

## **Breast Cancer - Inflammatory - Diagnosis** [1]

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**ON THIS PAGE:** You will find a list of the common tests, procedures, and scans that doctors can use to find out what's wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

For most types of cancer, a biopsy is the only way to make a definitive diagnosis of cancer. This is the most important step to make a diagnosis and to plan treatment. Imaging tests may also be done to find out how much the cancer has grown and whether it has spread to other parts of the body. However, imaging tests may not be as helpful as a biopsy for evaluating inflammatory breast cancer. In addition to a physical examination, the following tests may be used to diagnose inflammatory breast cancer. This list describes options for diagnosing this type of cancer, and not all tests listed will be used for every woman.

### **Imaging tests**

**Diagnostic mammography** [3]. A diagnostic mammogram is an x-ray of the breast. An x-ray is a way to create a picture of the structures inside of the body, using a small amount of radiation. It is similar to a screening mammography, which is used to look for a possible breast tumor in women who have no symptoms. A diagnostic mammography is often used when a woman is experiencing signs, such as nipple discharge or a new lump. It may also be used if something suspicious is found on a screening mammogram.

**Ultrasound** [4]. An ultrasound uses sound waves to create a picture of the internal organs. An ultrasound can distinguish between a solid mass, which may be cancer, and a fluid-filled cyst, which is usually not cancer. Ultrasounds are not used for screening.

**Magnetic resonance imaging (MRI) [5].** An MRI uses magnetic fields, not x-rays, to produce detailed images of the body. MRI can also be used to measure the tumor's size. A special dye called a contrast medium is given into the patient's vein before the scan to help create a clear picture of the possible cancer. A breast MRI may be used once a woman has been diagnosed with cancer to check the other breast for cancer or to find out how much the disease has grown throughout the breast. It may also be used for screening, particularly along with mammography for some women with a high risk of breast cancer. For example, women with breast cancer gene mutations, often called *BRCA* gene mutations, or a strong family history of breast cancer should receive MRI screening along with a mammogram.

MRI may often be better to see a small mass within a woman's breast than a mammogram or ultrasound, especially for women with very dense breast tissue, but it has a higher rate of false-positive test results which may result in more biopsies. A false-positive test result is one that indicates cancer when there is no cancer present. Talk with your doctor for more information.

## **Surgical tests**

**Biopsy [6].** A biopsy is the removal of a small amount of tissue for examination under a microscope. Other tests can suggest that cancer is present, but only a biopsy can make a definite diagnosis. The sample removed during the biopsy is analyzed by a pathologist. A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease. There are different types of biopsies, which are named by the technique and/or size of needle used to collect the tissue sample.

- A fine needle aspiration (FNA) uses a thin needle to remove a small sample of cells.
- A core needle biopsy uses a wider needle to remove a larger sample of tissue. This is usually the preferred biopsy technique for determining whether a physical examination or finding on an imaging test is cancer. A vacuum-assisted biopsy removes several large core of tissue. Local anesthesia, medication to block the awareness of pain, is used to lessen a patient's discomfort during the procedure. For inflammatory breast cancer, there is often no single, main tumor so more than one core biopsy may be needed to diagnose the cancer.
- A surgical biopsy removes the largest amount of tissue. This biopsy may be used to remove part of the lump, called an incisional biopsy, or to remove the entire lump, called an excisional biopsy. Because definitive surgery is best done after a cancer diagnosis has been made, a surgical biopsy is usually not the recommended way to diagnose breast cancer. Most often, non-surgical core needle biopsies are recommended to diagnose breast cancer. This means that only one surgical procedure is needed to remove the tumor and to take samples of the lymph nodes. An incisional biopsy is occasionally needed to diagnose inflammatory breast cancer when the core needle biopsies (see above) were not helpful to diagnose the cancer.
- Image-guided biopsy is used when a distinct lump can't be felt, but an abnormality is seen on a radiologic image, such as a mammogram. During this procedure, a needle is guided to the area of concern with the help of mammography, ultrasound, or MRI. A stereotactic biopsy is performed with mammography guidance. A small metal clip may be put into the breast to mark the site of biopsy, in case the sample tissue proves cancerous and additional surgery is required. This clip is usually titanium so it will not cause problems with future imaging tests, but check with your doctor before you have additional imaging tests. An image-guided biopsy

can be done using a fine needle, core, or vacuum-assisted biopsy, depending on the amount of tissue being removed. Imaging tests may also be used to help do a biopsy on a lump that can be felt, in order to help find the best location. This approach may be very useful to diagnose inflammatory breast cancer as it is often hard to locate the best area for a biopsy due to the nature of the disease.

If cancer is diagnosed, surgery is needed to remove the cancer in the breast and evaluate the lymph nodes for cancer (see [Treatment Options](#) [7]). However, for inflammatory breast cancer, surgery first is not usually the best option because breast cancer cells have often already spread throughout the breast. Because the goal of surgery is make sure that there are no cancer cells at the edge of the tissue removed during surgery, called a clear surgical margin, other treatment first may be a better option. Treatment before surgery is called neoadjuvant therapy (see [Treatment Options](#) [7]). If there is cancer in the lymph nodes, the cancer is called lymph node-positive breast cancer or node-positive. If there is no cancer in the lymph nodes, the cancer is called lymph node-negative breast cancer or node-negative.

**Tumor features.** By examining the tumor under the microscope, the pathologist finds out whether the tumor is invasive or in situ; ductal or lobular; and the grade, which describes how different the cancer cells look from healthy cells. Inflammatory breast cancer is always invasive.

### **Molecular testing of the tumor**

Your doctor may recommend additional laboratory tests on your tumor sample to identify specific factors unique to the tumor. Inflammatory breast cancers are often triple negative. This means that the tumor cells do not have estrogen or progesterone receptors or human epidermal growth factors receptors (see below). However, some inflammatory breast cancers do have these receptors.

**Estrogen receptor (ER) and progesterone receptor (PR) tests.** Breast cancer cells with these receptors depend on the hormones estrogen and progesterone to grow. The presence of these receptors helps determine both the patient's risk of recurrence and the type of treatment that will be most likely to prevent a recurrence. Generally, hormonal therapy (see [Treatment Options](#) [7]) works well for ER-positive or PR-positive tumors. However, many inflammatory breast cancers are ER-negative and PR-negative. Read about [ER and PR testing](#) [8].

**HER2 tests.** About 20% to 25% of breast cancers have an increase in the number of copies of a gene called the human epidermal growth factor receptor (*HER2*). This is called HER2-positive cancer. The gene makes a protein which is found on the cancer cell and is important in tumor cell growth; these types of cancers usually grow more quickly. The HER2 status helps determine whether a certain type of drug, such as trastuzumab (Herceptin), lapatinib (Tykerb), pertuzumab (Perjeta), or trastuzumab emtansine (TDM-1; Kadcyla) might help treat the cancer. Only trastuzumab and pertuzumab are approved for the treatment of early-stage cancers. In addition, about 50% of HER2-positive tumors also have hormone receptors and can benefit from both hormone therapy and HER2 targeted therapy. Read about [HER2 testing for breast cancer](#) [9].

### **Blood tests**

The doctor may also need to do several types of blood tests to learn more about the cancer:

**Serum chemistry.** These tests are often done to look at blood electrolytes, which are minerals in your body, such as potassium and calcium, and specialized proteins called enzymes that can be abnormal if cancer has spread. However, it is important to note that many noncancerous conditions can affect the results of these tests.

- Alkaline phosphatase is an enzyme that can be associated with disease that has spread to the liver, bone, or bile ducts.
- Blood calcium levels can be increased if cancer has spread to the bone. This is a condition called hypercalcemia.
- Total bilirubin count and the enzymes alanine aminotransferase (ALT) and aspartate aminotransferase (AST) evaluate liver function. High levels of any of these substances can indicate liver damage, which is a sign that the cancer could have spread to that organ.

**Blood tumor marker tests.** Serum tumor markers or biomarkers are proteins found in a person's blood that can be associated with the presence of cancer. An elevated serum tumor marker may indicate an abnormal process in the body, which could be due to cancer or a noncancerous condition. Tumor marker testing is not recommended for early-stage breast cancer, but they may be useful in the follow-up care of recurrent or metastatic disease. Common tumor markers in breast cancer include CA27.29, CA15-3, and CEA. Learn more about [tumor markers for breast cancer](#). [10]

### **Additional tests**

The doctor may recommend additional tests to evaluate the stage of the cancer depending on your medical history, symptoms, how much the disease has grown in the breast and lymph nodes, and results of the physical examination. Read the [Stages](#) [11] section for more information. These tests are not recommended for all patients.

- A chest x-ray may be used to look for cancer that has spread from the breast to the lung.
- A [bone scan](#) [12] may be used to look for spread to the bones. A bone scan uses a radioactive tracer to look at the inside of the bones. The tracer is injected into a patient's vein, and then the scan is performed several hours later using a special camera. The tracer collects in areas of the bone that are healing, which occurs in response to damage from the cancer cells. The areas where the tracer collects appear dark, compared to healthy bone, which appears gray. However, some cancers do not cause the same healing response and will not show up on the bone scan. Also, areas of advanced arthritis or healing after a fracture will also appear dark.
- A [computed tomography \(CT or CAT\) scan](#) [13] may be used to look for disease in organs outside the breast, such as the lung, liver, bone, and lymph nodes. A CT scan creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. A CT scan can also be used to measure a tumor's size. A CT scan can also be used to measure the tumor's size and if it is shrinking with treatment. A contrast dye may be injected into a patient's vein before the scan to provide better detail.
- A [positron emission tomography \(PET\) scan](#) [14] may also be used to determine whether the

cancer has spread to organs outside of the breast. A PET scan is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance is injected into the patient's body. This sugar substance is taken up by cells that use the most energy because they are actively dividing. Because cancer cells tend to use energy actively, they absorb more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body. Areas that are most active appear as bright spots, and the intensity of the brightness can be measured to better describe these areas. A combination PET/CT scan [15] may also be used to measure the size of tumors and to more accurately determine the location of the bright spots. A PET/CT scan will also show any abnormalities in the bone, similar to the bone scan.

After diagnostic tests are done, your doctor will review all of the results with you. If the diagnosis is cancer, these results also help the doctor describe the cancer; this is called staging.

*The next section helps explain the different stages for this type of cancer. Use the menu on the side of your screen to select Stages, or you can select another section, to continue reading this guide.*

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**Links:**

- [1] <http://www.cancer.net/cancer-types/breast-cancer-inflammatory/diagnosis>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/24584>
- [4] <http://www.cancer.net/node/24714>
- [5] <http://www.cancer.net/node/24578>
- [6] <http://www.cancer.net/node/24406>
- [7] <http://www.cancer.net/node/18583>
- [8] <http://www.cancer.net/node/29856>
- [9] <http://www.cancer.net/node/29831>
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- [15] <http://www.cancer.net/node/24565>