

Diagnostic Tests for Early-Stage Breast Cancer

When breast cancer is diagnosed, it's important that doctors get as much information as they can about your tumor so they can make the best recommendations about how to treat the cancer. Such information is obtained from tests performed on the tumor.

This fact sheet provides an overview of the general diagnostic tests that help doctors understand your tumor type. It also describes newer tests that offer additional information for women with certain types of early-stage (stage I or II) breast cancer.



UNDERSTANDING YOUR TUMOR TYPE

The following tests, which are performed on tumor samples, give valuable information that helps guide treatment decisions for breast cancer:

- **Tumor features.** Examining tumor samples under a microscope can tell doctors where in the breast the tumor is located, whether it is invasive or noninvasive (*in situ*), and whether it has spread to the lymph nodes.
- **Estrogen and progesterone receptor tests.** Receptors are structures present on the surface of some cancer cells that act as doorways, allowing certain substances, such as the hormones estrogen and progesterone, to enter the cells and encourage them to grow. Tumors that test positive for these structures are called hormone receptor positive and might be successfully treated with hormonal therapy (*e.g.*, tamoxifen or aromatase inhibitors).
- **HER2/neu tests.** About 25% of all breast tumors make too much of a substance called HER2/neu, which speeds the growth of breast cancer cells. Such tumors may respond to treatment with the drug trastuzumab (Herceptin), which targets HER2/neu.

ESTIMATING RISK OF RECURRENCE & PREDICTING RESPONSE TO TREATMENT

One of the newest tools available to women with breast cancer are tests that estimate patients' risk of breast cancer recurrence and/or the likelihood that they will respond well to a particular treatment. Currently, there are only two tests approved for estimating risk of recurrence in patients with early-stage breast cancer: *Oncotype DX* and *MammaPrint*. In addition to estimating risk for recurrence, *Oncotype DX* also identifies patients who may be successfully treated with tamoxifen alone and may not need chemotherapy.¹

How do these tests work? Tests like *Oncotype DX* and *MammaPrint* work by analyzing the activity of certain genes in a sample of tumor tissue removed during surgery.

¹ For more information, see the ASCO Patient Guide: *Tumor Markers for Breast Cancers* on www.cancer.net.

Genes (our basic units of heredity) carry instructions that tell cells how to behave. In cancer cells, many genes act abnormally. The tests look for patterns of abnormal genetic activity to predict how the tumor will behave. Oncotype DX examines the activity of 21 genes to determine chance of recurrence, and MammaPrint looks at 70 different genes.

Who are they for? Oncotype DX is appropriate for women with stage I or II breast cancer that is hormone receptor positive and lymph-node negative (has not spread to the lymph nodes) who are or will be receiving hormonal therapy. MammaPrint is approved for patients aged 61 or younger with stage I or II breast cancer that is lymph-node negative, whose tumors are less than five centimeters (two inches) in diameter. Such patients qualify regardless of their hormone receptor status.

How are results reported? Tumor samples are sent by your doctor directly to the company that developed the particular test you are receiving, and the results are ready in about two weeks. Results for the Oncotype DX, for example, are reported as a number between 0 and 100 called a recurrence score. The lower your recurrence score, the lower the risk that the cancer will come back within 10 years. A lower recurrence score also predicts a better response to tamoxifen. MammaPrint classifies patients as either at “low risk” or “high risk” of recurrence.

Are these tests covered by insurance? Some insurance companies may cover some tests. Check with your insurer to find out whether a test is covered. You can also contact the companies that make the tests for more information. They may offer assistance with sorting through financial and insurance concerns related to their tests.

REMEMBER: *The tests described cannot tell you for certain whether your cancer will return or what treatment will be best for you, as many factors need to be taken into consideration. Tests that estimate risk of recurrence and/or predict response to treatment may provide additional information about your tumor to help you and your doctors when making treatment decisions.*

CancerCare Can Help

If you've been diagnosed with breast cancer, CancerCare's professional oncology social workers are here to help. We provide free individual counseling, support groups, education, practical help and financial assistance to help you cope with cancer. To learn more about our services, call us at **1-800-813-HOPE (4673)** or visit www.cancer.org.



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