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.

Published November 2020
DOI: 10.3310/hta24660
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

The research reported in this issue of the journal was funded by the HTA programme as project number 16/12/04. The contractual start date was in April 2017. The draft report began editorial review in March 2019 and was accepted for publication in March 2020. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors’ report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HTA programme or the Department of Health and Social Care.

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