Extended Research Article

Evaluation of prognostic models to improve prediction of metastasis in patients following potentially curative treatment for primary colorectal cancer: the PROSPECT trial

Vicky Goh,[1][*] Susan Mallett,[2] Manuel Rodriguez-Justo,[3] Victor Boulter,[4]
Rob Glynne-Jones,[5] Saif Khan,[6] Sarah Lessels,[7] Dominic Patel,[3] Davide Prezzi,[1]
Stuart Taylor,[2] Steve Halligan[2] on behalf of all the PROSPECT investigators

[1]School of Biomedical Engineering and Imaging Sciences, King's College London, London, UK
[2]UCL Centre for Medical Imaging, London, UK
[3]Research Department of Pathology, UCL Cancer Institute, London, UK
[4]Patient Representative
[5]Mount Vernon Centre for Cancer Treatment, Northwood, UK
[6]Department of Pathology, London, UK
[7]Scottish Clinical Trials Research Unit (SCTRU), NHS National Services Scotland, Edinburgh, Scotland

[*]**Corresponding author** vicky.goh@kcl.ac.uk

Plain language summary

Evaluation of prognostic models to improve prediction of metastasis in patients following potentially curative treatment for primary colorectal cancer: the PROSPECT trial

Plain language summary

Bowel cancer is one the most common United Kingdom cancers and a leading cause of death. Despite apparently curative treatment, up to half of patients ultimately die from their disease because the tumour subsequently spreads around the body, known as 'metastasis'. Patients are given chemotherapy upfront to prevent this spread, but predicting who will and will not develop metastasis is challenging, so it is difficult to know who to treat. Prediction is based on cancer 'stage', which describes how advanced the tumour is on imaging and under the microscope. A 'multivariable prognostic model' may improve prediction and is a combination of multiple factors known about the patient and their tumour that provides a score for the chance of future disease. However, multivariable models are not commonly used to predict recurrence for colorectal cancer and are criticised because they omit the latest 'cutting-edge' measurements (e.g. from scanning and genetic testing). To improve prediction of outcomes after bowel cancer, we performed a study in 13 National Health Service hospitals, where we collected both basic and more novel measurements from patients at the time of their diagnosis. We then followed patients for 3 years to determine who did and did not develop metastasis. From 2011 to 2016, we recruited 448 patients and used data from 326 to develop a multivariable model to predict metastasis. Our baseline model used a combination of basic factors, such as age, sex, tumour size and location, and treatment. This model predicted future disease significantly better than simple measurement of tumour stage. However, we found that the model did not improve when we added cutting-edge measurements. This suggests that these newer measurements are not useful to predict the chance of future disease. Our results suggest that researchers investigating prediction would be best served by concentrating on basic rather than more novel measurements.

Health Technology Assessment

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