

**CHEST CT PROTOCOL FOR MULTIPLE DETECTOR ROW SCANNERS**

#	Study	Algorithm	Slice Thickness (mm) Interval & Sequence	Contrast Flow Rate if Excellent IV Line (cc / sec)	Contrast Volume for Avg Size Patient (cc)	Scan Initiation Time (sec)	(OR)		Field Size	Comments
							Smart Prep Over	Oral Esophageal Contrast		
1.	<b>Standard Contrasted Chest</b>	Soft tissue	5x5 arch → dome 5x5 thru adrenals 5x5 apex → arch + 2 cm	3 cc/sec	100 cc Chase with Saline	20 sec	Aorta	+ +	As protocolled or may cut off some chest wall in lung cancer staging. Show all chest wall for breast cancer, lymphoma	Begin 2 <sup>nd</sup> section at dome of diaphragm 65 seconds after beginning of injection on scanner 4, 75 seconds on scanner 2, 90 seconds after on Toshiba.
2.	<b>Standard Contrasted Chest &amp; Abdomen</b>		5x5 arch → dome 5x5 thru abdomen 5x5 apex → arch + 2 cm	3 cc/sec	100 cc Chase with Saline	20 sec	Aorta	+ + for tumor abdomen	As protocolled or may cut off some chest wall in lung cancer staging. Show all chest wall for breast cancer, lymphoma	Begin second section at dome of diaphragm 65 seconds after beginning of injection on scanner 4, 75 seconds on scanner 2, 90 seconds after on Toshiba.
3.	<b>Standard Contrasted Chest, Abdomen, &amp; Pelvis</b>	Soft tissue	5x5 arch → dome 5x5 to crests 5x5 apex → arch + 2 cm 5x5 pelvis	3 cc/sec	100 cc Chase with Saline	20 sec	Aorta	+ + for tumor abdomen	As protocolled or may cut off some chest wall in lung cancer staging. Show all chest wall for breast cancer, lymphoma	Begin 2 <sup>nd</sup> section at dome of diaphragm 65 seconds after beginning of injection on scanner 4, 75 seconds on scanner 2, 90 seconds after on Toshiba. Pause 90 seconds before pelvis.
4.	<b>Aortic Dissection</b>	Soft tissue	5x5 apex → dome without IV  <hr/> <ul style="list-style-type: none"> <li>▪ 2x2 or 2.5x2.5 symphysis → base of neck</li> </ul>	3 - 4 cc/sec	120 cc Chase with Saline		Aorta	— —	Do not need to include entire body wall.	<ul style="list-style-type: none"> <li>▪ 1 Breath hold</li> <li>▪ Over 300 lbs – Toshiba preferred</li> <li>▪ Do Not use Scanner 4</li> </ul>

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5.	<b>Trauma Chest</b>	Soft tissue	5x5 apex → dome then... 5x5 apex → liver inferior tip	3 - 4 cc/sec	100 cc Chase with Saline		Aorta	Surgeon's discretion	As appropriate.	<ul style="list-style-type: none"> <li>▪ No NG tube if possible.</li> <li>▪ Go through liver even if abdomen not ordered.</li> <li>▪ Sagittal &amp; Coronal reconstructions of longer pass.</li> <li>▪ Do not use Scanner 4</li> </ul>
	<b>Trauma Chest (cont'd)</b>									
6.	<b>Trauma Chest, Abdomen, &amp; Pelvis</b>	Soft tissue	5x5 apex → dome then... 5x5 apex → symphysis	3 - 4 cc/sec	100 cc Chase with Saline		Aorta	Surgeon's discretion	As appropriate.	<ul style="list-style-type: none"> <li>▪ No NG tube if possible.</li> <li>▪ Sagittal &amp; Coronal reconstructions of longer pass.</li> <li>▪ Do not use Scanner 4</li> </ul>
7.	<b>Question Subclavian, Brachiocephalic, or SVC Obstruction</b>	Soft tissue	3x3 or 3.75x3.75 base → apex Wait 30 seconds and repeat carina → apex .	3 - 4 cc/sec	100 cc Chase with Saline	30 sec	Aorta	— —	May cut off some of the body wall.	<ul style="list-style-type: none"> <li>▪ Need two passes to differentiate flow void from filling defect.</li> <li>▪ IV line in good arm</li> </ul>
8.	<b>Chest after dual phase abdomen</b>	Soft tissue	5x5 apex → base	Per abdominal images	Per abdominal images	Per abdominal images	Per abdominal images	+ +	See #1 above	
9.	<b>Chest with oral and esophageal only</b>	Soft tissue	5x5	-----	-----	-----	-----	+ +	See #1 above	
10.	<b>Chest after neck if &lt;175 cc for neck</b>	Soft tissue	5x5 arch → dome, 5x5 through adrenals 5x5 apex → arch + 2 cm	3 cc/sec	70 cc Chase with Saline	20 sec	Aorta	+ + If patient can swallow sitting	See #1 above	<ul style="list-style-type: none"> <li>▪ If &gt; 175 cc for neck or if serum creatinine &gt; 1.2 mg/dl, do #9.</li> </ul>

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11.	<b>Pulmonary Embolism</b>  (Technology chooses)	Soft tissue	1x1 or 2x1 or 2.5x1, Depending upon scanner and patient size (thicker section for bigger patient) base of chest → base of neck  <b>Also construct as 5x5</b>	4 cc/sec	130 cc Chase with Saline		Pulmonary Artery	— —	Cut off body wall / for thin sections  <b>Include entire body wall for 5x5</b>	<ul style="list-style-type: none"> <li>Great IV, cooperative patient, not pregnant.</li> <li>Above 300 lbs, prefer Toshiba</li> <li>Coronal reconstructions</li> <li>If legs for Deep Vein Thrombosis ordered: 5x5 knees→ crests starting 3 minutes after beginning of injection.</li> <li>Do Not use Scanner 4</li> </ul>
			<b>(A)</b>							
	or									
	<b>(B)</b>	Soft tissue	1x1 or 2x1 dome to roots of great vessels, then base of chest to base of neck on Toshiba.	4 cc/sec	150 cc Chase with Saline		Pulmonary Artery	— —	Cut off body wall / for thin sections  <b>Include entire body wall for 5x5</b>  <b>(Large field just to find rare breast mass, etc.)</b>	<ul style="list-style-type: none"> <li>Questionable IV, question whether patient can hold breath. Mechanical ventilation, not pregnant.</li> <li>Above 300 lbs, prefer Toshiba</li> <li>Coronal reconstructions of better pass</li> <li>If legs for Deep Vein Thrombosis ordered: 5x5 knees→ crests starting 3 minutes after beginning of injection.</li> <li>Do Not use Scanner 4</li> </ul>
			2.5x1 dome to roots of great vessels, then 2.5x1 back to dome. Then 5x5 apex → arch, 5x5 bases on GE  <b>Also 5x5</b>							

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12.	<b>Pulmonary Embolism – pregnant women</b>	Soft tissue	1x1 or 2x1 or 2.5x1, depending upon patient size (thicker section for bigger patient) and scanner. From DOME to apex. NO SECOND PASS.  <b>Construct as 5x5 as well.</b>	4 cc/sec	130 cc Chase with Saline		<b>Pulmonary Artery</b>	— —	As protocolled, or Cut off body wall for thin sections Include entire body wall for 5x5	Coronal reconstructions.
13.	<b>Hemoptysis</b>	Soft tissue	1x1 or 2x1 or 2.5x1, depending on size and scanner <b>Construct as 5x5 as well.</b> From L2 → base of neck.	4 cc/sec	130 cc Chase with Saline	-----	Aorta	— —	As protocolled or include 1 cm chest wall soft tissue outside of ribs. Include entire chest wall for 5x5	<ul style="list-style-type: none"> <li>▪ 1 Breath hold</li> <li>▪ If prior chest radiograph or scout view shows suspicious cavity or mass or consolidation, repeat cuts <u>through this area only</u> after 20 second delay</li> </ul>
14.	<b>Pulmonary Veins for electo-physiologic ablation</b>	Soft tissue	2x1 or 2.5x1 depending on patient size and scanner Dome → apex	3 cc/sec	130 cc Chase with Saline		Aorta	— —	As protocolled or cut off body wall	<ul style="list-style-type: none"> <li>▪ 1 Breath hold</li> <li>▪ If scout or CxR normal. May do without contrast</li> <li>▪ Cardiologists want 3-dimensional reconstructions. Send to the chest room Vitrea or Vitrea next to chest room.</li> </ul>

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						Scam Initiation Time (sec)	Smart Prep Over			
15.	HRCT	HR	1 or 1.25mm Q 10 mm prone inspiration -----	-----	-----	-----	-----	+	As protocolled or cut off body wall. Unless you absolutely have to use another scanner for some reason <u>DO ALL</u> <u>HRCT's on</u> <u>Scanner 2</u>	If patient cannot lie prone, do in whatever position patient can lie.  ▪ Doctor may protocol differently, for example skipping exhalation images
		HR	1 or 1.25mm Q 20 mm prone expiration -----			Unless you absolutely have to use another scanner for some reason <u>DO ALL</u> <u>HRCT's on</u> <u>Scanner 2</u>	Unless you absolutely have to use another scanner for some reason <u>DO ALL</u> <u>HRCT's on</u> <u>Scanner 2</u>	Unless you absolutely have to use another scanner for some reason <u>DO ALL</u> <u>HRCT's on</u> <u>Scanner 2</u>		
		Soft tissue	Either 1 or 9 as protocolled.							
16.	Trachea	Soft tissue	0.5 – 1 mm thick, 0.5 mm interval from Hyoid (approx C4) to 2 cm below carina insp & exp  -----  <b>In addition construct inspiratory as 5x5, with a field to include both lungs.</b>	-----	-----	-----	-----	-----	~ = 20 cm	Insp ~ = 170 mAs 120 kVp  Exp = 40 mAs 120 kVp ▪ Exp done while patient exhales, bearing down thru entire acquisition. Start scanning as patient begins to exhale. ▪ Practice in advance with patient. ▪ Send to Vitrea