Healthcare Improvement Scotland | SHTG Advice on health technologies

Artificial intelligence-assisted clinician review of chest X-rays for suspected lung cancer.

Plain Language Summary | February 2025

What is lung cancer?

Lung cancer is a type of cancer that may develop in the windpipe, main airway or any tissue in the lungs. Primary lung cancer begins in the lung, while secondary lung cancer means a cancer that has spread to the lungs from another part of the body.

What is artificial intelligence (AI)-assisted clinical staff review of chest X-rays?

Artificial intelligence, or AI, is when a computer perform task that usually needs human intelligence like understanding speech, making decisions and solving problems.

Chest X-rays use radiation to create pictures of the lungs within the chest. AI can be used to assess or 'read' chest X-rays. The AI software can be designed to flag something unusual on an X-ray that requires more urgent review by a clinician.

Why is this important?

Lung cancer is one of the most common and serious types of cancer. Lung cancer is often found too late, making it harder to treat. If clinicians can find lung cancer earlier, it increases the chances of people getting better faster and staying heathier for longer.

What we did

We looked for information about how AI can help assess chest X-rays for lung cancer. We wanted to know whether AI helps to speed up how fast cancer is identified and how fast patients were then treated. We also checked whether using the technology would save the NHS money.

What we found

Published evidence

We did not find much information on how well using AI to find lung cancer works, how much it costs, or whether it is clinically safe. The studies we found said that more information is needed on the benefits and costs of using AI to help assess chest X-rays.

Unpublished evidence

We looked at data from a service evaluation in NHS Grampian which showed that using AI, along with more staff and more scanning appointments, can help people who might have lung cancer get other tests sooner, such as computed tomography (CT) scans. Getting a CT scan sooner may speed up time to treatment and help identify patients with treatable lung cancer sooner, but the results from the service evaluation are not clear.

We found that using AI, as in the NHS Grampian service evaluation, is likely to add additional costs.

We also found that there are ongoing studies that have not yet reported their results.

What is our conclusion?

There is currently limited or no evidence to help decide how well AI helps to assess chest X-rays.

A service evaluation in Scotland has shown that use of AI may help shorten the time that people need to wait for a CT scan.

There are clinical trials and service evaluations taking place across the UK on the use of AI to assess chest X-rays. The results of these studies will help us to decide how well AI works for people with lung cancer.

What next?

We will share our report with the Accelerated National Innovation Adoption (ANIA) team at NHS Golden Jubilee. Our report will help people make decisions on the use of AI to read chest X-rays across Scotland.

This plain language summary has been produced based on the SHTG Assessment: Artificial intelligence-assisted clinician review of chest X-rays for suspected lung cancer. February 2025.