

# New breast cancer test will help more women avoid unnecessary chemotherapy

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A new genetic test for one of the most common forms of breast cancer will help doctors better identify those women who should be considered for chemotherapy, and those who can avoid it, say researchers.

A team at The Institute of Cancer Research, London, The Royal Marsden NHS Foundation Trust and Queen Mary University of London found that the test - called PAM50 - produced better long-term information than current methods for determining if a patient's breast cancer would return.

The test, which can be processed locally instead of being sent off to an American lab, identifies more women with the highest risk of their breast cancer returning, with fewer women classed as at intermediate risk.

The [new test](#) could therefore help doctors identify with greater certainty the women who will have the most potential of benefitting from chemotherapy, while letting others avoid unnecessary treatment.

The research, published today (Monday) in the *Journal of Clinical Oncology*, was funded by Breakthrough Breast Cancer, AstraZeneca and the NIHR Biomedical Research Centre at The Royal Marsden, with additional support from Cancer Research UK.

Breast cancer is diagnosed in 50,000 women every year, with 80% of cases caused by oestrogen receptor positive (ER+) disease. Women with

this type of breast cancer can be treated with hormone therapy, but for some women, the risk of their breast cancer coming back within 10 years means they are also given chemotherapy.

Currently, a test called Oncotype DX (1) can assess the likelihood of a patient's breast cancer returning, but the test costs more than £2,000 per patient to be administered privately and samples must be sent abroad to be processed. The current test also identifies a large portion of women as having 'intermediate risk', making a doctor's decision of whether chemotherapy will help more difficult.

In this study, scientists assessed RNA in [tissue samples](#) taken from 940 [patients](#) with ER+ breast cancer and compared the new PAM50 score, which analyses 50 genes linked with breast cancer, with the Oncotype DX test, and with a test called IHC4, developed by Breakthrough Breast Cancer.

The PAM50 test provided more long-term predictive information for doctors than both the Oncotype DX test and IHC4, while being as effective as other tests in identifying women at low risk of their breast cancer recurring.

Notably, the PAM50 test categorised more patients as having a high risk of their breast cancer returning within 10 years and fewer as intermediate than the other two tests. The researchers said the PAM50 test could therefore be a more cost-effective tool while providing doctors with more relevant information for determining which breast cancer patients will benefit most from chemotherapy.

Professor Mitch Dowsett, Professor of Biochemical Endocrinology at The Institute of Cancer Research and Head of Biochemistry at The Royal Marsden, said: "Chemotherapy is often used after surgery to reduce the risk of a patient's breast cancer coming back, but the side-

effects are significant and some women will not see any benefit. While the current test is useful for both patients and clinicians to help them decide whether chemotherapy is needed, it's expensive and not available locally.

"Our study found that the PAM50 test is more effective than other methods at providing the information to exclude breast cancer patients from unnecessary chemotherapy, and has the potential to be done more quickly. For each sub-group of breast cancer the PAM50 test added significant information beyond that of the standard clinical treatment score and the Oncotype DX score combined."

Professor Alan Ashworth, Chief Executive of The Institute of Cancer Research, said: "The great strides that have been made in breast cancer treatment have resulted in a large rise in survival from the disease, but some women receive treatment which can be arduous while receiving no benefit. This test will improve doctors' knowledge of who might benefit, allowing more women to make better informed decisions on their treatment."

Breakthrough Breast Cancer's Director of Research Julia Wilson said: "The PAM50 [test](#) has been proven to be an effective way of helping clinicians ensure that women do not have to undergo chemotherapy treatment that will not have any medical benefit, when their risk of cancer recurrence is in fact very low. This will mean that, where appropriate, women will be able to avoid the toxic side effects of [chemotherapy](#)."

"We're aiming to reach a stage where all [breast cancer](#) patients receive the most appropriate treatment for them, and this research from Mitch and his team is an important step in that direction."

**More information:** Paper: [jco.ascopubs.org/content/early ...](http://jco.ascopubs.org/content/early ...)

[012.46.1558.abstract](#)

(1) The Oncotype DX test is a commercially owned test developed by Genomic Health. The test analyses a panel of 21 genes within tumours to determine a Recurrence Score, a score out of 100 that corresponds to the likelihood of breast cancer recurring within 10 years of the initial diagnosis. Together with a clinical treatment score based on a doctor's assessment, the Recurrence Score is used to determine if a patient will need chemotherapy.

(2) The PAM50 test was carried out using NanoString Technologies' nCounter equipment.

Provided by The Institute of Cancer Research

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