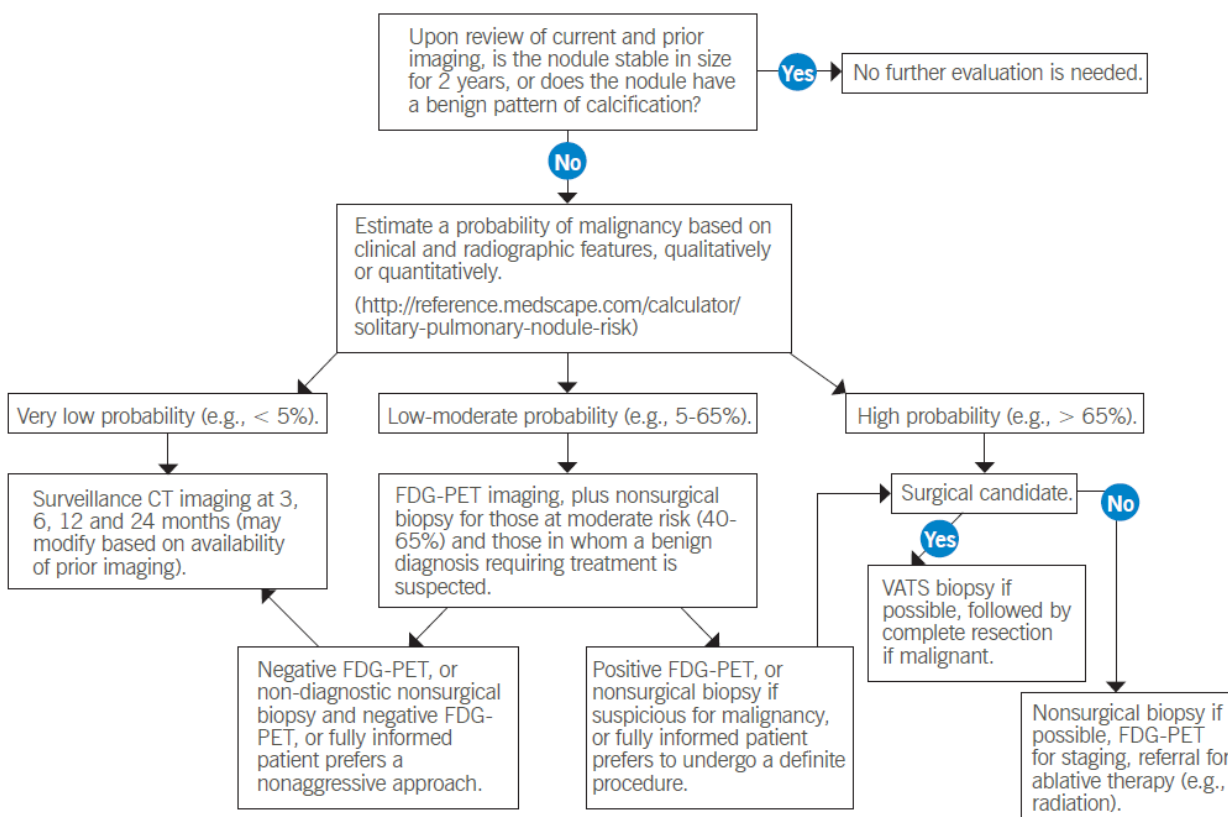


Components Necessary for High-Quality Lung Cancer Screening

American College of Chest Physicians and American Thoracic Society Policy Statement

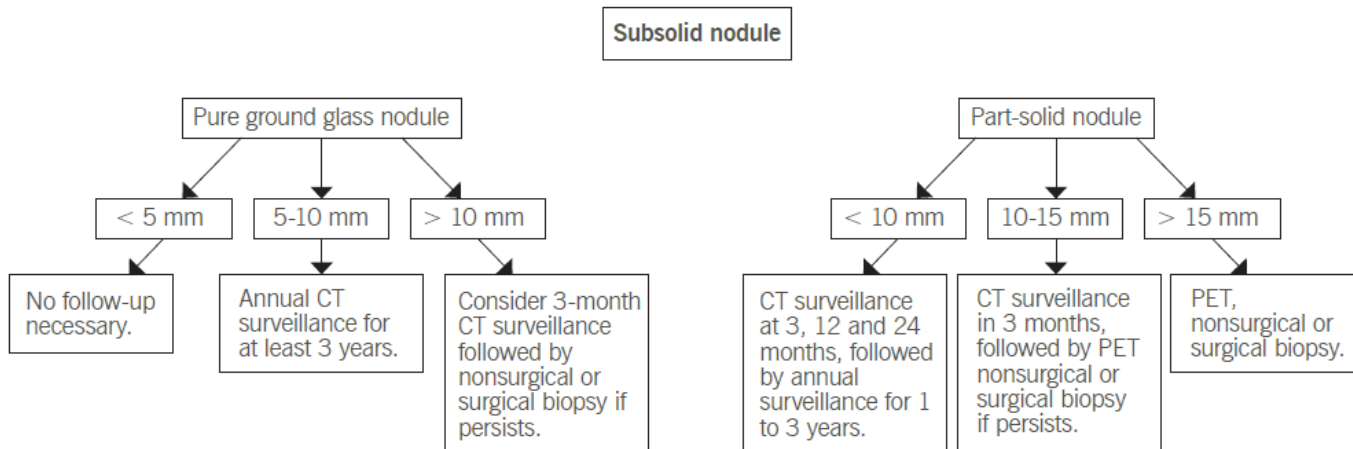
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e-Figure 1: Example of management algorithm for solid nodules 1 cm or greater in diameter.

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e-Figure 2: Example of management algorithm for subsolid nodules (20).

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

e-Table 1: ACR-STR lung cancer screening LDCT recommendations (13).

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Category	Category Descriptor	Category	Findings	Management	Probability of Malignancy	Estimated Population Prevalence
Incomplete	-	0	prior chest CT examination(s) being located for comparison part or all of lungs cannot be evaluated	Additional lung cancer screening CT images and/or comparison to prior chest CT examinations is needed	n/a	1%
Negative	No nodules and definitely benign nodules	1	no lung nodules nodule(s) with specific calcifications: complete, central, popcorn, concentric rings and fat containing nodules	Continue annual screening with LDCT in 12 months	< 1%	90%
Benign Appearance or Behavior	Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth	2	solid nodule(s): < 6 mm new < 4 mm part solid nodule(s): < 6 mm total diameter on baseline screening non solid nodule(s) (GGN): < 20 mm OR ≥ 20 mm and unchanged or slowly growing category 3 or 4 nodules unchanged for ≥ 3 months			
Probably Benign	Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	3	solid nodule(s): ≥ 6 to < 8 mm at baseline OR new 4 mm to < 6 mm part solid nodule(s) ≥ 6 mm total diameter with solid component < 6 mm OR new < 6 mm total diameter non solid nodule(s) (GGN) ≥ 20 mm on baseline CT or new	6 month LDCT	1-2%	5%
Suspicious	Findings for which additional diagnostic testing and/or tissue sampling is recommended	4A	solid nodule(s): ≥ 8 to < 15 mm at baseline OR growing < 8 mm OR new 6 to < 8 mm part solid nodule(s): ≥ 6 mm with solid component ≥ 6 mm to < 8 mm OR with a new or growing < 4 mm solid component endobronchial nodule	3 month LDCT; PET/CT may be used when there is a ≥ 8 mm solid component	5-15%	2%
		4B	solid nodule(s) ≥ 15 mm OR new or growing, and ≥ 8 mm part solid nodule(s) with: a solid component ≥ 8 mm OR a new or growing ≥ 4 mm solid component	chest CT with or without contrast, PET/CT and/or tissue sampling depending on the "probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm solid component.	> 15%	2%
		4X	Category 3 or 4 nodules with additional features or imaging findings that increases the suspicion of malignancy			
Other	Clinically Significant or Potentially Clinically Significant Findings (non lung cancer)	5	modifier - may add on to category 0-4 coding	As appropriate to the specific finding	n/a	10%
Prior Lung Cancer	Modifier for patients with a prior diagnosis of lung cancer who return to screening	C	modifier - may add on to category 0-4 coding	-	-	-

e-Table 2: LungRADS (19)

e-Table 3: Smoking cessation resources

- <http://tobaccodependence.chestnet.org/>
- <http://www.uspreventiveservicestaskforce.org/uspstf09/tobacco/tobaccors2.htm>
- <http://www.surgeongeneral.gov/initiatives/tobacco/resources.html>
- <http://www.cdc.gov/tobacco/campaign/tips/quit-smoking/guide/>
- <http://annals.org/article.aspx?articleid=744446>

e-Table 4: Education material resources

- <http://www.lung.org/lung-disease/lung-cancer/lung-cancer-screening-guidelines/lung-cancer-one-pager.pdf>
- <http://jama.jamanetwork.com/article.aspx?articleid=1685860>
- <http://www.uspreventiveservicestaskforce.org/uspstf13/lungcan/lungcanguide.pdf>
- <http://www.uspreventiveservicestaskforce.org/uspstf13/lungcan/lungcanfact.pdf>
- <http://www.cancer.gov/newscenter/qa/2002/NLSTstudyGuidePatientsPhysicians>

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