

Practice Guidelines

Lung Cancer Screening Recommendations from the ACCP

Key Points for Practice

- Low-dose CT is recommended annually for asymptomatic adults 55 to 77 years of age who have smoked at least 30 pack years, and who continue to smoke or have quit within the past 15 years.
- Low-dose CT screening is not recommended in patients who do not meet the age and smoking criteria, even if they are considered high risk by clinical risk prediction calculators.
- Evidence-based tobacco cessation treatments should be provided to current smokers undergoing low-dose CT screening for lung cancer.

From the *AFP* Editors

Low-dose chest computed tomography (CT)-based screening for lung cancer has become the standard of care in the United States since the results of the National Lung Screening Trial were published. However, the benefits and harms of CT-based screening differ among patient populations, and it can be difficult to determine who should undergo screening. The American College of Chest Physicians (ACCP) recently published recommendations for lung cancer screening based on the following key questions developed using the PICO (population, intervention, comparator, and outcome) format:

- What is the rate of death from lung cancer in persons at elevated risk who undergo screening with low-dose CT, compared with no screening or screening with another modality?
 - What is the rate of death from lung cancer in persons at elevated risk with different clinical phenotypes (sex, age, race, risk, chronic obstructive pulmonary disease, other comorbidities) who undergo screening with low-dose CT, compared with no screening or screening with another modality?
- What is the rate of death or complications resulting from biopsies of screen-detected lesions among persons at elevated risk of lung cancer who undergo screening with low-dose CT, compared with no screening or screening with another modality?
 - What is the rate of death or complications resulting from biopsies of screen-detected lesions among persons at elevated risk of lung cancer with different clinical phenotypes (sex, age, race, risk, chronic obstructive pulmonary disease, other comorbidities) who undergo screening with low-dose CT, compared with no screening or screening with another modality?
 - What is the rate of surgery for benign disease among persons at elevated risk of lung cancer who undergo screening with low-dose CT, compared with no screening or screening with another modality?
 - What is the psychosocial impact (including distress, anxiety, depression, and quality of life) on persons at elevated risk of developing lung cancer who undergo screening with low-dose CT and are found to have a screen-detected lung nodule, compared with no screening or no nodule detected?
 - What is the rate of overdiagnosis among persons at elevated risk of lung cancer who undergo screening with low-dose CT, compared with no screening or screening with another modality?
 - What is the cost-effectiveness of low-dose CT screening of persons at elevated risk of lung cancer, compared with no screening or screening with another modality?
 - What is the rate of lung cancer detection when clinical risk assessment tools are applied for the selection of persons at elevated risk of lung cancer for low-dose CT screening, compared with the use of criteria from the National Lung Screening Trial or U.S. Preventive Services Task Force (USPSTF)?
 - What is the rate of lung cancer detection when molecular biomarker results are applied to the selection of persons

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This series is coordinated by Sumi Sexton, MD, Editor-in-Chief.

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at elevated risk of lung cancer for low-dose CT screening, compared with the use of the National Lung Screening Trial or USPSTF criteria?

- What is the stage distribution of lung cancer, the rate of death from lung cancer, and the portion of positive scans among persons at elevated risk of lung cancer who undergo annual screening with low-dose CT with a 4-mm nodule size threshold for defining positive findings, compared with other definitions?
- What is the rate of smoking cessation among active smokers at elevated risk of lung cancer who receive smoking cessation counseling as part of a low-dose CT screening program, compared with those who do not receive smoking cessation counseling or those who do not participate in low-dose CT screening?

Evidence-Based Recommendations

Annual screening with low-dose CT is recommended for adults 55 to 77 years of age with no symptoms of lung cancer who have smoked at least 30 pack years, and who continue to smoke or have quit within the past 15 years. (Weak recommendation based on moderate-quality evidence.) CT-based screening is not recommended for persons who do not meet these criteria, even if clinical risk prediction calculators classify them at high risk. (Weak recommendation based on low-quality evidence.) These patients are less likely to benefit and more likely to be harmed by screening. In addition, U.S. health insurance providers may not cover CT-based screening if age and smoking criteria are not met. Persons who do not meet these criteria and who are not at high risk of lung cancer based on clinical risk prediction calculators also should not undergo CT-based screening. (Strong recommendation based on moderate-quality evidence.)

The ACCP does not recommend low-dose CT screening for lung cancer in patients with comorbidities that make them unable to tolerate evaluation of screen-detected findings or treatment of early-stage lung cancer, or that substantially limit their life expectancy. (Strong recommendation based on low-quality evidence.) Patients with conditions such as advanced liver disease, chronic obstructive pulmonary disease with hypoventilation and hypoxia, or New York Heart Association class IV heart failure have limited potential benefit and substantial potential harm from screening.

Lung cancer screening programs should define what constitutes a positive screen based on the size of CT-detected solid or part-solid lung nodules; the threshold for a positive result should be 4 to 6 mm in diameter. (Weak recommendation based on low-quality evidence.)

For current smokers undergoing low-dose CT screening, the ACCP recommends that evidence-based tobacco cessation treatments be provided as recommended by the U.S. Public Health Service.

Consensus-Based Recommendations

In addition to these evidence-based recommendations, the ACCP included several ungraded consensus-based statements in its recommendations. The ACCP suggests that low-dose CT screening programs:

- Develop strategies to determine whether patients have symptoms that suggest the presence of lung cancer, so that symptomatic patients do not enter screening programs but instead receive appropriate diagnostic testing, regardless of whether they meet eligibility criteria for screening.
- Develop strategies to maximize compliance with annual screening examinations.
- Develop a comprehensive approach to management of lung nodules, including multidisciplinary expertise (pulmonology, radiology, thoracic surgery, medical and radiation oncology) and algorithms for the management of small solid nodules, larger solid nodules, and subsolid nodules.
- Develop strategies to minimize overtreatment of potentially indolent lung cancers.
- Develop strategies to provide effective counseling and shared decision making before screening occurs.
- Follow imaging protocols from the American College of Radiology/Society of Thoracic Radiology.
- Use a structured reporting system for CT results.
- Develop strategies to guide the management of non-nodule findings.
- Develop data collection and reporting tools capable of assisting with quality-improvement initiatives and reporting to the National Registry.

Editor's Note: The 2013 USPSTF recommendation supports annual screening for lung cancer with low-dose CT in patients 55 to 80 years of age who have a 30-pack-year smoking history and who currently smoke or have smoked within the past 15 years (B rating). However, this recommendation is in the process of being updated. The American Academy of Family Physicians concluded that the evidence was insufficient to support screening because it was based on one study (National Lung Screening Trial), and instead recommended shared decision making given the costs and potential harms of annual CT-based screening (<https://www.aafp.org/patient-care/clinical-recommendations/all/lung-cancer.html>).

Guideline source: American College of Chest Physicians

Evidence rating system used? Yes

Systematic literature search described? Yes

Guideline developed by participants without relevant financial ties to industry? No

Recommendations based on patient-oriented outcomes? Yes

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