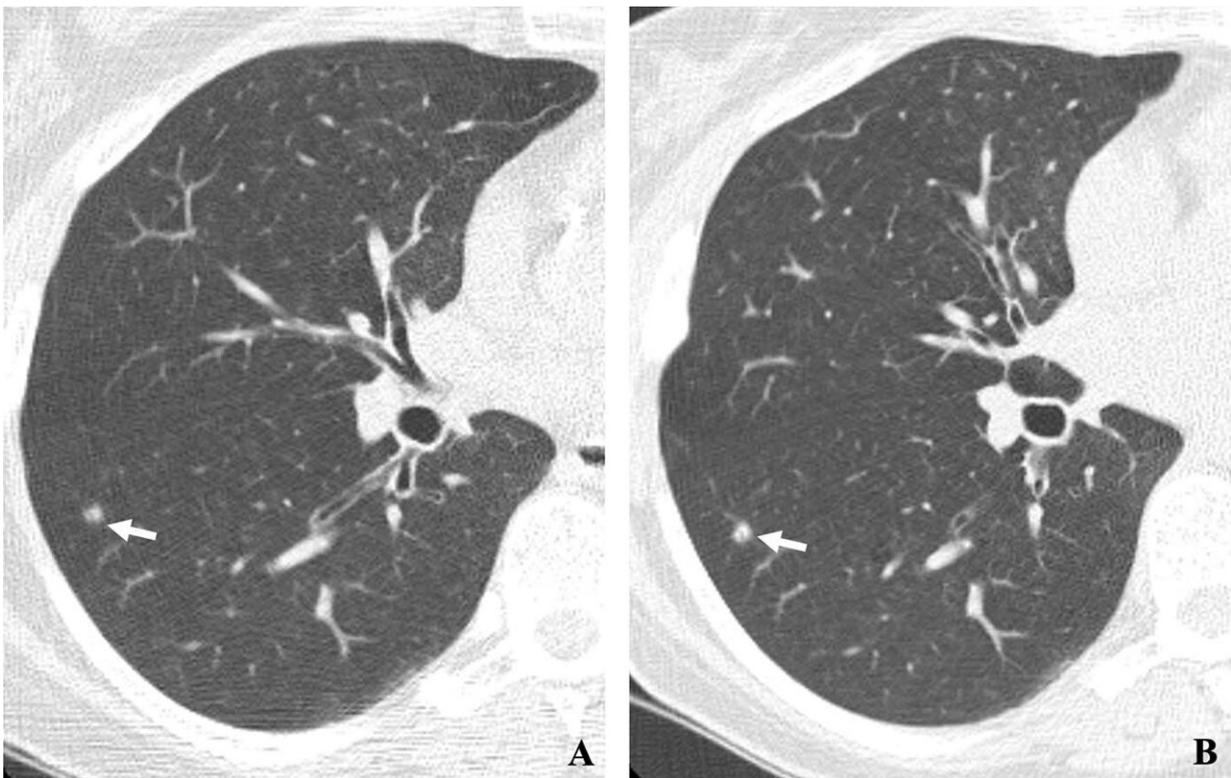


International study shows lung cancer screening dramatically increases long-term survival rate

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(A, B) Two annual repeat low-dose CT scans in a woman who was 60 years old at baseline enrollment in 1999. At baseline enrollment, she was currently smoking and had a 30-pack-year smoking history. No nodules were identified on baseline low-dose CT scans. On the sixth annual low-dose CT scan (B), a right lower lobe solid nodule (arrow) measuring 4.5 mm in maximum diameter was identified. The nodule could be identified in retrospect on the prior annual CT scan (arrow in A), when it measured 2.0 mm in maximum diameter. Estimated

tumor volume doubling time was 161 days. Lobectomy was performed 2 months later, and diagnosis of stage 1aN0M0 moderately differentiated adenocarcinoma measuring 6.0 mm in maximum diameter was made. Expert pathologic panel review (22) of the pathologic specimen updated the diagnosis to adenocarcinoma with mixed subtype (80% acinar, 20% bronchoalveolar carcinoma components) with 5 mm of invasion. Credit: Radiological Society of North America

Diagnosing early-stage lung cancer with low-dose computed tomography (CT) screening drastically improves its cure rate measured over a 20-year period, according to a large-scale international study by Mount Sinai researchers published in *Radiology*.

The results show that patients diagnosed with [lung cancer](#) via CT screening have a 20-year survival rate—an approximation of the cure rate—of 81%. Among the 1,257 participants diagnosed with lung [cancer](#), 81% had stage I disease and their long-term survival rate was 87%. If diagnosed in the earliest stage I ($\leq 10\text{mm}$), it was 95%.

In the United States, the average five-year survival rate for all [lung cancer patients](#) is 25.4% because only 21% of lung cancers are diagnosed at an early stage. More than half of the people with lung cancer die within one year of their diagnosis, making it the leading cause of cancer deaths. By the time symptoms appear, it is often too late.

The findings are the latest to demonstrate the importance of routine early screening in detecting cancers when they are small enough to be cured. Unfortunately, fewer than 6% of the people who are eligible for screening are currently getting it.

"While screening doesn't prevent cancers from occurring, it is the major tool to identify lung cancers in their earliest stage when they can be

cured," said the study's lead author, Claudia Henschke, Ph.D., MD, Professor of Diagnostic, Molecular and Interventional Radiology and Director of the Early Lung and Cardiac Action Program (ELCAP) at the Icahn School of Medicine at Mount Sinai in New York.

"Ultimately, anyone interested in being screened needs to know that if they are unfortunate enough to develop lung cancer, it can be cured if found early."

While treatments of more advanced cancers with targeted therapy and immunotherapy have come a long way, the best tool against lung cancer deaths is early diagnosis through low-dose CT screening before symptoms occur, according to the study authors.

"Symptoms occur mainly in late-stage lung cancer," said co-author Rowena Yip, Ph.D., MPH, Senior Biostatistician of ELCAP. "Thus, the best way to find early-stage lung cancer is by enrolling in an annual screening program."

The U.S. Preventive Services Task Force recommends annual lung cancer screening with low-dose CT in adults aged 50 to 80 years who have a 20 pack-year smoking history, which equals at least a pack a day for 20 years, and who currently smoke or have quit within the past 15 years.

Dr. Henschke and colleagues have been studying the effectiveness of cancer detection with low-dose CT screening for years. The efforts of the researchers to advance CT screening for early lung disease led to the creation of the International Early Lung Cancer Action Program (I-ELCAP). Started in 1992, this multi-institution, multinational research program has enrolled more than 89,000 participants from over 80 institutions.

In 2006, the researchers identified a 10-year survival rate of 80% for the patients whose cancer was identified by CT screening. For this study, they looked at 20-year survival rates.

"What we present here is the 20-year follow-up on participants in our screening program who were diagnosed with lung cancer under annual screening and subsequently treated," Dr. Henschke said. "The key finding is that even after this long a [time interval](#) they are not dying of their lung cancer. And even if new lung cancers were found over time, as long as they continued with annual screening, they could be cured."

"Ultimately, the critical clinically relevant information for people interested in screening relates to understanding their chance of being diagnosed with [lung](#) cancer, and if detected during [screening](#), how curable it would be compared to being diagnosed based on symptoms."

More information: A 20-year Follow-up of the International Early Lung Cancer Action Program (I-ELCAP), *Radiology* (2023).

Provided by The Mount Sinai Hospital

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