

Evaluating the Lung Cancer Screening Eligibility of Patients Undergoing Lung Cancer Operations: An Analysis of the Southern Community Cohort Study

Objective: The goal of lung cancer screening with low-dose computed tomography (LDCT) is to identify lung cancer at an earlier stage when it is amenable to surgical treatment. We sought to evaluate the proportion of lung cancer patients undergoing surgery who would have been eligible for lung cancer screening using data from the Southern Community Cohort Study (SCCS).

Methods: Patients who underwent surgery for lung cancer from 2002-2020 in the SCCS—a prospective cohort study of nearly 85,000 predominately low-income Black and White adults from 12 states in the southeastern United States—were identified for analysis. The proportions of patients who would have been eligible for LDCT screening under the 2013 and 2021 United States

Preventive Services Task Force (USPSTF) guidelines were compared using the McNemar test. Using data from the National Cancer Database, we calculated the proportion of breast and colon cancer patients who underwent surgery and who would have been eligible for breast and colon cancer screening, respectively; these proportions were then compared to the proportion of patients who underwent lung cancer operations in SCCS that would have been eligible for LDCT screening using a chi-square test.

Results: A total of 314 lung cancer patients underwent surgical treatment. The proportion of patients who would have been eligible for screening increased by 69.5% (from 32.5% to 55.1%, $P < 0.001$) under the 2013 vs. 2021 USPSTF lung cancer screening guidelines. However, 45% of lung cancer patients undergoing surgery would have still been ineligible for LDCT screening under the 2021 USPSTF guidelines—in comparison, only 22% of patients undergoing colon cancer surgery and 15% of patients undergoing breast cancer surgery would have been ineligible for colorectal cancer and breast cancer screening, respectively ($P < 0.001$). Of patients with a smoking history who underwent lung cancer operations and were ineligible for screening, 70.9% had fewer than 20 pack-years, 32.7% had quit smoking more than 15 years prior, 14.6% were too young, and 2.7% were too old (Figure).

Conclusions: Even though lung cancer screening is intended to identify lung cancers at earlier stages when they are amenable to surgical treatment, we found that 45% of patients undergoing lung cancer operations would have been ineligible for lung cancer screening, highlighting the need for further revision to the USPSTF lung cancer screening guidelines.

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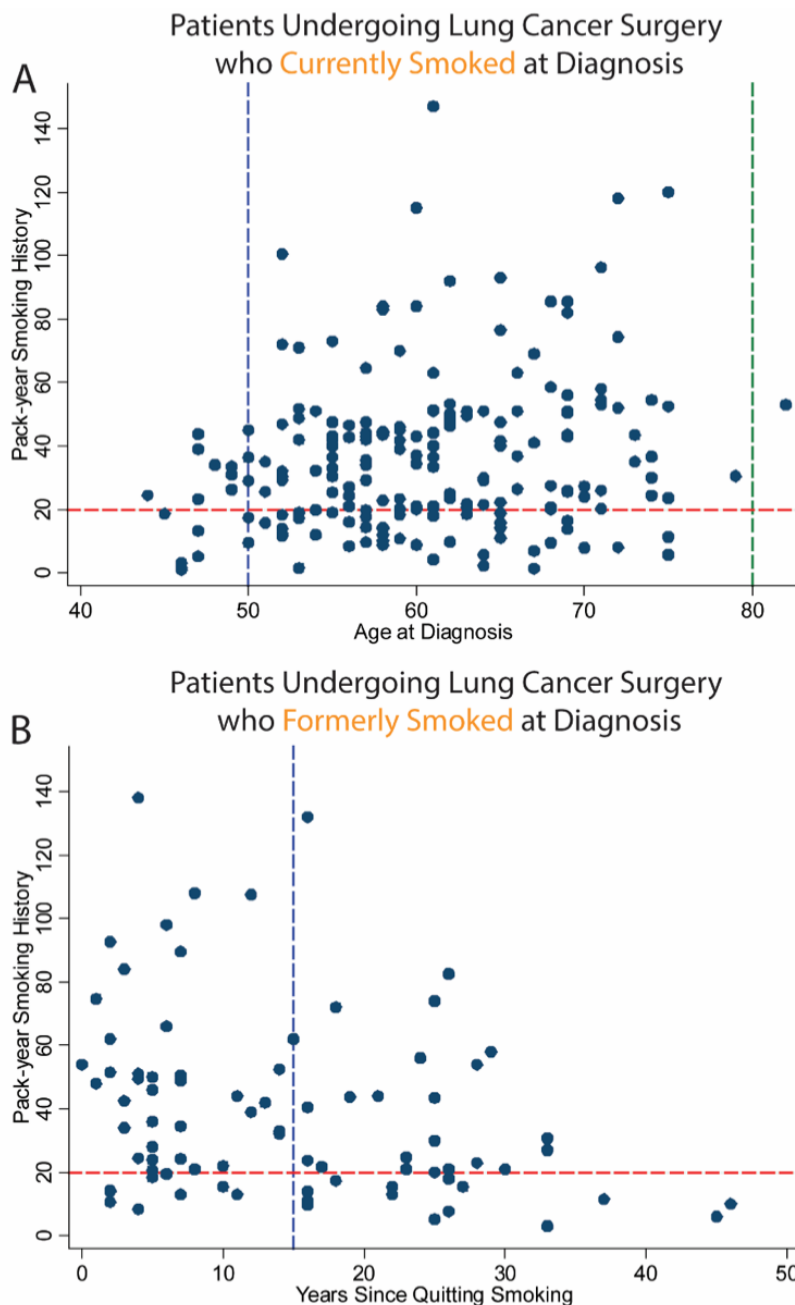


Figure 1. Distribution of Pack-year Smoking History, Age at Diagnosis, and Years Since Stopping Smoking among Patients Undergoing Lung Cancer Operations in the SCCS. For figure 1A, the blue dashed line represents the lower age bound, the green dashed line represents the upper age bound and the red dashed line represents the pack-year smoking history criteria threshold. Each dot corresponds to a lung cancer diagnosis. Dots to the left of the blue dashed line, right of the green dashed line, and below the red dashed line represents lung cancer patients who would have been ineligible for lung cancer screening under the 2021 USPSTF lung cancer screening guidelines. For Figure 1B, the blue dashed line represents the years-since-quitting smoking threshold and the red dashed line represents the pack-year smoking history criteria threshold. Dots to the right of the blue-dashed line and dots below the red-dashed line represent lung cancer patients who would have been ineligible for screening under the 2021 USPSTF lung cancer screening guidelines.