

Evidence Discussion (CH 33.3)

- Low-dose computed tomography (LDCT) Chest for lung cancer screening has been shown to have sensitivity ranging from 59% to 100%, a specificity of 26.4% to 99.7%, a negative predictive value of 97.7% to 100% and a positive predictive value from 3.3% to 43.5%¹. The benefit of lung cancer screening is early detection and treatment. The NLST trial showed a relative risk reduction in lung cancer mortality of 20%¹. The radiation dose of a LDCT is typically 10% to 30% of a standard-dose CT². The harms of a screening program would include false-positive results and subsequent unnecessary tests and procedures, the exposure to ionizing radiation and ensuing radiation-induced cancer, and increased patient anxiety and distress¹.
- The risk of malignancy associated with a Lung CT Screening Reporting and Data System (Lung-RADS) score is as follows: a score of 2 is <1%; a score of 3 is 1-2%; a score of 4A is 5-15%; a score of 4B and 4X is >15%³. The American College of Radiology (ACR) recommends follow up imaging of incidental pulmonary nodules detected on low dose lung cancer screening CT's based on the Lung-RADS score^{3,4} however, there is limited data on the impact of screening intervals⁴. The NLST and NELSON studies demonstrating reduction in lung cancer mortality were based on screening intervals of 1 year and 1, 3 and 5.5 years respectively⁴. Multiple studies have shown that the 3 month follow up recommended for Lung-RADS 4A nodules is optimal, but have raised concerns on stepwise downgrading of a stable 4A nodule to a Lung-RAD 2⁴. Therefore the ACR has modified follow up intervals with stepped management using the following criteria:
 - o Nodules that are stable or decreased at follow-up are downgraded to the next lower Lung-RADS category⁴
 - o Nodules that completely resolve or are proven benign after an appropriate diagnostic evaluation are reclassified based on the most concerning finding⁴
 - o Follow-up recommendations are timed from the current examination⁴

1. US Preventive Services Task Force. Screening for Lung Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2021;325(10):962–970. doi:10.1001/jama.2021.1117
2. CMS Decision Memo for Lung Cancer Screening with Low Dose Computed Tomography (LDCT) (210.14) Effective Date of this Version 2/5/2015.
3. Lung-RADS™ Version 1.1 Assessment Categories Release date: 2019. <https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/LungRADSAssessmentCategoriesv1-1.pdf>
4. Christensen J, Prosper AE, Wu CC, et al. ACR Lung-RADS v2022: Assessment Categories and Management Recommendations. *J Am Coll Radiol*. 2024;21(3):473-488. doi:10.1016/j.jacr.2023.09.009