Dynamic contrast-enhanced CT compared with positron emission tomography CT to characterise solitary pulmonary nodules: the SPUtNIk diagnostic accuracy study and economic modelling

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Plain English summary

SPUtNIk study and economic modelling

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Plain English summary

A nodule found on a lung scan can cause concern as it may be a sign of cancer. Finding lung cancer nodules when they are small (i.e. < 3 cm) is very important. Most nodules are not cancerous. Computerised tomography (cross-sectional images created from multiple X-rays) and positron emission tomography–computerised tomography (a technique that uses a radioactive tracer combined with computerised tomography) are used to see whether or not a nodule is cancerous; although they perform well, improvements are required.

This study compared dynamic contrast-enhanced computerised tomography with positron emission tomography–computerised tomography scans to find out which test is best. Dynamic contrast-enhanced computerised tomography involves injection of a special dye into the bloodstream, followed by repeated scans of the nodule over several minutes. We assessed the costs to the NHS of undertaking the different scans, relative to their benefits, to judge which option was the best value for money.

We recruited 380 patients from 16 hospitals across England and Scotland, of whom 312 had both dynamic contrast-enhanced computerised tomography and positron emission tomography–computerised tomography scans. We found that current positron emission tomography–computerised tomography is more accurate, providing a correct diagnosis in 76% of cases, than the new dynamic contrast-enhanced computerised tomography, which provides a correct diagnosis in 70% of cases. Although dynamic contrast-enhanced computerised tomography cannot replace positron emission tomography–computerised tomography, it may represent good-value use of NHS resources, especially if it is performed before positron emission tomography–computerised tomography and they are used in combination.

Although more research is required, it may be possible in the future to perform dynamic contrast-enhanced computerised tomography at the same time as positron emission tomography–computerised tomography in patients with suspected lung cancer or if a lung nodule is found on a lung screening programme at the time of the computerised tomography examination. This may reduce the need for some people to have positron emission tomography–computerised tomography.

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