Individualized model to determine which people should be screened for lung cancer outperforms current method

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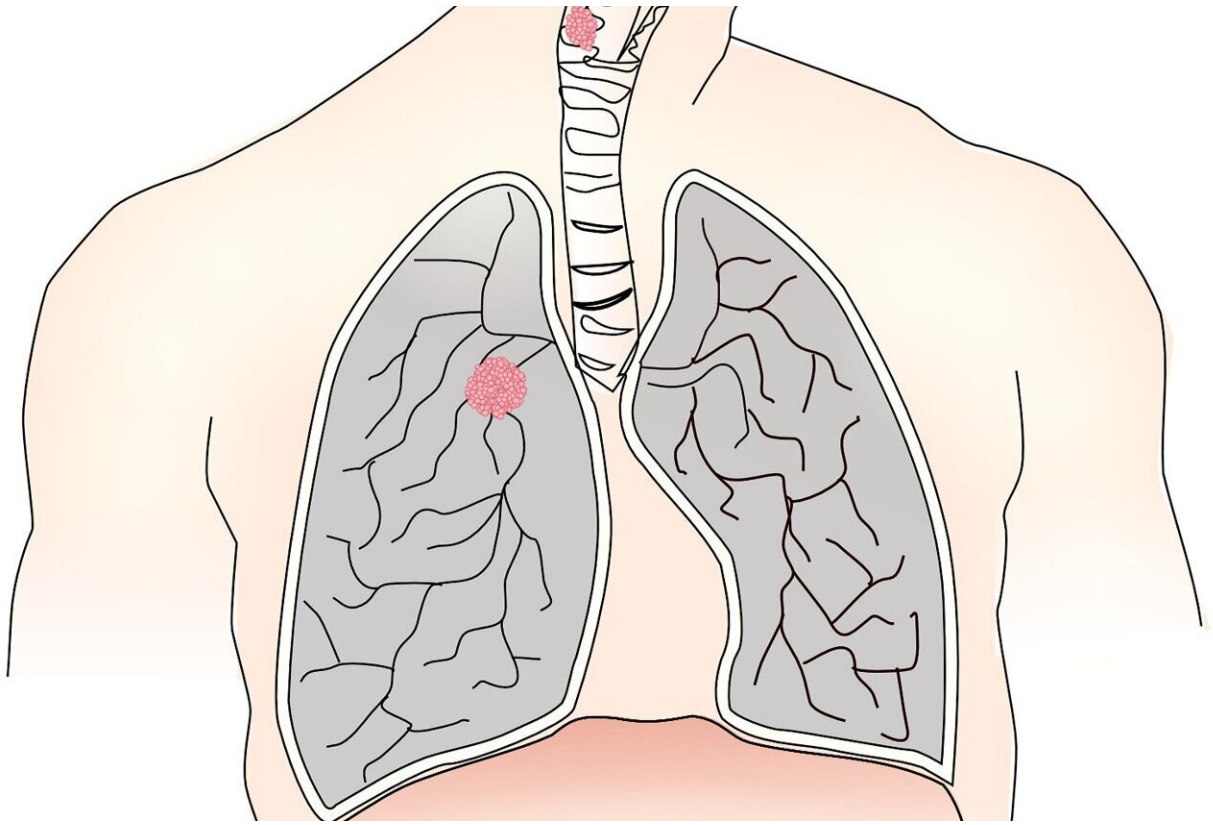

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A new study has found that an alternative model to identify patients with lung cancer eligible for screening was more accurate than the currently

used method based on the United States Preventive Services Task Force (USPSTF) criteria. The results are published in the journal Cancer.

Lung cancer is the leading cause of cancer deaths, and using low-dose computed tomography scans to screen people who are at elevated risk for lung cancer reduces lung cancer deaths. The USPSTF criteria use age and smoking history to determine eligibility for lung cancer screening: individuals aged 50–80 years who currently smoke or used to smoke and quit 15 years ago or less with 20 pack years of smoking history (such as one pack a day for 20 years or two packs a day for 10 years) are eligible.

A more personalized model is the PLCOm2012 lung cancer risk-prediction model based on the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial. This model uses additional parameters including personal history of cancer, family history of lung cancer, personal history of chronic obstructive pulmonary disease, education level, body mass index, and race to predict an individual's risk of lung cancer. (A modified version that does not include race is called PLCOm2012noRace.)

To compare the USPSTF and PLCOm2012 and PLCOm2012noRace methods, Martin Carl Tammemägi, Ph.D., of Brock University and his colleagues applied them to 1,565 individuals with lung cancer in South Dakota. The PLCOm2012 models had higher sensitivity and identified more people with lung cancer eligible for screening than USPSTF 2013 and USPSTF 2021 criteria. There did not appear to be an eligibility disparity between individuals who self-reported as Indigenous and those who did not, for both the USPSTF criteria and the PLCOm2012noRace model.

The research also indicated that screening people younger than 50 years of age is not warranted, since there were few people who were diagnosed with lung cancer under that age.

"Determining screening eligibility using risk prediction models that consider more individualized lung cancer risk factors has been shown in several studies, including this one, to do a better job in selecting people for screening as compared with USPSTF age and smoking history criteria," said Dr. Tammemägi.

"This research along with similar studies in other underserved populations should be used to encourage policy makers to include the use of more individualized screening eligibility criteria using risk prediction models. Although race is a social construct, until the risk factors for this construct are identified and included in risk prediction models, jurisdictions with large populations of underserved 'races' who are found to be at excess risk—including many Indigenous populations—should consider using risk prediction models incorporating race as a predictor variable."

More information: Sensitivity of USPSTF and PLCOm2012 lung cancer screening eligibility criteria in individuals with lung cancer in South Dakota self-reporting to be Indigenous and non-Indigenous, *Cancer* (2023). DOI: 10.1002/cncr.34947

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