Cancer diagnostic tools to aid decision-making in primary care: mixed-methods systematic reviews and cost-effectiveness analysis

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Declared competing interests of authors: William Hamilton has overseen the development of a suite of cancer risk assessment tools encompassing all the major adult cancers. Richard Neal has also contributed to some of these studies. The risk assessment tools are available at no cost to the NHS. William Hamilton is the chief investigator of the Electronic Risk Assessment Tools for Cancer (ERICA) trial, a philanthropically funded cluster randomised controlled trial of electronic risk assessment tools in primary care. As a result of this interest, William Hamilton excluded himself from the data analysis, although he contributed to the rest of the work, including writing the outputs. Anne E Spencer and Antonieta Medina-Lara also report supporting the ERICA trial. William Hamilton, Antonieta Medina-Lara and Anne E Spencer report grants from Gillings Foundation and minor support from Cancer Research UK for the ERICA trial. Antonieta Medina-Lara reports grants from the National Institute for Health Research during the conduct of the study and outside the submitted work.

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Plain English summary

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In the UK, people with cancer tend to die sooner than people with cancer in other European countries. This may be because their cancers are caught at a later stage, perhaps after they have spread. Spotting cancer earlier in people, and testing them sooner, may extend people's lives. Researchers have developed 'diagnostic tools', which give the probability of having cancer, based on a patient's symptoms, blood test results and other information. The tools help family doctors decide who needs further testing for possible cancer, including cancers of the digestive, urinary and reproductive systems, and in the blood. We do not know how many family doctors have these tools, or how well the tools work.

We systematically reviewed published studies about how these tools were developed, how good and accurate they are, and what effects their use has on patients. We found that many tools have been developed, but there is little evidence that they improve the quality or length of life. We sent surveys to family doctors all over the UK asking if they had the tools at their practice and if they used them. Based on the replies we received, we estimate that the tools are in about one in three practices. They are likely to be used in about half of the practices where they are available. For practices in England only, we looked for, but did not find, any association between using the tools and the number of urgent appointments made for cancer testing.

We used a computer model to show what might happen if family doctors used the tools for patients who have symptoms of bowel cancer. In our model, if general practitioners used the tools, patients would need fewer appointments before they were referred to a specialist. This should reduce the time to diagnosis and treatment, compared with not using the tools. However, there is very little evidence as to whether or not this is indeed the case. Therefore, at the moment, we cannot say whether or not the use of such tools by general practitioners is better for patients and the NHS. More research is needed on what effect these tools have on patients, especially as to whether or not quality and length of life are improved.

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This report

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