BREAST CANCER IN MEN

What Is Cancer?

Cancer develops when cells in a part of the body begin to grow out of control. Although there are many kinds of cancer, they all start because of out-of-control growth of abnormal cells.

Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide more rapidly until the person becomes an adult. After that, cells in most parts of the body divide only to replace worn-out or dying cells and to repair injuries.

Because cancer cells continue to grow and divide, they are different from normal cells. Instead of dying, they outlive normal cells and continue to form new abnormal cells.

Cancer cells develop because of damage to DNA. This substance is in every cell and directs all its activities. Most of the time when DNA becomes damaged the body is able to repair it. In cancer cells, the damaged DNA is not repaired. People can inherit damaged DNA, which accounts for inherited cancers. Many times though, a person’s DNA becomes damaged by exposure to something in the environment, like smoking.

Cancer usually forms as a tumor. Some cancers, like leukemia, do not form tumors. Instead, these cancer cells involve the blood and blood-forming organs and circulate through other tissues where they grow.

Often, cancer cells travel to other parts of the body, where they begin to grow and replace normal tissue. This process is called metastasis. Regardless of where a cancer may spread, however, it is always named for the place it began. For instance, breast cancer that spreads to the liver is still called breast cancer, not liver cancer.

Not all tumors are cancerous. Benign (non-cancerous) tumors do not spread (metastasize) to other parts of the body and, with very rare exceptions, are not life threatening.

Different types of cancer can behave very differently. For example, lung cancer and breast cancer are very different diseases. They grow at different rates and respond to different

treatments. That is why people with cancer need treatment that is aimed at their particular kind of cancer.

Cancer is the second leading cause of death in the United States. Nearly half of all men and a little over one third of all women in the United States will develop cancer during their lifetimes. Today, millions of people are living with cancer or have had cancer. The risk of developing most types of cancer can be reduced by changes in a person's lifestyle, for example, by quitting smoking and eating a better diet. The sooner a cancer is found and treatment begins, the better are the chances for living for many years.

What Is Breast Cancer in Men?

Breast cancer is a malignant tumor that has developed from cells of the breast. The disease occurs primarily in women but occasionally occurs in men. Many people do not realize that men have breast tissue and that they can develop breast cancer.

Normal Breast Structure

The breast is made up mainly of lobules (milk-producing glands in women), ducts (tiny tubes that carry the milk from the lobules to the nipple in women), and stroma (fatty tissue and connective tissue surrounding the ducts and lobules, blood vessels, and lymphatic vessels).

Until puberty, young boys and girls have a small amount of breast tissue consisting of a few *ducts* located under the nipple and *areola* (area around the nipple). At puberty, a girl's ovaries produce female hormones, causing breast ducts to grow, *lobules* to form at the ends of ducts, and the amount of *stroma* to increase. On the other hand, male hormones produced by the testicles prevent further growth of breast tissue. Men's breast tissue contains ducts, but only a few if any lobules.

Like all cells of the body, a man's breast duct cells can undergo cancerous changes. Because women have many more breast cells than men do and perhaps because their breast cells are constantly exposed to the growth-promoting effects of female hormones, breast cancer is much more common in women.

Many types of breast disorders can affect both men and women. Most breast disorders are *benign* (not cancerous). Benign breast tumors do not spread outside of the breast and are not life threatening. Other tumors are *malignant* (cancerous) and may become life threatening. Benign tumors, such as *papillomas* and *fibroadenomas*, are common in women but are extremely rare in men.

As in most tissues of the body, fluids are circulated to and from the breast by 2 main forms of channels. *Blood vessels* carry blood to and from the breast. *Lymphatic vessels* carry lymph instead of blood. *Lymph* is a clear fluid that contains tissue fluid and waste products and immune system cells (cells that are important in fighting infections). *Lymph nodes* are small, bean-shaped collections of immune system cells that are found along lymphatic vessels. This is important in cancer, because cancer cells can enter lymphatic vessels and spread to lymph

nodes. This becomes important when we talk about staging (see the section, "How Is Breast Cancer in Men Staged?").

Most lymphatic vessels in the breast connect to lymph nodes under the arm (*axillary lymph nodes*). Some lymphatic vessels connect to lymph nodes inside the chest (*internal mammary nodes*) and either above or below the collarbone (*supraclavicular* or *infraclavicular nodes*).

Knowing if the cancer cells have spread to lymph nodes is important because that lets us know that there is a higher chance that the cells could have gotten into the bloodstream and spread to other sites in the body. This is why it is important to find out if breast cancer has spread to your axillary lymph nodes when you are choosing a treatment. The more lymph nodes that are involved with the breast cancer, the more likely it is that the cancer will eventually be found in other organs as well. However, not all men with lymph node involvement develop metastases, and it is not unusual for a man to have negative lymph nodes and later develop metastases.

Benign Breast Conditions

Gynecomastia is the most common male breast disorder. It is not a tumor but rather an increase in the amount of a man's breast tissue. Usually, men have too little breast tissue to be felt or noticed. A man with gynecomastia has a button-like or disk-like growth under his nipple and areola, which can be felt and sometimes seen. Gynecomastia, common among teenage boys, is due to changes in hormone balance during adolescence. The same condition is also common in older men and is also due to changes in their hormone balance.

Rarely, gynecomastia occurs because tumors or diseases of certain *endocrine* (hormone-producing) glands cause a man's body to produce more *estrogen* (the main female hormone). Although men's glands normally produce some estrogen, it is not enough to cause breast growth. Diseases of the liver, which is an important organ in male and female hormone metabolism, can change a man's hormone balance and lead to gynecomastia. Obesity may be another cause of elevated estrogens in men.

Many commonly prescribed medicines can sometimes cause gynecomastia, too. These include some drugs used to treat ulcers and heartburn, high blood pressure, and heart failure. Men with gynecomastia should ask their doctors about whether any medicines they are taking might be causing this condition.

Klinefelter syndrome, a rare genetic condition, can lead to gynecomastia and increase a man's risk of developing breast cancer. This condition is discussed further in the section on risk factors for male breast cancer.

Types of Breast Cancer

Adenocarcinoma: Nearly all breast cancers start in the ducts or lobules of the breast. Because this is glandular tissue, they are called adenocarcinomas, a term applied to cancers of glandular tissue anywhere in the body. The 2 main types of breast adenocarcinomas are *ductal carcinomas* and *lobular carcinomas*.

Ductal carcinoma in situ (DCIS): DCIS is an uncommon type of breast adenocarcinoma in men (about 10%). Cancer cells fill the ducts but do not invade through the walls of the ducts into the fatty tissue of the breast or spread outside the breast. It is almost always curable with surgery.

In situ is the term used for the early stage of cancer, when it is confined to the immediate area where it began. Specifically in breast cancer, in situ means that the cancer remains confined to ducts (ductal carcinoma in situ) or lobules (lobular carcinoma in situ). It has not invaded surrounding fatty tissues in the breast nor spread to other organs in the body.

Infiltrating (or invasive) ductal carcinoma (IDC): Starting in a duct of the breast, this type of adenocarcinoma breaks through the wall of the duct and invades the fatty tissue of the breast. At this point, it can metastasize (or spread) to other parts of the body. IDC (alone or mixed with other types of invasive or in situ breast cancer) accounts for 80% to 90% of male breast cancers.

Lobular breast cancer: This type of adenocarcinoma in men is very rare, accounting for only 2% of adenocarcinomas. This is because men do not usually have lobular tissue, the milk-producing glands.

Paget disease of the nipple: This type of breast cancer starts in the breast ducts and spreads to the skin of the nipple. It may also spread to the *areola* (the dark circle around the nipple). The skin of the nipple usually appears crusted, scaly, and red, with areas of itching, oozing, burning, or bleeding. Using the fingertips, a lump may be detected within the breast. If no lump can be felt, the *prognosis* (outlook for survival) is generally good. Paget disease may be associated with in situ carcinoma or with infiltrating breast carcinoma. It accounts for about 1% of female breast cancers and a higher percentage of male breast cancers. Because the male breast is much smaller than the female breast, all male breast cancers start relatively close to the nipple, so spread to the nipple is more likely.

What Are the Key Statistics About Breast Cancer in Men?

The American Cancer Society estimates that in 2007 some 2,030 new cases of invasive breast cancer will be diagnosed among men in the United States. Breast cancer is about 100 times more common among women.

In 2007, about 40,910 people will die from breast cancer in the United States (40,460 women, 450 men). Breast cancer accounts for about 0.22% (two tenths of a percent) of cancer deaths among men. The number of breast cancer cases relative to the population has been increasing in the last 20 years mainly due to increased use of mammography.

The prognosis for men with breast cancer was once thought to be worse than that for women, but this is not true. Based on looking at each stage, the survival rates are equal. In other words, men and women with each stage of breast cancer have a similar outlook for survival.

Although at one time breast cancers of men were more often diagnosed with more advanced stages, this may no longer be true.

What Are the Risk Factors for Breast Cancer in Men?

A risk factor is anything that increases your chance of getting a disease such as cancer. Different cancers have different risk factors. For example, exposing skin to strong sunlight is a risk factor for skin cancer. Smoking is a risk factor for cancers of the lung, mouth, larynx, bladder, kidney, and several other organs.

Some men with one or more breast cancer risk factors never develop the disease, while most men with breast cancer have no apparent risk factors. Even when a patient has a risk factor, there is no way to prove that it actually causes the cancer.

Known Risk Factors

Aging: Aging is an important risk factor for the development of breast cancer in men. Men with breast cancer average about 67 years old at the time of their diagnosis.

Family history of breast cancer: Breast cancer risk is increased if other members of the family ("blood relatives") have had breast cancer. About 20% of men with breast cancer have close male or female relatives with the disease. See the section, "Do We Know What Causes Breast Cancer in Men?" for information on inherited breast cancer genes.

Inherited gene mutations: The gene mutation (change) BRCA2, which is responsible for some breast cancers in women, probably accounts for about 10% of breast cancers in men. BRCA1 mutations can also increase the risk of breast cancer in men but seems to be responsible for fewer cases than the BRCA2 gene. The clue to these mutations would be a strong family history of breast cancer, which often appeared at a young (under 60) age. Other gene mutations that have been thought responsible for some breast cancers in men are mutations in a gene called CHEK2.

Klinefelter syndrome: This is a *congenital* (present at birth) condition that affects about 1 of 1000 men. Normally men have a single X chromosome along with their Y chromosome, while women have two X chromosomes. Men with this condition have more than one X chromosome (sometimes as many as 4). This causes their testicles to be smaller than usual and not produce functioning sperm cells, making them infertile. Compared with other men, they have lower levels of *androgens* (male hormones) and more estrogens (female hormones). For this reason, they often develop *gynecomastia* (benign male breast growth).

Some studies that looked at all men with breast cancer have found more men with Klinefelter syndrome than are found in the normal population. This led doctors to think that breast cancer is a major concern for these men. But this may not be true. One study of 696 Danish men with Klinefelter syndrome found no cases of breast cancer in any of them. One problem is that these are both uncommon problems so that it is hard to collect enough cases to be sure. What this all probably means is that the risk is increased, but it is still very low because this is such an uncommon cancer, even for people with Klinefelter syndrome.

Radiation exposure: A man whose chest area has been exposed to radiation (usually for treatment of a cancer inside the chest, such as Hodgkin or non-Hodgkin lymphoma) has an increased risk of developing breast cancer.

Alcohol: Heavy alcohol intake increases the risk of breast cancer in men.

Liver disease: The liver plays an important role in sex hormone metabolism by producing binding proteins that carry the hormones in the blood. These binding proteins affect the hormones' activity. Men with severe liver disease such as *cirrhosis* have relatively low levels of androgen activity and higher estrogen levels. Therefore, they may have an increased risk of developing gynecomastia and breast cancer.

Estrogen treatment: Estrogen-related drugs are sometimes used in hormonal therapy for men with prostate cancer. This treatment may slightly increase their breast cancer risk. However, this risk is small compared with the benefits of this treatment in slowing the growth of prostate cancer. Men taking high doses of estrogens as part of a sex change procedure have a much higher breast cancer risk.

Physical inactivity and obesity: Recent studies have shown that physical activity reduces women's breast cancer risk and that breast cancer risk is increased by obesity during adult life. Obesity is probably a risk factor for male breast cancer. The reason is that fat cells convert male hormones (androgens) into female hormones (estrogens). This means that obese men have higher levels of estrogens in their body. Some obese men may notice that they don’t have to shave as frequently as other men. They might also have difficulty fathering children because they may be infertile. Regular exercise and maintaining a healthy weight reduces the risk of many diseases and cancers.

Occupation: Some reports have suggested an increased risk in men who work in hot environments such as steel mills. Also, men heavily exposed to gasoline fumes may have a higher risk. Finally, in a study of Florida firefighters there was an excess of breast cancer cases.

Do We Know What Causes Breast Cancer in Men?

Although certain risk factors may increase a man's chances of developing breast cancer, the cause of most breast cancers in men is unknown.

Researchers are making great progress in understanding how certain changes in DNA can cause normal cells to become cancerous. DNA is the chemical that carries the instructions for nearly everything our cells do. We usually resemble our parents because they are the source of our DNA. However, DNA affects more than our outward appearance.

Some *genes* (parts of our DNA) contain instructions for controlling when our cells grow, divide, and die. Certain genes that promote cell division are called *oncogenes*. Others that slow down cell division or cause cells to die at the appropriate time are called *tumor*

suppressor genes. Cancers can be caused by DNA mutations (defects) that activate oncogenes or inactivate tumor suppressor genes. Certain inherited DNA changes can cause a high risk of developing certain cancers and are responsible for cancers that run in some families.

Most DNA mutations related to male breast cancer occur during life rather than having been inherited before birth. Acquired mutations of oncogenes and/or tumor suppressor genes may result from cancer-causing chemicals in our environment or diet, but so far, studies have not identified any individual chemical in the environment or in our diet that appears responsible for these mutations or the subsequent male breast cancers.

Genetic risk factors: Some breast cancers are linked to inherited mutations of the BRCA tumor suppressor genes. Normally, these genes make a protein that helps cells recognize and/or repair DNA damage and prevents them from growing abnormally. However, if a person has inherited a mutated gene from either parent, the chances of developing breast cancer are higher. In women, mutations of 2 different BRCA genes (BRCA1 and BRCA2) are responsible for about 5% to 10% of breast cancers. Women with either of these altered genes have a lifetime breast cancer risk of up to 85%.

In men, the BRCA2 gene is responsible for about 5% to 10% of breast cancer cases. Some studies have found even higher rates. The lifetime breast cancer risk for men with BRCA2 mutations is about 7%, which is nearly 100 times greater than other men. In Jewish men, BRCA1 can play a role in a small number.

Testing of your DNA from blood samples can determine if you have inherited a mutated BRCA2 gene. This should only be done if you have a strong family history of breast cancer and/or ovarian cancer suspected to be caused by the BRCA2 mutation. If the test detects a mutated BRCA2 gene, you and your health care team can watch carefully for early signs of cancer. Mammography is very effective in finding early breast cancer in men. The health care team also can warn close male and female relatives that they also may be at risk.

The role of BRCA1 mutations in male breast cancer is less clear. Recent studies suggest that BRCA1 mutations may slightly increase the risk of breast cancer in men, although by a much smaller extent than BRCA2 mutations. A large study found about half as many BRCA1 mutations in men with breast cancer as BRCA2 mutations. Both BRCA genes can also increase a man's risk for certain other cancers, such as prostate cancer.

If you are considering genetic testing, you should speak to a genetic counselor or a doctor specially qualified in interpreting and explaining these test results. For additional information, see our policy statement on genetic testing.

Can Breast Cancer in Men Be Prevented?

There are definite things a man can do to lower his risk of breast cancer. Maintaining an ideal body weight and restricting alcohol are two of these. Beyond body weight and alcohol, there is no way known to prevent breast cancer in men. For now, the best strategies for reducing

the number of deaths caused by this disease are early detection and prompt treatment. Early detection has been a problem for men, who tend to ignore breast lumps and see their doctor only when it has gotten very large. In general, men are diagnosed with larger cancers and at more advanced stages than are women.

Can Breast Cancer in Men Be Found Early?

Early detection improves the chances that male breast cancer can be treated successfully. Many men's breast cancers could have been found earlier by their health care professional with regular checkups.

Differences Between Male and Female Breast Cancers: Relevance to Early Detection

Although there are many similarities between breast cancer in men and women, several important differences affect early detection.

The most obvious difference between the male and female breast is size. Because men have very little breast tissue, it is easier for men and their health care professionals to feel small masses. On the other hand, because men have so little breast tissue, cancers do not need to grow very far to reach the skin covering the breast or the muscles underneath the breast. Therefore, although male breast cancers tend to be slightly smaller than female breast cancers when they are first found, they have more often spread beyond the breast. The extent of spread beyond the breast is the most important factor in the prognosis (outlook for chances of survival) of a breast cancer.

Another difference is that breast cancer is common among women and rare among men. So many women are aware of this disease, while most men do not realize they have even a small risk of being affected. Some men ignore breast lumps or think they are caused by an infection or some other reason and they do not get medical treatment until the mass has grown significantly. Also, some men who think breast lumps occur only in women are embarrassed about finding one and worry that someone might question their masculinity. This attitude may also delay diagnosis and reduce a man's odds for successful treatment.

Because breast cancer is so uncommon, there is no value in screening mammography in most men. However, mammography along with careful examination might be useful as a screening examination for men with a strong family history and BRCA mutations found by genetic testing.

How Is Breast Cancer in Men Diagnosed?

Signs and symptoms: Men need to know that breast cancer is not limited to only women. If you notice any breast changes, you should see your health care professional as soon as possible for evaluation. Signs to watch for include:

- a lump or swelling
- skin dimpling or puckering

- nipple *retraction* (turning inward)
- redness or scaling of the nipple or breast skin
- discharge from the nipple

However, remember that most breast lumps in men are due to gynecomastia and not cancer.

Complete medical history: The first step is gathering a complete personal and family medical history. This will provide the doctor with information about your symptoms and risk factors for breast cancer or benign breast conditions.

Clinical breast exam: A thorough clinical breast exam will be performed to locate the lump or suspicious area and to feel its texture, size, and relationship to the skin and muscle tissue. The doctor will also examine the rest of your body to look for any evidence of spread, such as enlarged lymph nodes or an enlarged liver. Your general physical condition will also be evaluated.

Diagnostic mammography: Diagnostic mammography is an x-ray examination of the breast. In some cases, special images known as "cone views with magnification" are used to make a small area of altered breast tissue easier to evaluate. The results of this diagnostic testing may suggest that a biopsy is needed to tell whether the lesion (abnormal area or lump) is cancer. In a way, mammography is even more accurate in men than women since men do not have dense breasts or breast cysts.

Breast ultrasound: Ultrasound, also known as sonography, uses high-frequency sound waves to outline a part of the body. High-frequency sound waves are transmitted into the area of the body being studied and echoed back. The sound wave echoes are picked up and converted by a computer into an image displayed on a computer screen. No radiation exposure occurs during this test. Breast ultrasound is sometimes used to evaluate breast abnormalities that are found during mammography or a physical exam. Ultrasound is useful for some breast masses.

Nipple discharge exam: If you have nipple discharge, some of the fluid may be collected. The fluid is then examined under a microscope to determine if any cancer cells are present. If cancer cells are not seen in the nipple secretions but a suspicious mass is present, a biopsy of the mass is needed.

Biopsy: A biopsy is the only way to tell if a breast abnormality is cancerous. Unless the doctor is sure the lump is not cancer, this should always be done. All biopsy procedures remove a tissue sample for examination under a microscope. There are several types of biopsies, such as fine needle aspiration biopsy, core biopsy, and surgical biopsy. Your doctor will choose a type of biopsy based on your individual situation.

> *Fine-needle aspiration biopsy (FNAB)*: FNAB is the easiest and quickest biopsy technique. A very thin needle is inserted to withdraw fluid. The doctor can guide the needle into the area of the breast abnormality while feeling the lump. A FNAB of solid lumps yields small tissue fragments. Microscopic examination of FNAB

samples can reveal whether most breast abnormalities are benign or cancerous. In some cases, the results of the FNAB are not clear, and another type of biopsy is needed.

Core biopsy: For a core biopsy, the doctor removes a small cylinder of tissue from a breast abnormality. The needle used in this technique is larger than that used for FNAB. The biopsy is done with local anesthesia in the doctor's office.

Surgical biopsy: In this surgical procedure, the doctor removes all, or a portion, of the lump for microscopic analysis.

Imaging Tests to Detect Breast Cancer Spread

Chest x-ray: This test may be done to see whether the breast cancer has spread to your lungs.

Bone scan: This procedure helps show if a cancer has metastasized or spread to your bones. The patient receives an injection of radioactive material called technetium diphosphonate. The amount of radioactivity used is very low and causes no long-term effects. The radioactive substance is attracted to diseased bone cells throughout the entire skeleton. Areas of diseased bone will be seen on the bone scan image as dense, gray to black areas, called "hot spots."

These areas may suggest metastatic cancer is present, but arthritis, infection, or other bone diseases can also cause a similar pattern. To distinguish among these conditions, the cancer care team may use other imaging tests or take bone biopsies. Bone scans can find metastases earlier than regular x-rays.

Computed tomography (CT): The CT scan is an x-ray procedure that produces detailed, cross-sectional images of your body. Instead of taking one picture, like a conventional x-ray, a CT scanner takes many pictures as it rotates around you. A computer then combines these pictures into an image of a slice of your body. The machine creates several pictures of the part of your body that is being studied. This test can help tell if your cancer has spread into your liver or other organs. Often after the first set of pictures is taken, you will receive an intravenous injection of a *contrast agent*, or "dye," that helps better outline structures in your body. A second set of pictures is then taken.

CT scans can also be used to precisely guide a biopsy needle into a suspected area of cancer spread. For this procedure, called a *CT-guided needle biopsy*, the patient remains on the CT scanning table while a radiologist advances a biopsy needle toward the location of the mass. CT scans are repeated until the doctors are sure that the needle is within the mass. A fine needle biopsy sample (tiny fragment of tissue) or a core needle biopsy sample (a thin cylinder of tissue about ½-inch long and less than 1/8-inch in diameter) is removed and examined under a microscope.

CT scans take longer than regular x-rays. You need to lie still on a table, and the part of your body being examined is placed within the scanner, a doughnut-shaped machine that completely surrounds the table. The test is painless, but you may find it uncomfortable to hold still in certain positions for minutes at a time.

You will need an IV (intravenous) line through which the contrast dye is injected. The injection can also cause some flushing. Some people are allergic and get hives or, rarely, more serious reactions like trouble breathing and low blood pressure can occur. Be sure to tell the doctor if you have ever had a reaction to any contrast material used for x-rays. You may be asked to drink 1 to 2 pints of a solution of contrast material. This helps outline the intestine so that it is not mistaken for tumors.

Magnetic resonance imaging (MRI): This is described as a way of looking for breast cancer as a supplement to mammograms. Traditionally, MRI scans have been used to look for cancer spread just like CT scans. MRI scans are particularly helpful in examining the brain and spinal cord. MRI scans are a little more uncomfortable than CT scans. First, they take longer -- often up to an hour. Also, you have to lie inside a tube, which is confining and can upset people with claustrophobia, or fear of enclosed spaces. The machine also makes a thumping noise that you may find disturbing. Some places provide headphones with music to block this out. MRI is also a good way to examine the breast for other tumors.

Positron emission tomography (PET): PET uses glucose (a form of sugar) that contains a radioactive atom. A special camera can detect the radioactivity. Cancer cells of the body absorb high amounts of the radioactive sugar, because of their high rate of metabolism. PET is also useful when your doctor thinks the cancer has spread but doesn't know where. PET scans can be used instead of several different x-rays because it scans your whole body.

This test can be used as a diagnostic aid to mammography, especially in looking for cancer in axillary lymph nodes. So far though, most studies show it isn’t very sensitive in finding small deposits of cancer in lymph nodes, although it can find big ones.

Laboratory Testing of Breast Cancer Biopsy Samples

Types of breast cancer: The tissue removed during the biopsy is examined in the lab to see whether the lump is cancer. The biopsy is also used to determine the cancer's type. These types of breast cancer are defined in the section, "What Is Breast Cancer in Men?" In men, almost all the cancers are the invasive ductal type

Grades of breast cancer: A *pathologist* (doctor who specializes in laboratory tests for diagnosing diseases) looks at the tissue sample under a microscope and then assigns a grade to it. The grade helps predict the patient's prognosis because cancers that closely resemble normal breast tissue tend to grow and spread more slowly. In general, a lower grade number indicates a slower-growing cancer, whereas a higher number indicates a faster-growing cancer.

Histologic tumor grade (sometimes called *Bloom-Richardson grade*) is based on the arrangement of the cells in relation to each other, as well as features of individual cells. Grade 1 cancers have relatively normal-looking cells that do not appear to be growing rapidly and are arranged in small tubules. Grade 3 cancers, the highest grade, lack these features and tend to grow and spread more aggressively. Grade 2 cancers have features between grades 1 and 3. Grade 1, 2, and 3 cancers are sometimes referred to as well differentiated, moderately differentiated, and poorly differentiated. This system of grading is used for invasive cancers but not for in situ cancers.

Estrogen and progesterone receptors: Receptors are molecules that are a part of cells. They recognize certain substances such as hormones that circulate in the blood. Normal breast cells and some breast cancer cells have receptors that recognize estrogen and progesterone. These two hormones play an important role in the development, growth, prognosis, and treatment of breast cancer.

An important step in evaluating a breast cancer is to test for the presence of these receptors. This is done on a portion of the cancer removed at the time of biopsy or initial surgical treatment. Breast cancers that contain estrogen and progesterone receptors are often referred to as ER-positive and PR-positive tumors. These cancers tend to have a better prognosis than cancers without these receptors and are much more likely to respond to hormonal therapy (see the section, "How Is Breast Cancer in Men Treated?"). About 90% of male breast cancers have either estrogen or progesterone receptors.

HER2/neu testing: Only a small number of breast cancers in men have too much of a growth-promoting protein called HER2/neu and too many copies of the gene (normal is 2) that instructs the cells to produce that protein. In other cases, a normal number of HER2/neu genes are present, but they are too active in instructing the cells to produce HER2/neu protein.

These cancers tend to grow and spread more aggressively than other breast cancers. They can be treated with a drug called trastuzumab (Herceptin®) that prevents the HER2/neu protein from stimulating breast cancer cell growth (see the section, "How Is Breast Cancer in Men Treated?" for information about this drug). Studies also suggest that chemotherapy combinations containing anthracycline drugs (such as doxorubicin or epirubicin) treat breast cancers with too much HER2/neu more effectively than combinations that do not include these drugs.

HER2/neu testing is done on thin slices of the biopsy sample that are treated with special antibodies that identify the HER2/neu protein or with pieces of DNA that identify the HER2/neu gene. The test that uses antibodies to detect HER2/neu protein is called *immunohistochemistry*. The DNA test for extra copies of the HER2/neu gene is called fluorescent in-situ hybridization (usually called FISH for short). Many breast cancer specialists feel the FISH test is more accurate than the immunohistochemistry test. This test should be performed on all newly diagnosed breast cancers.

Tests of ploidy and cell proliferation rate: The *ploidy* of cancer cells refers to the amount of DNA they contain. If there's a normal amount of DNA, the cells are said to be *diploid*. If the amount is abnormal, then the cells are described as *aneuploid*. Although these tests may help determine prognosis, they rarely change the course of treatment and are considered optional. They are not recommended by the National Comprehensive Cancer Network (NCCN).

- *Flow cytometry* uses lasers and computers to measure the amount of DNA in cancer cells suspended in liquid as they flow past the laser beam.

- *Image cytometry* uses computers to analyze digital images of the cells from a microscope slide.

Flow cytometry can also measure the *S-phase fraction*, which is the percentage of cells in a sample that are in a certain stage of cell division called the *synthesis* phase. The more cells that are in this S-phase means the cancer is more likely to come back and spread.

Other tests for predicting breast cancer prognosis: Many new prognostic factors, such as changes of the p53 tumor suppressor gene, the epidermal growth factor (EGF) receptor, and microvessel density (number of small blood vessels that supply oxygen and nutrition to the cancer), are currently being studied. Also see the section, "What's New in Research and Treatment for Breast Cancer in Men?" for other developments.

How Is Breast Cancer in Men Staged?

Staging is the process of finding out how far the cancer has spread. The stage of a cancer is the most important factor in selecting treatment options. A *staging system* is a standardized way for the cancer care team to summarize the extent of your cancer.

Depending on the results of your physical exam and biopsy, the doctor may order certain imaging tests, such as a chest x-ray, mammograms of both breasts, bone scans, and CT scans, to gather information about the tumor. Blood tests may also be done to evaluate your overall health and detect whether the cancer has spread to certain organs.

The 2002 American Joint Committee on Cancer (AJCC) TNM System

The most common system used to describe the stages of cancers is the *American Joint Committee on Cancer (AJCC) TNM system*. This staging system classifies cancers based on their T, N, and M stages:

T stands for tumor (its size and how far it has spread within the breast and to nearby organs).
N stands for spread to lymph *n*odes (bean-shaped collections of immune system cells that help fight infections and cancers).
M is for *m*etastasis (spread to distant organs).

The approach to staging used here is based on the findings after surgery, when the pathologist has looked at the breast mass and lymph nodes (the pathologic stage).

Additional letters or numbers appear after T, N, and M to provide more details about the tumor, lymph nodes, and metastasis:

The letter T followed by a number from 0 to 4 describes the tumor's size and spread to the skin or chest wall under the breast. Higher T numbers indicate a larger tumor and/or wider spread to tissues near the breast.

The letter N followed by a number from 0 to 3 indicates whether the cancer has spread to lymph nodes near the breast and, if so, how many lymph nodes are affected.

The letter M followed by a 0 or 1 indicates whether the cancer has spread to distant organs for example, the lungs or bones or to lymph nodes that are not next to the breast, such as those above the collarbone.

Once the T, N, and M categories have been determined, this information is combined in a process called *stage grouping* to determine your disease stage. This is expressed as stage 0 and in Roman numerals from stage I (the least advanced stage) to stage IV (the most advanced stage).

Breast Cancer T, N, M Categories and Stage Groupings

Primary tumor (T):

TX: Primary tumor cannot be assessed.
T0: No evidence of primary tumor (this sometimes happens).
Tis: Carcinoma in situ; intraductal carcinoma, lobular carcinoma in situ, or Paget disease of the nipple with no associated tumor mass.
T1: Tumor 2 cm (4/5 of an inch) or less in greatest dimension.
T2: Tumor more than 2 cm but not more than 5 cm (2 inches) in greatest dimension.
T3: Tumor more than 5 cm in greatest dimension.
T4: Tumor of any size growing into the chest wall or skin.

Regional (nearby) lymph nodes (N) pathologic staging:

NX: Regional lymph nodes cannot be assessed (for example, removed previously).
N0: Cancer has not spread to regional lymph nodes.
N1: Cancer has spread to 1 to 3 axillary lymph node(s) on the same side as the breast cancer and/or in internal mammary nodes with microscopic disease found by sentinel node biopsy but are not found on imaging studies or by clinical exam. This category includes the situation where only a small cluster of cancer cells is detected.
N2: Cancer has spread to 4 to 9 lymph nodes on the same side as the breast cancer or in internal mammary nodes found by imaging studies or clinical exam in the absence of axillary lymph node metastasis.
N3: Cancer has spread to 10 or more axillary lymph nodes, or in infraclavicular (below the collar bone) lymph nodes, or in supraclavicular nodes (above the collar bone) or in internal mammary lymph nodes (located beneath the breast and inside the chest) found by imaging tests or clinical exam in the presence of one or more positive

axillary lymph nodes, or in more than 3 axillary lymph nodes and in internal mammary nodes found by sentinel node biopsy but not found by imaging tests or clinical exam -- all on the same side as the breast cancer.

Metastasis (M):

MX: Presence of distant spread (metastasis) cannot be assessed.
M0: No distant spread.
M1: Distant spread is present.

Summary of Breast Cancer Stages

Stage 0: Tis, N0, M0: Ductal carcinoma in situ (DCIS) is the earliest form of breast cancer. In DCIS, cancer cells are located within a duct and have not invaded the surrounding fatty breast tissue.

Stage I: T1, N0, M0: The tumor is 2 cm (about 4/5 of an inch) or less in diameter and has not spread to lymph nodes or distant sites.

Stage IIA: T0, N1, M0 / T1, N1, M0 / T2, N0, M0: No tumor is found in the breast, but it is in 1 to 3 axillary lymph nodes, or the tumor is less than 2 cm and has spread to 1 to 3 axillary lymph nodes or found by sentinel node biopsy as microscopic disease in internal mammary nodes but not on imaging studies or by clinical exam, or the tumor is larger than 2 cm in diameter and less than 5 cm but hasn't spread to axillary nodes. The cancer hasn't spread to distant sites.

Stage IIB: T2, N1, M0 / T3, N0, M0: The tumor is larger than 2 cm in diameter and less than 5 cm and has spread to 1 to 3 axillary lymph nodes or found by sentinel node biopsy as microscopic disease in internal mammary nodes or the tumor is larger than 5 cm and does not grow into the chest wall and has not spread to lymph nodes. The cancer hasn't spread to distant sites.

Stage IIIA: T0-2, N2, M0 / T3, N1, 2, M0: The tumor is smaller than 5 cm in diameter and has spread to 4 to 9 axillary lymph nodes or found by imaging studies or clinical exam to have spread to internal mammary nodes, or the tumor is larger than 5 cm and has spread to 1 to 9 axillary nodes or to internal mammary nodes. The cancer hasn't spread to distant sites.

Stage IIIB: T4, N0-2, M0: The tumor grown into the chest wall or skin and may have spread to no lymph nodes or as many as 9 axillary nodes. It may or may not have spread to internal mammary nodes. The cancer hasn't spread to distant sites.

Stage IIIC: T0-4, N3, M0: The tumor is any size, has spread to 10 or more nodes in the axilla or to one or more lymph nodes under the clavicle (infraclavicular) or above the clavicle (supraclavicular) or to internal mammary lymph nodes, which are enlarged because of the cancer. All of these are on the same side as the breast cancer. The cancer hasn't spread to distant sites.

Inflammatory breast cancer is classified as stage III, unless it has spread to distant organs or lymph nodes that are not near the breast, in which case it would be stage IV.

Stage IV: T0-4, N0-3, M1: The cancer, regardless of its size, has spread to distant organs such as bone, liver, or lung, or to lymph nodes far from the breast.

Breast Cancer Survival by Stage

The numbers below are based on patients diagnosed many years ago (1988-2001) and can be expected to be a little different for men diagnosed more recently. One reason is that the staging system was revised in 2002. Another reason is that treatments have improved since 1998. Because of these improved treatments, the survival rates for men diagnosed now should be better. These numbers come from the National Cancer Institute's Surveillance Epidemiology and End Results Database.

Stage	5-year relative survival rate
0	100%
I	96%
II	88%
III	60%
IV	23%

The 5-year survival rate refers to the percentage of patients who live at least 5 years after their cancer is diagnosed. Five-year rates are used to produce a standard way of discussing prognosis. Of course, many people live much longer than 5 years.

Relative survival rates take into consideration that people may die of other causes besides breast cancer. With relative rates, anyone who died of another cause, such as heart disease, is not counted. This is considered to be a more accurate way to describe the prognosis for people with a particular type and stage of cancer. Of course, 5-year survival rates are based on patients diagnosed and initially treated more than 5 years ago. Improvements in treatment often result in a more favorable outlook for recently diagnosed patients.

How Is Breast Cancer in Men Treated?

This information represents the views of the doctors and nurses serving on the American Cancer Society's Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.

The treatment information in this document is not official policy of the Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor.

Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Most of the information about treating male breast cancer comes from doctors' experience with treating female breast cancer. There are too few men with breast cancer for doctors to study in clinical trials.

Surgery

Mastectomy: A simple or total mastectomy removes the entire breast. In a modified radical mastectomy, the surgeon extends the incision to remove the lymph nodes under the arm. Sometimes, if the tumor is large and growing into the chest muscles, the surgeon must do a radical mastectomy, a more extensive operation removing the entire breast, axillary lymph nodes, and the chest wall muscles under the breast.

Although breast conservation is a treatment option for most women with breast cancer, it is rarely an option for men. This is because the male breast contains only a small amount of glandular tissue located beneath the nipple. So removing most male breast cancers means very little if any breast tissue will remain. Also, removing the nipple and areola is usually necessary to surgically treat the cancer.

The main side effect of removing axillary lymph nodes is *lymphedema* (swelling of the arm), which occurs in about 10% to 12% of cases. However, certain measures can help prevent or reduce the effects of lymphedema. You can learn about these in a booklet available from the American Cancer Society. If you develop swelling, tightness, or pain at any time in the arm, be sure to tell the nurse or doctor promptly. Numbness of the upper inner arm skin is another common side effect. This is due to damage of nerves under the arm and is not related to lymphedema.

Sentinel lymph node biopsy (SLNB): Although lymph node dissection is a safe operation and has low rates of serious side effects, doctors have developed another way of learning if cancer has spread to lymph nodes without removing all of them first. This procedure is called the *sentinel lymph node biopsy*.

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 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 see the blue dye and/or detect the radioactivity with a Geiger counter. He or she then removes the node for examination by the pathologist.

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. The timing of the axillary dissection depends on how easily the cancer can be seen in the lymph node at the time of surgery. Sometimes it is obvious and other times it will only be found by thorough microscopic study by a pathologist.

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 (see discussion of lymphedema earlier in this section).

This limited sampling of lymph nodes is not always appropriate. Doctors recommend sentinel lymph node biopsy be done only by a team known to have experience with this technique.

Systemic Therapy

Even in the early stages of the disease, cancer cells can break away from the primary tumor and begin to spread through the bloodstream. These cells can't be felt by physical examination or seen using x-ray or other imaging methods, and they cause no symptoms. But they can establish new tumors in other organs or the bones over time.

Systemic therapy reaches all parts of the body through the bloodstream. Chemotherapy and hormonal therapy are systemic therapies. *Adjuvant therapy* (additional therapy) is systemic therapy that is given after surgery to patients with no further detectable cancer. The goal of adjuvant therapy is to kill hidden cells and tumors or at least prevent them from growing by using therapy that reaches cancer cells throughout the body.

Not every patient needs adjuvant therapy, especially if the cancer has been diagnosed in an early stage. Systemic therapy is also the main strategy for treating breast cancer that has spread beyond the breast.

Chemotherapy

Chemotherapy is treatment with cancer-fighting drugs that may be given intravenously (injected into a vein) or by mouth. The drugs travel through the bloodstream to reach cancer cells in most parts of the body. When used as adjuvant therapy after breast conservation therapy or mastectomy, chemotherapy reduces the risk of breast cancer recurrence. The chemotherapy is given in cycles, with each period of treatment followed by a recovery period. The usual course of chemotherapy lasts between 3 and 6 months.

Chemotherapy can also be used as the main treatment for men or women whose cancer has already spread outside the breast and underarm area at the time it is diagnosed or spreads after initial treatments. The length of these treatments is not definite, but depends on how much, if at all, the cancer shrinks.

In most cases, adjuvant chemotherapy is most effective when combinations of more than one chemotherapy drug are used together. Clinical research studies over the last 30 years have determined which combinations of chemotherapy drugs are most effective. However, the “best “ combination may not have yet been discovered, so there continue to be clinical research studies comparing one of today’s most effective treatments against something that may be better. The most commonly used combinations are:

- Cyclophosphamide (Cytoxan), methotrexate (Amethopterin, Mexate, Folex), and fluorouracil (Fluorouracil, 5-FU, Adrucil) [shortened to CMF]
- Cyclophosphamide, doxorubicin (Adriamycin), and fluorouracil [shortened to CAF]
- Doxorubicin (Adriamycin) and cyclophosphamide [shortened to AC]
- Doxorubicin (Adriamycin) and cyclophosphamide with paclitaxel (Taxol) or docetaxel (Taxotere) (AC T or TAC)

- Doxorubicin (Adriamycin), followed by CMF
- Cyclophosphamide, epirubicin (Ellence), and fluorouracil with or without docetaxel (FEC or FEC T)

Other chemotherapy drugs used for treating men and women with breast cancer when it has metastasized include vinorelbine (Navelbine), gemcitabine (Gemzar), and capecitabine (Xeloda).

Doctors give chemotherapy in cycles, with each period of treatment followed by a rest period. The chemotherapy is given on the first day of each cycle, and then the body is given time to recover from the effects of chemotherapy. The chemotherapy drugs are then repeated to start the next “cycle.” The time between giving the chemotherapy drugs is generally every 2 weeks or every 3 weeks. Some drugs are given more often. These cycles generally last for a total time of 3 to 6 months depending on the drugs used.

The side effects of chemotherapy depend on the type of drugs, the amount taken, and the length of treatment. Temporary side effects might include fatigue, nausea and vomiting, loss of appetite, hair loss, and mouth sores. Because chemotherapy can damage the blood-producing cells of the bone marrow, patients may have low blood cell counts. This can result in an increased chance of infection (due to a shortage of white blood cells), bleeding or bruising after minor cuts or injuries (due to a shortage of blood platelets), and fatigue (due to low red blood cell counts).

There are very effective treatments for many of the temporary side effects of chemotherapy. For example, there are several drugs that can prevent or reduce nausea and vomiting. A group of drugs called growth factors can help the patient's bone marrow recover after chemotherapy and can treat problems caused by low blood counts.

Adriamycin (doxorubicin) may cause permanent heart damage if used for a long time or in high doses, but doctors carefully control the dose of this drug. They use echocardiograms and other heart tests in order to monitor the heart and will stop the medication at the first sign of damage.

Another side effect of chemotherapy is often called "chemo brain." Researchers have reported that many women who have received chemotherapy for breast cancer will experience a slight decrease in mental functioning. There may be some difficulty in concentration and memory. This may last a long time, but it rarely interferes with a woman’s ability to do intellectual tasks. Recently, other researchers have been unable to confirm these findings. Still, whether or not “chemo brain” is a real issue, women do function well after chemotherapy. In studies that have found “chemo brain” to be a side effect of treatment, the symptoms usually disappeared after one to two years. There is no information about men, but there is no reason to expect any differences.

Very rarely, usually within 1 to 2 years after treatment for breast cancer, certain chemotherapy drugs may cause acute myeloid leukemia, a life-threatening cancer of white

blood cells. Chemotherapy's benefits in preventing many breast cancers from coming back and in saving lives from breast cancer far exceed the risk of this serious but rare complication.

Finally, many women do not feel as healthy after receiving chemotherapy as they did before. There is often a feeling of bodily pain and a mild loss of physical functioning. This is a very subtle change that is only revealed by close questioning of women who have undergone chemotherapy. This may also be true for men, but there is no available information.

Radiation Therapy

Radiation therapy is treatment with high-energy rays or particles given to destroy cancer cells. This treatment may be used to reduce the size of a tumor before surgery or to destroy cancer cells remaining in the breast, chest wall, or armpit after surgery.

In some cases, the area treated by radiation therapy may also include supraclavicular lymph nodes (nodes above the collarbone) and internal mammary lymph nodes (nodes beneath the sternum ["breast bone"] in the center of the chest). When given after surgery, radiation therapy is usually not started until the tissues have been able to heal for about a month. Radiation therapy is usually delayed until chemotherapy is complete.

External beam radiation: This is the usual type of radiation therapy for men with breast cancer. The radiation is focused from a machine outside the body on the area affected by the cancer. This usually includes the chest wall where the breast was removed and, depending on the size and extent of the cancer, may include the underarm area as well. Radiation therapy is much like getting a diagnostic x-ray, but the radiation is more intense.

Before your treatments start, the radiation team carefully takes measurements to determine the correct angles for aiming the radiation beams and the proper dose of radiation. They will make some ink marks on your skin that they will use later as a guide to focus the radiation on the right area. Patients are usually treated 5 days a week in an outpatient center for about 6 or 7 weeks, with each treatment lasting a few minutes.

The main side effects of radiation therapy are fatigue and sunburn-like skin changes. Radiation therapy of the axilla (underarm area) can cause lymphedema (discussed earlier in the section on surgery), particularly if the lymph nodes have been surgically removed.

Hormone Therapy

In women, the growth of breast cancers (particularly those with detectable amounts of estrogen receptor protein) is promoted by the hormone estrogen. Several approaches to blocking the effect of estrogen or lowering estrogen levels are used to treat breast cancer. Estrogen is clearly the main target of hormonal therapy and is present in both men and women but in a much higher amount in women. Antiestrogen drugs and, less commonly, removal of a woman's ovaries are strategies for inhibiting estrogen's effect on cells or reducing estrogen levels.

Over 75% of male breast cancers contain estrogen receptors, and anti-estrogens are known to be effective in shrinking most of these tumors. The antiestrogen drug used most often in hormonal therapy of male and female breast cancer is tamoxifen (Nolvadex). It is taken daily in pill form.

Megestrol (Megace) is another drug used for hormonal treatment of breast cancer. The reason that Megace has beneficial effects on breast cancer cells is not yet fully understood.

Another group of drugs called *aromatase inhibitors* block the production of estrogens. Although they have been very effective in treating breast cancer in women, there is little information on their use in men with breast cancer. A few reports have been published stating that these drugs can shrink breast cancers in men but do not seem to be as effective as they are in women. Clinical trials are currently underway looking at the effectiveness of aromatase inhibitors along with reducing the testosterone made by the testicles with a group of drugs called LHRH analogs (see below).

The role of *androgens* (male sex hormones) in the growth of male breast cancer is not entirely clear. Most male breast cancers contain androgen receptors that may cause the cells to grow more rapidly. Also, the testicles produce androgens that may be converted to estrogens by other tissues, and the testicles may produce low levels of estrogen. *Orchiectomy* (surgical removal of the testicles) will shrink most male breast cancer metastases, and this treatment was once quite common; however, it is now used less often because of new nonsurgical approaches using hormone therapy.

Luteinizing hormone-releasing hormone (LHRH) analogs are drugs that affect the pituitary gland and, indirectly, cause the testicles to lower their production of androgens. Other drugs called antiandrogens block the effect of male hormones on breast cancer cells. For reasons not fully understood, lowering androgen levels (with LHRH analogs) or blocking androgen action (by antiandrogens) is often very effective in shrinking male breast cancer metastases.

Hormonal treatments are often used in a sequence. For example, tamoxifen may be tried first. If the cancer does not respond or if it grows back after an initial response, other hormonal treatments often work.

Side effects of hormonal therapy may include loss of sexual desire, inability to have an erection, weight gain, hot flashes, and mood swings. Be sure to discuss any such side effects with your cancer care team because they may be able to offer some relief.

Monoclonal Antibodies

Antibodies are proteins produced by immune system cells that attach to certain chemicals that the body recognizes as not being part of its own normal tissues. Antibodies help your body resist infections, and even cancer.

Trastuzumab (Herceptin) is a monoclonal antibody that reacts with the HER2/neu molecule present in some breast cancer cells. It can be very effective in treating people whose cancer

contains this molecule. Many new agents like Herceptin have been developed to target specific substances on cancer cells and are being introduced into clinical trials.

Recently, clinical trials have been completed that found that adding trastuzumab as an adjuvant therapy together with chemotherapy lowers the recurrence rate and death rate over chemotherapy alone after surgery in women with HER2/neu positive cancers. The use of trastuzumab along with chemotherapy has become standard adjuvant treatment for these women. Men will most likely receive the drug also, even though this has not been tested for men in clinical trials, because there are too few men with breast cancer to study.

Compared with chemotherapy drugs, the side effects of Herceptin are relatively mild. They may include fever and chills, weakness, nausea, vomiting, cough, diarrhea, and headache. Some women being treated with Herceptin, however, have experienced heart damage. The risk of heart problems is about 3 times higher when Herceptin is given with anthracyclines, a class of chemotherapy drugs that includes doxorubicin (Adriamycin) and epirubicin (Ellence). Major symptoms are shortness of breath and severe fatigue. Men experiencing these symptoms should call their doctor right away.

Bisphosphonates

Two drugs that help strengthen bones are also used when cancer has spread to the bones. They are pamidronate and zoledronic acid. They are given intravenously and help reduce bone fractures in this situation.

Autologous Peripheral Blood Stem Cell or Bone Marrow Transplantation

Until recently, a common belief was that very high doses of chemotherapy or radiation to kill cancer cells would be better than standard doses. However, such treatments also kill blood-producing stem cells in the patient's bone marrow. Damage to bone marrow stem cells lowers the white blood cell count, which makes it much easier for the patient to get severe infections that could be fatal. It also makes them bleed easily. This, too, can be fatal.

To help restore a healthy level of blood-producing stem cells after high-dose chemotherapy, some of the patient's stem cells are removed from either the peripheral blood or bone marrow before chemotherapy and then returned after treatment. The stem cells are then able to find their way back in to the bone marrow where they reestablish themselves and restore the body's ability to produce blood cells. Growth factors may be added to boost the process of blood cell production.

Most studies have shown no benefit for high-dose chemotherapy over standard treatment in women. A single small study in men had results similar to those obtained in women. Most doctors believe that high-dose chemotherapy would not benefit men either and should only be considered as part of a clinical trial. Recently, two small studies of postoperative high-dose chemotherapy have shown some benefit in women, who had many lymph nodes involved with cancer at the time of surgery. This issue is still being investigated in clinical trials.

Clinical Trials

You have had to make a lot of decisions since you've been told you have cancer. One of the most important decisions you will make is deciding which treatment is best for you. You may have heard about clinical trials being done for your type of cancer. Or maybe someone on your health care team has mentioned a clinical trial to you. Clinical trials are one way to get state-of-the art cancer care. Still, they are not right for everyone.

Here we will give you a brief review of clinical trials. Talking to your health care team, your family, and your friends can help you make the best treatment choice for you.

What Are Clinical Trials?

Clinical trials are carefully controlled research studies that are done with patients. These studies test whether a new treatment is safe and how well it works in patients, or they may test new ways to diagnose or prevent a disease. Clinical trials have led to many advances in cancer prevention, diagnosis, and treatment.

The Purpose of Clinical Trials

Clinical trials are done to get a closer look at promising new treatments or procedures in patients. A clinical trial is only done when there is good reason to believe that the treatment, test, or procedure being studied may be better than the one used now. Treatments used in clinical trials are often found to have real benefits and may go on to become tomorrow's standard treatment.

Clinical trials can focus on many things, such as:

- new uses of drugs that are already approved by the US Food and Drug Administration (FDA)
- new drugs that have not yet been approved by the FDA
- non-drug treatments (such as radiation therapy)
- medical procedures (such as types of surgery)
- herbs and vitamins
- tools to improve the ways medicines or diagnostic tests are used
- medicines or procedures to relieve symptoms or improve comfort
- combinations of treatments and procedures

Researchers conduct studies of new treatments to try to answer the following questions:

- Is the treatment helpful?
- What's the best way to give it?
- Does it work better than other treatments already available?
- What side effects does the treatment cause?
- Are there more or fewer side effects than the standard treatment used now?
- Do the benefits outweigh the side effects?
- In which patients is the treatment most likely to be helpful?

Phases of Clinical Trials
There are 4 phases of clinical trials, which are numbered I, II, III, and IV. We will use the example of testing a new cancer treatment drug to look at what each phase is like.

Phase I clinical trials: The purpose of a phase I study is to find the best way to give a new treatment safely to patients. The cancer care team closely watches patients for any harmful side effects.

For phase I studies, the drug has already been tested in lab and animal studies, but the side effects in patients are not fully known. Doctors start by giving very low doses of the drug to the first patients and increase the doses for later groups of patients until side effects appear or the desired effect is seen. Doctors are hoping to help patients, but the main purpose of a phase I trial is to test the safety of the drug.

Phase I clinical trials are often done in small groups of people with different cancers that have not responded to standard treatment, or that keep coming back (recurring) after treatment. If a drug is found to be reasonably safe in phase I studies, it can be tested in a phase II clinical trial.

Phase II clinical trials: These studies are designed to see if the drug works. Patients are given the best dose as determined from phase I studies. They are closely watched for an effect on the cancer. The cancer care team also looks for side effects.

Phase II trials are often done in larger groups of patients with a specific cancer type that has not responded to standard treatment. If a drug is found to be effective in phase II studies, it can be tested in a phase III clinical trial.

Phase III clinical trials: Phase III studies involve large numbers of patients -- most often those who have just been diagnosed with a specific type of cancer. Phase III clinical trials may enroll thousands of patients.

Often, these studies are randomized. This means that patients are randomly put in one of two (or more) groups. One group (called the control group) gets the standard, most accepted treatment. Other group(s) get the new one(s) being studied. All patients in phase III studies are closely watched. The study will be stopped early if the side effects of the new treatment are too severe or if one group has much better results than the others.

Phase III clinical trials are usually needed before the FDA will approve a treatment for use by the general public.

Phase IV clinical trials: Once a drug has been approved by the FDA and is available for all patients, it is still studied in other clinical trials (sometimes referred to as phase IV studies). This way more can be learned about short-term and long-term side effects and safety as the drug is used in larger numbers of patients with many types of diseases. Doctors can also learn

more about how well the drug works, and if it might be helpful when used in other ways (such as in combination with other treatments).

What It Will Be Like to Be in a Clinical Trial
If you are in a clinical trial, you will have a team of experts taking care of you and watching your progress very carefully. Depending on the phase of the clinical trial, you may receive more attention (such as having more doctor visits and lab tests) than you would if you were treated outside of a clinical trial. Clinical trials are specially 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 find out. While most side effects go away in time, some may be long-lasting or even life threatening. Keep in mind, though, that even standard treatments have side effects. Depending on many factors, you may decide to enter (enroll in) a clinical trial.

Deciding to Enter a Clinical Trial
If you would like to take part in a clinical trial, you should begin by asking your doctor if your clinic or hospital conducts clinical trials. There are requirements you must meet to take part in any clinical trial. But whether or not you enter (enroll in) a clinical trial is completely up to you.

Your doctors and nurses will explain the study to you in detail. They will go over the possible risks and benefits and give you a form to read and sign. The form says that you understand the clinical trial and want to take part in it. This process is known as giving your informed consent. Even after reading and 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 a clinical trial does not keep you from getting any other medical care you may need.

To find out more about clinical trials, talk to your cancer care team. Here are some questions you might ask:

- Is there a clinical trial that I could take part in?
- What is the purpose of the study?
- What kinds of tests and treatments does the study involve?
- What does this treatment do? Has it been used before?
- Will I know which treatment I receive?
- What is likely to happen in my case with, or without, this new treatment?
- What are my other choices and their pros and cons?
- 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 stay in the hospital? 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?

How Can I Find Out More About Clinical Trials That Might Be Right for Me?
The American Cancer Society offers a clinical trials matching service for patients, their family, and friends. You can reach this service at 1-800-303-5691 or on our Web site at http://clinicaltrials.cancer.org.

Based on the information you give about your cancer type, stage, and previous treatments, this service can put together a list of clinical trials that match your medical needs. The service will also ask where you live and whether you are willing to travel so that it can look for a treatment center that you can get to.

You can also get a list of current clinical trials by calling the National Cancer Institute's Cancer Information Service toll free at 1-800-4-CANCER (1-800-422-6237) or by visiting the NCI clinical trials Web site at www.cancer.gov/clinicaltrials.

For even more information on clinical trials, the American Cancer Society has a document called *Clinical Trials: What You Need to Know.* You can read this on the Web site, www.cancer.org, or have it sent to you by calling 1-800-ACS-2345.

Complementary and Alternative Therapies

When you have cancer you are likely to hear about ways to treat your cancer or relieve symptoms that are different from mainstream (standard) medical treatment. These methods can include vitamins, herbs, and special diets, or methods such as acupuncture or massage—among many others. You may have a lot of questions about these treatments. Here are some you may have thought of already:

- How do I know if a non-standard treatment is safe?
- How do I know if it works?
- Should I try one or more of these treatments?
- What does my doctor know/think about these methods? Should I tell the doctor that I'm thinking about trying them?
- Will these treatments cause a problem with my standard medical treatment?
- What is the difference between "complementary" and "alternative" methods?
- Where can I find out more about these treatments?

The Terms Can Be Confusing
Not everyone uses these terms the same way, so it can be confusing. The American Cancer Society uses *complementary* to refer to medicines or methods that are used *along with* your regular medical care. *Alternative* medicine is a treatment used *instead of* standard medical treatment.

Complementary Methods: Complementary treatment methods, for the most part, are not presented as cures for cancer. Most often they are used to help you feel better. Some methods that can be used in a complementary way are meditation to reduce stress, acupuncture to

relieve pain or peppermint tea to relieve nausea. There are many others. Some of these methods are known to help, while others have not been tested. Some have been proven not be helpful. A few have even been found harmful. However, some of these methods may add to your comfort and well-being.

There are many complementary methods that you can safely use right along with your medical treatment to help relieve symptoms or side effects, to ease pain, and to help you enjoy life more. For example, some people find methods such as aromatherapy, massage therapy, meditation, or yoga to be useful.

Alternative Treatments: Alternative treatments are those that are used instead of standard medical care. These treatments have not been proven safe and effective in clinical trials. Some of these methods may even be dangerous and some have life-threatening side effects. The biggest danger in most cases is that you may lose the chance to benefit from standard treatment. Delays or interruptions in your standard medical treatment may give the cancer more time to grow.

Deciding What to Do

It is easy to see why people with cancer may consider alternative methods. You want to do all you can to fight the cancer. Sometimes mainstream treatments such as chemotherapy can be hard to take, or they may no longer be working.

Sometimes people suggest that their method can cure your cancer without having serious side effects, and it's normal to want to believe them. But the truth is that most non-standard methods of treatment have not been tested and proven to be effective for treating cancer.

As you consider your options, here are 3 important steps you can take:

- Talk to your doctor or nurse about any method you are thinking about using.
- Check the list of "red flags" below.
- Contact the American Cancer Society at 1-800-ACS-2345 to learn more about complementary and alternative methods in general and to learn more about the specific methods you are thinking about.

Red Flags

You can use the questions below to spot treatments or methods to avoid. A "yes" answer to any one of these questions should raise a "red flag."

- Does the treatment promise a cure for all or most cancers?
- Are you told not to use standard medical treatment?
- Is the treatment or drug a "secret" that only certain people can give?
- Does the treatment require you to travel to another country?
- Do the promoters attack the medical or scientific community?

The Decision Is Yours

Decisions about how to treat or manage your cancer are always yours to make. If you are thinking about using a complementary or alternative method, be sure to learn about the method and talk to your doctor about it. With reliable information and the support of your health care team, you may be able to safely use the methods that can help you while avoiding those that could be harmful.

Treatment of Male Breast Cancer by Stage

Remember that there are few clinical trials on treatment of early stage male breast cancer. All our information on adjuvant therapy comes from studies with women.

Stage I male breast cancer: For most men in this group, surgical removal of the cancer is the only treatment needed. This is usually done by mastectomy and either removal of lymph nodes under the arm or sentinel node biopsy and removal of the lymph nodes only if they contain cancer.

Lumpectomy or other breast-conserving procedures are rarely an option since the whole breast can be removed under local anesthesia. If breast-conserving procedures are done, they should be followed by radiation therapy.

Chemotherapy and/or adjuvant (additional) therapy with tamoxifen may be recommended for some men with stage I breast cancer, depending on its size and results of lab tests. Adjuvant therapy is used for tumors larger than 1 cm (about 1/2 inch) or with high growth rates. Men with HER2/neu-containing tumors will probably also receive trastuzumab.

Stage II male breast cancer: The options for surgery and radiation therapy are the same as with stage I cancers. But if the nodes contain cancer cells, adjuvant therapy is usually recommended. Hormonal therapy is suggested for all node-positive, estrogen receptor-positive tumors. Chemotherapy may be also recommended. Choices about chemotherapy may be influenced by a man's age and general state of health. It is less likely to be chosen for older men, particularly those in poor health.

Radiation may also be recommended if several nodes are involved. Radiation therapy not only reduces the chance that the cancer will come back in the area of the breast, but it may actually increase the chance for cure. When node-negative cancers involve the chest muscle or the skin, radiation therapy after surgery may reduce the risk of local recurrence. Men with HER2/neu-containing tumors will probably also receive trastuzumab.

Stage III male breast cancer: This stage is treated with surgery, followed by adjuvant tamoxifen therapy (if the tumor is estrogen or progesterone receptor positive) and probably chemotherapy. In addition, most doctors would recommend radiation therapy to the chest wall. Men with HER2/neu-containing tumors will probably also receive trastuzumab.

Stage IV male breast cancer: Systemic therapy is the primary treatment, using chemotherapy, hormonal therapy, or both. Immunotherapy with trastuzumab (Herceptin) alone or in combination with chemotherapy is an option for men whose cancer cells have

high levels of the HER2/neu protein. Trastuzumab is usually started at the same time as the first chemotherapy for advanced breast cancer because people live longer if they receive this drug with their initial chemotherapy rather than later.

Radiation and/or surgery may also be used to treat certain symptoms. Treatment to relieve symptoms depends on where the cancer has spread. For example, pain resulting from bone metastases may be treated with external beam radiation therapy and/or bisphosphonates, such as pamidronate (Aredia) or zoledronic acid (Zometa). Bisphosphonates are drugs that can help prevent bone damage caused by metastatic breast cancer. (For more information about treatment of bone metastases, see the American Cancer Society document, "Bone Metastasis.")

Recurrent male breast cancer: If a patient has a local (breast or chest wall) recurrence and no evidence of distant metastases, cure is still possible. Surgical removal of the recurrence, followed by radiation therapy, is recommended whenever possible. If the area has already been treated with radiation, it may not be possible to give much or any additional radiation without severely damaging the normal tissues. Distant recurrences are treated the same way as metastases found at the time of diagnosis.

More Treatment Information

The NCI provides treatment guidelines via its telephone information center (1-800-4-CANCER) and its Web site (www.cancer.gov). Detailed guidelines intended for use by cancer care professionals are also available on www.cancer.gov.

What Should You Ask Your Doctor About Breast Cancer in Men?

It is important for you to have frank, open discussions with your cancer care team. You should ask questions, no matter how trivial you think they are. Some questions to consider:

- What type of breast cancer do I have?
- Is my cancer in situ or invasive?
- Has my cancer spread beyond the primary site?
- What is the stage of my cancer and what does that mean in my case?
- What treatments are appropriate for me? What do you recommend? Why?
- What are the risks or side effects that I should expect?
- What should I do to get ready for treatment?
- What are the chances of recurrence of my cancer with the treatment programs we have discussed?
- What is my expected prognosis, based on my cancer as you view it?

In addition to these questions, be sure to write down any that occur to you that are not on this list. For instance, you might want specific information about anticipated recovery times so that you can plan your work schedule. Or you may want to ask about second opinions or about experimental programs or clinical trials for which you may qualify.

What Happens After Treatment for Breast Cancer in Men?

If the cancer is caused by a BRCA mutation, men need to be aware that they are more likely to develop some other cancers, including prostate cancer, stomach cancer, and pancreas cancer. Smoking will increase the risk of most of these cancers. Melanoma may also be more likely in carriers of the BRCA2 mutation. Men with this mutation should avoid sun exposure.

Completing treatment can be both stressful and exciting. You will be relieved to finish treatment, yet it is hard not to worry about cancer coming back. (When cancer returns, it is called recurrence.) This is a very common concern among those who have had cancer. For more information on this please refer to the American Cancer Society document, "Living With Uncertainty: The Fear of Cancer Recurrence."

It may take a while before your confidence in your own recovery begins to feel real and your fears are somewhat relieved. Even with no recurrences, people who have had cancer learn to live with uncertainty.

Follow-up Care

After treatment is completed, it is very important to go to all scheduled follow-up appointments. During these appointments, your doctors will ask questions about any symptoms, do physical exams, and order laboratory or imaging tests as needed to look for recurrences or side effects. Almost any cancer treatment can have side effects. Some may last for a few weeks to several months, but others can be permanent. You should never hesitate to tell your doctor or other members of your cancer care team about any symptoms or side effects that concern you.

At first, your follow-up appointments will probably be scheduled for every 4 to 6 months. The longer you have been free of cancer, the less often the appointments are needed. After 5 years, they are done once a year. You will need to continue to have yearly mammograms.

Depending on the location of a recurrent cancer, treatment may involve surgery, radiation therapy, hormone therapy, and/or chemotherapy. For more information on recurrence please see the American Cancer Society document, "When Your Cancer Comes Back: Cancer Recurrence."

Lymphedema

Lymphedema, or swelling of the arm due to buildup of fluid, may occur any time after treatment for breast cancer. Any treatment that involves axillary dissection or radiation to the axillary lymph nodes carries the risk of lymphedema because normal drainage of lymph from the arm is changed.

The onset of lymphedema is often subtle and unpredictable. There is no good way to predict who will and will not develop lymphedema. It can occur right after surgery, months, or even years later. The potential for developing lymphedema remains throughout a man's lifetime.

With care, lymphedema can often be avoided or, if it develops, kept under control. Injury or infection involving the affected arm or hand can contribute to the development of lymphedema or aggravate existing lymphedema, so preventive measures should focus on protecting the arm and hand. Most doctors recommend that men avoid having blood drawn from or blood pressures taken on the arm on the side of the lymph node surgery or radiation.

One of the first symptoms of lymphedema may be a feeling of tightness in the arm or hand on the same side that was treated for breast cancer. Any swelling, tightness, or injury to the arm or hand should be reported promptly to your doctor or nurse. To learn more, see the American Cancer Society document, "Lymphedema: What Every Woman With Breast Cancer Should Know."

Seeing a New Doctor

At some point after your cancer diagnosis and treatment, you may find yourself in the office of a new doctor. Your original doctor may have moved or retired, or you may have moved or changed doctors for some reason. It is important that you be able to give your new doctor the exact details of your diagnosis and treatment. Make sure you have the following information handy:

- a copy of your pathology report from any biopsy or surgery
- if you had surgery, a copy of your operative report
- if you were hospitalized, a copy of the discharge summary that every doctor must prepare when patients are sent home from the hospital
- finally, since some drugs can have long-term side effects, a list of your drugs, drug doses, and when you took them

Lifestyle Changes to Consider During and After Treatment

You can’t change the fact that you have had cancer. What you can change is how you live the rest of your life -- making healthy choices and feeling as well as possible, physically and emotionally. Having cancer and dealing with treatment can be time-consuming and emotionally draining, but it can also be a time to look at your life in new ways. Maybe you are thinking about how to improve your health over the long term. Some people even begin this process during cancer treatment.

Make Healthier Choices

Think about your life before you learned you had cancer. Were there things you did that might have made you less healthy? Maybe you drank too much alcohol, or ate more than you needed, or smoked, or didn’t exercise very often. Emotionally, maybe you kept your feelings bottled up, or maybe you let stressful situations go on too long.

Now is not the time to feel guilty or to blame yourself. However, you can start making changes today that can have positive effects for the rest of your life. Not only will you feel better but you will also be healthier. What better time than now to take advantage of the motivation you have as a result of going through a life-changing experience like having cancer?

You can start by working on those things that you feel most concerned about. Get help with those that are harder for you. For instance, if you are thinking about quitting smoking and need help, call the American Cancer Society's Quitline® tobacco cessation program at 1-800-ACS-2345.

Diet and Nutrition

Eating right can be a challenge for anyone, but it can get even tougher during and after cancer treatment. For instance, treatment often may change your sense of taste. Nausea can be a problem. You may lose your appetite for a while and lose weight when you don't want to. On the other hand, some people gain weight even without eating more. This can be frustrating, too.

If you are losing weight or have taste problems during treatment, do the best you can with eating and remember that these problems usually improve over time. You may want to ask your cancer team for a referral to a dietitian, an expert in nutrition who can give you ideas on how to fight some of the side effects of your treatment. You may also find it helps to eat small portions every 2 to 3 hours until you feel better and can go back to a more normal schedule.

One of the best things you can do after treatment is to put healthy eating habits into place. You will be surprised at the long-term benefits of some simple changes, like increasing the variety of healthy foods you eat. Try to eat 5 or more servings of vegetables and fruits each day. Choose whole grain foods instead of white flour and sugars. Try to limit meats that are high in fat. Cut back on processed meats like hot dogs, bologna, and bacon. Get rid of them altogether if you can. If you drink alcohol, limit yourself to 1 or 2 drinks a day at the most. And don't forget to get some type of regular exercise. The combination of a good diet and regular exercise will help you maintain a healthy weight and keep you feeling more energetic.

Weight

Studies done in women have found that those who are overweight or obese at the time of diagnosis are more likely to have their disease recur and are more likely to die from breast cancer. Two large studies have found that women with a history of breast cancer who gained significant amounts of weight after diagnosis were more likely to relapse and more likely to die than were women who gained less weight. While these studies have not been done in men with breast cancer, you should be aware of the possible link between weight and breast cancer outcomes. Talk to your doctor about what your ideal weight should be and ways to get to it and stay there.

Rest, Fatigue, Work, and Exercise

Fatigue is a very common symptom in people being treated for cancer. This is often not an ordinary type of tiredness but a "bone-weary" exhaustion that doesn't get better with rest. For some, this fatigue lasts a long time after treatment, and can discourage them from physical activity.

However, exercise can actually help you reduce fatigue. Studies have shown that patients who follow an exercise program tailored to their personal needs feel physically and emotionally improved and can cope better. Also, recent studies in women suggest that breast cancer survivors who are physically active have lower rates of recurrence and lower death rates than those who are inactive.

If you are ill and need to be on bed rest during treatment, it is normal to expect your fitness, endurance, and muscle strength to decline some. Physical therapy can help you maintain strength and range of motion in your muscles, which can help fight fatigue and the sense of depression that sometimes comes with feeling so tired.

Any program of physical activity should fit your own situation. An older person who has never exercised will not be able to take on the same amount of exercise as a 20-year-old who plays tennis 3 times a week. If you haven't exercised in a few years but can still get around, you may want to think about taking short walks.

Talk with your health care team before starting, and get their opinion about your exercise plans. Then, try to get an exercise buddy so that you're not doing it alone. Having family or friends involved when starting a new exercise program can give you that extra boost of support to keep you going when the push just isn't there.

If you are very tired, though, you will need to balance activity with rest. It is okay to rest when you need to. It is really hard for some people to allow themselves to do that when they are used to working all day or taking care of a household. (For more information about fatigue, please see the publication, "Cancer Related Fatigue and Anemia Treatment Guidelines for Patients.")

Exercise can improve your physical and emotional health.

- It improves your cardiovascular (heart and circulation) fitness.
- It strengthens your muscles.
- It reduces fatigue.
- It lowers anxiety and depression.
- It makes you feel generally happier.
- It helps you feel better about yourself.

And long term, we know that exercise plays a role in preventing some cancers. The American Cancer Society, in its guidelines on physical activity for cancer prevention, recommends that adults take part in moderate to vigorous physical activity for at least 30 minutes on 5 days or more of the week. Moderate activities are those that take about as much effort as a brisk walk. Vigorous activities use larger muscle groups, make you sweat, and cause a noticeable increase in heart rate and breathing.

What Happens if Treatment Is No Longer Working?

If cancer continues to grow after one kind of treatment, or if it returns, it is often possible to try another treatment plan that might still cure the cancer, or at least shrink the tumors enough to help you live longer and feel better. On the other hand, when a person has received several different medical treatments and the cancer has not been cured, over time the cancer tends to become resistant to all treatment. At this time it's important to weigh the possible limited benefit of a new treatment against the possible downsides, including continued doctor visits and treatment side effects.

Everyone has his or her own way of looking at this. Some people may want to focus on remaining comfortable during their limited time left.

This is likely to be the most difficult time in your battle with cancer -- when you have tried everything medically within reason and it's just not working anymore. Although your doctor may offer you new treatment, you need to consider that at some point, continuing treatment is not likely to improve your health or change your prognosis or survival.

If you want to continue treatment to fight your cancer as long as you can, you still need to consider the odds of more treatment having any benefit. In many cases, your doctor can estimate the response rate for the treatment you are considering. Some people are tempted to try more chemotherapy or radiation, for example, even when their doctors say that the odds of benefit are less than 1%. In this situation, you need to think about and understand your reasons for choosing this plan.

No matter what you decide to do, it is important that you be as comfortable as possible. Make sure you are asking for and getting treatment for any symptoms you might have, such as pain. This type of treatment is called "palliative" treatment.

Palliative treatment helps relieve these symptoms, but is not expected to cure the disease; its main purpose is to improve your quality of life. Sometimes, the treatments you get to control your symptoms are similar to the treatments used to treat cancer. For example, radiation therapy might be given to help relieve bone pain from bone metastasis. Or chemotherapy might be given to help shrink a tumor and keep it from causing a bowel obstruction. But this is not the same as receiving treatment to try to cure the cancer.

At some point, you may benefit from hospice care. Most of the time, this can be given at home. Your cancer may be causing symptoms or problems that need attention, and hospice focuses on your comfort. You should know that receiving hospice care doesn't mean you can't have treatment for the problems caused by your cancer or other health conditions. It just means that the focus of your care is on living life as fully as possible and feeling as well as you can at this difficult stage of your cancer.

Remember also that maintaining hope is important. Your hope for a cure may not be as bright, but there is still hope for good times with family and friends -- times that are filled with happiness and meaning. In a way, pausing at this time in your cancer treatment is an

opportunity to refocus on the most important things in your life. This is the time to do some things you've always wanted to do and to stop doing the things you no longer want to do.

What's New in Breast Cancer Research and Treatment?

For more comprehensive information, go to the American Cancer Society document, Breast Cancer (in women). This contains the information on advances in treatment, because almost all the clinical trials and research are done in women.

Chemotherapy

Several new drugs are being tested in women with breast cancer. As they come into use, they will also be used for men with breast cancer. Also, new ways of giving these drugs are being tested.

Causes of Breast Cancer and Breast Cancer Prevention

Much work is being done in breast cancer research and prevention. Researchers are learning more about the role of a healthy diet and exercise in lowering risk. Drugs such as tamoxifen and raloxifene are being used to help prevent breast cancer in high-risk women, but almost nothing is known about the use of drugs for reducing the risk of breast cancer in men at high risk.

Genetic testing is becoming readily available for people with strong family histories of breast cancer. Also, researchers are looking for new gene mutations that may be responsible for breast cancer.

Additional Resources

More Information From Your American Cancer Society

We have selected some related information that may also be helpful to you. These materials may be ordered from our toll-free number, 1-800-ACS-2345 (1-800-227-2345).

After Diagnosis: A Guide for Patients and Families (also available in Spanish)

Bone Metastasis (also available in Spanish)

Breast Cancer (also available in Spanish)

Breast Cancer Early Detection (also available in Spanish)

Breast Cancer Dictionary (also available in Spanish)

Breast Cancer Treatment Guidelines for Patients, Version VII

Living With Uncertainty: The Fear of Cancer Recurrence

Lymphedema: What Every Woman With Breast Cancer Should Know

Mammograms and Other Breast Imaging Procedures

When Your Cancer Comes Back: Cancer Recurrence

The following books are available from the American Cancer Society. Call us at 1-800-ACS-2345 to ask about costs or to place your order.
A Breast Cancer Journey: Your Personal Guidebook, Second Edition

American Cancer Society's Guide to Pain Control: Understanding and Managing Cancer Pain, Revised Edition

Cancer in the Family: Helping Children Cope With a Parent's Illness

Caregiving: A Step-By-Step Resource for Caring for the Person With Cancer at Home, Revised Edition

Consumers Guide to Cancer Drugs, Second Edition

National Organizations and Web Sites*

In addition to the American Cancer Society, other sources of patient information and support include:

National Cancer Institute
Cancer Information Service
Telephone: 1-800-4-CANCER (1-800-422-6237)
Internet address: www.cancer.gov

Susan G. Komen Breast Cancer Foundation
5005 LBJ Freeway, Suite 250
Dallas, TX 75244
Telephone: 1-800-I'M AWARE (1-800-462-9273)
Internet address: www.komen.org

Y-ME National Breast Cancer Organization
212 West Van Buren Street, Suite 1000
Chicago, IL 60607-3903
Telephone: 1-800-221-2141 (English), 1-800-986-9505 (Spanish)
Internet address: www.y-me.org

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

The American Cancer Society is happy to address almost any cancer-related topic. If you have any more questions, please call us at 1-800-ACS-2345 any time, 24 hours a day.

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