Artificial intelligence software for analysing chest X-ray images to identify suspected lung cancer: an evidence synthesis early value assessment

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Plain language summary

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Plain language summary

Lung cancer is one of the most common types of cancer in the United Kingdom. Early diagnosis may improve survival, as lung cancer is often diagnosed late. Chest X-rays can be used to identify features of lung cancer. There can be delays in getting X-rays, and sometimes features of lung cancer are not seen on them. Artificial intelligence software may help by finding features of cancer on chest X-rays and highlighting them. A radiologist will look at the X-rays and information from the software. There is a lack of information about how lung cancer diagnosis could change if artificial intelligence software is used and what the costs may be to the National Health Service.

This project looked at the use of artificial intelligence software in the detection of lung cancer in people referred from primary care. Software companies were invited to provide evidence. There were no studies that looked at this topic among people from primary care. We summarised the closest evidence we could find instead. All of this had flaws, so we could not tell if the results were accurate or helpful to this review. It was not clear if artificial intelligence helped to find cancers or improve people's health.

We made a theoretical model to discuss the best way to assess if artificial intelligence software might be cost-effective in detecting lung cancer and what evidence would be needed to do this in a fully working model. Costs and alternative pricing models provided by five companies were used to calculate the cost of adding artificial intelligence software to review chest X-rays in people referred from their general practitioner, for the first 5 years, based on one National Health Service trust.

Future studies are needed to identify the impact of adjunct artificial intelligence on test accuracy, clinical decision-making and patient outcomes (e.g. mortality and morbidity).

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This article

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