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ROBERT WOOD JOHNSON MEDICAL SCHOOL
University of Medicine & Dentistry of New Jersey

The Cancer Institute of New Jersey℠
NCI CCC
A Comprehensive Cancer Center Designated by the National Cancer Institute

October Is Breast Cancer Awareness Month

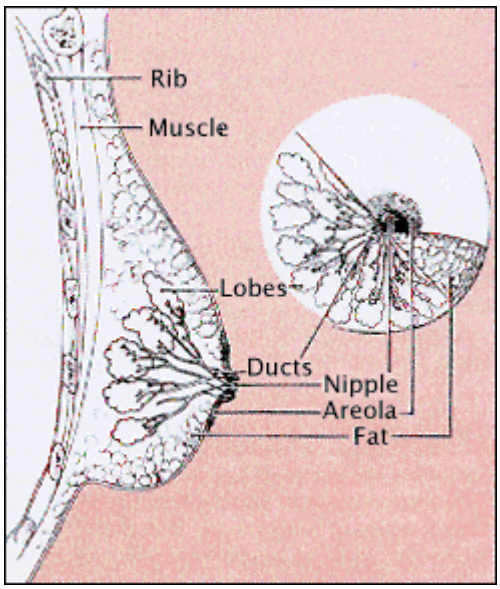
What Is Breast Cancer?

Breast cancer is the abnormal growth of cells in the breast tissue. When cancer arises in breast tissue and spreads (metastasizes) outside the breast, cancer cells are often found in the lymph nodes under the arm (axiliary lymph nodes). If the cancer has reached these nodes, it means that cancer cells may have spread to other parts of the body -- other lymph nodes and other organs, such as the bones, liver, or lungs.

What Are the Parts of the Breast?

Each breast has 15 to 20 sections called lobes. Within each lobe are many smaller lobules. Lobules end in dozens of tiny bulbs that can produce milk. Thin tubes called ducts link all the lobes, lobules, and bulbs. These ducts lead to the nipple in the center of a dark area of skin called the areola. Fat surrounds the lobules and ducts. There are no muscles in the breast, but muscles lie under each breast and cover the ribs.

Each breast also contains blood vessels and lymph vessels. The lymph vessels carry colorless fluid called lymph, and lead to small bean-shaped organs called lymph nodes. Clusters of lymph nodes are found near the breast in the axilla (under the arm), above the collarbone, and in the chest. Lymph nodes are also found in many other parts of the body.



This diagram shows the breast.

What Are the Key Statistics About Breast Cancer?

Breast cancer is the most common type of cancer among women in the United States. In 2012, an estimated 226,870 women will be diagnosed with breast cancer. (Additionally, 2,190 men will be diagnosed.) Breast cancer remains second among cancer deaths in women.

Who's At Risk?

The exact causes of breast cancer are not known. However, studies show that the risk of breast cancer increases as a woman gets older. Most breast cancers occur in women over the age of 50, and the risk is especially high for women over age 60.

Research has shown that the following conditions increase a woman's chances of getting breast cancer:

- **Personal history of breast cancer.** Women who have had breast cancer face an increased risk of getting breast cancer in their other breast.
- **Family history**. A woman's risk for developing breast cancer increases if her mother, sister, or daughter had breast cancer, especially at a young age.
- **Certain breast changes.** Atypical hyperplasia is a benign (non-cancerous) condition in which cells look abnormal under a microscope and are increased in number. Lobular carcinoma in situ is when abnormal cells are found in the lobules of the breast. These changes in the breast may increase a woman's risk for developing cancer.
- **Genetic alterations.** Changes in certain genes (BRCA1, BRCA2, and others) increase the risk of breast cancer. Genes are pieces of DNA, and most genes contain the information for making a specific protein. In families in which many women have had the disease, gene testing can sometimes show the presence of specific genetic changes that increase the risk of breast cancer. Doctors may suggest ways to try to delay or prevent breast cancer, or to improve the detection of this disease in women who have these changes in their genes.

Other factors associated with an increased risk for breast cancer include:

- **Estrogen.** Research suggests that the longer a woman is exposed to estrogen (estrogen made by the body, taken as a drug, or delivered by a patch), the more likely she is to develop breast cancer. For example, the risk is somewhat increased among women who began menstruation at an early age (before age 12), experienced menopause late (after age 55), never had children, or took hormone replacement therapy for long periods of time. Each of these factors increases the amount of time a woman's body is exposed to estrogen.

  DES (diethylstilbestrol) is a synthetic form of estrogen that was used between the early 1940s and 1971. Women who took DES during pregnancy to prevent certain complications are at a slightly higher risk for breast cancer. However, more studies are needed as these daughters enter the age range when breast cancer is more common.
- **Late childbearing.** Women who have their first child late (after about age 30) have a greater chance of developing breast cancer than women who have a child at a younger age.
- **Breast density.** Breasts that have high amounts of lobular and ductal tissue appear dense on mammograms. Breast cancers nearly always develop in lobular or ductal tissue (not fatty tissue). That's why cancer is more likely to occur in breasts that have a lot of lobular and ductal tissue (that is, dense tissue) than in breasts with a lot of fatty tissue. In addition, when breasts are dense, it is more difficult for doctors to see abnormal areas on a mammogram.
- **Radiation therapy.** Women whose breasts were exposed to radiation during radiation therapy before age 30, especially those who were treated with radiation for Hodgkin's disease, are at an increased risk for developing breast cancer. Studies show that the younger a woman was when she received her treatment, the higher her risk for developing breast cancer later in life.
- **Alcohol.** Some studies suggest a slightly higher risk of breast cancer among women who drink alcohol.

What are Signs and Symptoms of Breast Cancer?

Early breast cancer usually does **not** cause pain. In fact, when breast cancer first develops, there may be no symptoms at all. But as the cancer grows, it can cause changes that women should watch for:

- A lump or thickening in or near the breast or in the underarm area;
- A change in the size or shape of the breast;
- Nipple discharge or tenderness, or the nipple pulled back (inverted) into the breast;
- Ridges or pitting of the breast (the skin looks like the skin of an orange); or
- A change in the way the skin of the breast, areola, or nipple looks or feels (for example, warm, swollen, red, or scaly).

Can Breast Cancer Be Found Early?

A mammogram is an x-ray picture of the breast. It can find breast cancer that is too small for you or your doctor or nurse to feel. The following guidelines may help to detect breast cancer early.

Age 40 and over:

- Have a mammogram every year.
- Have a clinical breast exam by a healthcare professional every year.
- Do a breast self-exam each month.

Age 20-39:

- Have a clinical breast exam by a healthcare professional every 3 years.
- Do a breast self-exam each month.

If you have a history of breast cancer in your family, talk with your healthcare team about how often and when you should have a mammogram.

Can Breast Cancer Be Prevented?

Even if you do not have the risk factors listed above, you may still develop breast cancer. Scientists are trying to learn more about factors that increase the risk of developing this disease. For example, they are looking at whether the risk of breast cancer might be affected by environmental factors. So far, scientists do not have enough information to know whether any factors in the environment increase the risk of this disease.

Recent studies suggest that regular exercise may decrease the risk in younger women. Also, some evidence suggests a link between diet and breast cancer. Ongoing studies are looking at ways to prevent breast cancer through changes in diet or with dietary supplements. However, it is not yet known whether specific dietary changes will actually prevent breast cancer. These are active areas of research.

Research has led to the identification of changes (mutations) in certain genes that increase the risk of developing breast cancer. Women with a strong family history of breast cancer may choose to have a blood test to see if they have inherited a change in the BRCA1 or BRCA2 gene. Women who are concerned about an inherited risk for breast cancer should talk to their doctor. The doctor may suggest seeing a health professional trained in genetics. Genetic counseling can help a woman decide whether testing would be appropriate for her. Also, counseling before and after testing helps women understand and deal with the possible results of a genetic test. The LIFE Center at The Cancer Institute of New Jersey (CINJ) is a medical facility to which young women who are at increased risk for breast cancer can come for help, advice, and information in the fight against breast cancer.

Scientists are always looking for drugs that may prevent the development of breast cancer. In one large study, the drug tamoxifen reduced the number of new cases of breast cancer among women at an

increased risk for the disease. Doctors are well into studying how another drug called raloxifene compares to tamoxifen. This on-going study is called STAR (Study of Tamoxifen and Raloxifene).

Cancer Prevention Clinical Trials

Many other studies are being conducted to reduce the risk of breast cancer. For more information about nationwide cancer prevention trials, you can call the National Cancer Institute at 1-800-4 CANCER or visit their Web site at www.cancer.gov.

Expert Advice from The Cancer Institute of New Jersey (CINJ)

Dr. Deborah Toppmeyer is the chief medical officer and director of both the Stacy Goldstein Breast Cancer Center and the LIFE Center at CINJ. She is very active in the clinical (caring for patients) and research practice at the Center.

> "We have made great strides in breast cancer detection, treatment, and prevention over the past decade. Essential for continued progress in our fight to eradicate breast cancer is early diagnosis. Therefore, we encourage all women 40 and older to obtain routine annual screening and mammography."

Where Can I Find Further Information?

The LIFE Center at CINJ
732-235-7110
http://www.cinj.org/treatment/life_center.html

The Resource and Learning Center
732-235-9639
www.cinj.org/rlc

National Cancer Institute
1-800-4-CANCER
www.cancer.gov

The American Cancer Society
1-800-ACS-2345
www.cancer.org

The Susan G. Komen Breast Cancer Foundation
1-800-462-9273
ww5.komen.org

Y-ME National Breast Cancer Organization
1-800-221-2141
http://www.y-me.org

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