

The National Lung Screening Trial (NLST)

REDUCING MORTALITY WITH ANNUAL LDCT LUNG SCREENING

LOW-DOSE COMPUTED TOMOGRAPHY (LDCT) SCREENING WAS STUDIED VS CHEST X-RAY IN MORE THAN 53,000 PATIENTS¹

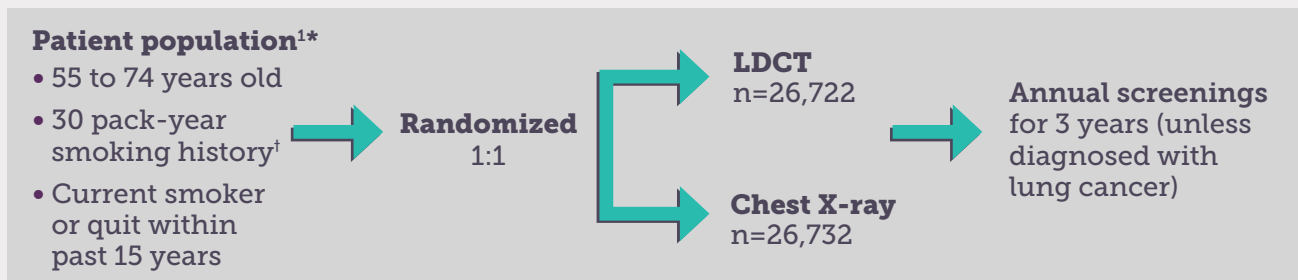


Relative reduction in rate of death from lung cancer with LDCT screening



LDCT screenings needed to **prevent 1 death** from lung cancer

Risks of LDCT include radiation exposure and false-positive results.



*Patients were excluded for previous diagnosis of lung cancer, chest CT within 18 months of trial enrollment, hemoptysis, or unexplained weight loss >15 lb in the past year.

[†]Pack year=number of cigarette packs smoked per day multiplied by the number of years a person has smoked.

DEFINING POSITIVE RESULTS IN THE NLST BASED ON RADIOLOGIST EVALUATION¹

LDCT

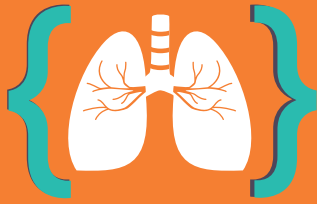
- Noncalcified nodules measuring at least 4 mm in any diameter
- Other abnormalities (eg, adenopathy, effusion)

Chest X-ray

- Any noncalcified nodule or mass
- Other abnormalities (eg, adenopathy, effusion)

FALSE POSITIVES

- Overall false-positive result rate of 23.3% in the LDCT study arm¹
- Since the NLST, additional developments have been made in lung cancer screening with LDCT²
- Follow-up studies have demonstrated the potential benefits of using updated criteria to evaluate LDCT screening results (see next page)^{2,3}



AN UPDATED LOOK AT FALSE-POSITIVE RATES IN LDCT SCREENING

AMERICAN COLLEGE OF RADIOLOGY (ACR) LUNG CT SCREENING REPORTING AND DATA SYSTEM (LUNG-RADS™)

- Lung-RADS was developed by the ACR to standardize lung cancer screenings and reports, and to reduce false-positive rates^{3,4}
- Lung-RADS criteria increase the threshold for a positive baseline screening result from 4 mm to 6 mm and require growth for preexisting nodules³

RETROSPECTIVE ANALYSIS USING LUNG-RADS: REDUCTION IN FALSE POSITIVES³

Reanalysis of NLST false-positive rates by applying Lung-RADS (n=26,722)^{3*}

Baseline screening		2 nd screening		3 rd screening	
NLST	Lung-RADS	NLST	Lung-RADS	NLST	Lung-RADS
26.6%	12.8%	27.3%	5.4%	15.9%	5.2%
52% relative reduction		80% relative reduction		67% relative reduction	

*All initial screenings, regardless of screening round, were denoted as "baseline" screenings.

- The relative increase in positive predictive value (PPV), or percentage of positive screening results with cancer present, was 82% after applying Lung-RADS criteria to the NLST population at baseline (PPV increased from 3.8% to 6.9%)³
- The potential effect of reduced sensitivity of the mortality benefit of LDCT in the NLST is unknown³

LUNG-RADS IN PRACTICE²

Applying Lung-RADS criteria to a clinical LDCT program showed an increase in the PPV of LDCT screening at baseline from

6.9% to 17.3%
(a 150% relative increase)

BENEFITS OF REDUCING FALSE-POSITIVE RATES

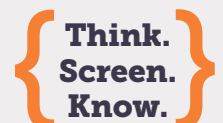
- Decrease in unnecessary, invasive procedures, follow-up scans, and associated costs or complications^{2,5}
- Improvement in patient experience by reducing stress and worry^{5,6}

Give them their best chance. Refer appropriate patients for LDCT.

References: 1. The National Lung Screening Trial Research Team. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N Engl J Med.* 2011;365(5):395-409. 2. McKee BJ, Regis SM, McKee AB, Flacke S, Wald C. Performance of ACR Lung-RADS in a clinical CT lung screening program. *J Am Coll Radiol.* 2015;12:273-276. 3. Pinsky PF, Gierada DS, Black W, et al. Performance of Lung-RADS in the National Lung Screening Trial: a retrospective analysis. *Ann Intern Med.* 2015;162(7):485-491. 4. American College of Radiology. Lung CT screening reporting and data system (Lung-RADS™). American College of Radiology website. <https://www.acr.org/Quality-Safety/Resources/LungRADS>. Accessed June 9, 2017. 5. American Cancer Society. Can non-small cell lung cancer be found early? American Cancer Society website. <https://www.cancer.org/cancer/non-small-cell-lung-cancer/detection-diagnosis-staging/detection.html>. Revised May 16, 2016. Accessed June 9, 2017. 6. Flory N, Lang EV. Distress in the radiology waiting room. *Radiology.* 2011;260(1):166-173.

Lung-RADS is a trademark of the American College of Radiology. Additional information can be found at <https://www.acr.org/Quality-Safety/Resources/LungRADS>.

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