

Gene test to predict breast cancer recurrence less cost effective in real world practice

January 8 2018



Micrograph showing a lymph node invaded by ductal breast carcinoma, with extension of the tumour beyond the lymph node. Credit: Nephron/Wikipedia

The most commonly used gene expression profile test used to help predict breast cancer recurrence may not be as cost-effective as once thought, say a team of researchers led by Georgetown Lombardi Comprehensive Cancer Center.

Their study, published in the *Journal of Clinical Oncology* ("Cost-Effectiveness of Gene-expression Profile Testing in Community Practice"), is the first to look at the [cost effectiveness](#) of the [test](#), Oncotype DX, in "real world" circumstances. Oncotype DX samples 21 different gene arrays to gauge risk of early stage, favorable prognosis tumors coming back later and spreading to other parts of the body ("distant recurrence") and can be very useful to help [patients](#) and their doctors decide if [chemotherapy](#) benefits will outweigh its risks. Patients with results indicating low-risk can consider forgoing chemotherapy, while those with high-risk results are recommended to have chemotherapy.

The new research takes into account who was tested; how many patients were determined by the test to be at high risk of [breast cancer recurrence](#), but did not act on treatment recommendations for chemotherapy; and conversely, how many patients were determined to be at lower risk of recurrence, but chose to get chemotherapy. The study also examined the impact of test accuracy on its cost-effectiveness.

Previous studies of the costs and benefits of Oncotype DX were conducted assuming ideal conditions: all patients got the test, physicians and patients used the test's score to dictate treatment, and the test had perfect prediction of recurrence. Under such ideal conditions past researchers concluded that the benefit of Oncotype DX was reasonable by current standards relative to its costs (between about \$3,500 to \$4,200). The new study shows that the less than perfect accuracy is one of the factors that make the test less cost-effective than previously thought.

"As with all new technology, it's important to assess real-world implementation to ensure what we're offering patients is useful to them and doesn't add to the societal and patient cost-burden, which is already very high in cancer care," says the study's lead author, Young Chandler, DrPH, MS, MPH, assistant professor of oncology at Georgetown University School of Medicine and a member of Georgetown Lombardi.

"Under idealized conditions, this test is considered cost effective. But by looking at national data, our economic analysis found that the likely cost-effectiveness ratio for Oncotype DX testing in community practice was higher than the ratios for the most commonly accepted diagnostic and preventive interventions," says the study's senior author, Jeanne S. Mandelblatt, MD, MPH, professor in the departments of oncology and medicine at Georgetown University School of Medicine and a member of Georgetown Lombardi.

"There has long been ongoing debate about what is good value for the money spent in oncology care. This study suggests that it will be critical to consider actual community practice in making such determinations," says Mandelblatt.

In this study, investigators looked at the "usual care" costs and effects for patients diagnosed with breast cancer between 2000-2004 (before use of genetic predictive tests) and compared the numbers with patients diagnosed from 2005-2012, when Oncotype DX was available to community physicians. In the usual care scenario, patients could receive chemotherapy or not based on their age and breast cancer stage, and in the Oncotype DX testing period, patients were either tested or not, and received chemotherapy based on age, stage, test use, and test results.

Using population data from the National Cancer Institute along with other large data banks, the research team conducted one hundred million simulations to account for uncertainty, inflation, and the benefit of

assurance versus worry, among other variables. They found that community practice Oncotype test rates between 2005-2012 were 24 percent and chemotherapy use rate was 30 percent. Patients younger than age 50 who were tested had lower chemotherapy rates than untested patients. Among older patients, there was more chemotherapy use among tested compared to untested patients. These patterns resulted in a greater proportion of tested patients who were destined to have distant recurrences receiving chemotherapy.

But in community practice, test results also sometimes resulted in decisions contrary to test findings —17 to 26 percent of patients with high-recurrence risk scores did not receive chemotherapy as guidelines recommend, and 8 percent of patients with low-risk scores opted to receive chemotherapy.

The researchers found the cost effectiveness ratio for testing versus usual care (no use of the genetic test) was \$188,125 per quality-adjusted life-year (QALY). Cost effectiveness for ideal conditions was \$39,496 per QALY (more similar to earlier estimates). In the United States, \$50,000 QALY was the first benchmark for where the benefits and usage were thought to be reasonable in relation to what is paid for them. Now, many accept a range of \$100,000 to \$150,000 per QALY, Mandelblatt says.

In their study, if the test was perfectly accurate, the cost-effectiveness ratio of Oncotype DX would be \$28,947 QALY, she says. "But given the impact of other genes and factors not considered by this test, some people with low risk [breast cancer](#) will recur, and some people with high risk cancer will never recur, making the test have less-than-perfect accuracy."

Still, benefits to patients are highest relative to costs in the small proportion of women at highest risk of recurrence that would not

otherwise be treated without testing," Mandelblatt says. "That is where such testing really shines."

Provided by Georgetown University Medical Center

Citation: Gene test to predict breast cancer recurrence less cost effective in real world practice (2018, January 8) retrieved 12 July 2023 from <https://medicalxpress.com/news/2018-01-gene-breast-cancer-recurrence-effective.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.