

New online tool for clinicians could predict long-term risk of breast cancer returning

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A new, simple web-based calculator that could better predict the long term risk of breast cancer returning in other areas of the body has today been published online by researchers at The Royal Marsden NHS Foundation Trust and Queen Mary University of London.

The prognostic tool—CTS5 (Clinical Treatment Score post-5-years) - published recently in the *Journal of Clinical Oncology*, could be used to decide which patients are at high enough risk of their cancer returning after receiving the standard five years of endocrine ([hormone](#)) [therapy](#), and so could benefit from continuation of treatment. It could also predict which patients are at low risk of recurrence, and so can avoid any further therapy along with the potential adverse side effects.

Over the last three decades, there has been a major increase in the rate of [invasive breast cancer](#) in Western countries. Approximately 85 per cent of patients are now diagnosed as oestrogen receptor (ER) positive, which means that the cancer grows in response to the hormone oestrogen. Almost all of these patients are prescribed five years of hormone therapy after having standard treatment (surgery, chemotherapy, and/or radiation therapy), to lower the risk of the cancer returning.

However, hormone therapy can have significant side effects for some patients, including weakness of bone tissue, and exacerbation of menopausal symptoms. Oncologists along with patients have to decide after five years of hormone treatment whether extending this type of

therapy is worthwhile and appropriate.

Professor Mitch Dowsett, Head of The Royal Marsden Ralph Lauren Centre for Breast Cancer Research and Professor of Biochemical Endocrinology at The Institute of Cancer Research (ICR), and Professor Jack Cuzick and Dr. Ivana Sestak from Queen Mary University of London developed CTS5 after reviewing data from two previously published studies. Together these provided information on 11,446 postmenopausal women with ER positive breast cancer who had received five years of hormone therapy (tamoxifen, anastrozole, or letrozole).

Using the data set from one previously published study, they measured how many women developed metastasis five to 10 years after they finished endocrine therapy. This was then combined with information about the tumour, which had been measured at the point of diagnosis, to produce a risk equation—CTS5.

To investigate the validity of the tool, researchers then tested CTS5 against data from the second study. CTS5 was shown to be able to accurately separate women into groups of low, intermediate, or high risk of developing a late distant recurrence breast cancer after five years of hormone therapy. The test identified 42 per cent of women as who were sufficiently low risk so that extending hormone therapy would have been of very little value.

Co-lead researcher Professor Mitch Dowsett, Head of The Royal Marsden Ralph Lauren Centre for Breast Cancer Research and Professor of Biochemical Endocrinology at The Institute of Cancer Research, London, said: "What we have developed could improve clinical practice, benefiting breast cancer patients by avoiding potentially unnecessary extended treatment. Clinicians require expertise and the best tools to help them make crucial decision on treatment for patients, decisions that

can make a difference to patient's quality of life."

Queen Mary University of London researchers led on the development of the web-based CTS5 calculator, which has been designed with clinicians in mind. After inputting patient details, including age, tumour size and tumour grade, it gives an estimated 5-10 year risk of the cancer returning in another part of the woman's body, with an estimated benefit from extending their hormone therapy.

Co-lead researcher Professor Jack Cuzick from Queen Mary University of London said: "Hormone sensitive breast cancer is one of the few cancers where late recurrence is common, and predicting who is at high risk is particularly important so that they can continue hormone treatment. While our ability to predict this type of cancer is highly likely to improve in the future, we're providing a simple tool which is available now, and is easily used and well tested."

Dr. Ivana Sestak from Queen Mary University of London said: "Over 50 per cent of women who have finished hormonal treatment for their breast cancer are at increased risk of developing a late metastasis. But there are no web-based calculators for predicting which women are at highest risk.

"Our tool provides a very simple way of obtaining the risk of a late metastasis for each woman individually. It is very important to identify these women in the clinic and the calculator provides help in the decision-making process."

Professor Dowsett adds: "This tool uses information that is already gathered in all patients, so could be easily used across the UK and globally at other centres."

The authors note that the data used was from previously published

studies that began over 20 years ago on patients with hormone receptor positive tumours (make up about 85% of [breast cancer](#)). The only major change to the management of this specific patient population since then has been the introduction of trastuzumab for some patients, and so clinicians who are treating this specific group should be cautious of using CTS5.

More information: Mitch Dowsett et al. Integration of Clinical Variables for the Prediction of Late Distant Recurrence in Patients With Estrogen Receptor–Positive Breast Cancer Treated With 5 Years of Endocrine Therapy: CTS5, *Journal of Clinical Oncology* (2018). [DOI: 10.1200/JCO.2017.76.4258](#)

Provided by The Royal Marsden NHS Foundation Trust

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