

Breast Cancer Diagnosis, Treatment and Follow-Up

What is Breast Cancer?

Each of the body's organs, including the breast, is made up of many types of cells. Normally, healthy cells grow and divide only when the body needs to replace those that are injured or dying. This orderly process helps keep the body in balance.

Sometimes cells keep dividing even when not needed. These extra cells form a mass of tissue called a growth or tumor.

Some growths consist of completely normal looking cells. These "benign" tumors do not invade surrounding tissue or spread to other parts of the body. They are not cancer. Benign tumors can, however, cause problems by pushing on normal structures in the body. Sometimes a biopsy is needed to tell whether a growth is benign or not.

Some growths consist of abnormal looking cells that are cancerous (malignant). When these cells are confined to the tumor and have not spread to surrounding tissue or other parts of the body, it is called "in situ" cancer. The most common type of in situ cancer is ductal carcinoma in situ (DCIS), which forms in the milk ducts. If left untreated, however, it may eventually spread to surrounding tissue.

Tumors with cells that have spread into surrounding tissue, bone or other parts of the body by traveling through blood or lymph vessels are called metastasis. Metastasized cells keep the same name of the original cancer location. For example, if breast cancer spreads to the lungs, it is called metastatic breast cancer in the lung instead of lung cancer. Therefore, it will require treatment for breast cancer.

Breast cancer commonly spreads to the lymph nodes near the breast. While serious, this is not as dangerous as it spreading to distant sites like the lungs, bones, liver or brain.

Not all breast cancers are alike since they can be made up of different types of abnormal cells. Most breast cancers begin in the milk ducts (ductal carcinomas). The second most common type originates in the lobules (lobular carcinoma). A rare kind of ductal carcinoma is called inflammatory breast cancer. It grows quickly and has an appearance similar to that of a breast infection. Sometimes, other tumor types, like lymphoma or sarcoma, can begin in the breast.

How is Breast Cancer Diagnosed?

The steps taken to evaluate a new breast lump, symptom or mammogram change are very important. They help the doctor make the clearest diagnosis with the least chance for harm or error.

Your health care team will choose appropriate tests, such as a mammogram, ultrasound or magnetic resonance imaging (MRI), to help them fully understand the situation and then recommend the best type of treatment. The exact type of tests done will depend on a number of factors, which the health care team will discuss with you. For example, if your breast imaging shows a suspicious breast lump or an area of concern, your doctor may recommend a biopsy. If the biopsy shows that cancer cells are present, other imaging and lab tests may be ordered.

Medical History and Physical Exam

At your first visit, a thorough medical history and physical exam will be done. When taking your medical history, you may be asked about your symptoms and other factors related to breast cancer risk such as a family or personal history of the disease. During the initial physical exam, you will have a thorough breast exam and be assessed for any changes that might show the cancer has spread. You may also have a more general exam if needed.

During the breast exam, you will be evaluated for:

- Changes in the texture, size, skin and nipples of your breasts.
- Lumps or masses.
- Enlarged lymph nodes under the arm (axillary nodes), along the breast bone (internal mammary nodes), near the collarbone (clavicular nodes) and at the sides of the neck (cervical nodes).

Breast Imaging Tests

Most patients will have a mammogram, which uses x-rays to examine breast tissue. Mammography is most useful when current images are compared to older ones, so providing any prior mammograms is very important.

A breast ultrasound may also be recommended. An ultrasound looks at the breast tissue with sound waves to help determine if the area of concern is a fluid-filled cyst or a solid tissue that may be cancerous. An ultrasound can also look at lymph nodes to see if they are involved.

Some patients may have a breast MRI in addition to the mammogram and ultrasound. This can help define the size and extent of cancer within the breast tissue.

Breast Biopsies

If the mammogram, ultrasound or MRI shows an area of concern, a biopsy will be recommended. During a biopsy, a small sample of the tumor is removed and examined under a microscope to see if cancer is present. There are several different types of breast biopsies. The type you have will depend on your particular situation. It is common to have more than one biopsy if it helps to better understand the tumor.

When making the initial cancer diagnosis, a needle biopsy is often preferred over a surgical procedure. A needle biopsy is quick and can be performed with little discomfort. Only a local anesthetic (numbing of the skin) is needed. A needle biopsy also gives the patient a chance to discuss treatment options with the doctor before any surgery is done.

There are two types of needle biopsies – core needle biopsy and fine needle aspiration (FNA). A core needle biopsy is the most common way to remove a small sample of the breast tissue. An FNA is mainly used to assess the regional lymph nodes.

Needle biopsies are typically performed using an ultrasound or mammogram to help pinpoint the exact location of the abnormality and guide the tip of the needle to the right spot. The choice to use a mammogram or ultrasound depends on the type of breast change and its location.

Sometimes, the tumor cannot be completely characterized by needle biopsies. These patients may require a surgical biopsy guided by a mammogram or ultrasound.

After the biopsy, the removed tissue is sent to pathology for microscopic examination. The pathologist (a doctor who identifies disease by looking at cells and tissue with a microscope) will then determine whether or not cancer cells are present. This process may take several days. Once the process is complete, the results will be discussed with you.

Other Recommended Tests

If your biopsy results indicate breast cancer, additional tests can help to determine the extent and the best course of treatment for you. Additional tests may include:

- Chest x-ray.
- Bone scan.
- Computerized tomography (CT) scan.
- MRI.
- Positron emission tomography (PET) scan.
- Blood tests (complete blood count or CBC, blood chemical and enzyme tests).
- Tumor tests, which may include estrogen and progesterone receptor tests to measure the amount of estrogen and progesterone receptors in the cancer tissue. This helps determine if treatment to block estrogen and progesterone receptors may stop the cancer from growing.
- HER2/neu tests, which determine if extra HER2/neu genes are present and how much of the HER2/neu protein is made. This helps determine if drugs that target the HER2/neu protein may stop the cancer from growing.
- Molecular testing.

How is Breast Cancer Treated?

Your treatment depends on many factors including the type of cancer cells, the spread of disease, the size of the tumor in relation to the breast and your general health.

Your doctor will also consider the two main risks associated with breast cancer—local recurrence and distant metastasis. Local recurrence means your cancer returns to the breast and regional lymph nodes that were originally involved. Distant metastasis means your cancer has spread to other parts of your body. Knowing your personal risk for your breast cancer recurrence or metastasis will help determine the best treatment options.

Your treatment may begin with surgery followed by an adjuvant therapy such as chemotherapy or hormone therapy. Adjuvant therapy is given after surgery, when no cancer cells can be seen, to prevent cancer from recurring. Some patients may require a neoadjuvant therapy before surgery to shrink the tumor and make it easier to remove. Cancer that has spread to other parts of the body is typically treated with chemotherapy or hormone therapy as well as radiation therapy or surgery to help control pain or other resulting symptoms.

Surgery

The two main surgical treatments for breast cancer are total mastectomy, removal of the entire breast, and breast conserving surgery, also called lumpectomy or partial mastectomy, where only the tumor is removed.

Women who have no evidence of cancer involving their lymph nodes may also undergo a surgical biopsy of this area under the arm. This is called sentinel lymph node biopsy. Women who have confirmed involvement of the lymph nodes may require removal of all the lymph nodes under the arm. This is called an axillary node dissection.

Most patients with early stage breast cancer are candidates for breast conserving surgery, which is usually followed by radiation therapy. Those with locally advanced cancers will most likely need to have a mastectomy.

Breast Reconstruction

If you are going to have a total mastectomy, you may want to think about having a new breast made. Plans for breast reconstruction are often part of your cancer treatment plan.

Reconstruction can be done at the time of the surgery or at some time in the future. The breast may be made with your own tissue or by using implants filled with saline or silicone. Breast reconstruction is not considered cosmetic surgery, so it is typically covered by health insurance. Reconstructive options such as tissue rearrangement or partial breast reconstruction may also be available for women undergoing lumpectomy in order to minimize the impact of surgery and radiation on the appearance of the breast.

Radiation Therapy

This treatment uses high-energy x-rays to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external beam radiation) or by placing radioactive material into the area where the cancer cells are found (brachytherapy).

Radiation therapy is usually given after breast conserving surgery to kill any cancer cells that might be left in the breast. It is also used after mastectomy in patients with advanced stage disease.

Chemotherapy

Chemotherapy uses special drugs to damage or kill cancer cells. Chemotherapy may be taken by mouth or it may be put into the body by a needle in a vein. Chemotherapy drugs enter the bloodstream, travel through the body and attack cancer cells outside the breast area. It is used to improve survival and reduce the possibility of metastasis. Chemotherapy is also given to some patients to reduce the size of the tumor before surgery.

Hormone Therapy

If tests show the breast cancer cells contain estrogen and progesterone receptors you may be given hormone therapy. Hormone therapy typically uses drugs to block the way hormones in the body help cancer grow.

Targeted Therapy

Targeted therapy uses drugs to identify and attack specific cancer cells, thereby decreasing harm to normal cells. Some types of targeted therapy kill cancer cells directly by affecting how the cells grow and survive. Other targeted therapies help the body's immune system attack and fight the cancer. Monoclonal antibodies and tyrosine kinase inhibitors are two types of targeted therapies used in the treatment of breast cancer.

Clinical Trials

Cancer clinical trials are part of a long, careful research process that involves people. The main purpose of a clinical trial is to find better ways to prevent, diagnose and treat a disease.

Patients who participate in a clinical trial receive drugs or procedures that already have been successful in previous laboratory and/or animal studies. While most clinical trials study new drugs or procedures, some involve treatments that have already received approval by the US Food and Drug Administration.

Clinical trials may take many years. First, doctors study a new treatment in the lab. Then they often study it in animals. If a new treatment shows promise, doctors then test the treatment in people. Doctors do this in three to four steps or phases. Your doctor may offer you a clinical trial as a treatment option. Participation, however, is voluntary and you can choose to withdraw at any time.

Each research study has its own guidelines for participation called eligibility criteria. Generally, participants in a specific clinical trial are alike in important ways such as the type and stage of their cancer.

Typically, new treatments are introduced in clinical trials for patients who have few or no alternatives. Promising treatments are then studied in larger trials that measure the advantages and disadvantages as compared to standard therapy.

What Else Should I Consider During and After Treatment?

Breast cancer affects all aspects of a person's life—not just the physical. The disease affects relationships with family and friends, work patterns and feelings about sexuality. Although every person will react differently to the diagnosis and to the effects of treatment, dealing with the emotional impact of breast cancer is essential to the recovery process. Family, friends, doctors, nurses, social workers and others can all help with emotional as well as physical recovery. The most important thing to remember is that a person can lead a fulfilling, normal life after having breast cancer.

What Follow-Up Care Should I Receive?

Care given after the completion of the initial treatment is essential for all breast cancer patients. Good follow-up care includes a clinical examination and diagnostic tests to check for signs of possible recurrence and social and psychological support to help cope with any long-term effects of diagnosis and treatment.

For most patients, one of the greatest difficulties after treatment is the fear of recurrence. Any change in the treated breast, chest wall or elsewhere in the body can cause alarm. It is important to realize that while these changes might be signs of a breast cancer recurrence, they also might be symptoms of another issue. Regular follow-up exams can differentiate between the two and help ensure that if there is a recurrence, it will be detected early.

Your doctor and nurse are the best sources of information for your follow-up care schedule. If you have any questions, do not hesitate to ask them.