How artificial intelligence (AI) could support lung cancer screening: insights from the SOLACE project

A new study has looked at whether artificial intelligence (AI) could support radiologists in their analysis of scans taken during lung cancer screening programmes.

Low-dose computed tomography (CT) scans have been shown to help find lung cancer earlier, when there are more treatment options and a better chance of survival. Many countries are now rolling out lung cancer screening programmes.

The scans look for lung nodules - small, abnormal growths in the lungs. Most are harmless but some can be an early sign of cancer. Analysing these scans creates a substantial workload for radiologists, and different radiologists may assess the same nodule differently. AI tools are being suggested as a way to help manage this workload and provide more consistent analysis across screening programmes.

This new paper from researchers in the EU-funded SOLACE project looks at:

- which functions are currently offered by available AI tools;
- how well these functions cover the tasks recommended by international clinical guidelines, and;
- what scientific evidence exists to support their use.

What did they study?

Researchers looked at 16 AI tools that are currently available for radiologists to use.

They looked at two main areas:

Functions: they checked what each AI tool could do and compared this to 6 main tasks covered by international clinical guidelines. This included finding nodules, grouping them by type (classifying), measuring and tracking the growth of nodules, assessing cancer risk and providing structured follow-up recommendations.

Evidence: they looked for published research on each product and assessed what kind of testing had been done, for example, whether studies checked if the tool was accurate, whether it helped radiologists make better decisions, or whether it looked at the impact on patients.

What were the main findings?

Functions:

- 14 out of 16 AI tools could find and measure the most common lung nodules.
- 12 out of 16 AI tools could track whether the nodules were growing over time
- 9 out of 16 could estimate cancer risk

- None of the AI tools were able to find less common types of lung nodules, such as those that are hidden inside the airways (endobronchial) or with air-filled spaces (cystic lesions).
- Many AI tools covered a large share of the tasks required by some European guidelines (EUPS and BTS), but had more limited coverage when measured against more extensive recommendations (Lung-RADS and ESTI) that include a wider range of lesion types.

Evidence

Out of 60 published scientific papers:

- Around 42 out of 60 studies (70%) focused on testing how accurately the AI tool could perform its functions on its own, such as finding, measuring, and classifying lung nodules.
- Just 4 out of 60 studies (7%) tested the AI tool in a real-world setting rather than using data collected in the past.
- None of the studies looked at whether patients had better health outcomes or whether using AI was cost-effective. 6 out of the 16 tools had no scientific evidence to support them at all.

Why is this important?

As lung cancer screening programmes expand across Europe, healthcare teams need to know which AI tools can support their workflows and how well tested those tools are.

This study found that many AI tools already cover a large share of the tasks needed, but important gaps remain, particularly for less common lesion types and for the most comprehensive guidelines. Most of the available research has tested whether the tools work correctly under controlled conditions, with very little testing in real-world screening settings and no research yet on how AI affects patient outcomes or costs.

The authors concluded that while AI tools could help radiologists, they should be used with caution and close monitoring and more research is needed before widespread use.

This study is part of the EU-funded SOLACE project which concluded in March 2026. The project produced a Knowledge Hub of resources to share evidence and support countries to roll out lung cancer screening programmes at a national level. Find out more about the SOLACE project and access the Knowledge Hub.

Read the full paper: Commercial AI for CT lung cancer screening: product capabilities, coverage of nodule management tasks and supporting evidence