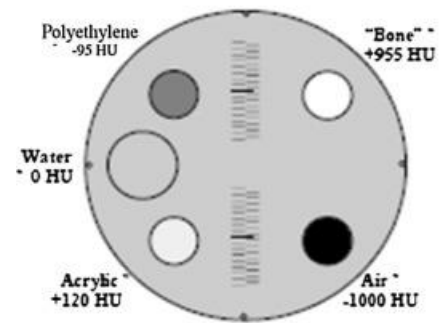
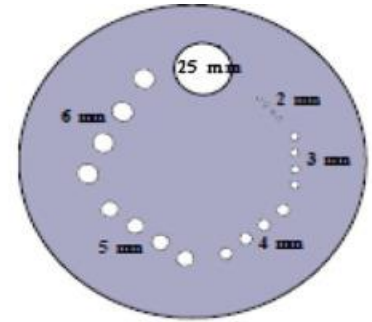


Improving the Impact of the QIBA CT Small Lung Nodule Profile – Panel Discussion

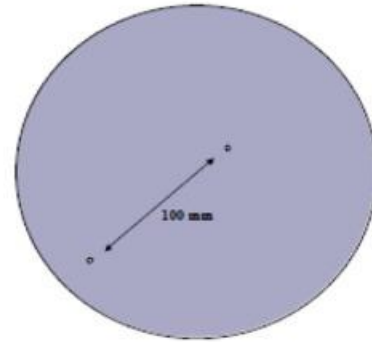
Panelist Raja Subramaniam, PhD
Mount Sinai Medical Center



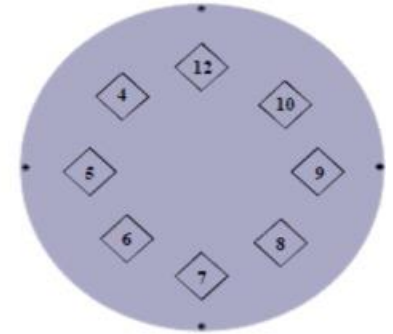
(a)



(b)



(c)



(d)

ADULT LUNG CANCER SCREENING TECHNICAL SPECIFICATIONS		
Adult Chest for Lung Cancer Screening		
Technique Parameters (Items in bold are designation requirements. Failure to meet these requirements will result in deferral of Designation)		
Scan Parameter	Parameter Specification	Comments
Scanner type	multidetector helical (spiral) detector rows ≥ 4	non helical and single detector scanners are not appropriate for lung cancer screening CT
Required Series		No IV or oral contrast should be used
kV	100 to 140 acceptable for standard sized patient	Should be set in combination with mAs to meet CTDIvol specifications
mAs	Should be set in combination with kVp to meet CTDIvol specifications.	The mAs selected should result in diagnostic-quality images of the lungs Should take into account the patient's body habitus and age, slice width, kVp, and unique attributes of the scanner and acquisition mode
Max. Tube Rotation Time	≤ 0.5 seconds	0.75 second is acceptable if a single breath hold ≤ 15 seconds can be achieved for scanners that cannot perform 0.5 second rotation time
Pitch (IEC Definition)	Between 0.7 and 1.5	Should be set with other technical parameters to achieve single breath hold scan and CTDIvol specifications
Respiration	single breath hold full inspiration	
Scan duration/ Acquisition time	≤ 15 seconds	Time to acquire the scan though entire lungs within a single breath
Reconstructed image width (nominal width of reconstructed image along z-axis)	≤ 2.5 mm	≤ 1 mm preferred
Reconstructed image spacing (Distance between two reconstructed images)	\leq slice width	Overlapping reconstructions are not necessary but are acceptable

Reconstruction algorithm	Standard (mediastinum and lung) High spatial frequency (lung parenchyma) is optional.	Consistent with diagnostic CT studies; Iterative reconstruction algorithms encouraged
CTDIvol	≤ 3 mGy for standard size patient	CTDIvol for a standard sized patient using the 32cm diameter CTDI phantom; standard sized patient is defined as 5'7" and 154 pounds
Adjustment in scanner output for patient size	manual or automatic method (both are acceptable)	(1) manual adjustments in mAs for different sized patients or (2) use of automatic exposure controls including tube current modulation (CareDose4D, AutomA, etc.) and automated kV selection tools (CarekV)
Anatomical Coverage/Display		
Scan Parameter	Parameter Specification	Comments
Anatomical Coverage	Lung apex through the lung bases	The site should attempt to limit coverage to no more than 2 cm below the costophrenic sulci. Adrenals do not need to be imaged.
Gantry tilt	None	
Display FOV	1 cm beyond the rib cage	Does not need to include entire chest wall thickness
Display window width / level	Lung and Mediastinum	Lung: Allow adequate visualization of the lung parenchyma and intraparenchymal airways and vessels. WW = 1200 – 1500 HU WL = -550 – -700 HU Mediastinum: Allow visualization of the mediastinal and hilar vessels and allow distinction of the chest wall musculature from subcutaneous fat. WW = 250 – 450 HU WL = 40 – 80 HU
Additional refomats	MPR and MIP are encouraged.	MPR-Multiplanar reformation; MIP-Maximum intensity projection
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