

Putting Prevention into Practice

An Evidence-Based Approach

Screening for Lung Cancer

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Case Study

S.J., a 68-year-old Black man, comes to your office to establish care after recently moving to the area. S.J. has a history of allergic rhinitis, osteoarthritis, and gastroesophageal reflux disease. Additionally, he has a 39-pack-year history of smoking but quit six years ago. He is retired but previously worked at an automobile factory. He reports some mild fatigue. He is concerned about his risk for lung cancer and asks whether he should be screened.

Case Study Questions

1. Based on the U.S. Preventive Services Task Force (USPSTF) recommendation statement, how should you counsel this patient?

- A. S.J. should be screened for lung cancer with chest radiography.
- B. S.J. should not be screened for lung cancer because he quit smoking more than five years ago.
- C. S.J. should be screened for lung cancer using sputum cytology and measurement of biomarker levels because he is younger than 70 years.
- D. S.J. should be screened for lung cancer with low-dose computed tomography (CT).

2. According to the USPSTF recommendation, how frequently should this patient be screened for lung cancer as long as he remains in good health?

- A. Annual screening should be performed until 15 years have elapsed since smoking ceased.
- B. Biennial screening should be performed until 10 years have elapsed since smoking ceased.
- C. Screening should be performed every three years until 15 years have elapsed since smoking ceased.
- D. Screening should be performed every five years until 20 years have elapsed since smoking ceased.
- E. Screening should be performed once.

3. According to the USPSTF, which of the following are the two most important risk factors for lung cancer?

- A. Family history.
- B. Smoking.
- C. Prior radiation therapy.
- D. Environmental exposures.
- E. Older age.

Answers appear on the following page.

See related AFP Community Blog post at <https://afpjournals.blogspot.com/2021/05/aafp-updates-recommendations-on-lung.html>.

This PPIP quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and supporting documents on the USPSTF website (<https://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening>.

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A collection of Putting Prevention into Practice published in AFP is available at <https://www.aafp.org/afp/pip>.

CME This clinical content conforms to AAFP criteria for CME. See CME Quiz on page 20.

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Answers

1. The correct answer is D. The USPSTF recommends annual screening for lung cancer with low-dose CT in adults 50 to 80 years of age who have at least a 20-pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once the patient has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. Low-dose CT has high sensitivity and reasonable specificity for the detection of lung cancer, with demonstrated benefit in screening persons at high risk. Other potential screening modalities that are not recommended because they have not been found to be beneficial include sputum cytology, chest radiography, and measurement of biomarker levels.¹

2. The correct answer is A. The two lung cancer screening trials that showed a benefit of lung cancer screening used different eligibility criteria and screening intervals. In the National Lung Screening Trial, people who currently smoked or had quit within the past 15 years were screened annually for three years. The Nederlands-Leuven Longkanker Screenings Onderzoek trial screened people who currently smoked or had quit within the past 10 years at intervals of one year, then two years, then 2.5 years.^{1,2} Modeling studies from the Cancer Intervention and Surveillance Modeling Network suggest that annual screening for lung cancer leads to greater benefit than does biennial screening.³ Based on the available evidence and these models, the USPSTF recommends annual screening and screening until 15 years have elapsed since

the patient quit smoking. Screening should be discontinued if the patient develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

3. The correct answers are B and E. Smoking and older age are the two most important risk factors for lung cancer. The risk of lung cancer in persons who smoke increases with cumulative quantity and duration of smoking and with age but decreases with increasing time since quitting for persons who formerly smoked. The USPSTF considers adults 50 to 80 years of age who have a 20-pack-year smoking history and currently smoke or have quit within the past 15 years to be at high risk and recommends screening for lung cancer with annual low-dose CT in this population. Other risk factors for lung cancer include environmental exposures (e.g., asbestos exposure), prior radiation therapy, other (noncancer) lung diseases, family history, and lower level of education.¹

The views expressed in this work are those of the authors and do not reflect the official policy or position of the University of Michigan or the U.S. government.

References

1. Krist AH, Davidson KW, Mangione CM, et al. Screening for lung cancer: US Preventive Services Task Force recommendation statement. *JAMA*. 2021;325(10):962-970.
2. Jonas DE, Reuland DS, Reddy SM, et al. Screening for lung cancer with low-dose computed tomography: updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2021;325(10):971-987.
3. Meza R, Jeon J, Toumazis I, et al. Evaluation of the benefits and harms of lung cancer screening with low-dose computed tomography: modeling study for the US Preventive Services Task Force. *JAMA*. 2021;325(10):988-997. ■