CT Protocol Review – Validation and Verification

David M. Gauntt, Ph.D. UAB Medical Center Birmingham AL



Why do CT protocol review?

Patient Dose

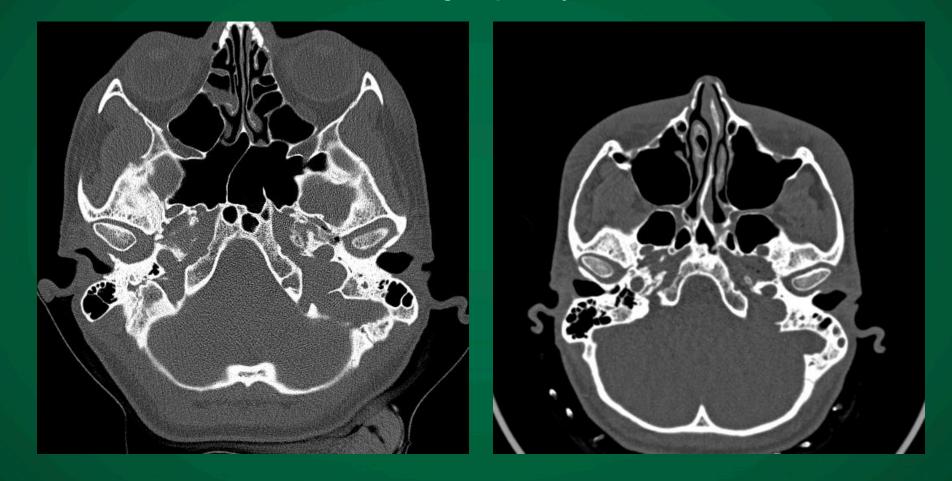


Photograph courtesy Alabama Media Group



Why do CT protocol review?

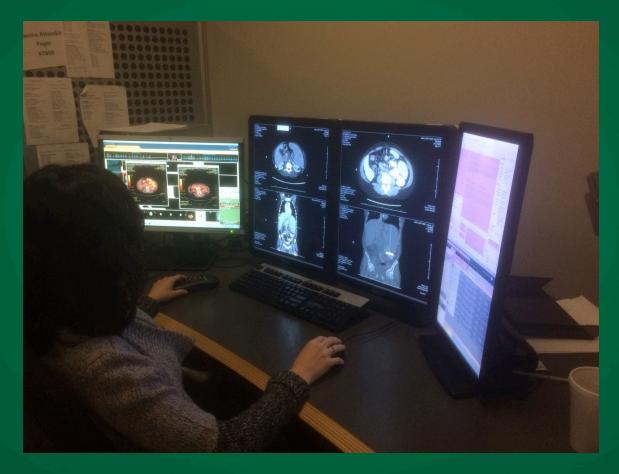
Image quality





Why do CT protocol review?

Workflow





Why CT protocol review?

Organization	Who	What	How often
State of Texas	Radiologist (or RadOnc), Physicist, Radiation Safety Officer	All "Radiation protocols"	Annually
ТJС	Radiologist, Physicist, Technologist	"Imaging protocols" Indications Contrast administration Patient age and size Expected CTDI	Up to facility
ACR (CTAP)	Physicist	"Clinical protocols"	Annually
ACR (2012 QCM)	Radiologist, Physicist, Technologist	"All protocols" kV, mAs, detector config, image width, pitch, etc.	Annually
AAPM (Professional Practice Guidelines)	Radiologist, Physicist, Technologist	Six specific clinical protocols Periodic verification Dated history of documents	Monthly to biannually

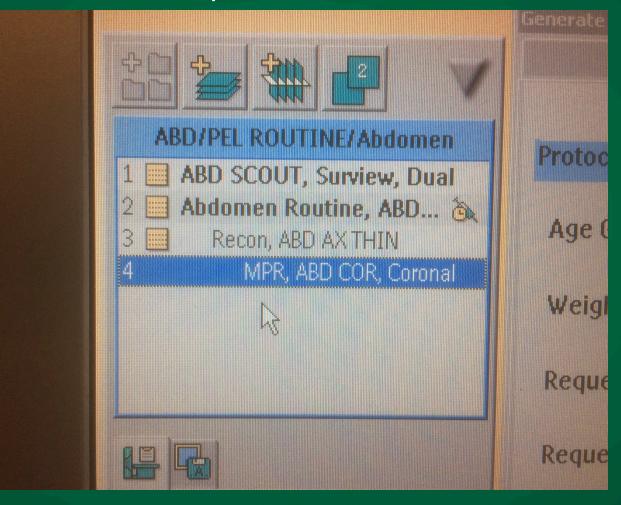
What is CT protocol review?

ISO 9000: validation is a confirmation that "the requirements (3.6.4) for a specific intended use or application have been fulfilled".

ISO 9000: verification is a confirmation that "[the] specified requirements (3.6.4) have been fulfilled".



Philips Brilliance 64





	Philips E	Brilliance 64	
Image: Provide the second sec			
Avg Patient mAs: (mA)		Auto Storing: Default	
	Scan Type: Abdomen Routine	Storage Devices Apply To All Series	Resolution: standard
Dose notification valu	Label: ABD AX	Auto Filming	Pitch:
DLP: Accumulated Dose	Length: 402.5 Direction: C In C Out	Auto Processing:	Rotation time: 0.5 sec FOV: 400 mm
CTDIvol: * DLP: 471.7 CTDI Phantom size: 32	Thickness: 2.5 mm Increment: 2.5 mm	CT Viewer	Reconstruction: IDose 3 Filter: Sharp (C)
Images: 161 CTDIvol:1 Time: 6.61s DLP: 462		Create New Study For:	Enhancement: 0.0 Window C: 60 W: 360
OK	Evolving	Rq. procedure: Image: Second Seco	Center X: 0 Y: 0 Matrix: 512
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Philips ICT 256

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2 Abdomen/Petvis 💩 🛞	General			Dose Management	
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2.3 ABD COR, Cor, 2.5	Scan Type:	Abdomen/Pelvis	-		Reduce
	Collimation:	Auto	* (128x0.625		Dose 4 16
		256			
	Pitch:	0.914	Ŧ		110
	Rotation Time:	0.5	*		
	L ROUTINE 2/5/16 Overview All Parameters urview, Dual, ABD SCOUT 2 Abdomen/Petvis, ABD WITH, Helical General Dose Management Label: ABD WITH DoseRight 3 ABD COR, Cor, 25 Octimation: Auto VP: Adult Scan Type: Abdomen/Petvis State: 50-90kg Octimation: 256 State: 50-90kg Chination: Auto State: 50-90kg Chination: Auto State: 50-90kg Chination: Standard State: 50-90kg Dose Notification State: 50-90kg Chination: Standard State: 50-90kg Chination:				
Age Group: Adult	Scan Time:	Automatic Scan Time: Atta Outomatic S			
	Resolution:	Standard	-	Liver Area DoseRight Index:	Management sseRight Right Index: Modulation Modulation for Average Adult: (m) for Average Adult:
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	☞ Breathing Lights				346.3 mGy*cm
	🔽 Edit before final Recon				
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		Injection Parameters	5	Dose Notification Value CTDIvol:	50 m
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Philips ICT 256

🖉 Exam Card Manager					
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Ear					
Neck					
Thorax					
Cardiac					
Spine					
Abdomen					
TRAUMA					
Orthoped					
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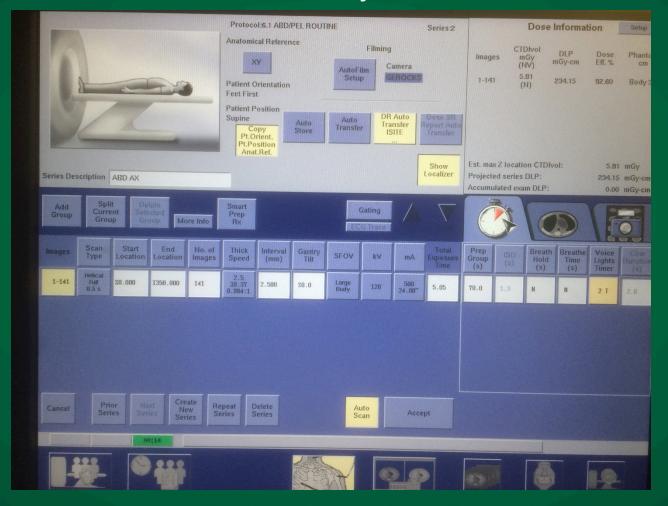


Philips ICT 256

Head		
HEAD AX WO		
Parameter	Value	
Length (Z)	300	
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mA	30	
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View	500	1
Auto Voice	No	
Breathing	No	
Lights Voice		
voice	English	
AutoStore	yes D,dbcbe8f6-75a3-48f5-aafc-	
Devices	26a0b835099d,ae681fc5-854f-4217-9762-	15.5
Devices	3896bf9bb025,cb895a93-9569-410c-bddd- b26a4b0a604b	
Direction	Out	
Contrast	No	

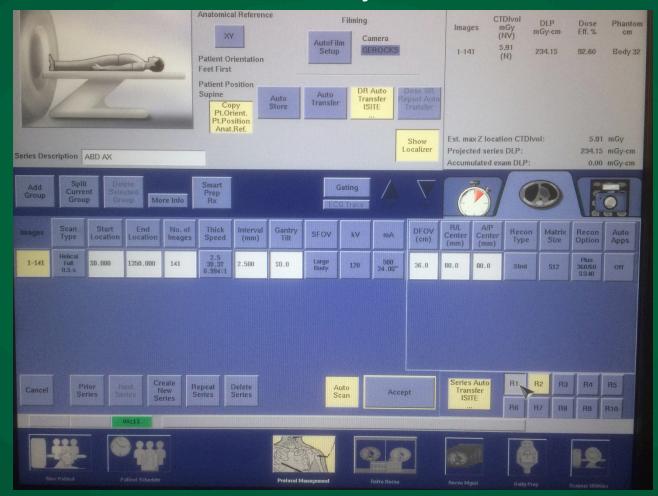


GE Discovery 750HD



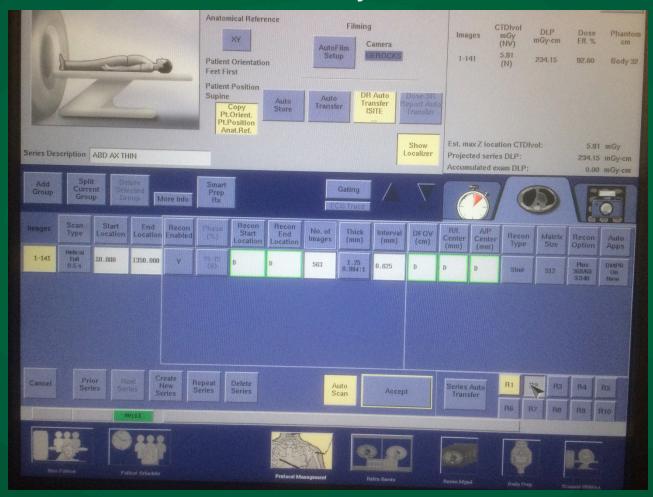


GE Discovery 750HD



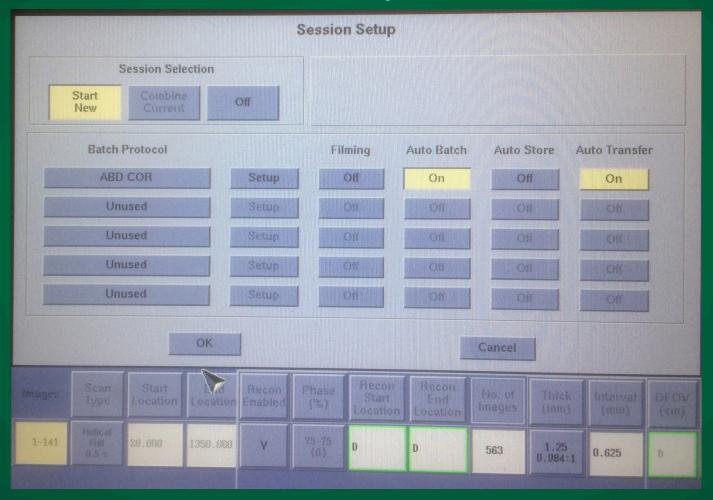


GE Discovery 750HD





GE Discovery 750HD





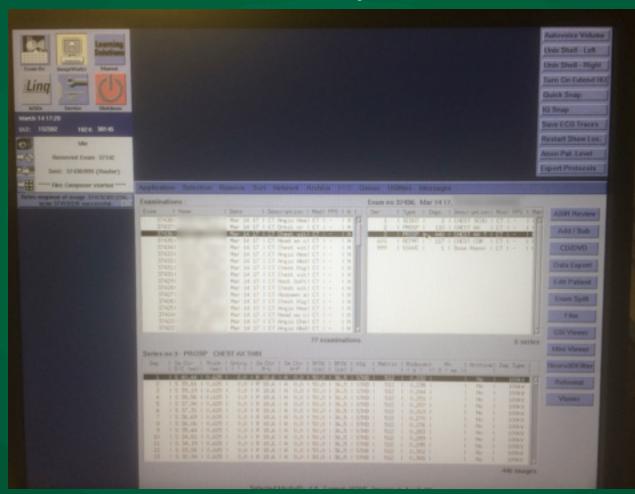
GE Discovery 750HD

Batch Protocol List	
CT Thick Axials 5mm	
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Oblique	
PETAxial	
PETCoronal	
PETSagittal	
Slices 10mm	
Slices 5mm	
SAGITTAL NECK	
ABD COR	
ABD COR 1	
ABD COR ART	

Batch Protocol List
ABD COR ART AAA
ABD COR THIN
ABD COR VEN
ABD SAG ART
ABD SAG ART MIP
CAP COR ART AAA
CAP COR THICK
CHEST COR 125
CHEST COR 2X2
CHEST COR EXP
CHEST COR GILEAD
CHEST COR INSP

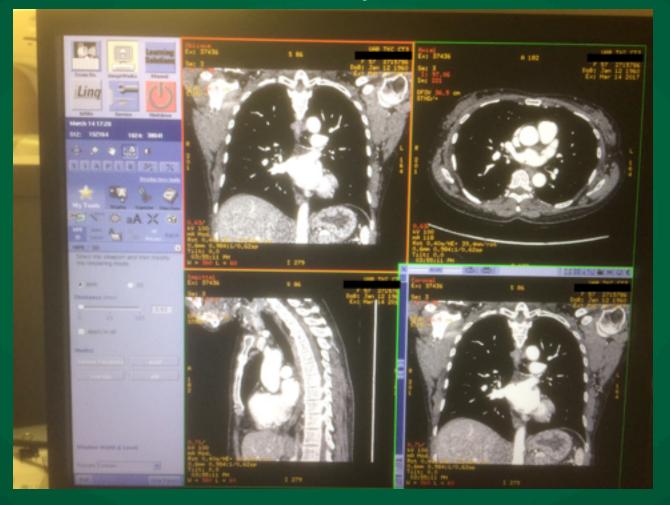


GE Discovery 750HD





GE Discovery 750HD





GE Discovery 750HD

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GE Discovery 750HD

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Loop Oblique Number of Images Spacing Between Images Slice Thickness Mode FOV	ABD SAG ABD COR ABD COR ABD COR CAP COR ABD COR CAP COR CAP COR CHEST CC Ave	Sagittal Ex: 37436 Se: 3 Se: 3 Se: 4 Se: 5 Se: 5
Output Save	- Preview	A 1



Philips ICT 256

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Siemens Somatom Force

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Protocol name	Range name		Ref. kV	Qual / ref. mAs	(Eff		(Eff.) mAs(Tube B)	CARE kV	Tissue of Interest (Slider position 1 - 12)	Dose modulation	CARE Dose type	CTDIvol (mGy)		Adjust:	Dose Notification value CTDIvol (mGy)	Dose Notification value DLP (mGy*cm)		Scan time (s)	Delay (s)		(mm)	(mm)		Slice (mm)	e Position increme (mm)	Nc
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	Dental		120 12	:0	63 6	3		On	5	On	CARE Dose4D	9.10	61	25%			1		2	0.8		0.75	192x0.6mr			
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HeadIntervention (Adult)	Topogram	Topogram 0.6 Tr20	12	0	10	6			3	Off	CARE Dose	0.16		25%			0.5	5	2	o			6x0.6mr	n 0	8	
	i-Spiral		120 12	:0 4	420 42	D		On	3	On	CARE Dose4D	60.06	51	25%			0.5	5	2	0.55		5	48x1.2mr			
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HeadNeuro (Adult)	Topogram	Topogram 0.6 Tr20	12	0	5	5			3	Off	CARE Dose	0.16		25%			0.5	5	2	o			6x0.6mr	n 0	6	
	Head		120 12	:0 2	273 27	3		On	3	On	CARE Dose4D	41.63	15:	25%			1		2	0.55		5	128x0.6mr	1		
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HeadNeuroSeq (Adult)		Topogram 0.6 Tr20	12	0	5	5			3	Off	CARE Dose	0.16		25%			0.5	5	2	o			6x0.6mr	n 0	6	
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HeadNeuro_XCARE (Adult)	Topogram	Topogram 0.6 Tr20	12	0	5	5			3		CARE Dose	0.16		25%			0.5	5	2	O			6x0.6mr	n 0	5	
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Philips Brilliance

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2 "Sinus Ax 3mm - Axial/Head/Ax"	axial	adult	head	180	317	Head	none	"	*	156	Out	3	3	120	185	150	concurrent	Cyc
3 "QA Head Std/Head/Ax"	axial	adult	head	180	267	Head	none		•	24	Out	6	6	120	200	150	concurrent	
4 "Chest HR Axial - Axial/Thorax/Ax"	axial	adult	body	180	400	Body	none		· ·	301.2	Out	1.2	1.2	120	200	150	concurrent	
5 "Retrospective - Surview/Cardiac/Sv"	surview	adult	body	180	30	invalid	invalid		•	300	Out	0.75	1.2	120	300	300	concurrent	
6 "Prospective - Surview/Cardiac/Sv"	surview	adult	body	180	30	invalid	invalid		•	300	Out	0.75	1.2	120	300	300	concurrent	
7 "THORAX PT. 2-10kg/Thorax/Hx"	helix	adult	body	180	56	Body	none		•	300	Out	3	3	120	300	30	concurrent	
8 "THORAX PT. 10-40kg/Thorax/Hx"	helix	adult	body	180	94	Body	none		•	300	Out	3	3	120	300	50	concurrent	
9 "THORAX PT. 40-60kg/Thorax/Hx"	helix	adult	body	180	150	Body	none		•	300	Out	3	3	120	300	80	concurrent	
10 "THORAX PT. 60-80kg/Thorax/Hx"	helix	adult	body	180	188	Body	none		•	300	Out	3	3	120	300	100	concurrent	
11 "THORAX PT. 80-90kg/Thorax/Hx"	helix	adult	body	180	225	Body	none		•	300	Out	3	3	120	300	120	concurrent	
12 "THORAX PT. >90kg/Thorax/Hx"	helix	adult	body	180	225	Body	none		•	300	Out	3	3	140	300	120	concurrent	
13 "Brain Axial/Head/Ax"	axial	adult	head	180	400	Head	none		· ·	264	Out	6	6	120	350	150	concurrent	
14 "Brain Spiral/Head/Hx"	helix	adult	head	180	183	Head	none			250	Out	5	5	120	300	200	concurrent	
15 "Surview 90/Head/Sv" 16 "Mean CT Number Head 1/Head/Ax"	surview	adult	head	90 180	30 229	invalid	invalid			200	Out	0.75	5	120	300 200	300 150	concurrent	
10 "Mean CT Number Head 1/Head/Ax" 17 "CT Uniformity Head/Head/Ax"	axial axial	adult adult	head head	180	229	Head Head	none			24	Out Out	6	6	120	200	150	concurrent	
17 "Image Noise Head /Head/Ax"	axial	adult	head	180	229	Head	none			24	Out	6	6	120	200	150	concurrent	
19 "Spatial ResolutionHead 1/Head/Ax"	axial	adult	head	180	216	Head	none		- ·	24	Out	1.5	1.5	120	189	150	concurrent	
20 "Spatial ResolutionHead 2/Head/Ax"	axial	adult	head	180	216	Head	none		· ·	12	Out	1.5	1.5	120	189	150	concurrent	
21 "Spatial ResolutionHead 3/Head/Ax"	axial	adult	head	180	216	Head	none		· ·	12	Out	0.75	0.75	120	189	150	concurrent	
22 "Slice Thickness Head 1/Head/Ax"	axial	adult	head	180	229	Head	none		· ·	12	Out	0.75	0.75	120	200	150	concurrent	
23 "Slice Thickness Head 2/Head/Ax"	axial	adult	head	180	229	Head	none		· ·	24	Out	1.5	1.5	120	200	150	concurrent	
24 "Brain Ax 4.5mm - Axial/Head/Ax"	axial	adult	head	180	457	Head	none		•	252	Out	4.5	4.5	120	400	150	concurrent	
25 "IAC <7y/Ear"	surview	adult	head	90	50	invalid	invalid	"IAC SCOUT"	•	250	Out	0.75	4.5	120	300	300	concurrent	
26 "IAC <7y/Ear"	helix	adult	head	180	107	Head	none	"IAC AX"	•	60	Out	0.8	0.4	120	300	200	concurrent	
27 "IAC 7y>/Ear"	surview	adult	head	90	50	invalid	invalid	"IAC SCOUT"	•	250	Out	0.75	0.4	120	300	300	concurrent	
28 "IAC 7y>/Ear"	helix	adult	head	180	133	Head	none	"IAC AX"		60	Out	0.8	0.4	120	300	250	concurrent	
29 "IAC - Surview/Ear/Sv"	surview	adult	head	90	50	invalid	invalid			200	Out	0.75	0.4	120	300	300	concurrent	
30 "Helical Neck/Neck/Hx" 31 "Neck Carotid/Neck"	helix	adult	body	180	375	Body	none			252	Out	3	3	120	300	200	concurrent	
31 "Neck Carotid/Neck" 32 "Neck Carotid/Neck"	surview axial	adult adult	body	90 180	50 90	invalid	invalid	LOCATOR		350 12	Out	0.75	3	120 120	300	300	concurrent	
32 "Neck Carotid/Neck" 33 "Neck Carotid/Neck"			body	180	90	Body	none	LUCATOR	·	12	Out Out	12	12 12	120	30 30	300 300	concurrent	
33 "Neck Carotid/Neck" Sheet1 +	axial	adult	body	180	1 90 1	Body	none	-	1 .	1 12 1	Out	12	12	1 120	30	300	none	
							6								_			
Normal View Ready							Sum=0	-										11.



GE Discovery

e abdomen_1.proto ~					
					abdomen_1.proto ~
					kiloVolts = 120
:ocol_mbir {					<pre>smartCathodeMode = scBiasMode</pre>
ersionName = "3.5.1"					<pre>smartCathodeModeOption = 0</pre>
gicNumber = "1"		abdomen_1.proto ~			<pre>smartCathodeNumDeflections = 1</pre>
ource = "Version0To1"					kvModulationMode = kvModulationNone
}		<pre>smartPrepSeriesTime = 0</pre>			<pre>rotationType = FullScan</pre>
<pre>DoseCheckExamLevelValue {</pre>		<pre>smartPrepSeriesUID = ""</pre>	e e abdomen_		rotationTypeFactor = 1
examCtdi = 23.6678		<pre>baselineScanNum = 0</pre>			<pre>scanFieldOfViewSize = 50</pre>
examDLP = 1454.45		numberOfSmartPrepScansDone =	vavOpacityIndov? -		<pre>scanFieldOfViewType =</pre>
}	abdomen 1.proto	number0fSPScansCurrentSPSeri	vavBreset4 - "Brese	ScanFieldOfViewLargeBo	dvVCT
		<pre>smartPrepMilliAmps = 40</pre>	vav0pacityIndex4 =		groupType = Scout
isAutoScanEnabl	seriesTime = 0	diagnosticDelay = 3	vavPreset5 = "Prese		macroRowWidth = 1.25
isAutoRecordEna	numFilmCopies = 1	enhancementThreshold = 50	vav0pacityIndex5 =		<pre>imageThickness = 1.25</pre>
isAutoStoreEnab	filmExamPage = Yes	monitoringDelay = 10	autoVoicePresetDela		biopsyLocation = 0
isAutoFilmDoseE	filmSeriesPage = No	monitoringISD = 3	<pre>gatingType = NoGati</pre>		doseEfficiency = 0
isAutoXferEnabl	filmComposerFormat = Use	monitoringLocation = -400	cardiacRateAutoDete		CTDi = 0
drSeriesAutoTra	filmScout = No	isSmartPrep_NV_DLP_Needed =	Auto Data at Data Alles althout		DLP = 0
srSeriesAutoTra	filmScoutSeriesNumber =	isSmartPrep_NV_CTDI_Needed =			endLocation = -500
isScanDataSaveE	filmScoutAll = No	<pre>smartPrep_NV_DLP = 0</pre>	cinePaddingValueSta		gantryTilt = 0
autoInjectionMo	filmScoutNumber = 2	<pre>smartPrep_NV_CTDI = 0</pre>	cardiacOperatorEnte		groupDelay = 3.4
showLocalizer =	filmScoutMagFactor = 1	<pre>smartPrepDLP = 0</pre>	cardiacReconPhasePe		isd = 1
filmGrayScale =	filmScoutWindowWidth = 5	<pre>smartPrepCTDI = 0</pre>	cardiacReconPhasePe		pitch = 3
isPMRdone = No	filmScoutWindowLevel = 5	<pre>smartPrepSF0V = ScanField0fv</pre>	cardiacReconPhasePe		retroEndLocation = 0
isSeriesLevelIn	filmScoutXR = Yes	isSmartPrepAutoMinDiagnostic	cardiacReconPhasePe		retroStartLocation = 0
patientOrientat	filmScoutXRSeriesNumber	isSmartPrepAutoVoicePreMsgEr	cineWindowPadding =		retroImageInterval = 0
patientPosition	filmScoutXRAll = No	endSeriesTime = 1229441295	isEBAEnabled = No		retroStartPhase = -5004800
seriesType = Sc	filmScoutXRNumber = 1	<pre>numberOfAutoXferHosts = 0</pre>	ebaRequestMax = 2		retroStartPhase = -5004800 retroEndPhase = -5004573
filmFormat = Fo	filmScoutXRMagFactor = 1	drSeriesAutoTransferNumberOf	<pre>petProtocolName = "</pre>		retroPhaseIncrement = 1
filmDirection =	filmScoutXRWindowWidth =	srSeriesAutoTransferNumberOf	isPetOn = No		
SSAProfileId =		<pre>seriesPathDirectory = ""</pre>	lastScanTableHeight		cardiacPhaseRxType = -5004656
filmSize = Stan	filmScoutXRWindowLevel =	isVavEnabled = No	numOfPetFOV = 0		rotationTime = 1
anatomicalRefer	filmScoutXRImageRange =	isVavFOVAutoScaleEnabled = N	numOfPetImagesPerF0		scanSpacing = 10
externalLandmar	isAutoStartFilmS1Enabled	isVavBoundingBoxOn = Yes	overlapPerPetFOV =		<pre>scanTime = 1</pre>
seriesUID = ""	isAutoStartFilmS2Enabled	vavZoomFactor = 1	petStartLoc = 0		<pre>startLocation = 0</pre>
filmDestination	isAutoStartFilmS3Enabled	vavAzimuth = -30	petEndLoc = 0		tableSpeed = 15
filmDeviceName	autoStartFilmS1SheetChan	vavElevation = 20	expertMode = No		<pre>xrayOff = 0</pre>
autoXferHostNam	autoStartFilmS2SheetChan	vavUserAnnoLevel = VavAnnoFu	measdate = ""		xrayOn = 0
drSeriesAutoTra	autoStartFilmS3SheetChan	vavResolution = VavEnhancedF	meastime = ""		autoFilmDelay = 0
drSeriesAutoTra	isAutoPrintFilmEnabled =	vavPresetNumber = 1	admindate = ""		<pre>autoVoiceProtocolNumber = 2</pre>
drSeriesAutoTra	cardiacTBIvalue = 50	vavNumberOfPresets = 5	admintime = ""		<pre>breathHoldTime = 0</pre>
drSeriesAutoTra	cardiacIRRvalue = 3	vavProtocolName = "Default"	postMeasdate = ""		<pre>breathTime = 0</pre>
srSeriesAutoTra	cardiacTDvalue = 70	isVavARAutoStartEnabled = No	postMeastime = ""		milliAmps2Factor = 1
srSeriesAutoTra	cardiacRRIvalue = 0	isVavARFilmEnabled = No	DateFormat = ""		milliAmps = 10
srSeriesAutoTra	isCardiacMonitoringOn =	isVavARScreenSaveEnabled = N	traceractivity = 0		automAFlag = 1
srSeriesAutoTra	isCardiacCineSSMonitorin	vavWindowWidth = 500	postActivity = 0		ManualmilliAmps = 400
horizontalLandm	isGatingOn = No	vavWindowLevel = 50	isMBIROnForRetro =		milliAmps2 = 100
seriesNumber =	isECGActive = No	vavPresetDirectory = "/usr/c	Group {		automaReferenceNoiseIndex = -1
seriesSmartPrep	isWaveformViewerOn = No	vavPreset1 = "PresetUnused"	IsThisGroup		automaNoiseIndex = -1
seriesTime = 0	<pre>isNewRetroSeriesOn = No</pre>	vavOpacityIndex1 = 0	biopsyRefere		automaMayMilliAmac - 440
Seriestine - 0	<u>isGsiOn</u> = No	vavPreset2 = "PresetUnused"	isBiopsyGrou		
	isContiguousSeries = Con	vav0pacityIndex2 = 0	isImageEnhan	cementEnabled = No	
	isEnhancedPriorityRecon0	vavPreset3 = "PresetUnused"	isSmartScanE		
	isSmartPrepOn = No	vav0pacityIndex3 = 0	isDualkVGrou		
	isSmartPrepDone = No	vavopacityinuexo = 0		ringGroup = No	
	isSmartPrepBaselineDone 🦳		direction =		
	<pre>spShowLocalizer = No</pre>		kiloVolts =		
	<pre>scanPhaseWhilePaused = No</pre>				
	<pre>smartPrepSeriesTime = 0</pre>				
	<pre>smartPrepSeriesUID = ""</pre>				
	hacalinoEconNum - A				

	DEPART		HIGHLANI	OS, TKC, UH	, UHED		ewed By:		,	
Protocol:	LIVER 3	PHASE					Scanne	r model:	ICT 256	
Description	Live, S p	hase (ne	,,,,	terial, teri			Tiotocol	number.	Dod, 3	
PATIENT TYPE: Ac	lult					Volume	Weight	based on	52gl	
INDICATIONS:						40-60kg	99-104m			
Cirrhosis, HCC evaluati					olization	60-90kg	143-148n			
ablation, cholangiocar	cinoma or li	iver lesion	of unknowr	origin			180-185n			
						>110kg:	195-200n		aque 350	
					1	_	Bolus tra	cked		
NPO 2 hours prior.En			time of sca	n and afterw	ards. 20	Rate	4-6ml/s.	-		
IV or greater. Oral co	ontrast not	required.				Delay			t thresho	
COMMENTS: NOT TO BE DONE OF		SCANNER	c			PO	Descendi		st thresho	u uelay
* ABD SAG ART MIP:						Thresh.		ng Aurta		
 + If preplan prediction 				ım, change s	lice		Prepaten	cy flush ¹	0-30ml	
thickness to 5mm	JI OI LUDE	current ii		in, change :	ince	Saline		ract fluch		
						PATIENT		N	Supine	
SCOUT IMAGES	T									
ABD SCOUT	VIEW Dual	kVp 120	mA 30	LENGTH 550mm	C,W 20,1500		FOV 500	Destina PACS	tion	
ABD AX ABD AX ART ABD AX VEN	Just al	bove diap	ohragm		w Illiac cr Ischium	est	350 350 500	120	DRI=16;	mAs 100 to 500
	μ				Ischlum		300			
ACQUISITION SE		Rot.								
ACQ SERIES	Pitch	Time	Coverage	Detect.	Reso	ution	Thick.†	Interval		CTDI per series
All	0.914	0.5 sec	80 mm	128x0.625	Stan	dard	2.5	2.5		12.8mGy
RECONSTRUCTIO	N SERIE						_			
RECON SERIES	ACQ		kernel	Thick.	Interval	Direct.	C,W	FOV	iDose	Destination
ABD AX	ABD AX		RP (C)	2.5	2.5	HD->FT	60,360	BODY	iDose 4	PACS
ABD AX ART			RP (C)	2.5	2.5	HD->FT	60,360	BODY	iDose 4	
	ABD AX		RP (C)	1.5 2.5	0.75	HD->FT	60,360	BODY	iDose 4	,
ABD AX ART THIN	ART		RP (C)	2.5	2.5 3	A -> P R -> L	60,360 100,450	BODY BODY	iDose 4	
ABD AX ART THIN ABD COR ART		SHAL	RP (C)	3 2.5	2.5	HD->FT	60.360	BODY	iDose 4	
ABD AX ART THIN ABD COR ART ABD SAG ART MIP *	<u> </u>					110-26	00,500		Libuse 4	FACS
ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN	ABD AX	SHA	RP (C)			HDANET	60 360	BODY	iDose 4	TERARECON
ABD AX ART THIN ABD COR ART ABD SAG ART MIP *	ABD AX VEN	SHAR	RP (C) RP (C) RP (C)	2.5 1.5 2.5	0.75	HD->FT A -> P	60,360 60,360	BODY BODY	iDose 4	

LIVER 3 PHASE

	DEPART	Care For the	IGHLAN	DS, TKC, UH	, UHED		ewed By: eated By:		Janyai	
Protocol:	LIVER 3	PHASE	_				Scanne	r model:	ICT 256	
Description:			n-con, ar	terial, vend	ous)		Protocol	number:	Body 3	
PATIENT TYPE: Ac	lult					Volume	Weight I	based on	52gl	
INDICATIONS:						40-60kg	99-104m	Omnipaq	ue 350	
Cirrhosis, HCC evaluati	on, as well	as portal h	pertensior	n. Chemoemb	olization,	60-90kg	143-148n	nl Omnipa	que 350	
ablation, cholangiocar	cinoma or l	iver lesion o	of unknowr	origin		90-110kg	180-185n	nl Omnipa	que 350	
						>110kg:	195-200n	nl Omnipa	que 350	
PATIENT PREPARA	TION:					Туре	Bolus trad	cked		
NPO 2 hours prior.En	courage wa	ater up to t	time of sca	n and afterw	ards. 20g	Rate	4-6ml/s.			
IV or greater. Oral co	ontrast not	required.				Dat	Arterial: 1	L5 sec pos	t threshol	d delay
COMMENTS:						Delay	Venous: 4	15 sec pos	t threshol	d delay
NOT TO BE DONE OF	16 SLICE	SCANNER	s			ROI	Descendi	ng Aorta		
* ABD SAG ART MIP	25cm FO	/, center c	of Aorta			Thresh.	150 HU			
+ If preplan prediction				ım, change s	lice			cy flush: 1	0-30ml	
thickness to 5mm						Saline	Postcontr	ast flush:	50ml	
						PATIENT	POSITIO	N	Supine	
SCOUT IMAGES	VIEW	la la		LENCT	C 14/		FOV	Deatir -	lan	
ABD SCOUT	VIEW Dual	kVp 120	mA 30	LENGTH 550mm	C,W 20,1500		FOV 500	Destinat PACS	lion	
ABD SCOUT	Duai	120	50	550mm	20,1500		500	FACS		
HELICAL ACQUISIT	IONS									
ACQ SERIES		Start			Stop		Length	kV	Ти	be current
ABD AX				Dala	w Illiac cr	+	350			
ABD AX ART	Just al	oove diap	hragm	Below	w mac cr	est	350	120	DRI=16;	mAs 100 to 500
ABD AX VEN					Ischium		500			
ACQUISITION SE	TINCS									
ACQUISITION SE		Rot.							1	
ACQ SERIES	Pitch	Time	Coverage	Detect.	Reso	ution	Thick.†	Interval		CTDI per series
All	0.914	0.5 sec	80 mm	128x0.625	Stan	dard	2.5	2.5		12.8mGy
RECONSTRUCTIO	N SERIE	s				-				
RECON SERIES	ACQ		kernel	Thick.	Interval	Direct	C,W	FOV	iDose	Destination
ABD AX	ABD AX	SHAF	RP (C)	2.5	2.5	HD->F	60,260	JODY	iDose 4	PACS
ABD AX ART		SHAF	RP (C)	2.5	2.5	HD->FT	60,360	BODY	iDose 4	PACS
ABD AX ART THIN	ABD AX	SHAP	P (C)	15	0.75	HD->FT	60 360	BODY	iDose 4	PACS TERARECON
ABD COR ART	ART	SHAF	RP (C)	2.5	2.5	A -> P	60,360	BODY	iDose 4	PACS
ABD SAG ART MIP *		SHAP	(P (C)	3	3	К-> L	100,450	BODY	IDose 4	PACS
ABD AX VEN		SHAF	RP (C)	2.5	2.5	HD->FT	60,360	BODY	iDose 4	PACS
	ABD AX	SHAF	RP (C)	1.5	0.75	HD->FT	60,360	BODY	iDose 4	TERARECON
ABD AX VEN THIN	VEN	-	RP (C)	2.5	2.5	A -> P	60,360	BODY	iDose 4	PACS
ABD AX VEN THIN ABD COR VEN		JIA	(0)							

LIVER 3 PHASE

	DICI	NE					tive Date	<u> </u>		
	UAB HO	SPITAL					ewed By:		Sanyal	
	-		IIGHLAND	DS, TKC, UH	I, UHED	Cre	eated By:		-	
	LIVER 3							r model:		ry 64
Description:	Liver 3 p	hase (no	n-con, ar	terial, vend	ous)		Protocol	number:	Body 3	
PATIENT TYPE: Ad	lult					Volume	Weight I	based on	52gl	
INDICATIONS:						40-60kg	99-104m	Omnipaq	ue 350	
Cirrhosis, HCC evaluati					olization,	60-90kg	143-148n	nl Omnipa	que 350	
ablation, cholangiocar	cinoma or li	ver lesion o	of unknown	origin		90-110kg	180-185n	nl Omnipa	que 350	
						>110kg:		nl Omnipa	que 350	
PATIENT PREPARA	TION:					Туре	Bolus trad	ked		
NPO 2 hours prior.En	courage wa	ater up to t	time of sca	n and afterw	ards. 20g	Rate	4-6ml/s.			
IV or greater. Oral co	ontrast not	required.				Delay	Arterial: 1	L5 sec pos	t thresho	ld delay
COMMENTS:						Delay	Venous: 4	15 sec pos	t thresho	ld delay
NOT TO BE DONE OF	16 SLICE	SCANNER	S			ROI	Descendi	ng Aorta		
* ABD SAG ART MIP:	25cm FOV	/, center o	of Aorta			Thresh.	150 HU			
+ If preplan prediction	on of tube	current hi	ts maximu	im, change s	lice	Saline	Prepaten	cy flush: 1	0-30ml	
thickness to 5mm								ast flush:	50ml	
						PATIENT	POSITIO	N	Supine	
SCOUT IMAGES										
LABEL	VIEW	kVp	mA	LENGTH	ww,w	1	FOV	Destinat	ion	
ABD SCOUT	Dual	120	10	550mm	500,50	{	500	PACS	1011	
HELICAL ACQUISIT	IONS									
ACO SERIES	T	Start			Stop		Length	kV	Ти	he current
ACQ SERIES ABD AX	<u> </u>	Start			Stop		Length 350	kV		
-			hragm	Belo	Stop w Illiac cr	est	350	kV 120	SmartM	IA NI=24
ABD AX		Start	hragm			est	-			IA NI=24
ABD AX ABD AX ART	Just ab		hragm		w Illiac cr	est	350 350		SmartM	IA NI=24
ABD AX ABD AX ART ABD AX VEN	Just ab		bhragm Coverage		w Illiac cr Ischium	est lution	350 350		SmartM	IA NI=24 to 500
ABD AX ABD AX ART ABD AX VEN ACQUISITION SE	Just ab	oove diap Rot.	-		w Illiac cr Ischium Resol		350 350 500	120	SmartM	IA NI=24 to 500
ABD AX ABD AX ART ABD AX VEN ACQUISITION SE ACQ SERIES AII RECONSTRUCTIO	Just ak TINGS Pitch 0.984	Rot. Time 0.5 sec	Coverage 40 mm	SFOV Lg Body	w Illiac cr Ischium Resol	lution	350 350 500 Thick.† 2.5	120 Interval 2.5	SmartM mA 100	CTDI per serie
ABD AX ABD AX ART ABD AX VEN ACQUISITION SE ACQ SERIES AII RECONSTRUCTIO RECON SERIES	Just ab TINGS Pitch 0.984	Rot. Time 0.5 sec S Algor	Coverage 40 mm	SFOV Lg Body Thick.	w Illiac cr Ischium Resol Stan	lution dard Direct	350 350 500 Thick.† 2.5	120 Interval 2.5 DFOV	SmartM mA 100 ASIR	A NI=24 to 500 CTDI per serie 21.4mGy Destination
ABD AX ABD AX ART ABD AX VEN ACQUISITION SET ACQ SERIES AII RECONSTRUCTIO RECON SERIES ABD AX	Just ab TTINGS Pitch 0.984 DI SERIES ACQ ABD AX	Rot. Time 0.5 sec <u>S</u> Str	Coverage 40 mm rithm nd	SFOV Lg Body Thick. 2.5	w Illiac cr Ischium Resol Stan Interval 2.5	lution dard Direct HD->FT	350 350 500 Thick.† 2.5 WW,WL 360,60	120 Interval 2.5 DFOV BODY	SmartM mA 100 ASIR SS40	A NI=24 to 500 CTDI per serie 21.4mGy Destination PACS
ABD AX ABD AX ART ABD AX VEN ACQUISITION SE ACQ SERIES AII RECONSTRUCTIO RECON SERIES ABD AX ABD AX ART	Just ab Pitch 0.984 I SERIES ACQ ABD AX ABD AX	Rot. Time 0.5 sec S Algon Stu	Coverage 40 mm rithm nd nd	SFOV Lg Body Thick. 2.5 2.5	w Illiac cr Ischium Resol Stan Interval 2.5 2.5	lution dard HD->FT HD->FT	350 350 500 Thick.† 2.5 WW,WL 360,60	120 Interval 2.5 DFOV BODY BODY	SmartM mA 100 ASIR SS40 SS40	A NI=24 to 500 CTDI per serie 21.4mGy PACS PACS
ABD AX ABD AX ART ABD AX VEN ACQUISITION SE ACQ SERIES AII RECONSTRUCTIO RECON SERIES ABD AX ABD AX ART ABD AX ART THIN	Just ab TIINGS Pitch 0.984 I SERIES ACQ ABD AX ABD AX ART	Rot. Time 0.5 sec S Algon Stu Stu	Coverage 40 mm rithm nd nd nd	SFOV Lg Body Thick. 2.5 2.5 1.25	w Illiac cr Ischium Resol Stan 1nterval 2.5 2.5 0.625	lution dard HD->FT HD->FT HD->FT	350 350 500 Thick.† 2.5 WW,WL 360,60 360,60	120 Interval 2.5 DFOV BODY BODY BODY	SmartM mA 100 ASIR SS40 SS40 SS40	A NI=24 to 500 CTDI per serie 21.4mGy Destination PACS PACS PACS, TERARECO
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5	Description:			on-con, a	rterial, ven	ous)			number:			
6	PATIENT TYPE: Ad	ult					Volume	Weight				
7	INDICATIONS:						40-60kg	-	l Omnipad			
8	Cirrhosis, HCC evaluati					olization,	60-90kg	143-148n	nl Omnipa	aque 350		
9	ablation, cholangiocar	cinoma or l	iver lesion	of unknow	n origin		90-110kg	180-185n				
10 11	DATION DOCDADA	TION					>110kg:		nl Omnipa	aque 350		
11	PATIENT PREPARA NPO 2 hours prior.En		ter un te	time of co	and offere	arde 20g	Type Rate	Bolus tra 4-6ml/s.	скеа			
13	IV or greater. Oral co			une or sca	an anu anterw	arus. zog	<u> </u>		15 sec pos	t threshol	d delav	
14	COMMENTS:						Delay			t threshol		
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16	* ABD SAG ART MIP:						Thresh.	150 HU				
17	† If preplan predictio	on of tube	current h	its maxim	um, change :	lice	Saline		cy flush: 1			
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21	LABEL ABD SCOUT	VIEW Dual	kVp 120	mA 106	LENGTH 550mm	W,C		FOV 500	Destina PACS	tion		
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24	HELICAL ACQUISIT	IONS										
25	ACQ SERIES		Start			Stop		Length	kV	Tu	be curre	nt
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30	ACQUISITION SET	TINGS										
31	ACQ SERIES	Pitch	Rot. Time	Coverage	Detect.	Thick. †	Interval				CTDI pe	er series
32	All		0.5	57.6mm	96x0.6	2.5	2.5				10	mGy
34	RECONSTRUCTIO									-		
35	RECONSERIES	ACQ		kernel	Thick.	Interval	Direct.	w.c	DFOV	ADMIRE	Destina	tion
				40	2.5	2.5	HD->FT	360,60	BODY	?	PACS	
36	ABD AX	ABD AX			2.5	2.5	HD->FT	360,60	BODY	2	PACS	_
36 37	ABD AX ABD AX ART	ABD AX		40	2.5	2.5	HU-2FT	300,00				
37 38	ABD AX ART ABD AX ART THIN	ABD AX	Br Br	40	1	0.5	HD->FT	360,60	BODY	?		RARECON
37 38 39	ABD AX ART ABD AX ART THIN ABD COR ART		Br Br Br	40 40	1 2.5	0.5	HD->FT A -> P	360,60 360,60	BODY BODY	?	PACS	RARECON
37 38 39 40	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP *	ABD AX	Br Br Br	40 40 40	1 2.5 3	0.5 2.5 3	HD->FT A -> P R -> L	360,60 360,60 450,100	BODY BODY BODY	? ?	PACS	RARECON
37 38 39 40 41	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN	ABD AX ART ABD AX	Br Br Br Br Br	40 40 40 40 40	1 2.5 3 2.5	0.5 2.5 3 2.5	HD->FT A -> P R -> L HD->FT	360,60 360,60 450,100 360,60	BODY BODY BODY BODY	? ? ?	PACS PACS PACS	
37 38 39 40	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP *	ABD AX ART	Br Br Br Br Br Br	40 40 40	1 2.5 3	0.5 2.5 3	HD->FT A -> P R -> L	360,60 360,60 450,100	BODY BODY BODY	? ?	PACS	
37 38 39 40 41 42	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN ABD AX VEN THIN	ABD AX ART ABD AX	Br Br Br Br Br Br	40 40 40 40 40 40	1 2.5 3 2.5 1	0.5 2.5 3 2.5 0.5	HD->FT A -> P R -> L HD->FT HD->FT	360,60 360,60 450,100 360,60 360,60	BODY BODY BODY BODY BODY	? ? ?	PACS PACS PACS TERARE	
37 38 39 40 41 42 43 44 50	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN ABD AX VEN THIN	ABD AX ART ABD AX	Br Br Br Br Br Br	40 40 40 40 40 40	1 2.5 3 2.5 1	0.5 2.5 3 2.5 0.5	HD->FT A -> P R -> L HD->FT HD->FT	360,60 360,60 450,100 360,60 360,60	BODY BODY BODY BODY BODY	? ? ?	PACS PACS PACS TERARE	
37 38 39 40 41 42 43 43 44	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN ABD AX VEN ABD AX VEN ABD COR VEN 3D LAB REFORMAT	ABD AX ART ABD AX VEN None	Br Br Br Br Br Br	40 40 40 40 40 40 40 40	1 2.5 3 2.5 1 2.5	0.5 2.5 3 2.5 0.5 2.5	HD->FT A -> P R -> L HD->FT HD->FT A -> P	360,60 360,60 450,100 360,60 360,60	BODY BODY BODY BODY BODY	? ? ?	PACS PACS PACS TERARE	
37 38 39 40 41 42 43 44 50	ABD AX ART ABD AX ART THIN ABD COR ART ABD SAG ART MIP * ABD AX VEN ABD AX VEN ABD COR VEN	ABD AX ART ABD AX VEN None	Br Br Br Br Br Br	40 40 40 40 40 40 40 40 40 40	1 2.5 3 2.5 1	0.5 2.5 3 2.5 0.5 2.5	HD->FT A -> P R -> L HD->FT HD->FT A -> P	360,60 360,60 450,100 360,60 360,60	BODY BODY BODY BODY BODY	? ? ?	PACS PACS PACS TERARE	

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62	Brilliance 40:All	N/A	N/A	N/A	N/A	Brilliance 64 Brilliance 40	All	N/A	RC3/2-D		N/A	120
63	TCT 256:All	0.914	0.5 sec	80 mm	128x0.625	ICT 256	All		mAs 100	to 500	12.8mGv	120
64	101 250.741	0.514	0.5 500		12080.025	101 200	7.0	5111-10,	1100	10 500	12.01109	120
65	Siemens scanners											
66	Acg key	Pitch	Rot. Time	Coverage	Detector	Model	Acq	AEC Sett	ings		СТД	ку
67	Force 96:All	0.6	0.5	57.6mm	96x0.6	Force 96			60 mAs; C	ARE		120 (Semi)
68												
69	GE Scanners											
70	Acg key	Pitch	Rot. Time	Coverage	SFOV	Model	Acq	AEC Sett	ings		CTDI	KV
71	Lightspeed 16:All	N/A	N/A	N/A	N/A	Lightspeed 16	All	N/A	-			120
72	Discovery 64:All	0.984	0.5 sec	40 mm	Lg Body	Discovery 64	All	SmartM	A NI=24		21.4mGy	120
73	Revolution 256:All	0.992	0.5 sec	40 mm	Lg Body	Revolution 256	All	SmartM	A NI=17			120
74												
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82		Interval		Contig	Overlap	Contig	Overlap			Contig	Contig	Contig
				_						-	ABD	ABD
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83		MPRParent								THIN	THIN	THIN
84	Brilliance 64	Filter	SHARP (C)		SHARP (C)	SHARP (C)	SHARP (C)			N/A	N/A	N/A
85		Thickness	2.5	2.5	1.5	2.5	1.5			2.5	2.5	3
86			iDose 3	iDose 3	iDose 3	iDose 3	iDose 3			N/A	N/A	N/A
87	Brilliance 16	Filter	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
88		Thickness	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
89		iDose Level	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A



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5	Select scanner													
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7	Export standard exams													
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9	Test, summary, and validation macros													
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11	Validate protocol sheet format													
12	Validate contrast media													
13	Look for obscured text													
14	Update status table													
15	Write acquistion summary to Output													_
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17	Update summary sheet													
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19	Reformatting and repair macros													
20	Update section titles													
21	Copy to all protocol sheets													
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			StdAcqParams.Validate	HEAD AX	Illegal rotation time (0.9)		-		
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Dose estimation

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3		Manufacturer	Philips						_
4		Phantom	Body						_
5		Voltage	120	kV					_
6		Scan mode	Helical						_
9		Rotation time	0.5	sec					
10		Coverage	40	mm					
12		Helical pitch	0.984						
22		For Philips iCT							
23		mA mode	Manual						
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26		CTDI	21.6	mGy					
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Dose estimation

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2		Model		odel	iCT 256						
3		Manufacturer			Philips						
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8	Wate	er equivalent diameter			30.54	cm					
9		F	Rotation	time	0.5	sec					
10			Cove	rage	40	mm					
12			Helical p	oitch	0.984						
22		For Philips iCT									
23			mA m	ode	DoseRight						
25				DRI	16						
28			Actual (CTDI	12.7	mGy					
29		Actu	ual techn	ique	174.0	mAs					
30		Actual	tube cur	rent	342.5	mA					
31											
32	Pr	rescan estimated CTDI			16.8	mGy					
33		rescan estimated mAs			229.4	mAs					
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56											
110											
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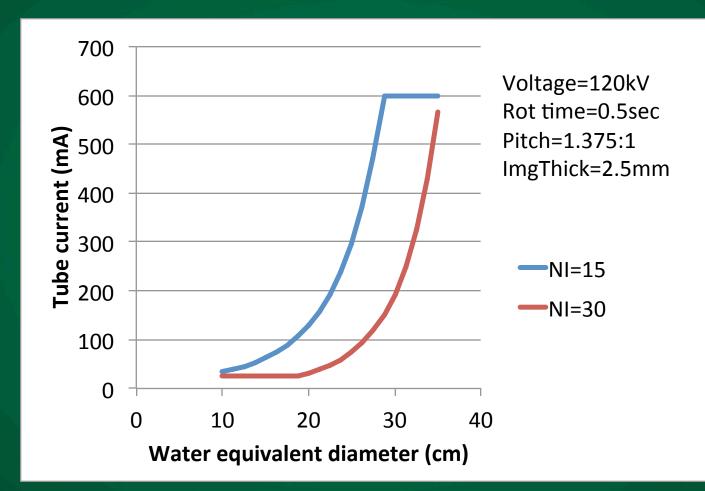
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Dose estimation

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6		Scan mod	e	Helical							
7		Patient siz	e N	ledium adul	t						
8	Wate	r equivalent diamete	er	30.54		cm					
9		Rotation tim	e	0.5		sec					
10		Coverag	ge	40		mm					
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35											
36		For GE Discovery/Li	ghtspe	ed/Optima							
37		mA mod	e	AutoMA							
38		Focal spo	ot	LFS							
39		Scan FO	V	LBody							
40		Noise inde	ex	20							
41		Thicknes	ss	3.75		mm					
42		Dose Reductio	n	30		%					
44		Rotation tim	ie	0.5		sec					
45		Tube currer	nt	164.56		mA					
46		Effective mA	s	83.62		mAs					
47		CTE	DI 🖌	6.71		mGy					
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49											
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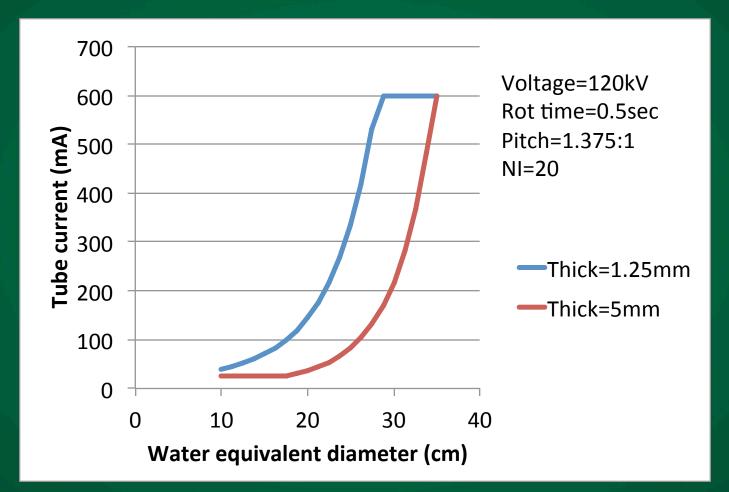
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Discovery AEC





Discovery AEC





Philips Brilliance 64

	DEPARTMENTS: HI	IGHLANI	DS, TKC, UH	, UHED	Effective Date 10/18/16 Reviewed By: Gauntt / Singh Created By: DMGauntt, RSJohnson, RMFowler						
	CHEST WITH CT CHEST WITH CO	ONTRAS	-		Scanner model: Brilliance 64 Protocol number: Chest 3						
PATIENT TYPE: A						Weight Contrast Volume					
MULTIPLANE F	REFORMATS										
MPR SERIES	Recon Series	Orient.	Thick.	Interval	Direct.	C,W	Length	Mode	Destination		
CHEST COR	CHEST AX THIN	COF	2.5	2.5	A -> P	60,360	CHEST	AVG	PACS		

DEPARTMENTS: HIGHLANDS, TKC, UH, UHED	Effective Date 10/18/16 Reviewed By: Gauntt / Singh Created By: DMGauntt, RSJohnson, RMFowler						
Protocol: CHEST WITH (NODULE)	Scanner model: Brilliance 64						
Description: CT CHEST WITH CONTRAST	Protocol number: Chest 5						
PATIENT TYPE: Adult	Weight Contrast volume						

MULTIPLANE REFORMATS MPR SERIES Thick. **Recon Series** Orient. Interval Length Mode Destination Direct. C,W CHEST COR CHEST AX THIN COR 1.5 60,360 AVG 1.5 A -> P CHEST PACS COR CHEST COR MIP CHEST AX THIN A -> P 60,360 CHEST MIP PACS 5 5



GE Discovery 64

	DEPARTMENTS: H		Effective Date 10/18/16 Reviewed By: Gauntt / Singh Created By: DMGauntt, RSJohnson, RMFowler								
	CHEST WITH CT CHEST WITH C	ONTRAS	Scanner model: Discovery 64 Protocol number: Chest 3								
PATIENT TYPE: A	Adult				Weight	eight Contrast Volume					
MULTIPLANE R	EFORMATS										
MPR SERIES	Recon Series	Orient.	Thick.	Interval	Direct.	WW,WL	Length	Mode	Destination		
CHEST COR	CHEST AX THIN	COR	2.5	A -> P	360,60	CHEST	AVG	PACS			

	Effective Date 10/18/16 Reviewed By: Gauntt / Singh
DEPARTMENTS: HIGHLANDS, TKC, UH, UHED	Created By: DMGauntt, RSJohnson, RMFowler
Protocol: CHEST WITH (NODULE)	Scanner model: Discovery 64
Description: CT CHEST WITH CONTRAST	Protocol number: Chest 5
PATIENT TYPE: Adult	Weight Contrast volume

MULTIPLANE REFORMATS													
MPR SERIES	Recon Series	Orient.	Thick.	Interval	Direct.	WW,WL	Length	Mode	Destination				
CHEST COR 1_25	CHEST AX THIN	COR	1.25	1.25	A -> P	360,60	CHEST	AVG	PACS				
CHEST COR MIP 5	CHEST AX THIN	COR	5	5	A -> P	360,60	CHEST	MIP	PACS				



	CT Protocol Manager (ve	rsion 0.9.3 beta)	
NP6CT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/NP6CT1/161102_NP6CT1/spr)		Database 🗘	
Selection: NP6CT1 (Nov 2, 2016) NP6CT1	Known scanners	Import selected scanners	Export recon parameters
	ACTONCT1 AIFPET1	Delete selected scanners	Export acq parameters
	AIFPET2		Validation/Verification
	CHERCT1 HCT1	Edit scanner list	Validate recon labels
	HCT2	Select all scanners	
	LCT1 NP6CT1	Select no scanners	Verify standard exams
	NP6CT2	Protocol comparison	_
	NP6CT3 NPERCT1	Scanner subset ALL	3
	NPERCT2	Exam category BODY	
	TKCCT40 TKCFORCE	Standard exam name ABD CTA 2 PHASE	
	TKCHDCT1		
	TKCHDCT2 WICCT	Group by exam	
0		Group by exam	
TKCHDCT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/TKCHDCT1/161104 TKCHDCT1/protocols)	Topograms No exams found		
Selection: TKCHDCT1 (Nov 4, 2016) TKCHDCT1	into examp round		•



	C	CT Protocol Manager (ve	rsion 0.9.3 beta)			
Right-click to import files		_	Database	\$		
		Known scanners	lucu aut a class			
		ACTONCT1	Import select	Export recon paran	neters	
		AIFPET1	Delete select	ed scanners	Export acq param	eters
		AIFPET2 CHERCT1	Edit scar	apor list	Validation/Verification	on
		HCT1			Validate recon la	
		HCT2	Select all	scanners		
		LCT1	Select no	scanners	Verify standard ex	xams
		NP6CT1 NP6CT2	Protocol comparison			
		NP6CT3				
		NPERCT1	Scanner subset ALL		\$	
		NPERCT2	Exam category BOD	Y	٥	
		TKCCT40 TKCFORCE	Standard exam name ABD	CTA 2 PHASE	\$	
		TKCHDCT1				
		Open Scan		15	•	
	Scanner ID	Directory	Most recent directory	y exam		
• ight-click to import files	NP6CT1	161102_NP6CT1	ᅌ Nov 2, 2016			
	TKCHDCT1	161104_TKCHDCT1	ᅌ Nov 4, 2016			
	Includes	vendor protocols				
	ОК	Revert Cance	2			



с [.]	T Protocol Manager (ve	rsion 0.9.3 beta)	
NP6CT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/NP6CT1/161102_NP6CT1/spr) No nodes selected	Known scanners	Database	
NP6CT1 (Nov 2, 2016)	ACTONCT1	Import selected scanners	Export recon parameters
► GROUP: Abdomen	AIFPET1	Delete selected scanners	Export acq parameters
GROUP: Ax	AIFPET2	Delete selected scaliners	
▶ ■ GROUP: Ax (V2.5b8)	CHERCT1	Edit scanner list	Validation/Verification
GROUP: CTA	HCT1	Calast all assumers	Validate recon labels
🕨 🚞 GROUP: Ear	HCT2	Select all scanners	Matter dand man
🕨 🚞 GROUP: Head	LCT1 NP6CT1 (Nov 2, 20	Select no scanners	Verify standard exams
🕨 🚞 GROUP: Neck	NP6CT2	Protocol comparison	
🕨 🚞 GROUP: Orthoped	NP6CT3		
🕨 🚞 GROUP: Pelvis	NPERCT1	Scanner subset ALL	
🕨 🚞 GROUP: Physics	NPERCT2	Exam category BODY	○
🕨 🚞 GROUP: Spine	TKCCT40	Standard array ages APD CTA 2 PUASE	
🕨 🚞 GROUP: Sv	TKCFORCE TKCHDCT1 (Nov 4,	Standard exam name ABD CTA 2 PHASE	
🕨 🚞 GROUP: Thorax	TKCHDCT1 (NOV 4, TKCHDCT2	Display mode Topograms	○
	WICCT	Group by exam	
		Group by exam	
TKCHDCT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/TKCHDCT1/161104_TKCHDCT1/protocols) No nodes selected TKCHDCT1 (Nov 4, 2016) CROUP: abdomen / adult GROUP: abdomen / pediatric GROUP: chest / adult GROUP: chest / pediatric GROUP: chest / pediatric GROUP: head / pediatric GROUP: hower_extremity / adult GROUP: miscellaneous / adult GROUP: orbit / adult GROUP: pelvis / adult GROUP: pelvis / adult GROUP: shoulder / adult	Topograms No exams found		



	CT Protocol Manager (ve	rsion 0.9.3 beta)		
NP6CT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/NP6CT1/161102_NP6CT1/spr) No nodes selected		Dat	tabase ᅌ	
NO HOUS SElected	Known scanners	Import	t selected scanners	Export recon parameters
The GROUP: Abdomen	ALFPET1	Delete	e selected scanners	Export acq parameters
EXAM: 400+ ABDOMEN	AIFPET2	Delete	selected scalliers	
EXAM: AAA ABD.	CHERCT1	Ec	dit scanner list	Validation/Verification
fileName=Abdomen_Multi_1216_usr.proc	HCT1	6-1	a at all a service of	Validate recon labels
ACQ_SERIES: Scout acquisitions	HCT2	Sel	ect all scanners	
ACQ_SERIES: Axial acquisitions (LOCATOR)	LCT1 NP6CT1 (Nov 2, 20	Sel	ect no scanners	Verify standard exams
ACQ: Acq 1 (axial) (LOCATOR)	NP6CT1 (NOV 2, 20 NP6CT2	Protocol comparison		
🔻 🚞 ACQ: Acq 2 (axial)	NP6CT3		C	
🔻 🚞 Summary	NPERCT1	Scanner subset	ALL	
CTDIvol=1.9x30	NPERCT2	Exam category	BODY	O
Collimation=4x3=12.0mm	TKCCT40			
DLP=2.3x30		Standard exam name	ABD CTA 2 PHASE	
Direction= <null></null>	TKCHDCT1 (Nov 4, TKCHDCT2	Display mode	Topograms	
First recon filter=Standard (B)	WICCT			
First recon label=			Group by exam	
First recon thickness=12	Topograms			
Length=set_by_spr	No exams found			
Resolution=standard				
Rotation time=0.75				
Table increment=0.0				
Tube voltage=120				
kV settings=120				
mA settings=30 mAs (60 mA) Manual				
Parameters				
Miscellaneous				
RECON:				
Summary recon-thickness <image_thickness> = 12</image_thickness>				
recon-increment <image_interval> =12.0</image_interval>				
filter-ui <filter_kernel> = 12.0</filter_kernel>				
recon-field-of-view <display fov=""> =400</display>				
$mpr-field-of-view-x < DISPLAY_WIDTH> = 400$				
mpr-field-of-view-x <disrlat_width> =400</disrlat_width>				
TKCHDCT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/TKCHDCT1/161104_TKCHDCT1/protocols) No nodes selected				
TKCHDCT1 (Nov 4, 2016)	0			

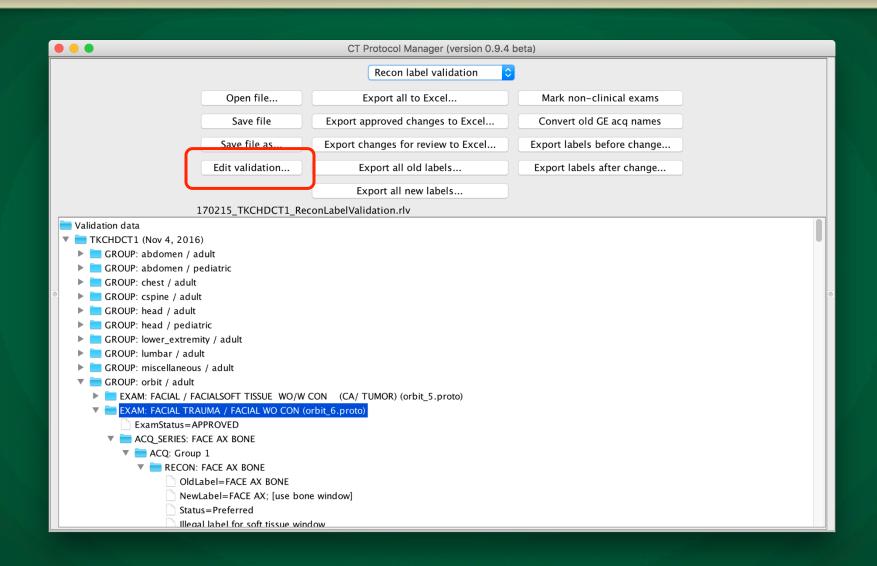


				CT	Protocol M	anager (ve	rsion 0.9.3	beta)									
NP6CT1 /Users/dgauntt/Documents/UAB/Se							Exam deta	ils		\$							
vice/Clinical/Protocol Support/CT/CT			5	canner	·	NP6CT1 (N	ov 2, 2016)						K			
canners/NP6CT1/161102_NP6CT1/			C	Group	(GROUP: Abdomen											
lo nodes selected			E	Exam pr	rotocol 🔲	exam: Aaa	ABD.							<			
NP6CT1 (Nov 2, 2016)	Topograms																
🔻 🔜 GROUP: Abdomen	NP6CT1 / /	Abdomen / A	AA ABD). ——													
EXAM: 400+ ABDOMEN	Set o	ptions															
fileName=Abdomen_Mu	Label		/iew	kV	′ m	IA L	ength(mm)		FOV(r	nm)	WI	_/WC	\ \	WW	De	stination	
ACQ_SERIES: Scout acqu	Acq 0 (sur	view)	180		120	50	550.0			500		50		120	0 Lo	cal, TERARECO	N
🔻 🚞 ACQ_SERIES: Axial acqu																	
ACQ: Acq 1 (axial) (I Acquisitions																	
🔻 🚞 ACQ: Acq 2 (axial)	NP6CT1 / /	Abdomen / A	AA ABE).													
🔻 🚞 Summary	Set	options															
CTDIvol=1.9	Label		kV	Pitch	Rotation	Coverag	Coverage Al		EC settings		Resolution		Scan FOV		Directio	n Length	CTDIvol
Collimation=4 DLP=2.3x30	Acq 1 (axial) (LOCATOR)) 120	0 mm	1 – s	4x3=12	4x3=12.0mm 30 m		As (60 mA) Ial		sta	ndard	-		-	set_by_spr	1.9
Direction= <n First recon filt</n 	Acq 2 (axial)		120	0 mm	1 – s	4x3=12.0mm) mAs (60 mA) anual		sta	ndard	-		_	set_by_spr	1.9x30
First recon lal	Acq 3 (helix)		120	0.020	3 0.75 s	5 s 16x0.75=12.0		150 mAs (188 mA)		A) standard		_		_	519.8944	10.4	
Length=set_b	Acq 5 (iteli	x)	120 0.93		0.753	10x0.75-12.01111		ACS/Z-DOM		standard					515.8544	10.4	
Resolution=s1																	
Rotation time	Reconstruct	ions Abdomen / A															
Table increm		_).													
Tube voltage	Set options																
kV settings=1	Label	Acquisition		C	Drientation	Filter	Thickne	ess In	terval	Length	FOV	WL/WC	ww	Direct	ion	Recon settings	5 Destinat
mA settings=	LOCATOR	Acq 1 (axia	I) (LOC	AT a	axial	Standard	12		12.0	12.0	400	40	400	NotSu	ippor	iDose 3	Local, T
Miscellaneous		Acq 2 (axia	l)	a	axial	Standard	12	:	12.0	12.0	400	40	400	NotSu	ippor	iDose 3	Local, T
RECON:		Acg 3 (heli:	()	a	axial	Sharp (C)	2		1.0	500.0	400	40	400	NotSu	ippor	iDose 3	Local, T
Summary		• •															
recon-thickne	Contrast ag	ents															
recon-increm	NP6CT1 / /	Abdomen / A	AA ABE)													
		Set options															
KCHDCT1	Label				Contrast a	aent											
/Users/dgauntt/Documents/UAB/Se	Acq 1 (axia	I) (LOCATOR		None													
vice/Clinical/Protocol Support/CT/CT	Aco 2 (axia				agent=CO	NTRAST' t	nreshhold=	150 [.] t	trianer	=Iniectio	nn: tv	ne=auto	n del	av=1 0)		

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ro 🕒 🕒 💭	T Protocol Manager (ve	rsion 0.9.3 beta)	
NP6CT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/NP6CT1/161102_NP6CT1/spr) No nodes selected	Known scanners	Database ᅌ	
NP6CT1 (Nov 2, 2016)	ACTONCT1	Import selected scanners	Export recon parameters
🕨 🚞 GROUP: Abdomen	AIFPET1	Delete selected scanners	Export acq parameters
Final Croup: Ax	AIFPET2		Validation /Verification
▶ GROUP: Ax (V2.5b8)	CHERCT1 HCT1	Edit scanner list	
GROUP: CTA	HCT2	Select all scanners	Validate recon labels
GROUP: Ear	LCT1	Calact no common	Verify standard exams
GROUP: Head GROUP: Neck	NP6CT1 (Nov 2, 20	Select no scanners	
GROUP: Orthoped	NP6CT2 NP6CT3	Protocol comparison	
GROUP: Pelvis	NPERCT1	Scanner subset ALL ᅌ	
GROUP: Physics	NPERCT2	Exam category BODY	
GROUP: Spine	TKCCT40		
Final States of the second sec	TKCFORCE TKCHDCT1 (Nov 4,	Standard exam name ABD CTA 2 PHASE	
Final GROUP: Thorax	TKCHDCT1 (NOV 4, TKCHDCT2	Display mode Topograms 🗘	
	WICCT	Group by exam	
TKCHDCT1 (/Users/dgauntt/Documents/UAB/Service/Clinical/Protocol Support/CT/CT Scanners/TKCHDCT1/161104_TKCHDCT1/protocols) No nodes selected TKCHDCT1 (Nov 4, 2016) TKCHDCT1 (Nov 4, 2016) GROUP: abdomen / adult GROUP: abdomen / pediatric GROUP: chest / adult GROUP: chest / pediatric GROUP: chead / adult GROUP: head / adult GROUP: head / pediatric GROUP: lower_extremity / adult GROUP: lower_extremity / adult GROUP: inscellaneous / adult GROUP: orbit / adult GROUP: pelvis / adult GROUP: shoulder / adult GROUP: shoulder / adult	Topograms No exams found		0







• •						CT Protocol Mar	ager (v	ersion 0.9.	4 beta)						
						Exam deta			٥						
						Reco	ı label v	alidation							
		Exam protocol	selection												
		Scanner		TKCHDCT1				Make all data rows editable							
		Group		orbit / adult				I	Refresh all	exams					
	opogr KCHI	Exam Exam status		FACIAL TRAUN	MA / FA	ACIAL WO CON									
		Exams to review	N .												
	abel		v	ALL		`		kip exams	s without e	rrors					ion
	ACE	Previous exa	am Mar	k as approved		Mark for review	Do	o not revie	ew N	ext exa	ım				
E	ACE	-Validation resu	lts												1
		Old label		Changed	Duplicate	Label	Status	Valida	tion						
	quisi KCHI	FACE SCOUT / Group 1													
•	Set	FACE SCOUT	Preferred	-			·			Prefer	red	No errors found			
	abel	FACE AX BONE													СТ
F	ACE /	FACE AX BONE	Deprecated	Router, TERAR	RECON	FACE AX		Changed		Prefer	red			ft tissue window	4
Re	cons		· · · · · · · · · · · · · · · · · · ·				wj	<u> </u>						6	
T	KCHI Set c	FACE COR	Preferred	Router		FACE COR [use bone windo	w]			Prefer	red	illegai	label for so	ft tissue window	
L	abel	FACE SAG	Preferred	Router		FACE SAG [use bone windo	w]			Prefer	red	Illegal	label for so	ft tissue window	
E.	ACE /	FACE AX SOFT	Preferred	TERARECON		FACE AX SOFT [use soft window	v]			Prefer	Preferred		label for bo	ne window):Vol
E.	ACE S ACE S ACE A	AG FACE A	X BO Grou.	SAGITTAL	-	1.600000	1.000	0	32.0	000	35	300	NotSuppor		
F.	ACE A	AX SOFT		Axial	Soft	0.625	0.31	2 0 to 6	1.7 2	20	150	20	NotSuppor	. AsirSlice SS40:S	lice



	Database 🗘	
Known scanners	Import selected scanners Export recon parameter	ers
ACTONCT1 AIFPET1	Delete selected scanners Export acq parameter	rs
AIFPET2 CHERCT1	Edit scanner list	
HCT1 HCT2	Select all scanners Validate recon labels	÷
LCT1	Select no scanners	IS
NP6CT1 NP6CT2	Protocol comparison	
NP6CT3 NPERCT1	Scanner subset ALL	
NPERCT2	Exam category BODY	
TKCCT40 TKCFORCE	Standard exam name ABD CTA 2 PHASE	
TKCHDCT1 (Nov 4, 2016) TKCHDCT2	Display mode Topograms	
WICCT	Group by exam	
Topograms		
No exams found		



	CT Protocol Manager (version 0.9.4 beta)	
Known scanners ACTONCT1 AIFPET1 AIFPET2 CHERCT1 HCT1 HCT2 LCT1 NP6CT1 NP6CT2 NP6CT3 NPERCT1 NPERCT2 TKCCT40 TKCFORCE TKCHDCT1 (Nov 4, 2016) TKCHDCT2 WICCT	CT Protocol Manager (version 0.9.4 beta) Database Import selected scanners Delete selected scanners Edit scanner list Select all scanners Protocol comparison Message Id of 272 protocols tested 14 of 272 protocols tested 14 of 14 protocols mismatch 0 of 14 protocols mismatch 0 of 14 protocols match 25 missing protocols 224 non-standard protocols with warning 1 undefined standard exams See difference tab for details	Export recon parameters Export acq parameters Validation/Verification Validate recon labels Verify standard exams

KCHDCT1 /Users/dgauntt/Documents/UAB/Service/Clinical/Prot	Differences
Users/dgaunt/Documents/UAB/Service/Clinical/Prot col Support/CT/CT canners/TKCHDCT1/161104_TKCHDCT1/protocols) to nodes selected TKCHDCT1 (Nov 4, 2016) TKCHDCT1 (Nov 4, 2016) #ABD SAG ART-2 #ABD SAG ART-2 #ABD COR #ABD COR ART ABD COR ART ABD COR THICK ABD COR THIN ABD SAG ARTERIAL ABD COR VEN ABD SAG ART ABD SAG ART ABD SAG ART ABD SAG ART CAP COR 1 CHEST COR CHEST COR 2X2 CHEST COR 2X2 CHEST COR GILEAD	 Standard exam validation TKCHDCT1 (Nov 4, 2016) Standard exams abdomen / adult/ABD/PEL ROUTINE: comparison to standard exam ABD/PEL ROUTINE abdomen / adult/ABD/PEL WITH LOW DOSE: comparison to standard exam ABD/PEL WITH LOW DOSE abdomen / adult/CAP AAA: comparison to standard exam CAP AAA abdomen / adult/CAP WITH: comparison to standard exam CAP AAA abdomen / adult/CAP WITH: comparison to standard exam GI BLEED 3 PHASE abdomen / adult/CAP KENAL STONE: comparison to standard exam GI BLEED 3 PHASE abdomen / adult/CAP KITH: comparison to standard exam RENTERCORAPHY abdomen / adult/CAP WITH: comparison to standard exam CAP AAA chest / adult/CAP WITH: comparison to standard exam CAP WITH chest / adult/CAP WITH: comparison to standard exam CAP WITH chest / adult/CAP WITH: comparison to standard exam PELVIS WITH pelvis / adult/PELVIS WO: comparison to standard exam PELVIS WITH pelvis / adult/PELVIS WO: comparison to standard exam PELVIS WITH 23 standard exams 23 standard exams 23 standard exams Undefined standard exams Undefined standard exams

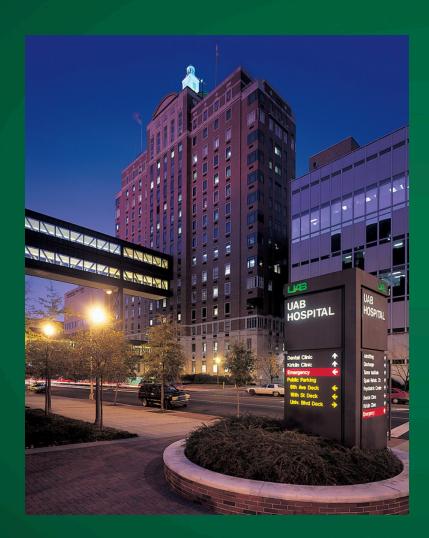
LABMEDICINE

CT Protocol Review

Do it!
Dose, image, workflow
Know your scanners
Validate, then verify!



CT Protocol Review



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