

## Breast cancer – diagnostics & treatment

*You Have Every Reason for Optimism*

*If a lump has been detected in your breast, there's no need to panic. Statistics are on your side. The fact is, 90% of breast lumps and calcium deposits detected in mammograms turn out to be benign (noncancerous).*

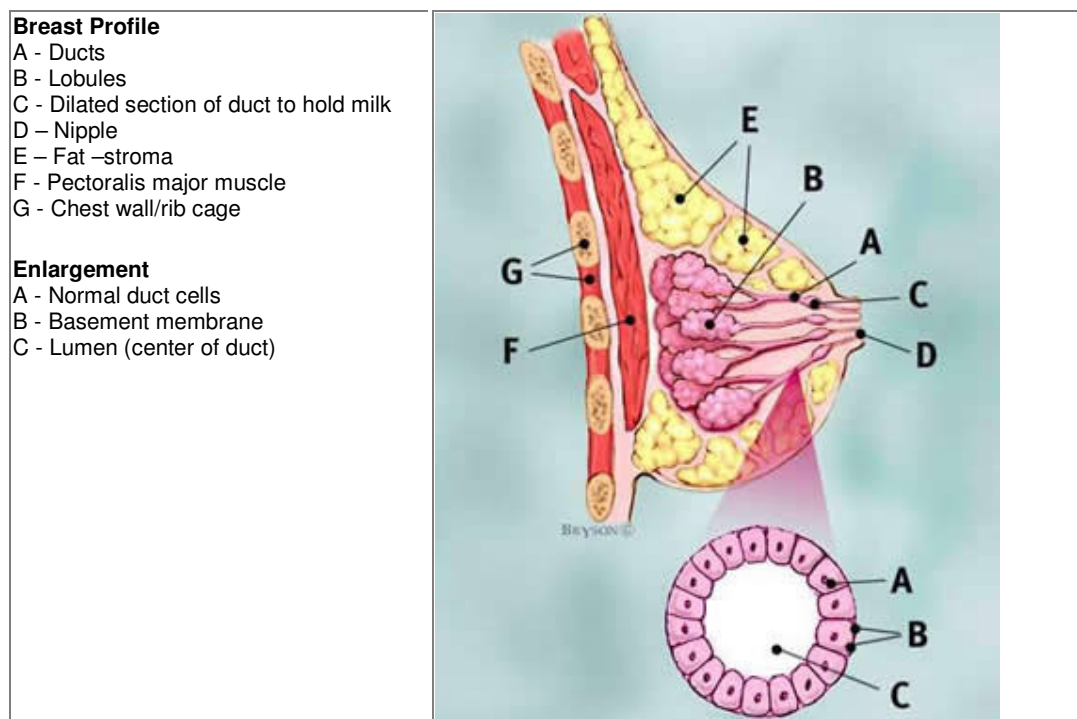
*If you've already been diagnosed with breast cancer, fear and even shock are natural responses. But as you'll learn in this Website, you still have good cause to stay positive.*

*Above all, rest assured that your best next step is to arm yourself with knowledge. When it comes to breast cancer, learning is power. Soon you'll discover there are many prevention, diagnostic, surgical and treatment options. In consultation with your medical team, family and friends, you owe it to yourself to make the most informed choices possible.*

### **BASICS:**

To understand breast cancer, it helps to know the basic anatomy and physiology of the breast. Then, when healthcare providers use these terms, you'll be speaking the same language.

#### Basic Breast Anatomy



1. There's no muscle in breast tissue, but the pectoralis major and pectoralis minor muscles lie beneath it.
2. Lobules are the milk-producing glands situated throughout the breast.  
(Breast cancer originates in one of these locations. Which one defines the particular [type of breast cancer](#).)
3. Ducts are the tiny tubes that connect to the lobules and carry milk to the nipple.  
(Breast cancer originates in one of these locations. Which one defines the particular [type of breast cancer](#).)
4. Nerves give the breast feeling and are higher in density around the nipple and Areola (dark area surrounding the nipple).
5. Stroma is the fatty and connective tissue all around the ducts, lobules, nerves, blood vessels and lymph vessels. It makes up most of the breast.
6. Arteries and veins carry blood to and from the breast, supplying nutrients and oxygen.
7. Lymph vessels and lymph fluid flow through the breast. Their function as a kind of waste disposal system deserves particular attention in understanding breast cancer.

### The Critical Role of the Lymph System

The lymph system can be especially important in the diagnosis of breast cancer. It consists of:

1. Lymph vessels - the small veins that carry lymph fluid.
2. Lymph fluid-fluid from tissue and blood vessels that carries away debris, bacteria, and dead or unwanted cells.
3. Lymph nodes-small, bean-shaped structures that appear throughout the body. Lymph fluid flows to the nodes, which in turn trap the waste products the fluid contains.

Several lymph nodes in the breast region deserve special attention. By examining the contents of these lymph nodes, physicians can predict the how likely it is that the cancer has spread from the breast to other parts of the body.

Nodes:

- Supraclavicular nodes-above the collarbone
- Axillary nodes-in the armpit
- Internal mammary nodes-beside the breastbone

### **What is Breast Cancer?**

Every cell in your body is on a mission to duplicate itself. But for life systems to function correctly, each cell must do so at a controlled rate and in an orderly fashion. Normal cells also must know when to die. It's how they make way for the vital, new cells. Usually, all goes well. The trouble comes when the cell's basic building block, DNA, somehow gets damaged. The abnormal cells that result seem to lose the wisdom of when to die. They outlive normal cells and keep on dividing, forming more and more abnormal cells, that is, cancer cells. Eventually the speed and disorderliness of cancer cell division causes lumps and tumors to form.

### Are All Breast Tumors Dangerous?

No, some lumps and tumor form but do not invade or damage other parts of the body. These are called benign or noncancerous tumors. Fortunately, they're the most common kind.

But a few tumors are more aggressive and destructive. These malignant or cancerous tumors attack surrounding cells, which is bad enough. But the real threat comes when these cancer cells travel to other parts of the body and start trying to replace normal cells and tissue there, too.

One of the most critical characteristics of any tumor is its growth rate. Some cancers grow fast enough to show up in a year or two. Others grow slowly and may not be detected for five years or longer. But there's no doubt about one thing. By the time a lump shows up in your breast, it's been there for quite some time. That's why when cancer is detected; it's not an emergency condition per se.

### What Causes Breast Cancer?

What causes the damage to the cell DNA in the first place is the subject of exhaustive medical research. Understanding how the damage happens is thought to be the keystone to finding a breast cancer cure. But for now, the precise mechanism remains unknown.

Nevertheless, researchers and physicians have gained considerable understanding of breast cancer risk factors, that is, factors that make the damage more likely to occur. For example, there's a clear-cut link between smoking and increased risk of breast cancer. Women who've had long-term hormone replacement therapy (HRT) also are at greater risk. Some risks can be reduced by lifestyle choices, but others cannot. The good news is that early detection is always the best plan for beating breast cancer.

### If You've Been Diagnosed with Breast Cancer

Above all, remember that hope is not mere wishful thinking. To start with, you're not alone. Over two million Americans are breast cancer survivors. That means breast cancer is very beatable. And there are plenty of more reasons for remaining optimistic:

1. 98% of people diagnosed early with breast cancer are successfully treated.
2. New discoveries are made all the time, improving the methods and outcomes of breast cancer prevention and treatment.
3. There are now more organizations and resources that support breast cancer patients than ever before. You can take advantage of these to help formulate your best strategy.
4. Breast cancer treatment is becoming increasingly focused and individualized. This is good news because, just as each woman's breasts are unique, so is her particular form of cancer.
5. Research proves that having a positive attitude gives you a decided edge when it comes to surviving breast cancer.

### DIAGNOSTICS:

Breast cancer diagnosis has undergone a revolution in the past 20 years. Today, advanced technology makes it possible to detect cancer at the earliest stage. Ultimately, this is the key to successful treatment and recovery.

#### Early Detection is Your n.1 Goal!

Understanding the diagnosis of breast cancer can be confusing to say the least. There are so many terms and technologies, it can make your head spin. That's why it's a good idea to familiarize yourself with the landscape before going too far. Just remember one thing that's perfectly clear: no matter how a breast abnormality is discovered-whether through breast self-examination or an advanced detection technology-early detection is the overriding goal.

#### Breast Self Examination (BSE)

If you're more than 20 years old, it's time to begin a systematic approach to examining your breasts. By doing such an exam regularly, you get to know how your breasts normally look and feel and can better detect any significant changes. If you notice anything out of the ordinary, see your health care provider as soon as possible.

#### What to look for in breast self-examination?

The most common signs of breast cancer are a new, firm lump or mass in your breast or a lump that seems to be growing. Sometimes breast cancer can spread to underarm lymph nodes and cause a lump or swelling there, even before a tumor in the breast is felt.

Other possible signs of breast cancer include:

- Swelling of all or part of the breast
- Skin irritation or dimpling
- Breast or nipple pain
- Nipple retraction (turning inward)
- Redness, scaliness or thickening of the nipple or breast skin
- Discharge other than breast milk

Make an appointment to see your doctor if you find any of these signs. Although it's statistically unlikely to be cancer, being safe is your best course of action.

### How to perform breast self-examination

- Lie down and place your right arm behind your head. This spreads the breast evenly over the chest wall as thinly as possible, making it much easier to feel all the tissue.
- Use the pads of your three middle fingers on your left hand to feel for lumps in the right breast. Use overlapping dime-sized circular motions.
- Use three different levels of pressure: light pressure to feel the tissue closest to the skin; medium pressure to feel deeper; and firm pressure to feel tissue close to your ribs. Use each pressure before moving on to the next spot.
- Use an up-and-down pattern, starting at an imaginary line drawn straight down your side from the underarm and moving across to the middle of the chest. Be sure to check the entire breast, from the rib below to the collarbone above.
- Repeat the exam on your left breast, using your right hand.
- While standing in front of a mirror, press your hands down firmly on your hips. Look at your breasts and nipples for any changes in size, shape, contour, color or skin health. Pressing down on the hips contracts your chest muscles so changes show up better.
- Examine each underarm with your arm only slightly raised so you can easily feel the area. Notice if you see or feel any changes there.

### Clinical Breast Exam

In a clinical breast exam (CBE) a doctor, nurse practitioner, nurse or doctor's assistant examines your breasts. He or she will first look for abnormalities in size, shape or skin changes. Then, using the finger pads, the examiner will gently palpate your breasts. The focus will be on your breast's shape and texture, location of any lumps and whether lumps are attached to the skin or lay deeper. Both of your underarms also will be examined. During the CBE is a good time for your doctor or nurse to teach you good BSE technique.

### Mammography

A mammogram is a type of X-ray, except that instead of taking pictures of bones, it images breast tissue. Mammograms might be the most important advancement in breast cancer detection during the past 30 years, since they can find breast cancers earlier and improve chances for a successful treatment. Physicians now recommend women over 40 get a mammogram every year. Mammograms are less effective in younger women, usually because their breasts are dense and can hide tumors. The same can also be true for pregnant women and women who are breast-feeding.

#### How mammography works

Having a mammogram requires you to undress above the waist. A wrap will be provided by the facility for you to wear. A technician places your breast on the mammogram machine's lower plate, which is made of metal and has a drawer to hold the x-ray film or digital camera. The upper plate, made of plastic, is lowered to compress your breast for a few seconds while the technician takes the picture. The whole procedure lasts about 20 minutes. Try not to schedule a mammogram when your breasts might be tender, for example, before or during your period.

#### The two types of mammograms

- 1. Screening mammograms**-are used to look for breast disease in women who seem to have no breast problems and usually involve two views of each breast. For some patients, such as women with breast implants, more views may be needed. The goal of screening mammograms is to find cancers before they start to spread.
- 2. Diagnostic mammograms**-are used to examine a woman with potential breast problems, such as a lump, nipple discharge or abnormality seen in a screening mammogram. A diagnostic mammogram can show that a lump is probably benign (non-cancerous) or that the abnormality is not worrisome. The mammogram also could suggest a biopsy is needed to get the whole story.

## BI-RAD Scoring

Each diagnostic mammogram is encoded with a number from 0 to 5 known as your BI-RAD score, which stands for Breast Imaging Reporting and Data System. These scores were developed to provide a consistent way for interpreting mammograms and to facilitate better follow-up and monitoring.

The BI-RAD Scoring System		
BIRAD Score	Definition	Further Steps
0	An abnormality may be present, but it can't be seen clearly	Additional images are needed
1 (Negative)	Nothing abnormal	None
2 (Benign)	Benign-looking findings such as calcifications or lumps can be seen, but they lack cancer characteristics	None—this score helps other doctors avoid misinterpreting the mammogram
3 (Probably benign)	What can be seen is probably benign and won't change over time. Risk of malignancy is < 2%	Have another mammogram in six months to see whether any change has occurred that raises concern
4 (Suspicious abnormality)	What can be seen isn't cancer for sure, but it might be	Biopsy recommended
5 (Highly suggestive of being malignant)	What can be seen has a high probability of being cancer	Biopsy strongly recommended

### The accuracy of mammography

Mammography is highly sensitive and accurate, but it isn't perfect. This is because every woman's breasts are different and there are many different definitions of what is "normal." Still, there are things you can do to ensure you get the most accurate results possible.

1. Ask to see the FDA certificate that is issued to the mammography facility. The FDA sets high professional standards of safety and quality for certified mammography services.
2. Use a facility that specializes in mammography or does many mammograms a day.
3. Once you know it's a high-quality facility, continue to go there regularly so your mammograms can be compared year-to-year.
4. If you're going to a facility for the first time, bring a list of the places, mammogram dates, biopsies or other breast treatments you've had.
5. If you've had mammograms at another facility, get those mammograms to bring with you to the new facility, or have them sent there, for comparison to the new ones.
6. Don't wear deodorant or antiperspirant. Some of these can interfere with mammogram images.
7. Schedule your mammogram when your breasts aren't tender or swollen to reduce discomfort and improve the images.
8. Describe any breast symptoms or problems you're having to your doctor or nurse before having the mammogram.

## Breast Ultrasound

Ultrasound, also known as **senography**, uses high-frequency sound waves to image parts of the body. A small instrument called a transducer is placed on your skin. It emits sound waves and then picks up the echoes when they rebound. A computer converts these echoes into an image on a computer monitor.

Ultrasound has become a valuable tool to use with mammography, because it's widely available and less expensive than options like **MRI**. Usually, breast ultrasound is used to target a specific area of concern found on a mammogram. Ultrasound also helps distinguish between cysts (fluid-filled sacs) and solid masses and between benign and cancerous tumors. Ultrasound is especially helpful in women with high breast density such as young women.

## Breast Biopsy

The only sure way to confirm a diagnosis of breast cancer for sure is through a biopsy. This involves removing a small piece of the tumor and having it examined under a microscope by a pathologist-a specialist in tumor analysis. There are several types of biopsies, each with advantages and disadvantages. The best choice depends on your specific situation.

Knowing that you need to have a biopsy, it's only natural to be anxious. Still, as you're waiting for the results, consider this: 70 to 80 percent of biopsies done when doctors found an abnormality on a mammogram (when they couldn't feel a lump) turn out not to be cancer.

## Needle biopsies

Today three basic types of biopsies are performed with a needle system of one type or another.

**Fine Needle Aspiration (FNA)**-is done with a very thin needle connected to a syringe. It's used to withdraw a small amount of tissue from a suspicious area. If the area to be biopsied can be felt, the needle can be guided into by touch. However, if the lump can't be felt easily, the doctor might use ultrasound, stereotactic guidance or a CAT scan to steer the needle to the exact location. This is because FNA biopsies can miss the cancer if the needle isn't placed right in the tumor cells.

**Core Needle Biopsy (CNB)**-is similar to FNA, except the needle is slightly larger and extracts small cylinders of tissue. Although CNB is slightly more invasive than FNA, it usually provides more detailed information. CNB is the most common form of biopsy because it provides accurate information, causes less discomfort than surgery and doesn't leave a scar. In the case of a lump or calcification that can't be felt, the doctor can use ultrasound or a stereotactic guidance to zoom in, just as with FNA.

**Vacuum-Assisted Biopsy**-Several advanced devices use a small rotating cutter and vacuum to remove biopsy samples. Once again, if the lesion can't be felt, the needle is guided using a stereotactic or ultrasound system. These newer biopsy methods remove more tissue than a core biopsy, further increasing the potential for an accurate diagnosis and decreasing the need for additional biopsies. With this knowledge, your doctor will be able to make a highly accurate analysis and advise you of all your treatment options before taking further steps. With vacuum-assisted biopsy systems, your actual breast biopsy procedure takes just minutes in a comfortable outpatient setting and is a simple, painless procedure.

## Marking systems

When a lump is discovered but can't be felt, you may require wire localization in order to "mark" the location of the lesion. Using ultrasound or stereotactic mammography, the radiologist inserts a fine wire attached to a tiny hook into your breast at the site of the lesion. This marker shows the surgeon precisely what to remove during a needle or surgical biopsy. Using a marker assists physicians to clearly identify the biopsy site for follow up examination.

## Surgical biopsy

Your doctor also may choose to perform a biopsy surgically. A surgical biopsy is performed under local anesthesia, sometimes with sedation. Most surgical biopsies are excisional, meaning the surgeon removes the whole tumor. A biopsy also can become a lumpectomy when the edges of the removed tissue are free from cancer cells. Usually, when an excisional biopsy is done, the surgeon tries to take a rim of normal tissue, too. That way, if cancer is diagnosed, the lumpectomy is already done. A surgical biopsy takes about an hour and causes minimal pain that goes away in a few days.

## The pathologist's role

No matter what kind of biopsy is done, a pathologist will examine the removed tissue under a microscope. The aim is to identify the cells and see if they're benign or malignant. Your pathology report holds the keys to your diagnosis, treatment and probable outcome. In other words, it's a document you definitely want to go over in detail with your doctor. By understanding what your findings really mean, you'll be in a better position to discuss treatment options with your medical team.

### What the pathologist looks for

If cancer cells are found, the pathologist looks further to find out:

- The type of cancer
- Its size
- How aggressive it is
- Other cell characteristics that affect your treatment options
- Whether or not cancer cells are found on the edges of the tissue removed (to see if all the cancer was removed)
- Whether cells in the lymph nodes show signs of cancer

The pathologist also grades the cancer based on how closely the biopsy sample resembles normal breast tissue.

**Grade 1**—(well differentiated) cancers have relatively normal-looking cells that do not appear to be growing rapidly and are arranged in small tubules. LOW

**Grade 2**—(moderately differentiated) cancers have features between grades 1 and 3. - MEDIUM

**Grade 3**—(poorly differentiated) cancers, the highest grade, lack normal features and tend to grow and spread more aggressively. - HIGH

### Other pathology tests

The pathologist also may perform tests for:

**Estrogen receptors and progesterone receptors**-The results of these tests are important, because ER positive tumors can be treated with drugs that block the action of the hormones.

**HER-2/neu (c-erb R2)**-Determining your HER-2/neu level helps your oncologist decide if you're a good candidate for treatment with a drug called Herceptin.

**Growth rate**-Having a high percentage of cells in the S-phase (the cell phase when DNA makes copies of itself) indicates more rapid tumor growth and a more dangerous tumor.

**Ploidy**-Ploidy refers to the amount of DNA cancer cells contain and can help determine your likely outcome.

p53-p53 is a suppressor gene that protects the body against cancer.

**Vascular or lymphatic invasion**-Microscopic examination can show if the tumor is invading lymph ducts or blood vessels, which would indicate a more aggressive tumor.

**Gene patterns**-Looking at the patterns of genes can help when deciding whether additional treatments or combination treatments might be helpful.

## Additional Breast Cancer Tests

Though a biopsy can show if cancer is present, it can't tell whether it's spread to other body parts. To find this out, more tests are needed.

### Magnetic Resonance Imaging (MRI)

MRI uses a combination of magnetic energy and radio waves to create images of the inside of your body. It's painless, **doesn't expose you to x-rays and takes about an hour**. Women at high risk for breast cancer should get an MRI and a mammogram every year. Women at moderately increased risk should talk with their doctors about adding MRI to their yearly mammogram. If MRI is used, it's in addition to, not instead of, a screening mammogram. This reason is, although MRI is a more sensitive than mammography, it can still miss some cancers a mammogram might see.



### Computed Tomography (CAT Scan)

Basically, a CAT scan is **an x-ray that produces detailed, 3D** images of your body. Instead of taking one picture, the scanner takes many pictures as it rotates around you while you lie on a table. A computer combines these pictures into image slices of the part of your body being studied. This test can help tell whether your cancer has spread into your liver or other organs. CAT scans can also be used for multi-dimensional guidance of a biopsy needle when extra precision is needed.

### Bone Scan

A bone scan can help show whether a cancer has spread (metastasized) to your bones. To find out, traces of low-level radioactive material are injected into a vein. They settle into areas of new bone growth throughout your entire skeleton in a few hours. Then you lay on a table while a special camera images your skeleton. Areas of new bone growth appear as hot spots that attract the radioactivity and might show where cancer has spread.

### Sentinel Node Detection

Lymphatic mapping with sentinel node biopsy is one of the most interesting developments in surgical oncology. Researches have discovered that when cancer advances it travels to the lymph nodes. The first lymph node is called the "Sentinel" lymph node. If no cancer is discovered in the "Sentinel" lymph node then the cancer has not spread and there is no need to perform an "Axillary Lymphadenectomy" where all the lymph nodes are removed. To locate the "Sentinel" lymph node an isotope is injected into the breast which then travels to the "Sentinel" lymph node and the nodes beyond. The isotope emits a gamma wave which can be detected with a gamma probe.

### Blood Tests

Blood tests might be done to measure enzymes in your bones and liver. Abnormal results could show cancer has spread. If so, more extensive tests would be done, such as a bone scan, CAT scan or MRI.

### Chest X-ray

Your doctor might suggest a traditional chest x-ray to see whether the cancer has spread to your lungs. Finding cancer in the lungs means the cancer has first spread through your blood stream, which raises concern.

### Positron Emission Tomography (PET) Scan

PET scans involve injecting blood sugar (glucose) containing radioactive atoms into your blood. Because cancer cells grow rapidly, they absorb large amounts of the radioactive sugar. A special camera can then create a picture of areas of radioactivity in the body. PET is useful when your doctor thinks the cancer may have spread, but doesn't know for certain to where.



## Building Your Breast Cancer Defense Team

In the unlikely event you're diagnosed with breast cancer, it's still no time to panic. On the contrary, now's the time to regroup and arm yourself with knowledge. Now's the time to keep your eyes focused on the endgame-GETTING WELL. One of the keys is to build the best possible cancer defense team. Many people will be involved, so it pays to know their roles.

Your diagnostic team:

- Primary Care Physician (PCP)**-probably first discovered the lump or was the one you reported it to. Since most PCP's aren't breast cancer experts, yours probably will refer you to a cancer treatment specialist.
- Radiologist**-specializes in tests used to detect cancer including mammography, ultrasound, MRI and CAT scanning.
- Pathologist**-examines the tissue removed during a biopsy and writes the report that helps you and your doctors choose the best treatment.

### Your treatment team

- Medical oncologist**-specializes in anti-cancer drugs or chemotherapy.
- Radiation oncologist**-specializes in using high-energy x-rays for cancer treatment.
- Anesthesiologist**-administers drugs or gases that put you to sleep before surgery.
- Reconstruction surgeon**-specializes in cosmetic surgery, such as breast reconstruction after mastectomy.
- Surgical oncologist**-is in charge of any surgical aspects of your treatment.

### Your medical support team

- Nurses**-many will have specialized training in breast cancer treatment in such areas as post-operative care, chemotherapy or radiation therapy.
- Social worker**-can help you deal with social and economic aspects of treatment, such as finding a support group or solving insurance issues.
- Physical therapist**-helps you with post-surgical rehabilitation using exercise, heat, massage and other treatments.
- Radiation tech**-works under the radiation oncologist to deliver radiation treatment.
- Residents and fellows**-doctors in training in medicine, surgery, radiation and other fields.

### Your personal support team

Last but certainly not least, in the event you are diagnosed with breast cancer, you'll need a network of people to support you. These are the people in your life who you can really count on to remain positive, to be supportive, to stay levelheaded and to be there for you through thick and thin.

**Advocate** - one of the best things you can do is seek support from a group or individual who has survived breast cancer. After all, who better to understand your thoughts and worries, to guide you toward the right resources and to help inform your decision-making processes?

**Buddy** - whether it's your spouse, best friend, relative or friendly neighbor, bring someone with you to appointments and exams who's not only close to you but clear-thinking and dependable. They'll be like the rudder on your ship if the seas get choppy. They'll be the one to ask questions, remember information and write down instructions if you feel too emotional.

**Family and friends** - ultimately those closest to you form the backbone of support needed to face and overcome challenges. Seek out those who build your positive attitude and self-esteem but who are also genuine and honest. It's what real friends are for.

## Breast Cancer Staging

The breast cancer staging system is essentially a summary of all your diagnostic information. It ranks your cancer and expresses the degree to which it has advanced. However, to understand the staging system, it first helps to know the different types of breast cancer.

## TYPES OF BREAST CANCER

Breast cancer types are named according to where in the breast they develop and whether or not they are invasive. Don't be too alarmed if you're told your cancer is invasive. Most cancers are, so that's the usual kind.

### In situ (non-invasive) breast cancers

**Lobular Carcinoma In Situ (LCIS)**- although not a true cancer, LCIS is sometimes classified as non-invasive breast cancer. It begins in the lobules (milk-producing glands), but does not grow through their wall. Most breast cancer specialists think that LCIS does not become invasive very often, but women with this condition do have a higher risk of eventually developing invasive breast cancer. So women with LCIS should have regular mammograms.

**Ductal Carcinoma In Situ (DCIS)**-this is the most common type of non-invasive breast cancer. Cancer cells are inside the milk ducts, but haven't spread through their walls into surrounding tissue. About 20% of new breast cancer cases are DCIS. Nearly all women diagnosed at this early stage of breast cancer can be cured and regular mammograms are the best way to find DCIS early.

### Invasive breast cancers

**Invasive Lobular Carcinoma (ILC)**-starts in the lobules, but can spread to other parts of the body. About 10% of invasive breast cancers are ILCs.

**Invasive Ductal Carcinoma (IDC)** is the most common type of breast cancer. It starts in the ducts, breaks through the duct walls, and then invades the fatty tissue of the breast. At this point, it may spread (metastasize) to other parts of the body through the lymph system and bloodstream. **About 80% of invasive breast cancers are IDC.**

### Rare forms of breast cancer

**Inflammatory breast cancer (IBC)** is an uncommon type of invasive breast cancer accounts for about 1% to 3% of all breast cancers. Usually there is no single lump or tumor. Instead, IBC makes the skin of the breast look red and feel warm and gives it a thick, pitted appearance like an orange peel.

**Mixed tumors** contain a variety of cell types, such as IDC combined with ILC. In this case, the tumor is treated as if it were an IDC (invasive ductal cancer).

**Medullary cancer** is a special type of infiltrating breast cancer with a well-defined, distinct boundary between tumor tissue and normal tissue. It also includes large cancer cells and immune system cells at the tumor edges.

**Metaplastic carcinoma** is a very rare kind of invasive ductal cancer. These tumors have cells not normally found in the breast, such as cells that make bone or look like skin cells.

**Mucinous carcinoma** is also known as colloid carcinoma and is a rare type of invasive breast cancer formed by mucus-producing cancer cells.

**Paget disease of the nipple** starts in the breast ducts, spreads to the skin of the nipple and then to the areola (the dark circle around the nipple). This skin often appears crusted, scaly and red-with areas of bleeding or oozing.

**Tubular carcinoma** is another special type of IDC. It's named tubular because that's how the cells look under a microscope.

**Papillary carcinoma** is a cancer with cells arranged in small, finger-like shapes. These cancers are usually treated as a subtype of DCIS.

**Adenoid cystic carcinoma** has both glandular and cylinder-like features when seen under a microscope. These cancers rarely spread to the lymph nodes and so tend to be curable.

**Phyllodes tumor** is a very rare breast tumor that develops in the connective tissue of the breast, rather than in the ducts or lobules. It's usually benign.

**Angiosarcoma** is a form of cancer that starts from cells that line blood vessels. It rarely occurs in the breasts, but when it does, it is usually a complication of radiation that shows up five to ten years after radiation treatment.

## Understanding the staging system

It's important to remember that each cancer is unique, just like each woman is. This makes the potential combination of treatment options vast. To summarize, however, cancer specialists rely on staging-a system that categorizes cancer into well-defined groups. The stage of your tumor, though not the only factor, is a critical one in deciding the treatment best for you.

### The TNM System

In simplified form, staging is based on three major factors:

**T**-Tumor Size is determined when the tumor is removed and sent to the pathologist.

**N**-Lymph Nodes are checked for evidence of tumor spread at the time of surgery in a procedure called axillary lymph node dissection.

**M**-Metastasis determines the degree to which the cancer has spread to other organs and is assessed with bone scans, X-rays, CAT scans and blood tests.

## The five stages of breast cancer

### Stage 0

This is the earliest form of breast cancer. It's usually **DCIS** and so cancer cells are still within the duct and haven't invaded surrounding breast tissue. **LCIS** is sometimes classified as stage 0 breast cancer, but most oncologists believe it's not a true breast cancer. Paget disease of the nipple-without an underlying tumor-is also stage 0. In all cases, the cancer has not spread to lymph nodes or distant sites.

### Stage I

The tumor is **2 cm (3/4-inch)** or less across and has not spread to lymph nodes or distant sites.

### Stage II

The tumor is **2-5 cm** (3/4 to 2-inches) across and the may or may not have spread to a few auxiliary lymph nodes or internal mammary lymph nodes. In either case, the cancer hasn't spread to distant sites.

### Stage III

The cancer still hasn't spread to distant sites. But the tumor is either: larger than 5 cm; has spread to many axillary lymph nodes; has enlarged the internal mammary lymph nodes; has spread into the lymph nodes under or above the collarbone; or has grown into the chest wall or skin. Inflammatory breast cancer also is classified as stage III, unless it has spread to distant lymph nodes or organs.

### Stage IV

The cancer can be any size and may or may not have spread to nearby lymph nodes. However, it has spread to distant organs (usually the bones, liver, brain or lungs) or to lymph nodes located far away from the breast.

## SURGERY:

To give you the best chance for successful breast cancer recovery, all the cancer tissue must be removed through some type of surgery. Knowing the facts about surgical options puts you in position to choose the right procedure for you.

### Preventing Recurrence is the Whole Point

In the event you're diagnosed with breast cancer, some type of surgery probably will be required. Still, it's no time to panic. The whole aim is to remove the cancer in such a way as to prevent its recurrence, that is, to make sure it doesn't return.

Basically, there are two options in breast cancer surgery today. One is to remove just the tumor along with a safety margin of healthy breast tissue around it, leaving most of the breast. This is called **breast-conserving surgery**. It's usually followed by **radiation therapy**, where high-energy x-rays are used to destroy any cancer cells left behind. When preserving the breast isn't possible or is too risky, the only option is to remove the whole breast through a procedure called a **mastectomy**.

### Breast-Conserving Surgery

If the tumor is small and located in one place in your breast, the best option might be breast-conserving surgery. The goal is to remove the whole tumor while saving as much of your breast as possible so it will still have a nice appearance. A margin of normal breast tissue around the tumor also is removed to make sure no cancer cells remain.

The technical name for this kind of surgery is **partial mastectomy**, but most people just call it **lumpectomy**. Sometimes large tumors are treated first with chemotherapy to shrink them before a lumpectomy is performed. Depending on how much tissue is removed, the procedure also might be called:

- Wide local excision—just the area around the lump is removed.
- Segmental mastectomy—a narrow segment of the breast is removed.
- Quadrantectomy—a one-quarter section of the breast is removed.

Breast-conserving surgery almost always requires additional treatment of the area with radiation therapy to kill any cancer cells that might have been left behind.

### Minimally invasive lumpectomy

If the tumor is very small, it's possible to take it out without surgery. For instance, using a core needle or vacuum-assisted biopsy system, small lesions can be removed along with a clear margin of healthy breast tissue. Essentially, the **biopsy procedure becomes a lumpectomy**.

New techniques also are being tested and used that allow doctors to "zap" small tumors. One method uses a laser beam to disintegrate (ablate) the cancer cells. Another relies on needles that are heated or frozen to extreme temperatures and then placed directly into the tumor to destroy the cancer cells.

### Surgical lumpectomy

A surgical lumpectomy is similar to an [excisional surgical biopsy](#). The surgery may be performed in a hospital operating room or outpatient surgery center and takes about an hour. It's done under local anesthesia, sometimes with sedation and you'll probably be able to go home the same day.

The surgeon will make a skin incision over the tumor area and remove the tumor with a small amount of surrounding healthy breast tissue. The tissue is sent to a pathologist who examines it under a microscope to make sure the margins are clear of tumor cells. If tumor cells are found along the edges, another lumpectomy will be done.

After the lumpectomy, you'll be taken to the recovery room for a short while and then discharged to go home. Unless you had an axillary lymph node dissection at the same time, you'll be able to resume regular activities soon. Normal side effects could include temporary pain, swelling and tenderness.

## Mastectomy

Mastectomy is the surgical removal of the breast. The radical mastectomy was the mainstay of breast cancer treatment for centuries and involved removing the entire breast, the lymph nodes in the armpit and major muscles of the chest wall. But research in the 1980s proved there was no advantage in removing the chest muscles. For this reason, mastectomies done today involve the removal of breast tissue, but not muscles. The current trend is to save as much of the breast as possible through skin-sparing mastectomy. In this procedure the incision includes only the nipple, a narrow margin of skin around it and the skin right over the cancer. This leaves most of the breast skin intact so it can be used for a more natural-looking reconstruction.

### The mastectomy procedure

A mastectomy usually is done in a hospital under general anesthesia and takes a few hours. The surgeon will remove breast tissue extending from the collarbone to the edge of the ribs, and from the breastbone to the armpit. This tissue will be sent to the pathologist, who looks for signs of cancer beyond the breast. You probably will also have an axillary lymph node dissection-removal of lymph nodes from your armpit. Knowing whether or not there are cancer cells in these lymph nodes helps determine your future treatments.

If you've decided to have immediate reconstruction of your breast, the cosmetic surgeon will take over while you're asleep. The reconstruction can take anywhere from an hour to eight hours, depending on the [reconstruction option](#) chosen. Most women stay in the hospital for one night after a mastectomy and go home the next day. You might stay longer if you have a mastectomy and reconstruction at the same time.

### Recovery after mastectomy

Once you're home, you'll probably feel more tired than usual for a while. But don't worry-fatigue is normal after any surgery. You'll also probably have arm muscle tightness and shoulder soreness. Avoid stretching or pulling until the drains are removed and you get your doctor's approval. Now's the time to lean on your support team for help.

Your goal is to regain full motion in your shoulder and arm as soon as possible. But make sure to get precise exercise instructions from your treatment team. Many groups-such as the YWCA Encore program-offer swimming, exercise and dance classes just for breast cancer patients.

### Which Breast Cancer Surgery is Right for You?

It's only natural to ask which is better, mastectomy or lumpectomy? The fact is, many research studies involving thousands of women and decades of follow-up show there's no difference in survival between the two procedures. Despite this, some physicians still only recommend mastectomy due to personal bias. If your doctor does so, make sure you know the reasons why. It's your breast and you have a right to ask.

Besides being equally effective, breast-conserving surgery offers other advantages over a mastectomy. Number one, you avoid the emotional trauma of losing your breast. Two, a good physical appearance of your breast can be expected. And last but not least, sensation in your nipple and skin usually is preserved.

That said, not all women can have breast-conserving surgery. For example, it wouldn't be recommended if:

- You have multiple tumors that are far apart in your breast.
- You previously had radiation treatment in the affected breast.
- The tumor is so big or your breast so small in comparison that your breast's appearance wouldn't be very good after the tumor is removed.
- The tumor is found to extend beyond the margins of the tissue removed during surgery.
- You're not willing to have radiation therapy—or there's no convenient radiation therapy facility near you.
- You prefer a mastectomy for peace of mind, since it lowers your fear of recurrence.
- You had a previous lumpectomy and re-excision (second lumpectomy) in the same breast but these didn't remove all the cancer.

Remember, you don't have to decide overnight. Take your time and gather the facts. Plus, you don't need to decide alone. Talk things over with your treatment team. Discuss the choices with your support team. And don't be afraid to get a second opinion. You can also discuss your choices with the *Susan G. Komen Foundation*, the *American Cancer Society's Reach to Recovery* program, *WIN-ABCs Breast Buddy* program and the *Y-Me Breast Cancer organization*. These groups will be happy to put you in touch with other women who had breast cancer surgery. It can really help to talk things over with someone who's been there before.

## Lymph Node Examination

Whether you have a mastectomy or a lumpectomy, you might have a procedure to remove lymph nodes from your armpit. Seeing if cancer cells have spread to the lymph nodes helps determine the likelihood that cancer cells have spread to other parts of the body. Knowing this helps your treatment team decide what additional therapy is needed.

### Axillary lymph node dissection

An axillary lymph node dissection can be performed through a small incision in your armpit during a lumpectomy or through the main surgical incision in a mastectomy. The surgeon will remove a small pad of fat that contains 10 to 40 lymph nodes. It will be sent to the pathologist who slices and examines each node under a microscope, searching for the cancer cells. The [pathology report](#) will show how many nodes were positive (have cancer cells in them).

### Sentinel lymph node biopsy

Doctors now can see if cancer has spread to the lymph nodes without removing so many of them. In this procedure, the surgeon removes the sentinel nodes—the first lymph nodes into which any tumor would have to drain. These nodes are the ones most likely to contain cancer cells if it has started to spread. The pathologist examines these nodes and, if they do in fact contain cancer, the surgeon then will do a [full axillary lymph node dissection](#). If the sentinel nodes are cancer-free, it's not likely the cancer has spread to other lymph nodes. That way, you avoid the potential side effects of full lymph node dissection, such as lymphedema. If you're thinking about having a sentinel biopsy, ask your treatment team if this is something they do regularly. It takes lots of experience to do it correctly.

### Lymphedema

Lymphedema is a possible side effect of axillary lymph node dissection. It's caused by scarring of lymph vessels in the underarm area after removal of lymph nodes. This scarring slows circulation of lymph fluid so the arm swells, limiting movement and increasing the risk of infection.

About 1 out of 5 women who have an axillary lymph node dissection develop lymphedema. It can occur soon after surgery or years later. It's hard to predict who will develop lymphedema, but there are several precautions you can take. Avoid overuse of the arm and protect it from skin infection or injury. If your arm feels painful, tight or swollen after surgery, tell your doctor right away. He or she will recommend treatment that focuses on therapeutic massage, special compression bandages and physical therapy.

## TREATMENT:

Destination—Complete Elimination

After a tumor is removed from the breast, a number of possible treatments may follow to ensure the cancer has been completely eliminated. The treatments chosen will depend on the size and location of the tumor and the extent to which the cancer has spread. The whole point of these post-surgical treatments is to prevent the cancer from returning and to halt its spread.

### Radiation Therapy

Radiation therapy involves treatment with **high-energy x-rays** that are used to kill any cancer cells remaining in the breast, chest wall or underarm area. Both normal and cancer cells are affected by the radiation. But the normal cells can recover fast, while abnormal cancer cells are permanently damaged. Basically, radiation therapy can be delivered in two ways—through external beam radiation or internal radiation (brachytherapy).

### External beam radiation

External beam radiation is the **most common type of radiation therapy** for treating breast cancer. The procedure is painless and lasts only a few minutes. Radiation beams are focused from several angles onto the area affected by the cancer, much like when you get an x-ray.

### Whole breast v. targeted therapy

How much radiation is delivered depends on whether a lumpectomy or mastectomy was performed and whether or not lymph nodes were involved. After a lumpectomy, the entire breast receives radiation. Then an extra amount is delivered just to the area where the cancer was removed to prevent its return. Depending on the size and extent of the cancer, radiation may include the chest wall, underarm area, supraclavicular lymph nodes (above the collarbone) and internal mammary lymph nodes (beneath the breast bone). External radiation therapy usually isn't started until about a month after surgery. If chemotherapy is also prescribed, radiation therapy usually is delayed until chemotherapy ends. Patients who receive breast radiation after lumpectomy usually are treated in an outpatient center five days a week for a total time of about six weeks.

### Possible side effects

The main side effects of external beam radiation therapy are swelling and heaviness in the breast, sunburn-like skin changes in the treated area and fatigue. Your healthcare team may advise you to avoid exposing the treated skin to the sun, which can make the side effects worse. You also want to avoid using adhesive tape or bandages on the affected skin as well as heating pads or ice packs. Changes to the tissue and skin usually go away in 6 to 12 months.

### Internal Radiation (Brachytherapy)

With internal radiation, also known as brachytherapy, a radioactive source is placed safely and precisely within the breast tissue—rather than aiming beams from outside the body. One of the main advantages of brachytherapy is that it delivers high intensity radiation near the tumor site with less spillover to surrounding tissue and organs. Brachytherapy sometimes is used to apply extra radiation to the tumor site in addition to external beam radiation. But it's also increasingly being used and studied as a stand-alone radiation therapy after a lumpectomy. The tumor size, location and other factors influence who might benefit from either of the two basic types of brachytherapy—interstitial or intracavity /APBI.

### Interstitial brachytherapy

Interstitial brachytherapy involves inserting 10-to-20 thin, plastic tubes into the breast near the lumpectomy site. Then, a radioactive pellet is loaded into each tube. Using a detailed CT scan, a computer plots the precise placement of each pellet to ensure the target area receives an even dose of radiation. Ten treatments are given over five days, each treatment lasting about ten minutes. Patients are free to leave the radiation therapy facility between treatments and go about their everyday affairs.

### Accelerated partial breast irradiation (APBI)

Accelerated partial breast irradiation (APBI) is an important development in breast cancer treatment. Otherwise known as **intracavity brachytherapy**, it involves placing a small, deflated balloon attached to a thin tube into the space left by the lumpectomy. The balloon is then filled with saline and left in place throughout the treatment. A radioactive source (seed)

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is threaded into the balloon through the tube for a short time period during each treatment and then removed. An advanced computer system accurately controls seed placement to make sure only the tissue closest to the balloon is affected by radiation. Treatments are delivered twice a day for five days, at which time the balloon is deflated and removed. One leading APBI brachytherapy system, uses vacuum ports to remove excess fluid and air which allows close adherence within the lumpectomy cavity. This adherence provides for more uniform treatment of the surrounding tissue. It also contains five separate lumens (tubes) inside the balloon that enable the doctor to shape the radiation dose toward the desired target area and away from the skin or chest wall. This ability to shape the dose allows doctors to treat more patients as they are not limited in the size or shape of the breast with relation to skin or chest wall distance.

After a lumpectomy, 6-to-7 weeks of external beam, whole-breast radiation therapy has been the standard of care. APBI changes this therapy approach in two major ways. For one thing, it shortens the treatment time from six weeks to just 5 days. Secondly, it reduces the treatment area from the entire breast to only the tissue surrounding the lumpectomy cavity. This is where most cancers are likely to recur. The goal is to use a less invasive and more focused treatment without compromising results. In clinical trials APBI has been shown to be as effective as whole breast irradiation.

### Systemic Breast Cancer Therapies

Localized breast cancer treatments, such as surgery and radiation therapy, treat the breast area only. But if there's reason to believe cancer cells have traveled beyond the breast area, you need a systemic treatment. This means drugs are used to attack cancer cells in all parts of your body. Systemic treatment can be delivered through chemotherapy, hormonal therapy, immunotherapy or any combination of the three.

### Chemotherapy

Chemotherapy is treatment with cell-killing drugs that aim to destroy cancer cells. Most of these drugs are injected, but some can be taken orally. The drugs then travel through the bloodstream to reach cancer cells throughout the body. Generally, chemotherapy has proven most effective when more than one drug is used. Chemotherapy is delivered in cycles with each treatment period followed by a rest period. The chemotherapy drugs are administered at the beginning of the cycle, followed by a two-to-three-week rest period. The total time of chemotherapy is generally three to six months.

Basic types of chemotherapy

**Adjuvant chemotherapy**—When systemic therapy is given after breast cancer surgery, even when there's no evidence of the cancer's spread, it's called adjuvant therapy. The goal of adjuvant therapy is to kill any undetected cells that have traveled from the breast, reducing the risk of breast cancer recurrence.

**Neoadjuvant chemotherapy**—Chemotherapy given before surgery is called neoadjuvant therapy. The aim is to shrink large cancers so they're small enough to be removed by lumpectomy instead of mastectomy. Another advantage of neoadjuvant chemotherapy is that doctors can see how the particular cancer responds to chemotherapy.

**Chemotherapy for advanced breast cancer**—Chemotherapy can also be used as the main treatment for women whose cancer has already spread outside the breast and underarm area. The length of these treatments depends on whether or not the cancer shrinks and how much.

High dose chemotherapy with transplantation

Although very high doses of chemotherapy kill cancer cells, they also kill blood-making stem cells in the bone marrow. Damage to these cells lowers the white blood cell count, which can lead to infection or easy bleeding. One way to get around this is to first remove stem cells from the blood or bone marrow, deliver the high-dose treatment and then return the stem cells into the body via injection. The stem cells soon find their way back into the bone marrow, where they reestablish themselves and restore the body's ability to make new blood cells. Initially, this was thought to be a good way to treat advanced breast cancer. But several studies have shown that women who receive high-dose chemotherapy don't live any longer than women who receive standard chemotherapy and suffer more serious side effects, so research continues.

Possible side effects and risks of chemotherapy

Chemotherapy drugs work by attacking cells that divide quickly, such as cancer cells. But other cells in the body also divide quickly, such as those in the bone marrow, mouth lining and hair follicles. These cells also can be affected by chemotherapy, leading to side effects. Some women have many side effects, others have few, and the side effects

depend on the type of drugs, amount taken and treatment length. Some side effects are short term and usually go away when the treatment ends, such as:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Increased chance of infections
- Easy bruising or bleeding
- Fatigue

Other side effects can be long-term or even permanent including:

**Menstrual changes**—Premature menopause and infertility are potential permanent complications of some chemotherapy drugs. The older a woman is when receiving chemotherapy, the more likely this is to occur.

**Heart damage**—Some chemotherapy drugs can cause permanent heart damage if used for a long time or in high doses. For these drugs, your doctor will monitor your heart and stop the medication at the first sign of trouble.

**Chemobrain**—Many women who receive chemotherapy seem to have a slight decrease in mental functioning, such as problems with concentration and memory.

**Feeling unwell or tired**—Many women do not feel as healthy after receiving chemotherapy as they did before. They report body pain or aching, mild losses of physical functioning and fatigue.

## Hormonal therapy

Hormone therapy is another kind of systemic treatment used to reduce the risk of cancer recurrence after surgery (adjuvant therapy). The goal is to block the effects of estrogen or progesterone, or to lower the amounts of them in the body. This is because these two hormones promote the growth of about two-out-of-three breast cancers.

Types of hormonal therapy

**Tamoxifen**—This is the most frequently used anti-estrogen drug and is taken daily in pill form. Taking tamoxifen after surgery cuts the risk of cancer recurrence in half for women who have early breast cancer with estrogen or progesterone receptors. The most common side effects include fatigue, hot flashes, vaginal discharge and mood swings.

**Toremifene**—This drug is closely related to tamoxifen and can be an option for postmenopausal women with breast cancer that has spread to other parts of the body (metastasized). Possible side effects are similar to those for tamoxifen.

**Fulvestrant**—This drug is often effective when breast cancer no longer responds to tamoxifen. It is only given to postmenopausal women and only is approved for treating advanced breast cancer. Hot flashes, mild nausea and fatigue are the major side effects.

**Aromatase inhibitors**—This group includes three drugs (letrozole, anastrozole and exemestane) that stop estrogen production, but only in postmenopausal women. These drugs work by blocking the enzyme aromatase. The most common side effect is joint stiffness or pain.

**Ovarian ablation**—Removing estrogens from premenopausal women can be done surgically by removing the ovaries, an operation called an oophorectomy. A similar effect can be achieved with luteinizing hormone-releasing hormone (LHRH) analogs, which block the ovaries from making estrogen.

**Megestrol acetate**—This drug is used for hormone treatment of advanced breast cancer, usually for women whose cancers do not respond to other hormone treatments. Its major side effect is weight gain.

**Androgens**—Male hormones may be considered after other hormone treatments for advanced breast cancer have failed. They're sometimes effective, but can promote masculine characteristics, such as an increase in body hair or deepening of the voice.

## Immunotherapy

Chemotherapy drugs work by attacking fast-growing cells in the body. This is effective against cancer cells, but it also damages other fast-growing cells the body needs. Immunotherapy works in a different way—by targeting only cancer cells. It builds up the immune system, which includes many kinds of white blood cells that circulate through the blood and attack invading cells. In essence, immunotherapy boosts the immune system's natural cancer-fighting ability.

Drugs that target HER2/neu

**Trastuzumab (Herceptin)**—This drug attaches to the growth-promoting protein HER2/neu, which is present in breast cancer cells in about one out of five patients. Breast cancers with lots of this protein tend to grow and spread faster. Trastuzumab can help slow this growth and stimulate the immune system to attack the cancer. It is injected, usually once a week or as a triple dose every three weeks. Compared with chemotherapy, its side effects are relatively mild and include flu-like symptoms.

**Lapatinib**—This drug also targets HER2/neu and is given as a pill, usually along with chemotherapy. It is used when HER2-positive breast cancer is no longer helped by chemotherapy and trastuzumab. The most common side effects include flu-like symptoms and discomfort in the hands and feet (hand-foot syndrome).

Drugs that target tumor blood vessels

**Bevacizumab**—This is another drug used in patients whose breast cancer has spread and it has shown positive results when used with chemotherapy. It targets vascular endothelial growth factor (VEGF), a protein that helps tumors form new blood vessels so they can get nutrients (angiogenesis). Common side effects include high blood pressure, low white blood-cell count and flu-like symptoms.

Bisphosphonates

Bisphosphonates such as pamidronate and zoledronic acid are used in cases where breast cancer has spread to the bones. They help strengthen any bones weakened by breast cancer cells. Bisphosphonates are given intravenously and may also help against osteoporosis that can result from chemotherapy. Possible side effects include flu-like symptoms, bone pain and tooth or jaw problems.

## Complementary and Alternative Therapies

When you or someone you care about has cancer, you're likely to hear about treatments besides traditional Western medicine. It's only natural to have a lot of questions about how these treatments work and whether they're safe and effective. Most medical professionals use the term complementary to refer to medicines or methods that are used along with your regular medical care. Typically, these are presented as ways to reduce pain, increase comfort or improve quality of life. In contrast, alternative treatments often are proposed instead of standard medical treatment. As such, they require serious scrutiny and should be met with skepticism.

Complementary therapies

Typically, complementary treatment methods aren't presented as cures for cancer, but rather as ways to help you feel better. Some methods are known to improve comfort and well being, while others really have not been tested. There are many complementary methods that you can safely use right along with your medical treatment to reduce side effects, ease pain and help you relax.

For example, many people find body therapies to be helpful, such as massage, Rolfing, therapeutic touch, yoga and acupuncture. A number of mind-body therapies also seem to help many women, such as support groups, meditation, relaxation, stress management and visualization. Of course, a strong social-support system, good nutrition and healthy doses of humor and laughter also go a long way.

It's also important to note that a number of herbal and nutritional therapies have been promoted for use by recovering breast cancer patients. For most of these, the facts aren't at all clear. So it's probably in your best interest to err on the side of caution. Few of these remedies have undergone scientific testing. And some even can be harmful.

## Alternative treatments

Alternative breast cancer treatments are those proposed for use instead of standard medical care. However, these alternatives have not been proven safe and effective in clinical trials. Some of these methods can even be dangerous or life threatening.

It's easy to understand why anyone with cancer would consider an alternative treatment. Who wouldn't want to do all she can to fight cancer? On top of this, some medical treatments like chemotherapy are rough. So along comes some promoter suggesting his method can cure your cancer without serious side effects, and who wouldn't want to believe it? The problem is, if it sounds too good to be true, it probably is.

Laetril is a case in point. Made from apricot pits, its promoters claimed it could cure cancer because cyanide found inside the pits killed cancer cells. But later scientific studies and patient experiences proved laetril to be worthless. Even worse, it could be harmful. Sometimes people became very sick from cyanide poisoning and there were even reports of deaths.

Yes, you have to be knowledgeable and consider your options, to be sure. But please talk to your doctor or nurse about any alternative methods you're thinking about. And above all, be especially skeptical about any treatment or method whose promoters:

- Promise a quick cure-all for all kinds of cancers.
- Tell you not to use standard medical treatments.
- Claim their cure is a secret that only they know how to administer.
- Require you to travel to another country.
- Attack Western science and medicine.
- Claim the government and medical community have conspired to suppress their product.
- Require payment in advance or promise a money-back guarantee.

## CURE:

No matter where you are in the process of breast cancer treatment, the time will come when it's over. The scars will heal. The last dose of chemotherapy or radiation therapy will be delivered. And the time will come to move forward with a new lease on life.

## The Road to Recovery

Moving forward after breast cancer surgery and treatment is a process of learning and renewal. On the one hand, there are clear-cut physical stages for which you can prepare, with the aim of resuming life as usual. On the other hand, life after breast cancer isn't quite the same for most women. It's as though a new life-chapter has begun.

## Breast Reconstruction

Choices about breast reconstruction after a mastectomy are personal ones. Some women don't want reconstruction; they want to avoid any more surgery than is necessary. Others definitely do want reconstruction to restore their self and body images. Who's to say which is right? It's important to realize, though, that reconstruction techniques have improved vastly over the years. Today, almost every woman can have breast reconstruction with great aesthetic results.

## Reconstruction timing

Breast reconstruction done at the time of mastectomy is called immediate reconstruction. If it's done at a later date it's called delayed reconstruction. Either way, it's critical to select a surgeon with lots of experience in reconstructive breast surgery and one who's a board-certified specialist. Have your breast cancer surgeon refer you to the best available specialist. Or contact the American Society of Plastic Surgeons for a list of qualified specialists in your area.

## Reconstruction options

There are three main reconstruction options. Of course, the first is no reconstruction at all. The second uses synthetic implants to create the shape of a breast. And the third uses a patient's own tissue—transplanted from another part of the

body. For both reconstruction options, the goal is to create a breast shape and texture that matches the other breast. To do so, a minor procedure such as a breast lift might be required on the remaining breast.

#### No reconstruction (prosthesis)

Many women who choose not to have reconstruction use a breast form (prosthesis) instead. These come in many sizes, shapes and colors. Some fit into a special bra, while others attach to the chest with a special adhesive. Some are inexpensive foam inserts. Others are custom-molded and have a realistic color and texture to closely match the natural breast. Breast forms help provide a nice, symmetrical appearance. They can also be useful in relieving strain on posture by balancing weight distribution.

#### Reconstruction with implants

The most common breast reconstruction options involve synthetic implants. These tear-shaped pouches—which are made of silicone and filled with saltwater or silicone gel—are inserted under the breast tissue to recreate the shape of a breast. The implant will be chosen to match the other breast. If it's a small implant, the surgeon can insert it without overstretching the skin and muscles of the chest. But if it's large, the surgeon will use a temporary expander, which is inserted and filled with a little saltwater (saline solution). Each week a little bit more saline will be injected into the expander to help the skin and muscle stretch. When they have stretched enough, the expander is removed and the permanent implant is inserted.

#### Reconstruction with body tissues

Breast reconstruction also can be done using tissue from another part of your body. This tissue transfer is called a flap. The use of flaps eliminates or reduces the use of synthetic materials in the body and often produces a more natural look and feel. But all flap reconstructions are complex and involve certain risks. Discuss the pros and cons in detail with your surgeon.

**TRAM (Transverse Rectus Abdominis) Flap**—This is one of the most common flaps. It uses one of the rectus abdominis muscles or abs. The muscle, fat and skin are separated from their attachments, pulled up under the skin to the breast area and then shaped to match the other breast.

**Latissimus Dorsi Flap**—Also called a lat flap, this procedure involves an incision under the shoulder blade. Part of the lat muscle from the upper back is then pulled through a tunnel under the skin to the breast area. If the lat muscle isn't large enough to match the other breast, a synthetic implant is added.

**Free Flap**—A portion of muscle, fat and skin is removed from the abdomen or buttocks and transplanted to the breast. The original blood supply to the flap is cut and then reconnected to new ones in the breast. This procedure requires a doctor skilled in microsurgery, since it involves sewing together tiny blood vessels under a microscope.

#### Nipple and areola reconstruction

Women who want the reconstructed breast to look as natural as possible can also have nipple and areola reconstruction. It's usually done a few months after the breast reconstruction so the breast has time to settle in place. Small flaps of skin on the reconstructed breast are raised and brought together into the shape of a nipple. The surrounding areola then is created either from skin or by tattooing.

### Life After Breast Cancer

Once breast cancer surgery and treatment are over, the road to recovery still lies before you. It's a road many women have traveled before. So many of the physical and emotional hurdles you might face are predictable.

#### Physical aspects of recovery

After a larger lumpectomy, mastectomy or lymph node dissection, your arm may feel numb and tingly due to nerve damage. Somewhat later, you might feel shooting pains caused by the nerve growing back. Decreased range of motion and weakness in the shoulder also are to be expected. But don't worry—these conditions rarely are permanent. Your medical team will help you regain arm strength and motion. Following the exercise schedule closely will help you recover quicker. And make sure also to follow your medical team's recommendations about reducing the risk of lymphedema.

Many side effects after treatment are temporary. For example, radiation therapy can make breast skin more irritable. After chemotherapy or radiation therapy, most women feel fatigued. But some side effects can endure. For example, chemotherapy and hormonal therapy are almost certain to stop your periods. If you are young, your periods are more likely to return than if you're approaching menopause. Chemotherapy can also reduce testosterone in the body, which is responsible for female sex drive. Talk to your doctor if you think this might be going on.

For younger women, fertility is a big consideration. Just having breast cancer doesn't mean you won't be able to have children. Many breast cancer survivors do. But talk the matter over in advance with your medical team. And, after surgery and treatment, have them review all the details of your case to make sure it's safe for you to get pregnant.

#### Emotional aspects of recovery

Breast cancer diagnosis has a way of affecting a woman's self-esteem, self-image, sexuality and whole perspective on life. Many breast cancer survivors feel that life is never the same again, so there's a heartfelt sense of loss. The only way forward seems to be to go through a grieving process, which is really a kind of healing.

After facing breast cancer, who wouldn't feel anxiety and depression? The key is to know the difference between feelings you can cope with on your own and those requiring professional help. Every woman undergoing cancer treatment will go through sad times called reactive depression. Most women can get through it with help from their support team. But there's a form of depression that doesn't go away so easily. It involves round-the-clock feelings of sadness, worthlessness and guilt along with great fear of the future and lack of interest in intimacy. This is called clinical depression and requires help from trained professionals. By all means, ask for professional help if you feel these things. It's a sign of wisdom, not weakness.

#### Developing and maintaining healthy habits

Having had breast cancer can be a big incentive to set new priorities in life. Often this includes adopting a healthier lifestyle all around. That's one of the best decisions any woman can make. Evidence suggests that good nutrition helps speed healing after surgery and chemotherapy. Plus, a diet with the right balance of proteins, fats, carbohydrates and vitamins can help you feel younger and stay healthier. You'll already be doing arm exercises as part of your recovery. But why stop there? A regular exercise program for your whole body can help you stay stronger and feel younger and also improves your immune system.

Remember too that breast cancer survivors are at increased risk for other types of cancer. That's a perfect reason to quit smoking and always use sunblock when you're in the sun. Any lifestyle change or complementary therapy that promotes relaxation or lowers stress seems to be a real bonus as well.

#### Follow-up exams and breast cancer awareness

Even after treatment is complete, there's always a chance cancer can recur. True, the more time that passes without a recurrence, the greater your chance of staying cancer-free. But no one can ever say for sure the cancer is cured for good. That's why regular follow-up exams are vital. One doctor should be in charge of your follow-up care to keep track of all the facts. Usually, you'll be seen every few weeks right after treatment, but later this will trickle down to every six months or so.

Breast self-examination (BSE) is particularly important for women at higher risk for breast cancer, which includes every cancer survivor. Doctors also suggest a clinical breast examination (CBE) as part of your regular check-ups. The doctor or nurse will spend additional time examining the scars and areas under the arms and around the collarbones (where lymph nodes are found). In addition, every woman who's had breast cancer should have a mammogram once a year. Women who've had a mastectomy should have an annual mammogram on the remaining breast. For women whose breasts are dense or hard to diagnose with mammography, an MRI is advised. Chest X-rays, blood tests and bone scans might also be advised.

#### Recommendations for Family Members

If you're diagnosed with breast cancer, the likelihood increases that your first-degree relatives will also develop it. That doesn't mean they'll get cancer for sure. But it does mean you need to encourage your daughters and sisters to practice early detection. This includes regular breast self-examination and clinical breast examination. It also means yearly mammograms starting either at age forty or at an age ten years younger than you were when diagnosed—whichever is earlier. MRI is advised for women whose breasts are not easily examined with mammography.

## The Search for a Breast Cancer Cure

All over the world, in-depth research is in full gear into the causes, prevention and treatment of breast cancer. No one claims we'll be able to cure all cases of breast cancer soon. But great strides constantly are being made.

### Causes of breast cancer

Many studies are examining lifestyle factors and habits that affect breast cancer risk. For instance, studies are looking into the affects of exercise, weight gain or loss and diet. Other researchers are trying to determine the best use of genetic testing for breast cancer screening. One large, long-term study known as the [Sister Study](#) aims to help find the causes of breast cancer. It's following 50,000 women for ten years or more to collect information about genetic, lifestyle and environmental factors that might cause breast cancer.

### Genetic studies

Doctors can't predict who will have a cancer recurrence. That's why almost every woman receives some kind of treatment after surgery (adjuvant therapy). To better determine who truly needs adjuvant therapy, scientists have linked certain gene patterns with more aggressive cancers. These cancers are the ones that are more likely to return and spread. This new research has also revealed that there are four basic types of breast cancers, each requiring a unique treatment pattern.

### Chemoprevention

Some research suggests that using chemotherapy drugs in advance, such as tamoxifen, taloxifene and others might lower breast cancer risk in some women. But many women are reluctant to use these medications because of the side effects. Newer studies also are looking at whether or not preventative use of aromatase inhibitors can reduce the risk of breast cancer in postmenopausal women.

### New imaging methods

Several new imaging methods show great promise for evaluating breast abnormalities, although they're still being researched:

**Scintimammography**—involves the injection of a radioactive tracer. The tracer attaches to breast cancer cells, which a special camera can detect. This technology might be useful for zeroing in on suspicious areas found in mammograms.

**Tomosynthesis**—is an extension of a digital mammogram that allows the breast to be viewed as many super-thin slices. It's still considered experimental but may provide an earlier, more accurate breast cancer diagnosis.

**Thermography**—analyzes patterns of heat radiation that come from various tissues and structures that lie within the breast. These patterns might give clues about early or unusual tumor formations.

### Emerging surgeries and treatments

#### Newer types of mastectomy

Newer approaches to mastectomy that deliver better cosmetic results are always being studied. These include skin-sparing mastectomy, subcutaneous mastectomy and nipple-sparing mastectomy. In each of these procedures, the breast tissue is removed, but if no breast cancer cells are found next to the skin layer—or nipple and areola—they can be reattached. This generally produces a more natural looking and feeling reconstruction.

#### Advancements in breast reconstruction

Although the number of women choosing breast-conserving surgery continually increases, some women still choose mastectomy for medical or personal reasons. More and more women who do also are choosing reconstructive surgery to restore the breast's appearance. Technical advances in microvascular surgery (reattachment of tiny blood vessels) have given rise to many new free flap procedures for breast reconstruction. These offer the potential benefits of shorter recovery time and less discomfort after surgery.

#### Radiation therapy advancements

For women who need radiation therapy after a lumpectomy, accelerated partial breast irradiation (APBI) offers a more convenient approach than traditional radiation treatments that take many weeks to complete. Several types of APBI are



being applied and studied, including accelerated external beam radiation (higher doses in shorter time periods), intraoperative radiation therapy (delivery of high doses of radiation therapy during surgery) and intracavitary brachytherapy.

### New chemotherapy regimens

Recent research suggests that giving chemotherapy every two weeks at the usual doses may work better in preventing recurrence than delivering it every three or four weeks. This is called dose dense chemotherapy. Because of the aggressive schedule, care must be taken to prevent low blood-cell counts. Also, because advanced breast cancers are hard to treat, researchers always are looking for newer and better drugs. One promising candidate is ixabepilone. It's been found to cause many breast tumors to shrink or stop growing, even in women who've had other types of chemotherapy.

### Targeted drug therapies

Other new drugs take advantage of gene changes in cancer cells. Trastuzumab works by preventing the HER2/neu protein from promoting excessive growth of breast cancer cells and may also help the immune system fight the cancer. Lapatinib is FDA approved for use in women with HER2-positive breast cancer that's growing despite use of trastuzumab. Studies also have found that breast cancers surrounded by many new, small blood vessels are likely to be more aggressive. Bevacizumab is drug that can be used in combination with chemotherapy to stop these blood vessels from developing (anti-angiogenesis).

## Breast Cancer Support Groups and Organizations

By now you know you're not alone in your battle with breast cancer. In addition to your medical and personal support teams, many sources of help, information, referrals and programs are there for you. The list that follows is by no means exhaustive. But it will give you a good start.

Remember also that recovery can involve helping others. As you reclaim your strength, in body and mind, consider reaching out to other survivors. Some might be in earlier or tougher stages of recovery. Imagine what they could gain from your experience and guidance. Many organizations listed below need volunteers to help women in their breast cancer struggle. Giving to someone else just might be the greatest gift you can give yourself.

American Cancer Society

[www.cancer.org](http://www.cancer.org)

The ACS offers a wealth of cancer-related information and services. You can get answers to all your questions and receive support, information, training and other benefits. ACS programs are free and available in many languages.

CANCERLIT

[www.cancer.gov/cancerinfo/literature](http://www.cancer.gov/cancerinfo/literature)

This site is the one to go to whenever you want to find any cancer articles published in scientific journals, books, meetings or reports.

Families USA

[www.familiesusa.org](http://www.familiesusa.org)

This nonprofit organization's mission is to achieve high-quality, affordable healthcare and long-term care for all Americans and to be a consumer watchdog for healthcare consumers.

Hospice Net

[www.hospicenet.org](http://www.hospicenet.org)

Geared toward the patient and her family, you can find answers to all your questions about hospice care. The site also shows you where to find a hospice and features a professional staff that provides answers to your questions via email.

National Alliance of Breast Cancer Organizations

[www.nabco.org](http://www.nabco.org)

This coalition of more than 370 breast cancer organizations is the leading nonprofit information and educational resource on breast cancer in the United States. It has links to almost anything you want to know about breast cancer.

National Cancer Institute

[www.cancer.gov](http://www.cancer.gov)

Part of the National Institutes of Health, this federal government organization is responsible for funding cancer research. It's huge and has many divisions including:

**Cancer Information Service**

[www.cancer.gov/cis](http://www.cancer.gov/cis)

This is the place to go when you want someone to explain the latest research in simple to understand, non-technical language.

**Clinical Trials**

[www.cancertrials.nci.nih.gov](http://www.cancertrials.nci.nih.gov)

Here you can search for clinical trials by state, city and type of cancer. This Website also provides information about the cost of trials and whether your insurance will cover it.

**National Center for Complementary and Alternative Medicine**

[www.nccam.nih.gov](http://www.nccam.nih.gov)

This center is one of the 27 Institutes within the National Institutes of Health. Its mission is to conduct research on complementary and alternative medicine (CAM), train practitioners in CAM, and educate the public on which methods work and which don't—and why.

**The Susan G. Komen Foundation**

[www.komen.org](http://www.komen.org)

The Susan G. Komen Foundation is a private fundraising foundation that raises awareness and awards grants for research and programs that prevent breast cancer through research, education and screening.

**Visiting Nurse Associations of America**

[www.vnaa.org](http://www.vnaa.org)

Provides information, education and other resources for accessing nurses and other healthcare professionals who can provide care in your home.

**Y-ME National Breast Cancer Organization**

[www.y-me.org](http://www.y-me.org)

This organization's goal is to ensure no one faces breast cancer alone. It provides information, support and a 24-hour-a-day hotline for times when you need to talk.

**Young Survival Coalition**

[www.youngsurvival.org](http://www.youngsurvival.org)

This international network is dedicated to the concerns and issues unique to women younger than 40 who have breast cancer. Besides focusing on advocacy and awareness, the group also provides emotional support for young women living with breast cancer.

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## BREAST CANCER ADDITIONAL INFORMATION

It's natural to want to know your risk of getting breast cancer. But the answer isn't so simple. You can have lots of risk factors and never develop breast cancer. Or, you can have no risk factors and still develop it. Still, it may give you some peace of mind to know what these factors are and which ones you control.

### Breast Cancer Prevention and Risk

One of the first questions people have about breast cancer is, "Can it be prevented?" The answer is, yes and no. Some factors you can control, others you can't. Of course, you should do all you can to control the factors you can. But after all is said and done, the value of early detection through breast self examination (BSE) and screening mammography still can't be emphasized enough. That way, even if you do get breast cancer, you have the best chance of beating it.

### Breast Cancer Risks You Can Control

The good news is that you can do something about some factors that increase breast cancer risk. These factors relate to your lifestyle and exposure to certain kinds of drugs and treatments.

## Hormones

### Menstruation, menopause, and children

Scientists know for sure that hormones play a key role in determining breast cancer risk. The two important female hormones are **estrogen and progesterone**. They figure prominently in when start your periods, have babies, and experience menopause. The bottom line is that the longer you're exposed to these hormones, the greater your risk of developing breast cancer. Here's why:

**Menstruation**— The younger you are when you start your period, the higher your risk for breast cancer. This is because your body will have been exposed to female hormones longer. For each year after age 11 that you started your period, your risk of developing breast cancer decreases 20 percent.

**Menopause**—The older you are when you stop menstruating, the higher your risk. Once again, your body will have been exposed to female hormones longer. For example, women who start menopause before age 45 have one-half the risk of developing breast cancer compared to women who begin menopause after 55.

**Childbirth**—The risk of getting breast cancer is about 1.4 times higher for women who've never had children when compared to those who have. This is because women who've never been pregnant will have had a period every month, exposing them to female hormones longer.

**Age at childbirth** — The younger you are when you have your first child, the lower your risk for breast cancer. The risk for women who first give birth after age 30 is two to five times higher than for women who have their first child before age 18.

**Breastfeeding**—Studies suggest that nursing does have some affect on breast cancer risk. But a woman needs to have breastfed children for years to significantly reduce her risk.

All these hormonal factors may leave you wondering what your choices really are. After all, you can't change when you started your period. But you can:

- Choose whether or not to have a baby
- Decide how old to be when you have a baby
- Consider an oophorectomy (surgical removal of the ovaries) to bring on early menopause. This is only considered an option for women at very high breast cancer risk due to abnormal BRCA1 or BRCA2 genes.

## Hormone replacement therapy

Hormone replacement therapy (HRT) also involves estrogen and progesterone, which are given to women after menopause to ease menopausal symptoms. It's now clear from medical research that HRT affects breast cancer risk in several ways:

- Breast cancer risk increases when HRT is used for more than five years, especially when both estrogen and progesterone were taken together.
- The risk of getting breast cancer reduces after you stop HRT.
- HRT increases your risk for breast cancer and does not reduce heart disease risk, which researchers once thought. In other words, the negatives probably outweigh the positives. Still, many doctors believe HRT is probably safe to take for shorter periods. Before you decide, make sure to discuss all the risk factors with your doctor.

## Oral contraceptives

It's not real clear how oral contraceptives (birth control pills) impact breast cancer risk. Some studies suggest women who use "the pill" have a slightly higher risk than women who never used it. But the risk starts going down after use is stopped. In fact, women who stopped using the pill over ten years ago don't seem to have any increased risk at all. If you're thinking about using birth control pills, it's a good idea to first discuss all your breast cancer risk factors with your doctor.

## Bodyweight

There are a lot of myths about the effects of weight on cancer risk. So be careful where you get your information. Here are the known facts:

Overweight women have a much higher risk of developing cancers of the breast, uterus, cervix, and ovaries.

Being overweight increases the risk of dying from cancer and accounts for 20 percent (1 in 5) of cancer deaths in women.

Obese women have a significantly higher risk of death from cancer than normal weight women who contract cancer.

When you add it all up, losing weight could prevent one-out-of-six cancer deaths in the U.S. Doesn't it make sense to do all you can to become a lighter, healthier you?

## Exercise

Studies prove that pre-menopausal women who exercise have a lower risk of breast cancer than women who don't.

What's more, the particular type of exercise doesn't seem to matter—just as long as you do enough of it. Whether indoors or out, whether on your own, in a small class, or a large group, the important thing is to find something you enjoy and stick with it.

## Alcohol consumption

No doubt about it, drinking alcohol increases your breast cancer risk. And it doesn't matter whether you drink beer, wine, or hard liquor. The risk also increases with the amount you drink. For instance, women who have one alcoholic drink a day have a small risk increase over nondrinkers. But those who have two to five drinks daily have about 1-1/2 times the risk of developing breast cancer compared to nondrinkers. The moral of the story is, if you don't drink, don't start. If you do drink, cut down. But the news gets better—research suggests taking folic acid daily could help offset breast cancer risk for women who drink alcohol.

## Radiation exposure

Exposure to radiation increases breast cancer risk—if the radiation was directed at the chest area. Breast tissue is most susceptible to damage from radiation when it's still developing. So if you're exposed when you're over age 40, the risk increase is small. Don't worry about radiation levels during mammography—they're real low.

### Other risks being studied

Lots of other risk factors for breast cancer have been proposed. Some of these claims can be taken seriously. But others are little more than Internet rumors. So don't believe everything you hear and be careful where you get your information.

**High-fat diets**—International studies have shown that breast cancer is less common in countries where the diet is low in total fat, polyunsaturated fat, and saturated fat. But studies of women in the U.S. have not found breast cancer risk to be related to fat intake at all. Researchers can't explain this disagreement yet, so more research is needed. But consider this: a high-fat diet has been shown to increase the risk of developing other types of cancer and heart disease. So cutting back on dietary fat certainly can't be bad.

**Deodorants**—Internet e-mail rumors have theorized that chemicals in underarm deodorants are absorbed through the skin and build up in the breast, eventually leading to breast cancer. There's zero evidence to support this rumor.

**Bras**—Internet e-mail rumors also have theorized that bras cause breast cancer by blocking lymph flow. The clinical evidence for this claim also is zilch.

**Abortion**—Several studies have produced very strong evidence to show that neither an induced abortion nor a spontaneous one (miscarriage) has any effect on breast cancer risk.

**Breast implants**—Several studies have determined that breast implants don't increase breast cancer risk, despite rumors to this effect that were circulated years ago.

**Environmental pollution**—Lots of research has been done to understand environmental influences on breast cancer risk. But it's pretty hard to make heads or tails of it. For example, women living on Cape Cod and Long Island have high rates of breast cancer. Many people believe toxic chemicals such as DDT are the real cause. But the charge is controversial and the research has been inconclusive so far. Chemical companies have lobbied hard to produce contradictory evidence. Meanwhile, further studies are in progress, backed by physician and patient advocate groups.

**Smoking**—A few studies have linked cigarette smoking to breast cancer. On the other hand, other studies have found no connection. The same goes for the connection between secondhand smoke and breast cancer risk. Still, we're 100% sure smoking is linked to heart disease, stroke, and lung cancer. So why go there?

**Night work**—Several studies suggest women who work at night—such as nurses on night shift—have an increased risk for breast cancer. It's a recent finding and more studies are being done. But some researchers think the reason is disruption in melatonin, a hormone affected by light.

### Breast Cancer Risks You Can't Control

Sad to say, of all the breast cancer risks that exist, most are out of your control. The moral of the story is—never forget the #1 thing you can do to beat cancer—practice early breast cancer detection.

#### Gender

Breast cancer is such an overwhelmingly female disease that sometimes the fact is taken for granted. True, men sometimes get breast cancer. But the rate of breast cancer in women versus men is about 100 to 1 in the U.S. Simply put, just being a woman puts you at higher risk for breast cancer.

#### Age

The next most common breast cancer risk factor is age. Just consider a few statistics. 80 percent of breast cancers occur in women over 50. At 20, a woman's chances of developing breast cancer are less than 1 in 2,000. But at 70, they go up to 1 in 24. No, you can't do much about getting older, except to get wiser, too. But you can stay in good health and have regular mammograms and clinical breast exams, improving your overall health prospects.

## Medical history

Certain factors in your previous medical history influence your breast cancer risk:

**A history of breast cancer**—If you've had breast cancer once, your risk of developing breast cancer in the other breast is three to four times higher than women who've never had breast cancer. But don't be overly alarmed. Only eight percent of women get a second breast cancer within ten years of the first occurrence.

**Breast biopsy results with atypical cells**—Sometimes a breast biopsy doesn't find cancer but detects pre-cancerous conditions, meaning cells in the breast that are abnormal (atypical). In this case, it's critical to make sure you have annual mammograms and clinical breast exams, since your risk of getting breast cancer is higher.

### Family history

Having a family history of breast cancer also is a known risk factor. Women whose first-degree relatives (mothers, sisters, or daughters) had breast cancer are 1.5 to 3 times more likely also to develop breast cancer. The risk increases more if you have:

- More than one first-degree relative who's had breast cancer.
- A first-degree relative who developed breast cancer at an early age.
- A relative who had breast cancer in both breasts.
- A relative who had ovarian cancer.
- A male relative who had breast cancer.

If you have no first-degree relatives with cancer, having distant relatives with cancer has little or no impact on risk. So don't worry yourself by thinking of all your distant relatives who had cancer.

### Ethnicity

Breast cancer rates do vary among ethnic groups, but the reasons why aren't so clear. For example, 1 in 40 Ashkenazi Jewish women has abnormal BRCA1 and BRCA2 (breast cancer) genes. Compare this with the general population, where the rate is just 1 in 650. This puts Ashkenazi women at higher risk for early-onset breast cancer, even when they don't have a family history of cancer. You can see why for Ashkenazi women early detection and genetic counseling are especially important.

In the U.S., breast cancer risk is highest among Caucasian women, followed in order by African American, Asian American, Hispanic, and Native American women. Across all ages, Caucasian women are more likely to develop breast cancer than African American women. But for some reason, African American women under age 40 have slightly higher rates of breast cancer than Caucasians in the same group.

## Genetics

### BRCA1 and BRCA2

In recent years, scientists have identified two genes that provide new insight into breast cancer. Now that they know where the genes are, risk-reduction strategies may be possible. The two genes are BRCA1 and BRCA2 (BRCA just stands for breast cancer). All women and men have these genes. The cancer risk only increases when the gene is abnormal (mutated), which can be determined by a blood test.

BRCA1 or BRCA2 mutations put a woman at much higher risk of developing breast cancer. These women also are more likely to get breast cancer when younger, to develop cancer in the other breast, and to develop other forms of cancer. As frightening as this may sound, only about 1 in 650 people have an abnormal BRCA1 gene, and even fewer have an abnormal BRCA2 gene. Still, add all the statistics up and BRCA1 or BRCA2 mutations account for five to ten percent of all breast cancers.

The American Society of Clinical Oncology suggests you be tested for BRCA gene mutations if you have:

More than two first-degree relatives who had breast cancer, and one or more who had ovarian cancer.  
More than three first-degree relatives with breast cancer diagnosed before they were 50.



Two sisters diagnosed with breast or ovarian cancer before the age of 50.  
A first-degree relative who's had two breast cancers, two ovarian cancers, or breast and ovarian cancer.

If you think you might fit into this group, ask your physician to refer you to a genetic counselor. He or she can explain your risk of carrying an abnormal BRCA gene, along with all the pros and cons of genetic testing.

### Other genes that may affect breast cancer

Scientists have discovered a few other genes that might be linked to breast cancer. These genes don't put women at as high a risk for breast cancer as BRCA genes, and they aren't inherited as often.

**ATM**—Normally, this gene helps repair damaged DNA in cells. But families with a high rate of breast cancer have been found to have mutations of this gene.

**CHEK2**—When this gene is mutated, breast cancer risk doubles. When it's mutated and there's also a strong family history of breast cancer, the risk increases much more.

**p53**—Normally this gene suppresses tumors. But when it's mutated, it can also increase the risk of developing breast cancer and some other cancers.

**PTEN**—This gene normally helps regulate cell growth. But inherited mutations in this gene increase the risk for tumors in the breast and other parts of the body.

### Genetic counseling

If you're considering genetic testing, make sure to talk to a genetic counselor first. Your nurse or doctor can refer you to good one. You really need to understand and consider the benefits and risks of genetic testing before having them. Why? For starters, the tests are expensive and are not covered by all health insurance plans.

But there's another challenge you need to be aware of. Unless you're careful, the results might be used against you. Some people who've had abnormal genetic test results have been denied life insurance or health insurance. Or, if they did get it, they had to pay a whole lot more. Some states have passed laws to prevent insurance companies from denying insurance based on genetic testing results. But that doesn't mean the laws always work.