec
5	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon

#	Type	Orien-tation	SW	Increment	Kernel	Window		
1		axial	5 mm	5 mm	B31f	400/40		
4a		axial	1 mm	0.7 mm	B25f	600/80		
4b		axial	5 mm	5 mm	B31f	600/80		
5		axial	5 mm	5 mm	B31f	400/40		

responsible G. Rubin

last change 05/31/2005

Renal Arteries Angio

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the renal arteries, looking for aneurysm, stenosis, occlusions

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to aortic bifurcation, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate due to patients' size; 6 sec diagnostic delay; Trigger Level at 100 HU

Weight	Contrast for scan time ~ 10s (10+6)			
	Contrast		Saline	
	Volume	Rate	Volume	Rate
<121 lbs	64 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate
121 to 143 lbs	72 cc	4.5 cc/sec	40 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate
143 to 187 lbs	80 cc	5 cc/sec	40 cc	5 cc/sec
	Volume	Rate	Volume	Rate
187 to 209 lbs	88 cc	5.5 cc/sec	40 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate
>209 lbs	96 cc	6 cc/sec	40 cc	6 cc/sec

Dose: CD4D for Range 1 and Range 4;

Range 1: Non Contrast series from upper Pole to aortic bifurcation; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU


Range 4: Renal CTA; from upper Pole to aortic bifurcation; breath hold in inspiration; 6 sec diagnostic delay; set acan range first, then change scan time to 10 sec;

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: Abdomen

Range 4: 1 mm at 0.7 mm Interval;
FoV: Kidney

5 mm at 5 mm Interval;
FoV: Abdomen

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Renal Arteries Angio</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at Celiac Axis	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	Renal Art.	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 10 sec

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80			
4b		axial	5 mm	5 mm	B31f	600/80			

responsible G. Rubin	last change 05/31/2005
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Living Renal Donor

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the renal arteries and veins, for vessel mapping and looking for stones

Patient

Preparation: n.a.

Positioning: head first; supine position; arms up;

Topogram: 512 mm AP, from diaphragm to aortic bifurcation, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Flow Rate due to patients' size; 10 sec diagnostic delay; Trigger Level at 100 HU

Weight	Contrast for scan time ~ 10 sec (10+10)			
	Contrast		Saline	
	Volume	Rate	Volume	Rate
<121 lbs	80 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate
121 to 143 lbs	90 cc	4.5 cc/sec	40 cc	4.5 cc/sec
	Volume	Rate	Volume	Rate
143 to 187 lbs	100 cc	5 cc/sec	40 cc	5 cc/sec
	Volume	Rate	Volume	Rate
187 to 209 lbs	110 cc	5.5 cc/sec	40 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate
>209 lbs	120 cc	6 cc/sec	40 cc	6 cc/sec

Dose: CD4D for Range 1 and Range 4;

Range 1: Non Contrast series from upper Pole to aortic bifurcation; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Renal CTA; from upper Pole to aortic bifurcation; set scan range first, then change scan time to 10 sec; breath hold in inspiration; 10 sec diagnostic delay;


Range 5: delayed Topogram AP, after approx. 10 min

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: Abdomen

Range 4: 1 mm at 0.7 mm Interval;
FoV: Kidney

5 mm at 5 mm Interval;
FoV: Abdomen

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Living Renal Donor</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	512
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at Celiac Axis	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	LRD	cra/cau	
	Topogram	AP cra/cau	512

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	1	0.5 sec	~ 10 sec
		100	120						

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	1 mm	0.7 mm	B25f	600/80			
4b		axial	5 mm	5 mm	B31f	600/80			

responsible G. Rubin	last change 05/31/2005
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Lower Extremity Runoff

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the abdominal, pelvic and lower extremities arteries, looking for aneurysm, stenosis, occlusions, collaterals, bypass or arterial mapping;

Patient

Preparation: n.a.

Positioning: feet first; supine position; arms up; use table extension instead of head holder; feet relaxed; support with tape around toes; table height adjusted to centre of legs;

Topogram: 1500 mm AP, from diaphragm to toes, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Multiple Rate injection; Flow Rate due to patients' size; minimum diagnostic delay; Trigger Level at 100 HU

Weight	Contrast for Scantime ~ 40 sec					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	96 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	108 cc	3.6 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	120 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	132 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	144 cc	4.8 cc/sec	40 cc	4.8 cc/sec

Dose: CD4D for Range 1, Range 4 and Range 5;

Range 1: Non Contrast series from diaphragm to symphysis; breath hold in inspiration;

Range 2+3: Bolus Tracking; ROI in abdominal aorta at level SMA (T 12); 30 Scans; Cycle Time 1.12 sec; Trigger Level at 100 HU

Range 4: Runoff CTA; from above celiac trunk to toes; breath hold in inspiration; minimum diagnostic delay; set scan range first, then change scan time to 40s for all patients;

Range 5: from knees to toes;

Recons: Range 1: 5 mm at 5 mm Interval;
FoV: greater trochanter

Range 4: 2 mm at 1 mm Interval;
FoV: greater trochanter

1 mm at 0.7 mm Interval;
FoV: greater trochanter

5 mm at 5 mm Interval; Abdomen/Pelvis only
FoV: entire Abdomen

Range 5: 1 mm at 0.7 mm Interval;
FoV: greater trochanter

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Lower Extremitiy Runoff</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	non contrast	cra/cau	
2	premonitoring	ROI Aorta at Celiac Axis	
3	monitoring	30Scans, CycleTime at 1.12 s; TriggerLevel at 100 HU	
4	AngioRunoff	cra/cau	
5	Lower Limb	cra/cau	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	variable	0.5 sec	~ 40 sec
5	250		120	x		64x0.6	1	0.5 sec	

2D/3D/4D Recon									
#	Type	Orien-tation	SW	Increment	Kernel	Window			
1		axial	5 mm	5 mm	B31f	400/40			
4a		axial	2 mm	1 mm	B25f	600/80			
4b		axial	1 mm	0.7 mm	B25f	600/80			
4c		axial	5 mm	5 mm	B25f	600/80	Abd/Pelvis only		
5		axial	1 mm	0.7 mm	B25f	600/80			

responsible G. Rubin	last change 05/31/2005
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Lower Extremity CTA Trauma

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the arteries of the lower legs, looking for vessel abnormalities after trauma;

Patient

Preparation: n.a.

Positioning: feet first; supine position; arms down; use table extension instead of head holder; feet relaxed; support with tape around toes; table height adjusted to centre of legs;

Topogram: 756 mm AP, from above the knees to toes, craniocaudal

Contrast

Injection: 20-22 G IV; 350 mgJ/cc Concentration; Testbolus series; then multiple Rate injection; Flow Rate due to patients' size; calculated delay (DynEval Taskcard);

Test bolus			
Contrast		Saline	
Volume	Rate	Volume	Rate
16 cc	4 cc/sec	40 cc	4 cc/sec

Weight	Contrast for Scan time ~ 20 sec					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	48 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	54 cc	3.6 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	60 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	66 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	72 cc	4.8 cc/sec	40 cc	4.8 cc/sec

- Dose:** CD4D for Range 1, Range 4 and Range 5;
- Range 1:** Non Contrast series from above the knees to toes;
- Range 2:** Test bolus above the knees; 25 Scans; Cycle Time 2 sec;
Delay evaluation on DynEva Taskcard;
- Range 3:** CTA; from above the knees to toes; minimum diagnostic delay; set scan range first, then change scan time to 20s for all patients;
- Recons:** Range 1: 5 mm at 5 mm Interval;
FoV: legs
- Range 3: 1 mm at 0.7 mm Interval;
FoV: legs
- Transfer:** Auto transfer of all data to GEPACS as usual

Scanprotocol

Lower Extremity CTA Trauma

Stanford University
Medical Center



Blake Wilbur Clinic

Chronical

#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	non contrast	cra/cau	
2	Testbolus	above knees	
		25 Scans, CycleTime at 2 sec	
3	Lower Leg	cra/cau	

Scanparameters

#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3	250		120	x		64x0.6		0.5 sec	~ 20 sec

2D/3D/4D Recon

#	Type	Orientation	SW	Increment	Kernel	Window		
1		axial	5 mm	5 mm	B31f	400/40		
2	DynEva Taskcard							
3		axial	1 mm	0.7 mm	B25f	600/80		

responsible G. Rubin last change 05/31/2005

Upper Extremity CTA Runoff

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the upper extremity vascular territory in case of trauma, masses or for arterial mapping

Patient

Preparation: n.a.

Positioning: Arm raised above head either in supine-, prone- or lateral- (swimmer) position, due to patient's body habitus and physical condition; finger spread out or taped down; arm centred on the table;

Topogram: 1500 mm AP, from fingertips to mid chest; craniocaudal

Contrast

Injection: 20-22 G IV at contra lateral arm; 350-370 mg I/cc Concentration; Multiple Rate injection; Flow Rate due to patients' size; minimum diagnostic delay; Bolus Tracking at beginning of scan range without ROI, start manually when contrast arrives;

Complete outflow from Shoulder to fingers:

Weight	Contrast for Scan time ~ 20 sec					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	48 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	54 cc	3.6 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	60 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	66 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	72 cc	4.8 cc/sec	40 cc	4.8 cc/sec

Range 1: non cons in case of trauma and masses

Range 2+3: Bolus Tracking at the beginning of scan range; ROI set in the air; 30 Scans; Cycle Time 1.12 sec; Start manually when contrast appears in the artery;

Range 4: Runoff CTA; from below the shoulder through fingers; caudocranial; minimum diagnostic delay; set scan range first, then change scan time to 20s for all patients;

Dose: CD4D for Range 4;

Targeted outflow from elbow to fingers:

Weight	Contrast for scan time ~ 15 sec			
	Contrast		Saline	
	Volume	Rate	Volume	Rate
121 to 187 lbs	75 cc	5 cc/sec	40 cc	5 cc/sec
	Volume	Rate	Volume	Rate
187 to 209 lbs	83 cc	5.5 cc/sec	40 cc	5.5 cc/sec
	Volume	Rate	Volume	Rate
>209 lbs	90 cc	6 cc/sec	40 cc	6 cc/sec

Range 1: non cons in case of trauma and masses;

Range 2+3: Bolus Tracking at the beginning of scan range; ROI set in the air; 30 Scans; Cycle Time 1.12 sec; Start manually when contrast appears in the artery;

Range 4: Runoff CTA; from above the elbow through fingers; caudocranial; minimum diagnostic delay; set scan range first, then change scan time to 15s for all patients;

Dose: CD4D for Range 4;

Recons: Range 1: 3 mm at 3 mm Interval
FoV: to arm, forearm and fingers;


Range 4: 1 mm at 0.7 mm Interval;
FoV: to arm, forearm and fingers;

3D Recons: 5 mm at 2 mm Interval coronal ThinMIP;
5 mm at 2 mm Interval sagittal ThinMIP;

Modifier: bilateral CTA Runoff

Range 4: simultaneous targeted outflow CTA from elbow through fingers:
both arms raised above head; IV proximal to cubital vein

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
Upper Extremity CTA Runoff	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	non contrast	cra/cau	
2	premonitoring	ROI at start of scan range	
3	monitoring	30Scans, CycleTime at 1.12 s; start manually	
4	AngioRunoff	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	variable	0.5 sec	~ 20 sec
									targeted outflow from elbow through fingers ~ 15 sec

2D/3D/4D Recon								
#	Type	Orien-tation	SW	Increment	Kernel	Window		
1		axial	3 mm	3 mm	B25f	400/40		
4a		axial	1 mm	0.7 mm	B25f	600/80		
4b	ThinMIP	coronal	5 mm	2 mm	B25f	600/80		
4c	ThinMIP	sagittal	5 mm	2 mm	B25f	600/80		

responsible	G. Rubin	last change	06/09/2005
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Upper Extremity CTA Aortic Arch and Runoff

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Contrast enhanced examination to assess the upper extremity vascular territory in case of Arterial Occlusive Disease, Hemodialysis Access, Vasculitis, Arterial Bypass Grafts and Stents, Free Flap Mapping, trauma, masses;

Patient

Preparation: for indication **Vasculitis:** Nitro glycerine 0.4 mg; has to be decided on site by Dr. Hellinger (has to be paged)

Positioning: Arm raised above head either in supine-, prone- or lateral- (swimmer) position, due to patient's body habitus and physical condition; finger spread out or taped down; arm centred on the table;

Topogram: 1500 mm AP, from fingertips to mid chest; craniocaudal

Contrast

Injection: 20-22 G IV at contra lateral arm; 350-370 mg I/cc Concentration; Multiple Rate injection; Flow Rate due to patients' size; minimum diagnostic delay; Bolus Tracking at Aortic Arch; Trigger Level 150 HU;

Complete outflow:

Weight	Contrast for Scan time ~ 30 sec					
	Contrast rate 1		Contrast rate 2		Saline	
	Volume	Rate	Volume	Rate	Volume	Rate
<121 lbs	20 cc	4 cc/sec	80 cc	3.2 cc/sec	40 cc	3.2 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
121 to 143 lbs	23 cc	4.5 cc/sec	90 cc	3.6 cc/sec	40 cc	3.6 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
143 to 187 lbs	25 cc	5 cc/sec	100 cc	4 cc/sec	40 cc	4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
187 to 209 lbs	28 cc	5.5 cc/sec	110 cc	4.4 cc/sec	40 cc	4.4 cc/sec
	Volume	Rate	Volume	Rate	Volume	Rate
>209 lbs	30 cc	6 cc/sec	120 cc	4.8 cc/sec	40 cc	4.8 cc/sec

- Range 1:** non cons in case of Bypass Grafts, Stents, Hemodialysis Access and Thoraco-dorsal Vascular Mapping
- Range 2+3:** Bolus Tracking at Aortic Arch; 30 Scans; Cycle Time 1.12 sec; Trigger Level at 150 HU;
- Range 4:** Runoff CTA; from Aortic Root through fingers; Caudocranial; minimum diagnostic delay; set scan range first, then change scan time to 30s for all patients;
- Range 5:** second pass series, immediately after Range 4; **only for indication: Vasculitis and masses (Hemangioma, AVM ...)**
- Range 6:** venous phase at 30 sec interscandelay and same scan range; **only for indication: Hemodialysis Access**, which has to be decided on site by Dr Hellinger (has to be paged)
- Dose:** CD4D for Range 4, 5 and 6;
- Recons:**
- Range 1: 3 mm at 3 mm Interval
FoV: to heart, arm, forearm and fingers;
 - Range 4: 1 mm at 0.7 mm Interval;
FoV: to heart, arm, forearm and fingers;
 - 3D Recons: 5 mm at 2 mm Interval coronal ThinMIP;
5 mm at 2 mm Interval sagittal ThinMIP;
 - Range 5: 1 mm at 0.7 mm Interval;
FoV: to heart, arm, forearm and fingers;
 - 3D Recons: 5 mm at 2 mm Interval coronal ThinMIP;
5 mm at 2 mm Interval sagittal ThinMIP;
 - Range 6: 1 mm at 0.7 mm Interval;
FoV: same as Range 3
 - 3D Recons: 2 mm at 1 mm Interval coronal MPR;
2 mm at 1 mm Interval sagittal MPR;

Modifier: Thoraco-dorsal Vascular Mapping (TDV)

Range 4: Arm raised above head; scan range from diaphragm through elbow; scan time: 20 sec (injection see table for 20 sec scan range); Bolus Tracking at Aortic Arch; Trigger Level 150 HU;

Additional Recon: 5 mm at 5 mm Interval B31f through chest only
1 mm at 1mm Interval B45f through chest only

Modifier: Thoracic Outlet Syndrom:

Range 4: arterial phase in neutral position; arms at side; from mid chest to low neck; caudocranial; 10 sec scan; Bolus Triggering at Aortic Arch, Trigger Level at 150 HU; minimum diagnostic delay; Flow rate based on Patient's size, Volume 60-80 cc;


Range 5: arterial phase for provocative testing; arm raised above head; from mid chest through fingers; caudocranial; 30 sec scantime (for injection protocol use table above)

Bilateral Thoracic Outlet Syndrom:

Range 4: one arm at side (neutral position) and the other arm raised above head (provocative manuvre); caudocranial from mid chest through fingers of raised arm; 30 sec scantime (for injection protocol use table above)

Range 5: arms in vice versa position; same scan range, same injection (total amount of contrast: 200 cc)

Transfer: Auto transfer of all data to GEPACS as usual


Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Upper Extremity CTA Aortic Arch and Runoff</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	non contrast	cra/cau	
2	premonitoring	ROI at Aortic Arch	
3	monitoring	30Scans, CycleTime at 1.12 s; Trigger Level 150 HU	
4	AngioRunoff	cau/cra	repeat Range 4 for TOS
5	second pass	cau/cra	for Vasculitis and masses
6	venous	cau/cra	for Hemodialysis Access

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Collimation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	variable	0.5 sec	~ 30 sec
5	250		120	x		64x0.6	variable	0.5 sec	~ 30 sec
6	250		120	x		64x0.6	variable	0.5 sec	~30 sec

2D/3D/4D Recon								
#	Type	Orientation	SW	Increment	Kernel	Window		
1		axial	3 mm	3 mm	B25f	400/40		
4a		axial	1 mm	0.7 mm	B25f	600/80		
4b	ThinMIP	coronal	5 mm	2 mm	B25f	600/80		
4c	ThinMIP	sagittal	5 mm	2 mm	B25f	600/80		
5a		axial	1 mm	0.7 mm	B25f	600/80		
5b	ThinMIP	coronal	5 mm	2 mm	B25f	600/80		
5c	ThinMIP	sagittal	5 mm	2 mm	B25f	600/80		
6a		axial	1 mm	0.7 mm	B25f	400/40		
6b	MPR	coronal	2 mm	1 mm	B25f	400/40		
6c	MPR	sagittal	2 mm	1 mm	B25f	400/40		

responsible	G. Rubin	last change	06/09/2005
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Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Upper Extremity CTA Thoraco-Dorsal Vascular Map</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	non contrast	cra/cau	
2	premonitoring	ROI at Aortic Arch	
3	monitoring	30Scans, CycleTime at 1.12 s; Trigger Level 150 HU	
4	AngioRunoff	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli-mation	Pitch	Rotation	Scantime
		35	120						
1	140		120	x		20x1.2	1	0.5 sec	
2		20	120						
3		20	120						
4	250		120	x		64x0.6	variable	0.5 sec	~ 20 sec

2D/3D/4D Recon								
#	Type	Orien-tation	SW	Increment	Kernel	Window		
1		axial	3 mm	3 mm	B25f	400/40		
4a		axial	1 mm	0.7 mm	B25f	600/80		
4b	ThinMIP	coronal	5 mm	2 mm	B25f	600/80		
4c	ThinMIP	sagittal	5 mm	2 mm	B25f	600/80		
4d		axial	5 mm	5 mm	B31f	400/40	through chest only	
4e		axial	1 mm	1 mm	B45f	1500/-700	through chest only	

responsible	G. Rubin	last change	06/09/2005
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Upper Extremity Venogram

Stanford University
Medical Center



Blake Wilbur Clinic

Protocol: Siemens Sensation 64 / Vascular

Objective: Venous enhanced examination to assess the upper extremity vascular territory in case of Venous Occlusive Disease, Venous Bypass Grafts and Stents;

Patient

Preparation: n.a.

Positioning: Arm raised above head either in supine-, prone- or lateral- (swimmer) position, due to patient's body habitus and physical condition; finger spread out or taped down; arm centred on the table;

Topogram: 1500 mm AP, from fingertips to mid chest; craniocaudal

Contrast

Injection: 20-22 G IV at contra lateral arm; 350-370 mg I/cc Concentration; Volume due to patients' size; (~230 mg/l /lbs) 60 sec diagnostic delay; Bolus Tracking at Aortic arch; Trigger Level 150 HU;

Weight	Contrast	
	Volume	Rate
<121 lbs	80 cc	3 cc/sec
121 to 143 lbs	100 cc	3 cc/sec
143 to 187 lbs	120 cc	3 cc/sec
187 to 209 lbs	140 cc	3 cc/sec
>209 lbs	150 cc	3 cc/sec

Range 1+2: Bolus Tracking at Aortic Arch; 30 Scans; Cycle Time 1.12 sec; 60 sec diagnostic delay;


Range 3: Venogram; from bottom of heart through elbow; caudocranial; 60 sec diagnostic delay; set scan range first, then change scan time to ~20s for all patients;

Dose: CD4D for Range 3;

Recons: Range 3: 1 mm at 0.7 mm Interval;
FoV: to heart, arm and elbow;

3D Recons: 2 mm at 1 mm Interval coronal MPR;
2 mm at 1 mm Interval sagittal MPR;

Transfer: Auto transfer of all data to GEPACS as usual

Scanprotocol	Stanford University Medical Center  Blake Wilbur Clinic
<h1 style="color: #8B0000;">Upper Extremitiy Venogram</h1>	

Chronical			
#	Range	Direction	cm
	Topogram	AP cra/cau	1500
1	premonitoring	ROI at Aortic Arch	
2	monitoring	30Scans, CycleTime at 1.12 s; Trigger Level 150 HU	
3	Venogram	cau/cra	

Scanparameters									
#	Ref mAs	Eff mAs	kV	CD-4D	CD	Colli- mation	Pitch	Rotation	Scantime
		35	120						
2		20	120						
3		20	120						
4	250		120	x		64x0.6	variable	0.5 sec	~ 20 sec

2D/3D/4D Recon							
#	Type	Orien- tation	SW	Increment	Kernel	Window	
1a		axial	1 mm	0.7 mm	B25f	400/40	
1b	MPR	coronal	2 mm	1 mm	B25f	400/40	
1c	MPR	sagittal	2 mm	1 mm	B25f	400/40	

responsible G. Rubin	last change 06/09/2005
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