Commentary: Should lung cancer screening guidelines go up in smoke?

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Central Message

Bravo-Iniguez and colleagues use 2 risk models to show that non-smoking-related risk factors increase the probability of developing lung cancer, and we should consider screening never smokers at high risk.

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In this issue of the *Journal*, Bravo-Iniguez and colleagues¹ use 2 previously developed lung cancer risk models to show that non-smoking-related risk factors significantly increase the probability of development of lung cancer. The Liverpool Lung Project (LLP)² and the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial (PLCO)³ models estimate the risk of development of lung cancer on the basis of smoking history and non-smoking-related risk factors, such as family history of lung cancer and asbestos exposure. According to these models, a never smoker with several non-smoking-related risk factors has a higher risk of lung cancer than does a heavy smoker with no other risk factors.

These findings are important to note, because our current lung cancer screening guidelines⁴ and coverage⁵ are based on age and smoking history alone and do not take into account any other risk factors. The National Lung Screening Trial participants were between 55 and 74 years of age, had a smoking history of at least 30 pack-years, and either were current smokers or had quit within 15 years.⁶ Several subsequent lung cancer screening trials in Europe also enrolled participants on the basis of age and smoking history alone.⁷⁻¹² The National Comprehensive Cancer Network¹³ and the American Association for Thoracic Surgery¹⁴ guidelines include non-smoking-related risk factors, but they recommend screening only for patients who also have a smoking history.

As the LLP and PLCO risk models show, however, although smoking is the greatest risk factor by far, there are several other important risk factors that can lead to a cumulative increase in risk. In fact, the incidence of lung cancer in never smokers has been growing steadily. In Asia, the proportion of patients with lung cancer who are never smokers is much higher than in the United States and Europe,¹⁵ and several institutions have started low-dose computed tomographic screening for the general population, regardless of smoking history.¹⁶⁻¹⁸

This study has several limitations related to the 2 previously developed risk models. Both LLP and PLCO risk models were based on case-control studies that relied on volunteers. They used narrow cohorts, and they thus may not be accurate in predicting the risks of lung cancer in other populations. Approximately 99% of the LLP participants were white,² and most of the PLCO participants had a high socioeconomic status.³ In addition, the risk models did not include all non-smoking-related risk factors, such as secondhand smoke and radon exposure.

This study uses the LLP and PLCO risk models to demonstrate that non-smoking-related risk factors greatly increase the risk of development of lung cancer. We should consider screening never smokers who have other significant risk factors, and we should develop new lung cancer screening guidelines to address these patients.

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