The mutual goal of the National Comprehensive Cancer Network (NCCN) and the American Cancer Society (ACS) partnership is to provide patients and the general public with state-of-the-art cancer treatment information in understandable language. This information, based on the NCCN’s Clinical Practice Guidelines, is intended to assist you in the dialogue with your doctor. These guidelines do not replace the expertise and clinical judgment of your doctor. Each patient’s situation must be evaluated individually. It is important to discuss the guidelines and all information regarding treatment options with your doctor. To ensure that you have the most up-to-date version of the guidelines, consult the Web sites of the ACS (www.cancer.org) or NCCN (www.nccn.org). You may also call the NCCN at 1-888-909-NCCN or the ACS at 1-800-ACS-2345 for the most recent information.
NCCN Clinical Practice Guidelines were developed by a diverse panel of experts. The guidelines are a statement of consensus of its authors regarding the scientific evidence and their views of currently accepted approaches to treatment. The NCCN guidelines are updated as new significant data become available. The Patient Information version will be updated accordingly and will be available on-line through the NCCN and the ACS Web sites. To ensure you have the most recent version, you may contact the ACS or the NCCN.

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Introduction

With this report, patients have their first access to information on the way breast cancer is treated at the nation's leading cancer centers. Originally devised for cancer specialists by the National Comprehensive Cancer Network (NCCN), these treatment guidelines have now been translated for the general public by the American Cancer Society (ACS). To obtain another copy of these guidelines, as well as more information, call the American Cancer Society at 1-800-ACS-2345 or the NCCN at 1-888-909-NCCN, or visit these organizations' Web sites at www.cancer.org (ACS) and www.nccn.org (NCCN).

Since 1995, doctors have looked to the NCCN for advice on treating cancer. NCCN Clinical Practice Guidelines were developed by a diverse panel of experts from 19 of the nation's leading cancer centers. The guidelines represent the authors' consensus regarding the scientific evidence and their views of currently accepted approaches to treatment. The NCCN guidelines are updated as new significant data become available. The Patient Information version will be updated accordingly and will be available on-line through the NCCN and the American Cancer Society Web sites. To ensure that you have the most recent version, you may contact the American Cancer Society or the NCCN.

For more than 85 years, the public has relied on the American Cancer Society for information about cancer. The Society's books and brochures provide comprehensive, current, and understandable information to hundreds of thousands of patients, their families, and friends. This collaboration between the NCCN and ACS provides an authoritative and understandable source of cancer treatment information for the general public.

These patient guidelines will help you better understand your cancer treatment and your doctor's counsel. We urge you to discuss them with your doctor. Here are some questions you might want to ask.

- How many tumors do I have? How large are they?
- What is my cancer's grade (how abnormal the cells appear) and histology (type and arrangement of tumor cells), as seen under a microscope?
- Do I have any lymph nodes with cancer (positive lymph nodes)? If yes, how many?
- What is the stage of my cancer?
- Is my cancer estrogen receptor-positive or progesterone receptor-positive?
- Is breast-conserving therapy an option for me?
- In addition to surgery, what other treatments do you recommend? Radiation? Chemotherapy? Hormonal therapy?
- What are their side effects?

Making Decisions About Breast Cancer Treatment

On the following pages you'll find flow charts that doctors call "algorithms" or "decision trees." The charts represent different stages of breast cancer. Each one shows you step-by-step how you and your doctor can arrive at the choices you need to make about your treatment.
To reach an informed decision you need to understand some of the medical terms your doctor uses. You may feel you’re on familiar ground already, or perhaps you need to refer to the various sections listed in the table of contents. Not only will you find background information on breast cancer, but also explanations of cancer stage, work-up, and treatment – all categories used in the flow charts. We’ve also provided a glossary at the end of the booklet.

Although breast cancer is a very serious disease, it can be treated by a multidisciplinary team of health care professionals. This team may include a surgeon, radiation oncologist, medical oncologist, radiologist, pathologist, oncology nurse, social worker, and others. But not all women with breast cancer should receive the same treatment. Doctors must consider a woman’s specific medical situation. This booklet can help you and your doctor decide which choices best meet your medical and personal needs.

**Normal Breast Tissue**

The main parts of the female breast are lobules (milk-producing glands), ducts (milk passages that connect the lobules and the nipple), and stroma (fatty tissue and ligaments surrounding the ducts and lobules, blood vessels, and lymphatic vessels). Lymphatic vessels are similar to veins but carry lymph instead of blood.

Lymph is a clear fluid that contains tissue waste products and immune system cells. Most lymphatic vessels of the breast lead to axillary (underarm) lymph nodes. Cancer cells may enter lymph vessels and spread out along these vessels to reach lymph nodes. Cancer cells may also enter blood vessels and spread through the bloodstream to other parts of the body.

*Lymp nodes* are small, bean-shaped collections of immune system cells important in fighting infections. When breast cancer cells reach the axillary lymph nodes, they can continue to grow, often causing swelling of the lymph nodes in the armpit.

If breast cancer cells have multiplied in the axillary lymph nodes, they are more likely to have spread to other organs of the body as well.
Types of Breast Cancer

Breast cancer is an abnormal growth of cells that line the ducts and the lobules. The classification of types of breast cancer is based on whether the cancer started in the ducts or the lobules, whether the cells have “invaded” through the duct or lobule, and the appearance of the cancer under a microscope.

Carcinoma In Situ

In situ means that the cancer stays confined to ducts or lobules and has not invaded surrounding fatty tissues in the breast or spread to other organs in the body. There are two types of breast carcinoma in situ:

• **Lobular carcinoma in situ (LCIS):** Also called lobular neoplasia. It begins in the lobules but does not penetrate through the lobule walls. Most breast cancer specialists think that LCIS, itself, does not usually become an invasive cancer, but women with this condition do run a higher risk of developing an invasive cancer in either breast.

• **Ductal carcinoma in situ (DCIS):** The most common type of noninvasive breast cancer. Cancer cells inside the ducts do not spread through the walls of the ducts into the fatty tissue of the breast.

Infiltrating (or Invasive) Ductal Carcinoma (IDC)

Starting in a milk passage, or duct, of the breast, the cancer cells break through the wall of the duct and invade the breast’s fatty tissue. They can then invade lymphatic channels or blood vessels of the breast and spread to other parts of the body (metastasis). Infiltrating or invasive ductal carcinoma accounts for about 80% of all breast cancers.

Infiltrating (or Invasive) Lobular Carcinoma (ILC)

This type of cancer starts in the milk-producing glands. Like IDC, this cancer can spread beyond the breast to other parts of the body. About 10% to 15% of invasive breast cancers are invasive lobular carcinomas.

Medullary Carcinoma

This special type of infiltrating ductal cancer has a relatively well-defined, distinct boundary between tumor tissue and normal breast tissue. It also has a number of other special features, including the large size of the cancer cells and the presence of immune system cells at the edges of the tumor. It accounts for about 5% of all breast cancers. Medullary carcinoma has a slightly better prognosis (outlook for chances of survival) and a slightly lower chance of metastasis than invasive lobular or invasive ductal cancers of the same size.

Colloid Carcinoma

This rare type of invasive ductal breast cancer, also called mucinous carcinoma, is formed by mucus-producing cancer cells. Colloid carcinoma has a slightly better prognosis and a slightly lower chance of metastasis than invasive lobular or invasive ductal cancers of the same size.

Tubular Carcinoma

Tubular carcinoma is a special type of infiltrating ductal breast carcinoma. About 2% of all breast cancers are tubular carcinomas. They have a slightly better prognosis and a slightly lower chance of metastasis than invasive lobular or invasive ductal cancers of the same size.
Inflammatory Breast Cancer

Inflammatory breast cancer accounts for about 1% of invasive breast cancers. The skin of the affected breast is red, feels warm, and has the appearance of an orange peel.

The name for this type of breast cancer was chosen many years ago because the tissue appeared inflamed. Doctors now know that these changes are not due to inflammation but rather to spread of cancer cells within lymphatic channels of the skin.

Inflammatory breast cancer has a higher chance of spreading and a worse prognosis than typical invasive ductal or lobular cancers. Inflammatory breast cancer is automatically staged as stage IIIB unless it has already spread to other organs at the time of diagnosis. Such spread is more common with inflammatory breast cancer and makes it stage IV (see discussion of stages below).

Benign Breast Lumps

Most breast lumps are benign (not cancerous). Fibrocystic changes usually cause these lumps. Fibrosis refers to excessive formation of scar-like connective tissue; cysts are fluid-filled sacs. Women with fibrocystic changes often experience breast swelling and pain. The breasts may feel lumpy, and the nipple may discharge a clear or slightly cloudy liquid.

Benign breast lumps such as fibroadenomas or intraductal papillomas are quite common. They cannot spread outside of the breast to other organs. Talk to your doctor about whether it is necessary to remove these lumps. This booklet only refers to treating breast cancer, not benign breast conditions.

Breast Cancer Work-Up

An evaluation of a breast lump or mammogram finding includes a thorough medical history, a physical examination, and breast imaging (such as x-rays) including a diagnostic mammogram. A biopsy is needed for a worrisome finding, though many of these suspicious areas prove to be benign (not cancer). If cancer is found, other imaging and laboratory tests are needed. Exactly which tests are helpful depends on the type of cancer and the extent of the cancer. This section provides a summary of the steps, tests, and types of biopsy that may be suggested.

Doctor Visit and Examination

A woman’s first step in having a new breast lump, symptom, or a change on a mammogram evaluated, is to meet with her doctor. He or she will take a medical history which includes a series of questions about your symptoms and about factors that may be related to breast cancer risk (such as family history of cancer). Your physical examination should include a general examination of your body as well as careful examination of your breasts. Your doctor will look for:

- Any breast change, including its texture, size, relationship to skin and chest muscles
- Any changes in the nipple or skin of the breast
- Any evidence of lumps or masses in the breast
- Lymph nodes under the armpit or above the collarbone (enlargement or firmness of these lymph nodes might mean spread of breast cancer)
General examination of other organs to check for obvious spread of breast cancer and to help evaluate the general condition of your health.

**Breast Imaging Tests**

After completing your physical examination and taking your medical history, your doctor will recommend that you have breast imaging studies, including a mammogram unless this has already been done.

Women who have no breast lumps or symptoms will have a screening mammogram. This includes two pictures of each breast, a top-to-bottom and a side-to-side view.

Women with a lump in the breast, other suspicious symptoms, or with a change found on a screening mammogram will have a procedure called diagnostic breast imaging. A diagnostic mammogram includes more mammogram images of the area of concern to give more information about the size and character of the area. A breast ultrasound or sonogram also may be done. Ultrasound examination uses high-frequency sound waves to further evaluate a lump or mammogram finding. Most importantly, ultrasound helps determine if the area of concern is a fluid-filled cyst or solid tissue that may be cancer.

To get a high-quality mammogram picture, it is necessary to compress the breast slightly. A technician places the breast on the mammogram machine’s lower plate, which is made of metal and has a drawer to hold the x-ray film. The upper plate, made of clear plastic, is lowered to compress the breast for a few seconds while the technician takes a picture. Although compression may be uncomfortable, most women do not say it is painful.

Some women may have breast magnetic resonance imaging (MRI) in addition to a diagnostic mammogram and ultrasound. In some cases, breast MRI may help define the size and extent of cancer within the breast tissue. It may especially be useful in women whose “dense” breast tissue makes it more difficult to find tumors with a mammogram. Breast MRI is not proven as a screening test and is not a replacement for a screening mammogram.

**Breast Biopsy**

If a woman or her doctor finds a suspicious breast lump, or if imaging studies show a worrisome area, the woman must have a biopsy. This is a procedure to provide a tissue sample to be examined under the microscope. This examination is what actually determines if cancer is present.

There are several different types of breast biopsies. Biopsy may be done by a needle, or it may require a surgical procedure. Each type of biopsy has advantages and disadvantages. The best type of biopsy for each situation depends on the patient.

In most cases, if it is possible, a needle biopsy is preferred instead of a surgical biopsy as the first step in making a cancer diagnosis. A needle biopsy provides a diagnosis more rapidly and with less discomfort. In addition, it gives the woman an opportunity to discuss treatment options with her doctor before any surgery is performed. There is no danger that needle biopsy itself will spread the breast cancer. However, in some cases, a surgical biopsy may still be needed to remove all or part of a lump for microscopic examination after a needle biopsy has been performed, or it may be necessary to do a surgical biopsy instead of needle biopsy.
Two types of needle biopsies are used to diagnose breast cancer. The most common is core needle biopsy that removes a small cylinder of tissue. A less commonly used biopsy is fine needle aspiration (FNA) biopsy. FNA uses a smaller needle than a core biopsy but only removes a small amount of cells. FNA can also be used to remove fluid from a suspicious cyst.

Your doctor can do a core needle biopsy or FNA biopsy if he/she can feel the lump. If a lump cannot be felt easily or is not felt at all and only seen on mammogram or ultrasound, the doctor can use the ultrasound or mammogram to guide the needle during the biopsy. The mammogram-directed technique is called stereotactic needle biopsy. In this procedure, computerized mammogram breast images help the doctor map the exact location of the breast lump and guide the tip of the needle to the right spot. Ultrasound images can be used in the same way to guide the needle. The choice between a mammogram-directed stereotactic needle biopsy and ultrasound-guided biopsy depends on the type of breast change and the experience and preference of the doctor.

In patients who need a surgical (excisional) biopsy, the surgeon generally removes the entire area with the breast change with a zone of surrounding normal-appearing breast tissue called a margin. If the breast change cannot be felt, then the mammogram is used to guide the surgeon through a technique called wire localization. After numbing the area with a local anesthetic, x-ray pictures are used to guide a small hollow needle to the abnormal spot in the breast. A thin wire is inserted through the center of the needle, the needle removed, and the wire used to guide the surgeon to the right spot.

Most breast biopsies cause little discomfort. Only local anesthesia (numbing of the skin) is necessary for needle biopsies. For surgical biopsies, most surgeons use a local anesthetic plus some intravenous medicines to make the patient drowsy. A general anesthetic is not needed for most breast biopsies.

**Examination of tissue:** After the breast tissue is removed by either needle biopsy or surgical biopsy, it is sent to a pathology laboratory to determine if it is cancer. This process may take several days and cannot be rushed in most cases. This examination of the breast tissue determines if the lump is cancer.

Your doctor should give you your pathology results. Or, you can ask for a copy of your pathology report and to have it explained carefully to you. If you want, you can get a second opinion on the pathology of your tissue by having the microscope slides from your tissue sent to a consulting breast pathologist at an NCCN cancer center or other laboratory suggested by your doctor.

**Other Tests After Cancer Has Been Diagnosed**

If your breast biopsy results show that you have breast cancer, your doctor will order some other tests to find out if your cancer has spread and to help determine your treatment. For most women with breast cancer, extensive testing provides no benefit and is not necessary. Unfortunately, there is no test that can completely reassure you that the cancer has not spread. The NCCN Guidelines describe which tests are needed based on the extent of
the cancer and on the results of the history and physical examination. Tests that may be done include:

**Chest x-ray:** All women with breast cancer should have a chest x-ray before surgery to make sure that the breast cancer has not spread to the lungs.

**Bone scan:** This may provide information about spread of breast cancer to the bones. However, all changes that show up on a bone scan are not cancer. Unless there are symptoms of spread to the bone, including new pains or changes on blood tests, a bone scan is not necessary except in patients with advanced cancer. To scan bones, a small dose of a radioactive substance is injected into your vein. This radioactive substance collects in areas of abnormal bone. These areas show up on x-rays. Other than the needle stick, a bone scan is painless.

**Computed tomography (CT) scans:** CT scans are done when there are symptoms or other findings to suggest the cancer has spread to other organs. For most women with an early stage breast cancer, a CT scan is not needed. CT scans take multiple x-rays of the same part of the body from different angles to provide detailed pictures of internal organs. Except for the injection of intravenous dye, necessary for most patients, this is a painless procedure.

**Magnetic resonance imaging (MRI):** MRI scans use radio waves and magnets to produce detailed images of internal organs without any x-rays. MRI is useful in looking at the brain and spinal cord and in examining any specific area in the bone. Routine MRI for all patients with breast cancer is not helpful and is not needed.

**Blood tests:** Some blood tests are needed to plan surgery, to screen for evidence of cancer spread, and to plan treatment after surgery.

These blood tests include:

- Complete blood count (CBC): This determines whether the blood has the correct type and number of blood cells. Abnormal test results could reveal other health problems, including anemia, and could suggest the cancer has spread to the bone marrow. Also, if you receive chemotherapy, doctors repeat this test because chemotherapy affects the blood-forming cells of the bone marrow.

- Blood chemical and enzyme tests: These tests are done in patients with invasive breast cancer (not needed with in situ cancer) and may show the cancer has spread to the bone or liver. If these test results are higher than normal, your doctor will order imaging tests such as bone scans or CT scans.

**Tumor marker testing (estrogen receptor, progesterone receptor, HER-2/neu):** Testing the tumor itself for certain chemicals helps determine the chances the cancer will spread and helps your doctor determine the best treatment. The pathology laboratory tests the cancer tissue that is removed, either from the first biopsy or the final surgery.

**Tumor hormone receptor testing** helps determine the best treatment. Two hormones in women – estrogen and progesterone – may stimulate the growth of normal breast cells and play a role in some breast cancers. Cancer cells respond to these hormones through the estrogen receptors (ER) and progesterone receptors (PR). These receptors are the cell's
“welcome mat” for these hormones circulating in the blood. If a cancer does not have these receptors, it is referred to as estrogen-receptor negative and/or progesterone-receptor negative. If the cancer has these receptors, it is referred to as estrogen-receptor positive and/or progesterone-receptor positive or just hormone-receptor positive (ER-positive, PR-positive).

These hormone receptors are important because cancer cells that are ER- or PR-positive will stop growing if the woman takes hormone drugs that block the effect of estrogen and progesterone. These drugs increase the chance that the cancer will never come back (recur) in other body organs and improve the chances of long-term survival. Most women whose breast cancer is ER- or PR-positive should take hormone drugs as part of their treatment. However, these hormone drugs are not effective if the cancer is ER- or PR-negative.

All women with invasive breast cancer (not necessary with in situ cancer) should be tested for hormone receptors. You should ask your doctor for these results and whether you should consider hormone drugs as part of your treatment.

Women with invasive breast cancer should also be tested for a cancer gene that helps cancer cells grow. This gene is called HER-2/neu. Breast cancer cells with too much HER-2/neu tend to grow faster and may respond better to combinations of chemotherapy drugs that include drugs of the anthracycline class (such as doxorubicin or epiroubicin).

In addition to helping choose the type of chemotherapy, women with cancers that are positive for HER-2/neu may be treated with a new drug that directly attacks HER-2/neu. This drug is an antibody called trastuzumab (Herceptin®). Trastuzumab, along with other treatments, is used in women whose breast cancer has spread to other organs and who are HER-2/neu-positive. Trastuzumab is not routinely used unless it is known that the cancer has spread, but studies are being done to determine if it helps when combined with standard chemotherapy in women whose cancer has not spread.

Breast Cancer Stages

Cancers are classified by stage. Staging a cancer is the process of finding out how much cancer there is in the body and where it is located. Doctors determine the stage of a cancer by gathering information from examinations and tests on the tumor, lymph nodes, and distant organs.

• Clinical stage is determined by information from the doctor’s examination and imaging tests (x-rays, mammograms, etc).

• Pathologic stage includes information from the surgical removal of the cancer and lymph nodes.

A breast cancer’s stage is one of the most important factors that may predict prognosis (outlook), or the chance of cancer coming back or spreading to other organs. A cancer’s stage therefore is one of the important factors in choosing the best treatment.

Each woman’s prognosis with breast cancer differs, depending on the cancer’s stage and other cancer factors such as hormone receptors, her general state of health, and her treat-
ment. You should feel you are able to talk frankly with your doctors about your cancer stage and prognosis, and how they affect treatment options.

The system most often used to describe the growth and spread of breast cancer is the TNM staging system, also known as the American Joint Committee on Cancer (AJCC) system. In TNM staging, information about the tumor, nearby lymph nodes, and distant organ metastases is combined and a stage is assigned to specific TNM groupings. The grouped stages are described using the number 0 and Roman numerals from I to IV.

T stands for the size of the cancer (measured in centimeters). N stands for spread to lymph nodes in the area of the breast, and M is for metastasis (spread to distant organs of the body).

**T categories:** T categories are based on the breast cancer’s size, its location within the breast, and spread to nearby tissue.

- **T0:** No evidence of primary tumor.
- **Tis:** Carcinoma in situ or noninvasive breast cancer.
- **T1:** The cancer is 2 cm in diameter (about 3/4 inch) or smaller.
- **T2:** The cancer is more than 2 cm but not more than 5 cm in diameter.
- **T3:** The cancer is more than 5 cm in diameter.
- **T4:** The cancer is any size and has spread to the chest wall or the skin.

**Ductal carcinoma in situ (DCIS):** Cancer cells are located within the breast duct and have not invaded the duct wall and into surrounding tissue.

**Lobular carcinoma in situ (LCIS):** Also called lobular neoplasia. The abnormal cells grow within the breast lobule (milk-producing glands), but do not penetrate or invade through the wall of the lobule. LCIS is not truly a cancer, but women with LCIS are at higher risk of developing invasive breast cancer later in life.

- **T1:** The cancer is 2 cm in diameter (about 3/4 inch) or smaller.
- **T2:** The cancer is more than 2 cm but not more than 5 cm in diameter.
- **T3:** The cancer is more than 5 cm in diameter.
- **T4:** The cancer is any size and has spread to the chest wall or the skin.

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**Tumor Sizes**

<table>
<thead>
<tr>
<th>Tumor Size</th>
<th>Description</th>
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<tbody>
<tr>
<td>1 cm</td>
<td>2 cm</td>
</tr>
<tr>
<td>2.5 centimeters (cm) = 1 inch</td>
<td>1 cm = 10 mm</td>
</tr>
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2.5 centimeters (cm) = 1 inch
1 cm = 10 mm
N categories: The N category is based on which of the lymph nodes near the breast, if any, are affected by the cancer.

- **N0**: The cancer has not spread to lymph nodes.
- **N1**: The cancer has spread to lymph nodes under the arm on the same side as the breast cancer. Lymph nodes have not yet attached to one another or to the surrounding tissue.
- **N2**: The cancer has spread to lymph nodes under the arm on the same side as the breast cancer. Lymph nodes are attached to one another or to the surrounding tissue.
- **N3**: The cancer has spread to internal mammary lymph nodes (located beneath the breast and inside the chest).

M categories: The M category depends on whether the cancer has spread to any distant tissues and organs.

- **M0**: No distant cancer spread.
- **M1**: Cancer may have spread to distant organs or to the supraclavicular (above the collarbone) lymph nodes.

Stage grouping for breast cancer: Once the T, N, and M categories have been assigned, this information is combined to assign an overall stage of 0, I, II, III, or IV.

## Types of Breast Cancer Treatment

Two separate issues need to be addressed for all women treated for breast cancer: the treatment of the breast itself, and the treatment for cancer cells that may have spread to other parts of the body. Doctors use the term “local therapy” to refer to treatment of the breast and surrounding lymph nodes (usually a combination of surgery and radiation therapy), and the
term “systemic therapy” to refer to chemotherapy or hormone therapy to control cancer cells that may have spread elsewhere.

**Breast-Conserving Surgery**

Nearly all women with breast cancer will have some type of surgery. Lumpectomy removes only the breast lump and the surrounding area, or margin, of normal tissue. If cancer cells are present at the margin (the edge of the excisional biopsy or lumpectomy tissue), an excision can usually be done again to remove the remaining cancer.

In almost all cases of invasive breast cancer, 6 to 7 weeks of radiation therapy follow lumpectomy. Doctors call this combination (of lumpectomy and radiation) breast-conserving therapy. It’s an option for most, but not all, women with breast cancer. Those who probably should not have lumpectomy, or breast-conserving therapy, include:

- Women who have already had radiation therapy to the affected breast or chest
- Women with two or more areas of cancer, in the same breast, too far apart to be removed in one incision
- Women whose first excisional biopsy – or, when needed, their re-excision – has not completely removed their cancers
- Women with certain connective tissue diseases that make body tissues especially sensitive to the side effects of radiation
- Pregnant women who would require radiation while still pregnant
- Women whose tumor is larger than 5 cm (2 inches) and can’t be shrunk by treatment before surgery.

**Mastectomy**

In a simple (total) mastectomy procedure, surgeons remove the entire breast but do not cut away any lymph nodes from under the arm or muscle tissue from beneath the breast. This procedure is used to treat noninvasive breast cancer. In a modified radical mastectomy, surgeons remove the entire breast and some axillary (underarm) lymph nodes.

Doctors rarely perform the radical mastectomy, which removes not only the entire breast and lymph nodes under the arm, but also the chest wall muscles under the breast as well. At one time this surgery was quite common, but it left women disfigured and caused side effects. The modified radical mastectomy has proven as effective as the radical mastectomy.

The possible short-term side effects of both mastectomy and lumpectomy include wound infection, hematoma (accumulation of blood in the wound), and seroma (accumulation of clear fluid in the wound).

**Lymph Node Surgery**

Whether a woman has a mastectomy or a lumpectomy for invasive cancer, she and her doctor usually need to know if the cancer has spread to the lymph nodes. If the lymph nodes are affected, that increases the likelihood that cancer cells have spread through the bloodstream to other parts of the body. Women with ductal carcinoma in situ or lobular carcinoma in situ do not need lymph node testing.

Doctors once believed that removing as many lymph nodes as possible would reduce the risk of developing distant metastasis and improve a woman’s chances for long-term survival. We now know that the lymph node surgery itself
probably does not improve the chance for long-term survival, and that systemic treatment offers the best chance of killing cancer cells that have spread beyond the breast.

Surgery is the only way to accurately determine if the cancer has spread to the lymph nodes. This usually means removing some or all of the lymph nodes in the armpit. Usually 10 to 20 lymph nodes in the armpit are removed. This operation is called an *axillary lymph node dissection*.

For some women, removing the underarm lymph nodes can be considered optional. This includes:

- Women with tumors so small and with such a favorable outlook that lymph node spread is unlikely
- Instances where it would not affect whether adjuvant treatment is given
- Elderly women

Although lymph node dissection is a safe operation and has low rates of serious side effects, doctors have tried to develop new ways of finding out if cancer has spread to lymph nodes without removing all of them first.

Over the past 5 years, a new procedure called the *sentinel lymph node biopsy* has been introduced. In this procedure the surgeon finds and removes the “sentinel node” – the first lymph node into which a tumor drains and the one most likely to contain cancer cells. The surgeon injects a radioactive substance and/or a blue dye into the area around the tumor. Lymphatic vessels carry these substances into the sentinel node and provide the doctor with a “lymph node map.” The doctor can either see the blue dye or detect the radioactivity with a Geiger counter. He or she then removes the node for examination by the pathologist, and the incision is closed. If the sentinel node contains cancer, the surgeon will perform an axillary dissection – removal of more lymph nodes in the armpit. This may be done at the same time or several days after the original sentinel node biopsy.

If the sentinel node is cancer-free, the patient will not need more lymph node surgery and can avoid the side effects of full lymph node surgery, discussed further on.

This limited sampling of lymph nodes is not appropriate for some women. The guidelines recommend sentinel lymph node biopsy be done only if there is a team with documented experience with this technique. In addition, it is only done if there is a single tumor less than 5 cm in the breast, no prior chemotherapy or
Choosing Between Lumpectomy and Mastectomy

The advantage of lumpectomy is that it saves the appearance of the breast. A disadvantage is the need for several weeks of radiation therapy after surgery. However, some women who have a mastectomy will still need radiation therapy.

Women who choose lumpectomy and radiation can expect the same chance of survival as those who choose mastectomy.

Although most women and their doctors prefer lumpectomy and radiation therapy, your choice will depend on a number of factors, such as:

- How you feel about losing your breast
- How far you have to travel for radiation therapy
- Whether you are willing to have more surgery to reconstruct your breast after having a mastectomy
- Your preference for mastectomy as a way to “get rid of all your cancer as quickly as possible”

Lumpectomy and radiation are not appropriate if:

- The patient has had radiation to the breast or chest wall
- The patient is pregnant
- The disease is in several areas of the breast
- There are suspicious areas of calcium spread out in the breast

Lumpectomy and radiation may not be appropriate if:

- Two separate incisions are needed to remove the disease
- The patient has a connective tissue disease such as scleroderma
- The tumor is larger than 5 cm (about 2 inches)

hormone therapy has been given, no more than a 6 cm biopsy has been performed, and the lymph nodes feel normal.

Whenever a patient has axillary lymph node surgery, she may have temporary or permanent numbness in her skin on the inside of her upper arm; the procedure can also limit arm and shoulder movements. Without normal lymph drainage, fluids can collect and lead to arm and hand swelling known as lymphedema.

No one can predict which patients will develop this condition or when. Lymphedema can develop just after surgery, or even months or years later. Most women, however, do not have serious lymphedema.

With care, patients can take steps to help avoid lymphedema or at least keep it under control. Talk to your doctor for more details.

Among the steps to take to help avoid lymphedema:

- Avoid having blood drawn from or IVs inserted into the arm on the side of the lymph node surgery.
• Do not allow a blood pressure cuff to be placed on the arm on the side of the lymph node surgery. If you are in the hospital, tell all health care workers about your arm.

• Tell your doctor immediately if your arm or hand feels tight or swollen. Don’t ignore it.

• Wear a well-fitted compression sleeve if needed.

• Wear gloves when gardening or doing other things that are likely to lead to cuts.

**Radiation Therapy**
Radiation is used to destroy cancer cells left behind in the breast, chest wall, or lymph nodes after surgery. Radiation treatments are usually given 5 days a week for 6 to 8 weeks.

Side effects most likely to occur include swelling and heaviness in the breast, sunburn-like skin changes in the treated area, and fatigue. Changes to the breast tissue and skin usually go away in 6 to 12 months. In some women, the breast becomes smaller and firmer after radiation therapy. If the lymph nodes under the arm are treated with radiation, it can also cause lymphedema.

**Systemic Therapy**
To reach cancer cells that may have spread beyond the breast and nearby tissues, doctors give cancer drugs by mouth or into a vein. This type of treatment is called *systemic therapy*. Examples of systemic therapy include chemotherapy and hormone therapy.

Systemic therapy given to patients after surgery is called *adjuvant therapy*. The goal of adjuvant therapy is to kill undetected cells. Even in the early stages of the disease, cancer cells can break away from the primary breast tumor and spread through the bloodstream. These cells usually don’t cause symptoms you can feel, and they don’t show up on an x-ray and can’t be felt during a physical examination. But they can establish new tumors in other places in the body.

Systemic therapy given to patients before surgery is called neo-adjuvant therapy. Sometimes oncologists give patients neo-adjuvant therapy to try to shrink the tumor enough to make surgical removal possible. This may allow women who would otherwise need mastectomy to have breast-conserving surgery. Systemic therapy is the main treatment for women diagnosed with metastatic breast cancer.

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**Reconstructive Surgery**
These procedures create the shape and appearance of a breast after mastectomy. For most women, the breast can be reconstructed at the same time as mastectomy (immediate *breast reconstruction*) or later (delayed reconstruction). Surgeons may use silicone or saline-filled implants, or tissue from other parts of your body. If they use your own body tissues, this is called autologous tissue reconstruction. How do a woman and her doctor decide on the type of reconstruction and when she should have the procedure? The answer depends on the woman’s personal preferences, the size and shape of her breasts, the size and shape of her body, her level of physical exercise and details of her medical situation, such as how much skin is removed and if she needs chemotherapy or radiation.
Chemotherapy: Patients take anti-cancer drugs intravenously (injected into a vein) or by mouth. Either way, the drugs travel in the bloodstream and move throughout the entire body. Doctors who prescribe these drugs (medical oncologists) generally use a combination of medicines proven more effective than a single drug.

- The chemotherapy options for women with node-negative breast cancer are CMF, CAF, or AC. (See box on page 19 for specific chemotherapy regimens.)

- Women with node-positive breast cancer receive CAF, CEF, AC with or without paclitaxel, A-CMF, or CMF. (See box for specific chemotherapy regimens.)

- Women with recurrent or metastatic breast cancer may receive:

  Preferred first-line chemotherapy (given first):
  - Anthracycline-based, taxane or CMF

  Preferred second-line chemotherapy (given after first-line):
  - If anthracycline is given first, then CMF or taxane
  - If taxane is given first, then anthracycline-based or CMF
  - Other possible drugs include capecitabine, vinorelbine, gemcitabine, mitoxantrone, and platinum compounds

If the cancer has high amounts of HER-2/neu, or the cancer has spread to the lymph nodes, a regimen containing an anthracyline (doxorubicin or epirubicin) is usually given.

Doctors give chemotherapy in cycles, with each period of treatment followed by a rest period. The total course of chemotherapy usually lasts 3 to 6 months, depending on the drugs used. The side effects of chemotherapy depend on the type of drugs used, the amount taken, and the length of treatment.

Doxorubicin and epirubicin may cause heart damage, but this is very uncommon in people who do not have preexisting heart disease. If you know you have heart disease or there is concern you have heart disease, your doctor

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### Drugs Commonly Used to Treat Breast Cancer

<table>
<thead>
<tr>
<th>Generic</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclophosphamide</td>
<td>Cytoxan</td>
</tr>
<tr>
<td>Docetaxel</td>
<td>Taxotere</td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>Adriamycin</td>
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<tr>
<td>Epirubicin</td>
<td>Ellence</td>
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<tr>
<td>Paclitaxel</td>
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<tr>
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<td>Nolvadex</td>
</tr>
<tr>
<td>Toremifene</td>
<td>Fareston</td>
</tr>
<tr>
<td>Trastuzumab</td>
<td>Herceptin</td>
</tr>
</tbody>
</table>

### Chemotherapy regimens containing two or more drugs

- **CMF**: Cyclophosphamide, methotrexate, and fluorouracil
- **CAF**: Cyclophosphamide, doxorubicin, and fluorouracil
- **AC**: Doxorubicin and cyclophosphamide
- **AC+ Paclitaxel**: Doxorubicin, cyclophosphamide, and paclitaxel
- **A→CMF**: Doxorubicin followed by CMF
- **CEF**: Cyclophosphamide, epirubicin, and fluorouracil
may suggest special heart tests before you use these drugs and may suggest other chemotherapy drugs if your heart function is impaired.

Temporary side effects might include loss of appetite, nausea and vomiting, mouth sores, hair loss, and changes in the menstrual cycle. Chemotherapy can damage the blood-producing cells of the bone marrow. A drop in white blood cells can raise a patient’s risk of infection; a shortage of blood platelets can cause bleeding or bruising after minor cuts or injuries; and a decline in red blood cells can lead to fatigue.

There are treatments for these side effects. For example, several drugs can prevent or reduce nausea and vomiting. A new group of drugs called growth factors can help bone marrow recover after chemotherapy and can treat problems resulting from low blood counts. These drugs are often not necessary. Talk with your doctor about which treatment will be right for you.

Women can also have permanent effects such as early menopause and infertility from anticancer drugs. The older a women is when she receives chemotherapy, the more likely it is she will stop menstruating or lose her ability to become pregnant.

Ask your doctor for a copy of NCCN’s specific guidelines for treating many of the side effects associated with chemotherapy, such as Fever and Neutropenia Treatment Guidelines for Patients with Cancer.

**Monoclonal antibody therapy:** Trastuzumab is a drug that is an antibody directed against the HER-2/neu receptor on the surface of the breast cancer cells of some patients. It works alone or when combined with chemotherapy for patients whose cancer has spread. Because heart muscle cells also have the HER-2/neu receptor, Trastuzumab can cause heart damage when combined with doxorubicin and cyclophosphamide. It should be used cautiously when combined with other heart-damaging drugs such as anthracyclines (doxorubicin and epirubicin). Currently, trastuzumab is only used for women with proven spread of breast cancer whose tumors are positive with HER-2 neu or who are taking part in a clinical trial.

**Hormone Therapy**

Estrogen, a hormone produced by the ovaries and the adrenal glands, causes some breast cancers to grow. Doctors use several approaches to block the effect of estrogen or to lower estrogen levels. In the past, removing the ovaries in premenopausal women and the adrenal glands in postmenopausal women were often effective treatments. Today, the most commonly used drug to block the effect of estrogen is the antiestrogen drug tamoxifen. Another antiestrogen drug called toremifene is available and works like tamoxifen.

Studies show that tamoxifen can reduce the chances of cancer coming back after surgery if the breast cancer cells contain receptors for estrogen or progesterone. Doctors also use the drug to treat metastatic breast cancer.

In postmenopausal women, the adrenal glands produce male hormones that are released into the blood. In fat, bones, and some breast cancer, this male hormone is changed into estrogen. Drugs called aromatase inhibitors which prevent the change to estrogen, have proven as
effective as tamoxifen in treating metastatic breast cancer in women in this age group.

Some studies have shown a slight increase of early-stage endometrial cancer (which occurs in the lining of the uterus) among postmenopausal women taking tamoxifen. If you take tamoxifen and have any unusual vaginal bleeding – a possible symptom of endometrial cancer – tell your doctor right away.

Another uncommon side effect of tamoxifen is deep-vein thrombosis, a condition in which blood clots form in the deep blood vessels of the legs and groin. The blood clots sometimes break off and spread to the lungs. The risk of stroke is also slightly increased.

Other side effects may include hot flashes, mood swings, and cataracts. But for most women the benefits of taking tamoxifen far outweigh the risks. One of the advantages of the aromatase inhibitors in postmenopausal women is that they don’t cause these side effects except for the hot flashes, but thinning of the bones may be increased.

Other hormonal treatments are megestrol acetate (a progesterone-like drug), fluoxymesterone (a male hormone like testosterone), and ethinyl estradiol (an estrogen drug that is effective if it is given in high doses).

Premenopausal women can take another type of drug, called luteinizing hormone-releasing hormone (LHRH) agonist. It is given by injection and prevents estrogen production.

**Bisphosphonates:** These drugs are used to strengthen bones that have been weakened by invading breast cancer cells. The most commonly used drug, is pamidronate.

**Treatment of Pain and Other Symptoms**

Most of this booklet discusses ways to remove or destroy breast cancer cells or to slow their growth. But maintaining your quality of life is an important goal. Don’t hesitate to discuss your symptoms or how you feel with your cancer care team. There are effective and safe ways to treat pain, most other symptoms of breast cancer, and most of the side effects caused by breast cancer treatment. If you don’t tell your health care team, they may have no way of knowing about your problems.

**Complementary or Alternative Therapies**

If you are considering any unproven alternative or complementary treatments, it is best to discuss this openly with your cancer care team and request information from the ACS or the National Cancer Institute. Some unproven treatments can interfere with standard medical treatments or may cause serious side effects.

**Other Things to Consider During and After Treatment**

During and after your treatment for breast cancer you may be able to speed up your recovery and improve your quality of life by taking an active role. Learn about the benefits and risks of each of your treatment options, and ask questions of your cancer care team if there is anything you do not understand. Learn about and look out for side effects of treatment, and report these right away to members of your cancer care team so they can take steps to ease them and shorten their duration.
Remember that your body is as unique as your personality and your fingerprints. Although understanding your cancer’s stage and learning about your treatment options can help predict what health problems you may face, no one can say for sure how you will respond to cancer or its treatment.

You may have special strengths such as a history of excellent nutrition and physical activity, a strong family support system, or a deep faith, and these strengths may make a difference in how you respond to cancer. There are also experienced professionals in mental health services, social work services, and pastoral services who may assist you in coping with your illness.

You can also help in your own recovery from cancer by making healthy lifestyle choices. If you use tobacco, stop now. Quitting will improve your overall health and the full return of the sense of smell may help you enjoy a healthy diet during recovery. If you use alcohol, limit how much you drink. Have no more than 1 or 2 drinks per day. Good nutrition can help you get better after treatment. Eat a nutritious and balanced diet, with plenty of fruits, vegetables, and whole grain foods.

If you are being treated for cancer, be aware of the battle that is going on in your body. Radiation therapy and chemotherapy add to the fatigue caused by the disease itself. Give your body the rest it needs so that you will feel better as time goes on. Exercise once you feel rested enough. Ask your cancer care team whether your cancer or its treatments might limit your exercise program or other activities.

It is important that you consider your emotional, psychological, and spiritual health along with the physical aspects of your recovery from cancer.

A woman’s choice of treatment will likely be influenced by her age, the image she has of herself and her body, her hopes and fears, and her stage in life. For example, many women select breast-conserving surgery with radiation therapy over a mastectomy for body image reasons. On the other hand, some women who choose mastectomy may want the affected area removed, regardless of the effect on their body image, and others may be more concerned about the side effects of radiation therapy than body image.

Other issues that concern women include loss of hair from chemotherapy and skin changes of the breast from radiation therapy. In addition to these body changes, women may also be concerned about the outcome of their treatment. These are all factors that affect how a woman will make decisions about her treatment, how she views herself, and how she feels about her treatment.

Concerns about sexuality are often very worrisome to a woman with breast cancer. Some treatments for breast cancer can change a woman’s hormone levels and may have a negative impact on sexual interest and/or response. A diagnosis of breast cancer when a woman is in her 20s or 30s is especially difficult because choosing a partner and childbearing are often very important during this period. Relationship issues are also important because the diagnosis can be very distressing for the partner, as well as the patient. Partners are usually concerned about how to express their love physically and emotionally during and after treatment.
Suggestions that may help a woman adjust to changes in her body image include looking at and touching her body; seeking the support of others, preferably before surgery; involving her partner as soon as possible after surgery; and openly talking about the feelings, needs, and wants created by her changed image.

A cancer diagnosis and its treatment is a major life challenge, with an impact on you and everyone who cares for you. Before you get to the point where you feel overwhelmed, consider attending a meeting of a local support group or contacting other patient advocacy groups. If you need individual assistance in other ways, contact your hospital’s social service department or the ACS for help in contacting counselors or other services.

Clinical Trials

The purpose of clinical trials: Studies of promising new or experimental treatments in patients are known as clinical trials. A clinical trial is only done when there is some reason to believe that the treatment being studied may be valuable to the patient. Treatments used in clinical trials are often found to have real benefits. Researchers conduct studies of new treatments to answer the following questions:

• Is the treatment helpful?
• How does this new type of treatment work?
• Does it work better than other treatments already available?
• What side effects does the treatment cause?
• Are the side effects greater or less than the standard treatment?
• Do the benefits outweigh the side effects?
• In which patients is the treatment most likely to be helpful?

Types of clinical trials: A new treatment is normally studied in three phases of clinical trials before it can be approved by the FDA (Food and Drug Administration).

Phase I clinical trials: The purpose of a phase I study is to find the best way to give a new treatment and find out how much of it can be given safely. Doctors watch patients carefully for any harmful side effects. The treatment has been well tested in laboratory and animal studies, but the side effects in patients are not completely known. Doctors conducting the clinical trial will start by giving very low doses of the drug to the first patients and increasing the dose for later groups of patients until side effects appear. Although doctors are hoping to help patients, the main purpose of a phase I study is to test the safety of the drug.

Phase II clinical trials: These are designed to see if the drug works. Patients are usually given the highest dose that doesn’t cause severe side effects (determined from the phase I study) and closely observed for an effect on the cancer. The doctors will also look for side effects.

Phase III clinical trials: Phase III studies involve large numbers of patients. Some phase III clinical trials may enroll thousands of patients. One group (the control group) will receive the standard (most accepted) treatment. The other group will receive the new treatment. Usually doctors study only 1 new treatment to see if it works better than the standard treatment, but sometimes they will
test 2 or 3. All patients in phase III studies are closely watched. The study will be stopped if the side effects of the new treatment are too severe or if one group has had much better results than the others.

If you are in a well-designed clinical trial, you will receive excellent care. You will have a team of experts looking at you and monitoring your progress very carefully. The study is especially designed to pay close attention to you.

However, there are some risks. No one involved in the study knows in advance whether the treatment will work or exactly what side effects will occur. That is what the study is designed to discover. While most side effects will disappear in time, some can be permanent or even life threatening. Keep in mind, though, that even standard treatments have side effects. Depending on many factors, you may decide to enroll in a clinical trial.

**Deciding to enter a clinical trial:** Enrollment in any clinical trial is completely up to you. Your doctors and nurses will explain the risks and possible benefits of the study to you in detail and will give you a form to read and sign indicating your understanding of the study and your desire to take part. This process is known as giving your informed consent. Even after signing the form and after the clinical trial begins, you are free to leave the study at any time, for any reason. Taking part in the study will not prevent you from getting other medical care you may need.

To find out more about clinical trials, ask your cancer care team. Among the questions you should ask are:

- What is the purpose of the study?
- What kinds of tests and treatments does the study involve?
- What does this treatment do?
- What is likely to happen in my case with, or without, this new research treatment?
- What are my other choices and their advantages and disadvantages?
- How could the study affect my daily life?
- What side effects can I expect from the study? Can the side effects be controlled?
- Will I have to be hospitalized? If so, how often and for how long?
- Will the study cost me anything? Will any of the treatment be free?
- If I am harmed as a result of the research, what treatment would I be entitled to?
- What type of long-term follow-up care is part of the study?
- Has the treatment been used to treat other types of cancers?

You can get a list of current clinical trials by calling the National Cancer Institute’s Cancer Information Service toll free at 1-800-4-CANCER or visiting the NCI clinical trials Web sites for patients or health care professionals (cancer.gov).

Participating in a clinical trial may help you directly, and it may help other women with breast cancer in the future. For these reasons, the NCCN and the ACS are committed to helping people with cancer learn more about these studies.
**Decision Trees**

The “decision trees”, or algorithms, on the following pages represent different stages of breast cancer. Each one shows you step-by-step how you and your doctor can arrive at the choices you need to make about your treatment.

Keep in mind, this information is not meant to be used without the expertise of your own doctor who is familiar with your situation, medical history, and personal preferences.

Participating in a clinical trial is an option for women at any stage of breast cancer. Taking part in a study does not prevent you from getting other medical care you may need.

The NCCN guidelines are updated as new significant data become available. To ensure you have the most recent version, consult the web sites of the ACS (www.cancer.org) or NCCN (www.nccn.org). You may also call the NCCN at 1-888-909-NCCN or the ACS at 1-800-ACS-2345 for the most recent information on these guidelines or on cancer in general.
Stage 0 Lobular Carcinoma In Situ

The work-up for lobular carcinoma in situ (LCIS) includes a complete medical history and physical examination and diagnostic mammograms of both breasts to see whether there are any other abnormal areas in either breast. Pathology review (a second opinion on examination of the biopsy sample) is suggested by NCCN to be certain you have LCIS and not an invasive cancer or a benign condition.

Generally, no treatment is given. Observation (careful follow-up without surgery) is the preferred option for most women who are diagnosed with LCIS because their risk of developing invasive cancer is low. Invasive cancers that do develop during observation of LCIS are usually not aggressive and tend to be easily treated.

A preventive mastectomy of both breasts may be an option for some women with LCIS who may have a greater risk of developing invasive breast cancer—for example, women with an extensive family history of breast cancer. Your doctor can help you decide whether to consider this treatment. You should also consider genetic counseling before deciding to have a preventive (prophylactic) mastectomy. After
If your doctor decides to just watch you as the primary treatment, the follow-up for women with LCIS includes a medical history and physical exam every 6–12 months for 5 years, and once a year thereafter. You should have a mammogram every year. Because tamoxifen increases endometrial cancer risk in post-menopausal women, women taking this drug should have a pelvic exam each year and should promptly report any abnormal uterine bleeding. These precautions are not needed if the uterus has been removed.

mastectomy, you can have breast reconstruction right after surgery or later on.

Strategies for reducing your risk of breast cancer have become as important as methods of detecting and treating the disease. There is evidence that tamoxifen, an antiestrogen drug that has been used as hormone therapy for breast cancer, can also lower your risk of developing an invasive breast cancer after LCIS has been diagnosed. When used in this situation, tamoxifen is taken daily by mouth for 5 years. Tamoxifen is not used if the woman has had both breasts removed.
Stage 0 Ductal Carcinoma In Situ

As in LCIS, the work-up for ductal carcinoma in situ (DCIS) involves a complete medical history and physical examination. Diagnostic mammograms of both breasts should be performed to help estimate how far DCIS has spread within the ducts of the breast and to check whether the opposite breast contains any abnormal areas. The NCCN recommends that you get a second opinion by a pathologist to be certain that the cancer is DCIS rather than an invasive cancer or a benign condition. If the mammogram, physical examination, or biopsy results show that two or more areas of
the breast contain DCIS, mastectomy is the treatment of choice.

If DCIS is present in only one area and no cancer is found at the edges of the first surgical excision (or, if necessary, after re-excision) – either a total mastectomy or a lumpectomy plus radiation therapy is suggested. Mastectomy provides the most certain local control of DCIS. But studies have shown that women with DCIS who are treated with radiation after their lumpectomy live as long as

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those who have a mastectomy. After lumpectomy, a mammogram is suggested to ensure that the entire tumor has been removed.

If a DCIS tumor is very small (less than a half cm, or 1/5 inch), and is low-grade and lumpectomy is chosen, radiation may not always be needed.

Women with DCIS who are treated with mastectomy do not need lymph nodes removed.

Also, these women have options for either immediate or delayed breast reconstruction. The value of tamoxifen in women with DCIS who have had a mastectomy is less clear. Therefore they should discuss the risks and benefits with their health care team.

Women with DCIS treated with breast-conserving therapy should strongly consider taking tamoxifen after their initial treatment.
This drug can lower the risk of developing an invasive breast cancer after DCIS has been removed. It may also lower the risk of cancer in the other breast.

Standard follow-up for women with DCIS includes a history and physical exam every 6 months for 5 years, then every year thereafter.

They should have yearly mammograms. Because tamoxifen increases endometrial cancer risk, women taking this drug should have a pelvic exam every year and should promptly report any abnormal uterine bleeding. These precautions are not needed if the uterus was removed.
**Stage I, II, and Some Stage IIIA Breast Cancers (T3, N1, M0)**

The guidelines for stages I and II and those stage III tumors that are larger than 5 cm (2 inches) with lymph nodes affected but not attached to each other recommend the following:

- Complete medical history and physical examination
- Complete medical history and physical examination
- Blood counts and liver function tests
- Chest x-ray
- Diagnostic mammograms (both breasts)
- Breast ultrasound and breast MRI if needed
- Pathology review of biopsy sample
- Bone scan (only if symptoms or tests suggest cancer has spread to bones)
- HER-2/neu test
- Bone scan (optional for Stage II)
- CT, MRI, or ultrasound of abdomen for Stage III

Keep in mind that this information is not meant to be used without the expertise of your own doctor, who is familiar with your situation, medical history, and personal preferences.

Participating in a clinical trial is an appropriate option for women at any stage of breast cancer. Taking part in a clinical trial does not prevent you from getting other medical care you may need.
• Estrogen/progesterone-receptor tests to check whether the tumor is hormone-responsive
• HER-2/neu test.

If the patient is having bone pain or if certain blood test results are abnormal, a bone scan should be done.

The treatment of breast cancer involves surgical removal of the cancer. In most cases this means a lumpectomy, removing only the cancer and some surrounding normal tissue (margin). Lumpectomy is possible in most women with stage I or II breast cancer. Radiation to the breast should follow lumpectomy.
In some cases, a mastectomy is needed. In choosing lumpectomy versus mastectomy, women must understand that as long as lumpectomy can be done (based on the factors that follow), the chances of successful treatment and survival are the same with both treatments.

What factors would prevent a woman from choosing breast-conserving surgery?
- The patient has had radiation to the breast or chest wall
- The patient is pregnant
- The disease is in several areas of the breast
- There are suspicious areas of calcium spread out in the breast
- Two separate incisions are needed to remove the disease
- The patient has a connective tissue disease such as scleroderma
- The tumor is larger than 5 cm (about 2 inches)

If a woman and her doctor choose a modified radical mastectomy as her primary treatment, the guidelines recommend postoperative
radiation in certain instances. Post-surgery radiation and chemotherapy should be used when the cancer has spread to 4 or more lymph nodes, or if the tumor is larger than 5 cm or shows positive margins (that is, cancer cells at the boundary around the tumor). Women with cancer metastasis in up to 3 lymph nodes should consider radiation therapy given after surgery and chemotherapy.

Women who have not had a modified radical mastectomy do not need radiation if:

- Their tumors are smaller than 5 cm
- The margins are not involved by cancer, and
- No cancer has spread to lymph nodes

In the past, women with stage I or II breast cancer received chemotherapy (based on lymph node involvement, tumor type, and tumor size) after surgery. Doctors now offer some women with larger tumors chemotherapy before surgery. Sometimes chemotherapy can shrink the tumor so that a lumpectomy is possible when it otherwise would not have been.
Axillary Lymph Node Surgery

In addition to the surgery for the cancer in the breast, surgery to remove lymph nodes under the arm is sometimes done to provide staging information to guide further treatment. Lymph node surgery is usually done at the same time as the breast surgery.

The standard surgery is to remove the fatty tissue containing all the lymph nodes under the armpit, and under the muscle. In a mastectomy, the lymph nodes are removed through the same incision (cut in the skin). In a lumpectomy, it is done through an incision separate from the lumpectomy incision.

A new procedure called sentinel lymph node biopsy may be substituted for removing all the underarm lymph nodes in certain circumstances. In this procedure, only the few lymph nodes most likely to contain cancer are removed and checked for cancer. An average of 3 lymph nodes are removed with sentinel lymph node biopsy. If these lymph nodes do
not contain cancer, then no further lymph node surgery is performed. If these lymph nodes contain cancer, then the standard lymph node surgery is done to determine how many have cancer, and to remove them.

The advantage of sentinel lymph node biopsy is that there is less pain and discomfort with the surgery, and less chance of developing arm swelling called lymphedema than with full lymph node removal. Sentinel lymph node biopsy is not appropriate for all women. It should only be used if the team of doctors has proven experience with the technique. In addition, it is only appropriate for women with breast tumors smaller than 5 cm, who have had no previous chemotherapy or hormonal therapy. It is not appropriate when the lymph nodes are enlarged and hard on physical examination and in women who have more than one cancer in the breast.
Adjuvant (Additional) Treatment for Stages I, II and Some IIIA

Decisions about adjuvant chemotherapy or hormonal therapy are based on the status of the lymph nodes in the armpit, the size of the cancer, and its appearance under a microscope. If the nodes are negative (do not contain any cancer cells) and the tumor measures a half centimeter or smaller, the woman needs no adjuvant (post-surgery) therapy. Women with lymph node-negative tubular, colloid, medullary, or adenoid cystic types of tumors that measure smaller than 1 cm (about \( \frac{2}{5} \) inch) need no additional therapy. When the nodes are positive (contain cancer cells), the woman needs therapy after surgery.
In women without lymph node metastasis, NCCN recommends that when the tumor is smaller than 1 cm and cancer is not present in the blood and/or lymph vessels, no adjuvant therapy be given. When the tumor measures 0.6 to 1 cm and has one or more unfavorable features, the doctor may recommend that the patient consider adjuvant chemotherapy or hormonal therapy.

If the tumor has grown larger than 1 cm and hormone-receptor test results are negative, the
NCCN guidelines recommend adjuvant chemotherapy. If the tumor is hormone receptor-positive, tamoxifen is given for 5 years in addition to chemotherapy.

The guidelines recommend that patients with hormone receptor-negative tumors whose cancer has spread to their lymph nodes receive adjuvant chemotherapy. Those with hormone receptor-positive tumors should receive adjuvant chemotherapy plus tamoxifen for 5 years. (Follow-up care guidelines appear on page 48.)

The early results of a clinical trial have shown that the aromatase inhibitor anastrozole provides better control of breast cancer and has fewer side effects than tamoxifen in post-menopausal women with hormone-receptor positive breast cancer. The follow-up of this clinical trial is short, and so definitive conclusions cannot yet be made. Currently, anastrozole may be an alternative option to tamoxifen. If you have been through menopause, you might wish to discuss this with your health care team. Anastrozole is not effective in pre-menopausal woman, and tamoxifen remains the preferred hormone treatment for these women.
### Adjuvant Chemotherapy Options

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<thead>
<tr>
<th>Lymph Node Negative</th>
<th>Lymph Node Positive</th>
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<tr>
<td>CMF</td>
<td>FAC, CAF, CEF</td>
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<tr>
<td>FAC, CAF</td>
<td>AC with or without paclitaxel</td>
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<tr>
<td>AC</td>
<td>A followed by CMF</td>
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<tr>
<td></td>
<td>CMF</td>
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<td>EC</td>
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(Refer to page 19 for specific names of drugs)
Preoperative Treatment for Stage II and Stage IIIA Large Breast Cancers

Preoperative chemotherapy is an option that allows some women who would otherwise need a mastectomy because of large tumors to have breast-conserving treatment. Tumors may shrink enough during chemotherapy to permit a lumpectomy that completely removes the main tumor and still keeps the size and shape of the breast.

The work-up recommended before starting preoperative chemotherapy includes:

- Complete medical history and physical examination
- Blood counts and blood chemistry tests
- Chest x-ray
- Diagnostic mammograms of both breasts
- Breast ultrasound and MRI if needed
- Pathology review
- Estrogen/progesterone receptor tests
- HER-2/neu test.
A bone scan is recommended for all stage IIIA patients and for stage II patients with symptoms or blood test results suggesting distant metastasis. It is optional for other women with stage II cancers. A CT, MRI, or ultrasound exam of the abdomen is recommended for stage IIIA patients but not for stage II patients.

Preoperative chemotherapy for these women should include an anthracycline drug such as doxorubicin or epirubicin. If this treatment is successful, lumpectomy and removal of underarm lymph nodes is the next step; otherwise, a mastectomy is done along with removal of underarm lymph nodes. After mastectomy or lumpectomy, more chemotherapy may be given. Chemotherapy given after lumpectomy may include a taxane, such as paclitaxel or docetaxel. Tamoxifen is given for hormone receptor positive tumors. Radiation therapy is suggested after this chemotherapy, with the exact areas treated depending on the type of first surgery.
Treatment for Stages III and IV Invasive Breast Cancer

The recommended work-up for all stage III breast cancers includes:

• Complete medical history and physical examination

• Blood counts and complete blood count, platelet count, chemical liver function tests

• Chest x-ray (to check for spread to the lungs)

• Diagnostic mammograms of both breasts

• Breast ultrasound test (if necessary to further clarify findings)
Pathology review (second opinion on the biopsy sample)
- Hormone-receptor tests of the biopsy sample
- HER-2/neu test (to help predict the response to certain drugs).

In addition, the guidelines recommend a bone scan and CT, MRI, or ultrasound scan of the abdomen.

Women with stage IIIA tumors larger than 5 cm that have spread to lymph nodes that are not attached to one another or surrounding tissues have three options that have been described in the previous algorithms.

Women with stage IV tumors have already gone through a work-up. Stage IV cancer can mean distant metastasis of the cancer. But it also can mean the only metastasis away from
the breast and underarm lymph nodes is in the lymph nodes above the collarbone on the same side as the breast cancer.

The treatment for stage III and stage IV with metastasis only to lymph nodes above the collarbone (supraclavicular lymph nodes) starts with chemotherapy, with or without tamoxifen depending on the hormone-receptor status of the cancer. Patients whose tumors shrink enough to be surgically removed have three options:

- Modified radical mastectomy (with or without reconstruction) and removal of underarm lymph nodes, followed by radiation therapy to the chest wall, supraclavicular lymph nodes, and, if they are enlarged, internal mammary (inside the chest, where the ribs meet the sternum or breastbone) lymph nodes
- Lumpectomy with lymph node removal, followed by radiation therapy to the breast and other areas
• Radiation to the breast and lymph nodes. Among breast cancer specialists, this option remains controversial.

For these patients the guidelines recommend adding more chemotherapy after surgery. If the hormone-receptor status is positive or unknown, the guidelines recommend tamoxifen for 5 years.

Women with stage IIIA or IIIB breast cancer who do not respond to one chemotherapy regimen may be given another chemotherapy regimen with or without radiation. If they respond, they can be treated as outlined with standard breast cancer surgery. If they do not respond, they should discuss treatment with their doctor.
Follow-Up of Women with Stages I, II, or III Breast Cancer and Work-Up and Treatment of Recurrence

Routine follow-up for all patients who have had invasive breast cancer includes the following: a medical history and physical exam every 4–6 months for 5 years, then once a year.

Women who have had a lumpectomy should have a mammogram of the treated breast 6 months after radiation therapy, and then mammograms of both breasts every year.
Recurrent Breast Cancer

Work-up for a suspected recurrence of breast cancer includes:

- Complete medical history and physical examination
- Complete blood counts
- Liver function tests
- Chest x-ray
- Bone scan

Weight-bearing bones that are painful or showed abnormalities on the bone scan should also be x-rayed, and CT or MRI scans of the

Follow-up of Women with Stages I, II, and III Breast Cancer, and Work-up and Treatment of Recurrence

Treatment of Recurrence

If possible, remove cancer and follow with radiation therapy if none given before

Mastectomy

Consider systemic therapy

Same treatment as for Stage IV cancer (see page 52)

For patients first treated with mastectomy

For patients first treated with lumpectomy and radiation therapy
abdomen, chest, or head should be done if there are symptoms affecting these areas.

- A biopsy should be done to confirm the first recurrence whenever possible.

- If HER-2/neu testing was not done on the original cancer, it should be done if possible.

A recurrence may be local, meaning that cancer has returned to the breast, underarm lymph nodes, or nearby tissues, or it may be systemic, which means that cancer has spread to distant organs. If the recurrence is local, and the woman was first treated with mastectomy, the cancer should be removed by surgery (if possible with limited surgery). The area of the recurrence and surrounding tissues should receive radiation therapy if it has not been given before. If the cancer cannot be removed
by surgery, the woman should have radiation therapy if it was not given before. In either case, the NCCN recommends considering chemotherapy and/or hormonal therapy after the radiation treatment.

If the woman was first treated with lumpectomy and radiation, a local recurrence should be treated with a mastectomy, and then consideration of chemotherapy and/or hormonal therapy.

If the recurrence is systemic, then the treatment should be the same as for patients with stage IV breast cancer.
Stage IV or Systemic Recurrence

Very few women with newly diagnosed breast cancer have distant metastases (stage IV). With one exception, those who do are treated the same as patients with systemic recurrence of breast cancer. Women with stage IV disease whose cancer has spread no further than suprACLAVICULAR (above the collarbone on the same side as the cancer) lymph nodes should receive the same treatment as women with stage III breast cancer (see page 44).

The work-up for patients with stage IV breast cancer is the same as that listed on page 48.
For patients whose cancers are estrogen/progesterone receptor-positive and no vital organ is heavily involved with cancer, hormone therapy is recommended. If a woman has not received an antiestrogen (such as tamoxifen or toremifene) within the last year, and she is premenopausal, an antiestrogen with or without luteinizing hormone-releasing hormone (LHRH) agonist is recommended. If she is post-menopausal, antiestrogens or an aromatase inhibitor such as anastrozole or letrozole can be given. If the woman has received an antiestrogen in the last year, the NCCN recommends the use of other hormonal therapies,
such as progestins, aromatase inhibitors (in postmenopausal women) androgens, high-dose estrogens, or (in premenopausal women) removal or radiation treatment of the ovaries.

Women whose tumors shrink or stop growing should continue to receive hormonal therapy. If the disease progresses again, a different hormonal therapy should be tried.

If the cancer leads to a vital organ or is hormone receptor-negative or a patient becomes unresponsive to hormonal therapy, chemotherapy is recommended. When the primary chemotherapy regimen no longer works, another chemotherapy protocol should be tried. If tests of the tumor tissue show high levels of HER-2/neu, giving trastuzumab alone or along with chemotherapy is an option. Eventually, the tumor will develop resistance to each chemotherapy drug. In that case, a chemotherapy regimen may be given followed by a different regimen. If two or more different chemotherapy regimens have no effect on the tumor, supportive care focused on relieving symptoms or a clinical trial may be a better option than more chemotherapy.

If there are signs that the cancer has spread to the bones and are weakened, a bisphosphonate (pamidronate or zoledronate) should be given. These help strengthen the bones.

Treatment may also depend on the site of distant recurrence or metastasis. For example, when there is spread to the brain, spinal cord,
or membranes covering the brain and spinal cord, methotrexate may be given directly into the spinal fluid, or the metastasis can be treated with radiation therapy. Painful bone metastases can be treated with radiation therapy. Fluid buildup around the lungs or heart can be treated by draining the fluid and putting chemotherapy drugs into the space.

Preferred Chemotherapy for Recurrent or Metastatic Breast Cancer

Preferred first-line chemotherapy
- Anthracycline-based, taxane or CMF

Preferred second-line chemotherapy
- If anthracycline is given first, then CMF or taxane
- If taxane is given first, then anthracycline-based or CMF
- Other possible agents include capecitabine, vinorelbine, gemcitabine, mitoxantrone, and platinum compounds
Adjuvant therapy
Treatment that is added to increase the effectiveness of a primary therapy. It usually refers to hormonal therapy, chemotherapy, or radiation added after surgery to kill any cancer cells still remaining and increase the chances of curing the disease or keeping it in check.

Antiestrogen
A substance (for example, the drug tamoxifen) that blocks the effects of estrogen on tumors. Antiestrogens are used to treat breast cancers that depend on estrogen for growth.

Aromatase inhibitors
Drugs that block production of estrogens by the adrenal gland. They are used to treat hormone-sensitive breast cancer in postmenopausal women. These include anastrozole, letrozole, and exemestane.

Axillary dissection
A surgical procedure in which the lymph nodes in the armpit (axillary nodes) are removed and examined to find out if breast cancer has spread to those nodes and to remove any cancerous lymph nodes.

Biopsy
Removal of a piece of tissue for examination under a microscope to see whether cancer cells are present.

Bisphosphonates
Drugs that help strengthen bones weakened by cancer by encouraging the deposition of calcium. These include pamidronate and zoledronate.

Breast-conserving therapy
Surgery to remove a breast cancer and a small amount of benign tissue around the cancer, without removing any other part of the breast. This procedure is also called lumpectomy, segmental excision, or limited breast surgery. The method may require an axillary dissection and usually requires radiation therapy in addition to the breast conservation surgery.

Breast reconstruction
Surgery that rebuilds the breast contour after mastectomy. A breast implant or the woman’s own tissue provides the contour. If desired, the nipple and areola may also be re-created. Reconstruction can be done at the time of mastectomy or any time later.

Carcinoma in situ
An early stage of cancer, in which the tumor is still only in the structures of the organ where it first developed, and the disease does not invade other parts of the organ or spread to distant sites. Most in situ carcinomas are highly curable.
**Chemotherapy**
Treatment with drugs to destroy cancer cells. Chemotherapy is often used in addition to surgery or radiation to treat cancer when metastasis is proven or suspected, when the cancer has come back (recurred), or when there is a strong likelihood that the cancer could recur.

**Clinical stage**
Describes the extent of cancer present based on results of diagnostic tests and the physical examination.

**Cyst**
A fluid-filled mass that is usually benign. The fluid can be removed for analysis.

**Diagnostic mammogram**
A screening mammogram is performed on women with no evidence of lumps or other symptoms. This includes two x-ray views of each breast (top to bottom; side-to-side). A diagnostic mammogram includes additional x-ray views of areas of concern found on physical examination or on the screening mammogram to provide more information about the size and character of the abnormality.

**Duct**
A hollow passage for gland secretions. In the breast, a passage through which milk passes from the lobule (which makes the milk) to the nipple. These ducts are the starting point for most breast cancers.

**Ductal carcinoma in situ**
The most common type of noninvasive breast cancer. Cancer cells have not spread beyond the ducts.

**Estrogen**
A female sex hormone produced primarily by the ovaries, and in smaller amounts by the adrenal gland. In breast cancer, estrogen may promote the growth of cancer cells.

**Fibroadenoma**
A type of benign breast tumor composed of fibrous tissue and glandular tissue. On clinical examination or breast self-examination, it usually feels like a firm, round, smooth lump. These usually occur in young women.

**Fibrocystic changes**
A term that describes certain benign changes in the breast; also called fibrocystic disease. Symptoms of this condition are breast swelling or pain. The breast often feel lumpy or nodular. Because these signs sometimes mimic breast cancer, diagnostic mammography or ultrasound or even a biopsy may be needed to show that there is no cancer.

**Fibrosis**
Formation of fibrous (scar-like) tissue. This can occur anywhere in the body.

**Grade**
Cancer cells are graded using numbers 1 to 3 by how much they look like normal cells. Grade 1 (also called well-differentiated) means the cancer cells look like the normal cells, grade 3 (poorly differentiated) cancer cells do not look like normal cells at all. Grade 1 cancers aren’t considered aggressive; in other words, they grow more slowly and metastasize slower. Grade 3 cancers are more likely to grow faster and metastasize. A cancer’s grade along with its stage is used to determine treatment.
**HER-2/neu**
A gene that produces a type of receptor that helps cells grow. Breast cancer cells with too many HER-2/neu receptors tend to be fast growing and may respond to treatment with an antibody called trastuzumab.

**Hormone**
A chemical substance released into the body by the glands, such as the thyroid, adrenal, or ovaries. The substance travels through the bloodstream and sets in motion various body functions. For example, prolactin, which is produced in the pituitary gland, begins and sustains the production of milk in the breast after childbirth.

**Hormone receptor assay**
A test to see whether a breast tumor is likely to be affected by hormones or if it can be treated with hormones.

**Hormone therapy**
Treatment with hormones, drugs that interfere with hormone production or hormone action, or surgical removal of hormone-producing glands to kill cancer cells or slow their growth. The most common hormonal therapy for breast cancer is the drug tamoxifen. Other hormonal therapies include megestrol, aromatase inhibitors, androgens and surgical removal of the ovaries (oophorectomy).

**Internal mammary lymph nodes**
Lymph nodes located inside the chest, next to the junction of the sternum (breastbone) and the ribs.

**Intraductal papillomas**
Small, finger-like, polyp-like, noncancerous growths in the breast ducts that may cause a bloody nipple discharge. These are most often found in women 45 to 50 years of age. When many papillomas exist, breast cancer risk is slightly increased.

**Luteinizing hormone-releasing hormone (LHRH agonist)**
LHRH is a hormone produced by the hypothalamus, a tiny gland in the brain. The LHRH agonist is a man-made hormone that blocks the action of other hormones in the body.

**Lobular carcinoma in situ**
Also called lobular neoplasia. Cancer that has not spread beyond the lobules. The lobules are the milk-producing parts of the breast at the distant end of the ducts.

**Lumpectomy**
Surgery to remove the breast tumor and a small amount of surrounding normal tissue.

**Lymph nodes**
Small bean-shaped collections of immune system tissue such as lymphocytes, located along lymphatic vessels. They remove waste and fluids from lymph and help fight infections. Also called lymph glands.

**Lymphedema**
An infrequent complication after breast cancer treatment. Swelling in the arm caused by excess fluid that collects after lymph nodes and vessels are removed by surgery or treated by radiation.
**Mastectomy**
Removal of the entire breast. In a simple or total mastectomy, surgeons do not cut away any lymph nodes or muscle tissue; in a modified radical mastectomy, surgeons remove the breast and some armpit lymph nodes; in a radical mastectomy (now rarely performed) surgeons remove the breast, armpit lymph nodes, and chest wall muscles under the breast.

**Menopause**
The time in a woman’s life when monthly cycles of menstruation cease forever and the level of hormones produced by the ovaries decreases. Menopause usually occurs in the late 40s or early 50s, but it can also be caused by surgical removal of both ovaries (oophorectomy) or by chemotherapy, which often destroys ovarian function.

**Metastasis**
The spread of cancer cells to distant areas of the body by way of the lymph system or bloodstream.

**Preoperative therapy**
Systemic therapy, such as chemotherapy or hormone therapy, given before surgery. Preoperative therapy can shrink some breast cancers, so that surgical removal can be accomplished with a less extensive operation that would otherwise be needed.

**Node status**
Indicates whether a breast cancer has spread (node positive) or has not spread (node negative) to lymph nodes in the armpit (axillary nodes). The number and site of positive axillary nodes can help predict the risk of cancer recurrence.

**Oophorectomy**
Surgery to remove the ovaries.

**Ovary**
Reproductive organ in the female pelvis. Normally a woman has two ovaries. They contain the eggs (ova) that, when joined with sperm, result in pregnancy. Ovaries also produce estrogen.

**Pathologic stage**
Describes the extent of cancer present based on surgical removal and examination of tissue.

**Progesterone**
A female sex hormone released by the ovaries during every menstrual cycle to prepare the uterus for pregnancy and the breasts for milk production (lactation).

**Prognosis**
A prediction of the course of disease; the outlook for the cure of the patient. For example, women with breast cancer that was detected early and received prompt treatment have a good prognosis.

**Sentinel node biopsy**
In a sentinel lymph node biopsy, the surgeon injects a radioactive substance and/or blue dye into the area around the tumor. Lymphatic vessels carry these materials to the sentinel lymph node (also called the sentinel node). The doctor can see the blue dye or detect the radioactivity (with a Geiger counter) in the sentinel node, which is cut out and examined. If the sentinel node contains cancer, more axillary lymph nodes are removed. But if it is free of cancer, the patient can avoid additional axillary surgery and its potential side effects.
**Stage**
Indicates how far a cancer has spread.

**Stereotactic needle biopsy**
A method of needle biopsy that is useful in some cases in which calcifications or a mass can be seen on mammogram but cannot be located by touch. Computerized equipment maps the location of the mass, and this is used as a guide for the placement of the needle.

**Supportive care**
Measures taken to relieve symptoms and improve quality of life, but not expected to destroy the cancer. Pain medication is an example of supportive care.

**Supraclavicular lymph nodes**
Lymph nodes located in the area above the clavicle (collarbone).

**Systemic therapy**
Treatment that reaches and affects cells throughout the body; for example, chemotherapy.

**Tamoxifen**
This drug blocks the effects of estrogen on many organs, such as the breast. Blocking estrogen is desirable in some cases of breast cancer because estrogen promotes their growth. Recent research suggests that tamoxifen may lower the risk of developing breast cancer in women with certain risk factors.

**Toremifene**
Another anti-estrogen.

**Ultrasound**
High-frequency sound waves used to produce images of the breast.

For a more comprehensive glossary, you may access the ACS Web site at www.cancer.org.
Current ACS-NCCN Treatment Guidelines for Patients

Breast Cancer Treatment Guidelines for Patients
Breast Cancer Treatment Guidelines for Patients (Spanish)
Cancer Pain Treatment Guidelines for Patients
Cancer Pain Treatment Guidelines for Patients (Spanish)
Cancer-Related Fatigue Treatment Guidelines for Patients
Cancer-Related Fatigue Treatment Guidelines for Patients (Spanish)
Colon and Rectal Cancer Treatment Guidelines for Patients
Colon and Rectal Cancer Treatment Guidelines for Patients (Spanish)
Fever and Neutropenia Treatment Guidelines for Patients with Cancer
Lung Cancer Treatment Guidelines for Patients
Lung Cancer Treatment Guidelines for Patients (Spanish)
Melanoma Treatment Guidelines for Patients
Nausea and Vomiting Treatment Guidelines for Patients with Cancer
Nausea and Vomiting Treatment Guidelines for Patients with Cancer (Spanish)
Ovarian Cancer Treatment Guidelines for Patients
Prostate Cancer Treatment Guidelines for Patients
Prostate Cancer Treatment Guidelines for Patients (Spanish)
The *Breast Cancer Treatment Guidelines for Patients* were developed by a diverse group of experts and were based on the NCCN clinical practice guidelines. These patient guidelines were translated, reviewed, and published with help from the following individuals:

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