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Key Inforbits

- About Breast Cancer
- Risk Factors for Breast Cancer
- Breast Cancer Screening
- Breast Cancer Statistics and Rates
- Breast Cancer Treatments
- Breast Self-Exam
- Hot Topics in Breast Cancer

October is...



Breast Cancer Awareness Month

About Breast Cancer:

Breast cancer is uncontrolled growth of cells in the breast lobules, glands that produce milk; in the breast ducts, where milk produced by the lobules travels to the nipple; or, less often, in the connective tissues in the breast.¹ The abnormal growth of cells is usually caused by gene mutations that occur as we get older, but sometimes breast cancer is an inherited genetic abnormality. Although this type of cancer usually occurs in women, men can develop breast cancer as well.² Breast cancer can spread, or metastasize, to other parts of the body as it progresses. This can happen when cancer cells enter the lymph nodes which are connected throughout the body. Breast cancer stages are categorized by the distance that the cancer cells travel from the original tumor.¹ Tumors can be detected during routine self-examinations and mammograms. When tumors are detected at early stages, treatments are more successful.³

1. Breastcancer.org [Internet]. Ardmore (PA): Breastcancer.org; c2010. What Is Breast Cancer; [updated 2008 Nov 25, cited 2010 Sep 23]; [about 2 screens]. Available from: http://www.breastcancer.org/symptoms/understand_bc/what_is_bc.jsp
2. National Cancer Institute [Internet]. Bethesda (MD): National Cancer Institute. Breast Cancer; [cited 2010 Sep 23]; [about 1 screen]. Available from: <http://www.cancer.gov/cancertopics/types/breast>
3. National Breast Cancer Foundation, Inc. [Internet]. Frisco (TX): National Breast Cancer Foundation, Inc.; c2010. Stages of Breast Cancer; [cited 2010 Sep 23]. Available from: <http://www.nationalbreastcancer.org/About-Breast-Cancer/Stages.aspx>

Risk Factors for Breast Cancer^{1,2}

Non-modifiable risk factors:

- Female gender
- Caucasian race
- Increasing age
- Personal or immediate family history of breast cancer
- Genetics (BRCA mutated genes are most common)
- Dense breast tissue
- Starting menses before 12 years old
- Entering menopause after 55 years old
- Exposure to diethylstilbestrol (DES)
- Chest irradiation

Lifestyle-related risk factors:

- Women having first child after 30 years old
- Use of oral contraceptives
- Postmenopausal hormone replacement therapy (HRT)
- Choosing not to breast feed children
- Alcohol consumption
- Obesity
- Lack of physical activity

Note: Some women have at least 1 risk factor but never develop breast cancer.^{1,2}

1. Mayo Clinic [Internet]. Rochester (MN): Mayo Foundation; c1998-2010. Breast cancer: Risk factors; 2009 Nov 19 [cited 2010 Sep 21]. Available from: <http://www.mayoclinic.com/health/breast-cancer/DS00328/DSECTION=risk-factors>
2. American Cancer Society [Internet]. Atlanta: American Cancer Society, Inc. Breast cancer: What are the risk factors for breast cancer?; [updated 2010 Sep 17, cited 2010 Sep 23]. Available from: <http://www.cancer.org/Cancer/BreastCancer/DetailedGuide/breast-cancer-risk-factors>

Breast Cancer Screening¹

The American Cancer Society recommends routine screening for women in order to detect cancer in its early stages. Starting around 20 years old, women should perform monthly breast self-exams (BSE) to monitor for lumps and other breast changes. Beginning at 40 years old, yearly mammograms are recommended for all women with normal risk. Women who have a higher risk of developing breast cancer (see above risk factors) should discuss screening with their physicians. In many cases these women will start screening earlier and may be screened using mammograms and MRIs, according to physicians' recommendations. In addition, a clinical breast exam (CBE) is recommended every 3 years for women 20-30 years old and every year for women at least 40 years old. All women should discuss their breast cancer risk factors with their physicians and determine when screening should start and what tests should be obtained.¹ There is, however, controversy over the issue of breast cancer screening. The U.S. Preventive Services Task Force recommends mammograms every other year starting at the age of 50. They also recommend against teaching breast self-exams, stating that the sensitivity of detection is 12-41% lower than that of a clinical breast exam.²

1. American Cancer Society [Internet]. Atlanta (GA): American Cancer Society, Inc. American Cancer Society Guidelines for the Early Detection of Cancer; [cited 2010 Sep 21]. Available from: <http://www.cancer.org/Healthy/FindCancerEarly/CancerScreeningGuidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer>
2. U.S. Preventive Services Task Force [Internet]. Rockville, MD: U.S. Preventive Services Task Force. Screening for Breast Cancer: Recommendation statement; [updated 2009 Dec; cited 2010 Sept 29]. Available from: <http://www.uspreventiveservicestaskforce.org/uspstf/uspbrca.htm>

Stage-Based Survival Rates and Breast Cancer Statistics

- Staging is based on tumor size, invasiveness of the tumor, lymph node involvement, and metastasis.¹
- Staging is important for choosing the most effective treatment plan.
- Stage 0 is non-invasive breast cancer and stage 4 is metastatic breast cancer.

Breast Cancer 5-Year Survival Rates²

Stage	5-Year Survival Rate (%)
0	100
I	98
II	88
IIIA	56
IIIB	49
IV	16

Breast Cancer Statistics

- Breast cancer is the 2nd most common cancer diagnosed in women in the U.S.¹
- In 2010, an estimated 207,090 females and 1,970 males will be diagnosed with breast cancer in the U.S.
- In 2010, an estimated 39,840 females and 390 males will die in the U.S. due to breast cancer.
- About 50% of female breast cancer cases are diagnosed between 45 and 64 years old.
- When breast cancer is diagnosed, 60% is local, 33% has spread to lymph nodes, and 5% has metastasized.

1. Breastcancer.org [Internet]. Ardmore (PA): Breastcancer.org; c2010. Stages of Breast Cancer; [updated 2010 Jan 21, cited 2010 Sep 23]; [about 4 screens]. Available from: <http://www.breastcancer.org/symptoms/diagnosis/staging.jsp>
2. National Breast Cancer Foundation, Inc. [Internet]. Frisco (TX): National Breast Cancer Foundation, Inc.; c2010. Stages of Breast Cancer; [cited 2010 Sep 23]. Available from: <http://www.nationalbreastcancer.org/About-BreastCancer/Stages.aspx>

- National Cancer Institute [Internet]. Bethesda (MD): National Cancer Institute. SEER Stat Fact Sheets: Breast; [cited 2010 Sep 21]. Available from: <http://seer.cancer.gov/statfacts/html/breast.html>

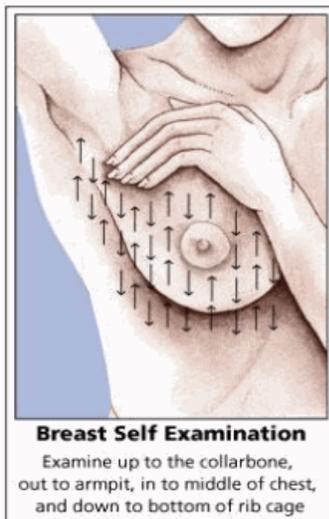
Breast Cancer Treatments

Treatment plans are often a combination of treatments.

- **Surgery**¹
 - Surgery can be done to remove tumors (lumpectomy), all breast tissue (simple mastectomy), or all breast and underlying tissue (radical mastectomy).
 - Lymph nodes in the underarm may also be removed if the node that receives lymph from the tumor is found to contain cancer cells.
- **Chemotherapy**² : Common examples: doxorubicin (Adriamycin) and cyclophosphamide (Cytosan®)
 - Injectable drugs are used to kill cancer cells.
 - Combinations of drugs may be used, depending on the regimen your physician thinks will help you the most.
 - “Chemo” may be used after surgery to kill any cells left behind or to reduce the risk of recurrence.
- **Radiation**²
 - High-energy particles are used to kill cancer cells that may not have been removed during surgery.
 - This is another way to reduce the risk of recurrence.
- **Hormone Therapy**² Common examples: tamoxifen (Nolvadex®) and anastrozole (Arimedex®)
 - Drugs that block the effects of estrogen or reduce the amount of estrogen in the body may be used to treat hormone-receptor-positive breast cancer.
- **Targeted Therapy (Monoclonal Antibodies)**² : Common example: trastuzumab (Herceptin®)
 - Cancer cells have certain characteristics that normal cells do not have and these drugs target those specific traits.

- Mayo Clinic [Internet]. Rochester (MN): Mayo Foundation; c1998-2010. Breast cancer: Treatments and drugs; 2009 Nov 19 [cited 2010 Sep 21]. Available from: <http://www.mayoclinic.com/health/breastcancer/DS00328/DSECTION=treatments-and-drugs>
- Breastcancer.org [Internet]. Ardmore (PA): Breastcancer.org; c2010. Treatment & Side Effects; [updated 2010 Apr 29, cited 2010 Sep 23]; [about 2 screens]. Available from: <http://www.breastcancer.org/treatment/>

Breast Self-Exam^{1,2}



Step 1: While standing in front of mirror, look for changes in your breasts (color, size, shape)

Step 2: Repeat with arms above head

Step 3: Lie down and put one arm above head. With the opposite hand, use the pads of your fingers to check the breast for lumps by using a circular motion. Follow the pattern shown in the picture to the left.

Step 4: Repeat Step 3 to check the opposite breast.

Step 5: Repeat monthly

If any abnormalities or concerns are found, contact your physician.

- BreastCancer.org [Internet]. Ardmore, PA: BreastCancer.org; c2009. The Five Steps of a Breast Self-Exam; 2009 Apr 28 [cited 24 Sept 2010]. Available from: http://www.breastcancer.org/symptoms/testing/types/self_exam/bse_steps.jsp
- Image from: <http://www.cancer.org/Cancer/BreastCancer/DetailedGuide/breast-cancer-detection>. Accessed on: 24 Sept 2010.

HOT TOPICS

Antidepressants with Breast Cancer Treatment

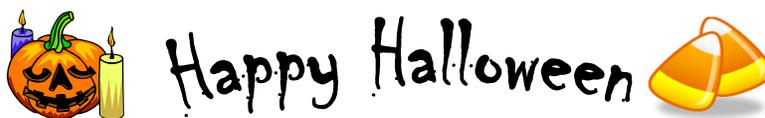
Breast cancer is one of the most common forms of cancer in women, second only to skin cancer.¹ As you could imagine, patients with cancer can sometimes experience episodes of depression. Tamoxifen, which is an estrogen receptor antagonist, is commonly used in women with estrogen-receptor-positive breast cancer. Due to its inhibition of estrogen effects, women may experience hot flashes and mood swings. Antidepressant medication can be prescribed to cancer patients that are experiencing these side effects and/or depression. Selective Serotonin Reuptake Inhibitors (SSRIs) have been used for this indication. Although SSRIs work well as an antidepressant, they also inhibit cytochrome P450 isoenzyme 2D6 (CYP2D6) and each SSRI has a different degree of inhibition. CYP2D6 is needed for the conversion of tamoxifen into its active metabolite, endoxifen. Paroxetine (Paxil[®]) irreversibly inhibits CYP2D6 making it one of the most potent inhibitors of the SSRIs. A recent retrospective cohort study analyzed this interaction to determine its effects on breast cancer mortality. The study included 2,430 women who were 66 years of age and older, newly treated with tamoxifen, and co-prescribed a single SSRI (paroxetine, fluoxetine (Prozac[®]), sertraline (Zoloft[®]), citalopram (Celexa[®]), or fluvoxamine (Luvox[®] CR)). The study found an increased risk of death when patients were taking paroxetine with tamoxifen and no increased risk of death was found when other SSRIs were given with tamoxifen. In conclusion, when choosing an antidepressant to add to existing tamoxifen therapy, choose antidepressants that do not inhibit the activation of tamoxifen.²

1. Centers for Disease Control and Prevention [Internet]. Atlanta: CDC; c2010. Cancer Prevention and Control: Cancer Among Women; updated 11 Mar 2010 [cited 23 Sept 2010]. Available from: <http://www.cdc.gov/cancer/dcpc/data/women.htm>
2. Kelly CM, Juurlink DN, Gomes T, Duong-Hua M, Pritchard K, Austin PC, et al. Selective serotonin reuptake inhibitors and breast cancer mortality in women receiving tamoxifen: a population cohort study. *Brit Med J* [Internet]. Feb 2010 [cited 23 Sept 2010]; 340:c293. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2817754/pdf/bmj.c693.pdf>

Breast Cancer in Males

Male breast cancer rarely gains any attention, however it is important to note that about 1% of all breast cancer incidents affect the male population. It has been reported that the incidence of breast cancer in men has increased by about 26% in the past 25 years.¹ The American Cancer Society has reported that in the year 2010, there will be about 1,970 men who develop breast cancer and 390 men will die from the disease.² Breast cancer in men presents most commonly with a painless lump, as it does in women. Family history of breast cancer and imbalances of hormones are two of the risk factors for these males. In the past, prognosis was thought to be worse for men diagnosed with breast cancer, however studies have shown that men and women diagnosed in the same stages of breast cancer will have similar survival rates.²

1. Gomez-Rapso C, Tevar FZ, Moyano MS, Gomez ML, Casado E. Male Breast Cancer. *Cancer Treatment Reviews*. 2010 Oct; 36(6):451-57.
2. Breast Cancer in Men [Internet]. Atlanta: American Cancer Society; c2010 [cited 2010 Sept 23]. Available from: <http://www.cancer.org/Cancer/BreastCancerinMen/DetailedGuide/breast-cancer-in-men-key-statistics>



The last "dose" ...

"The only way of finding the limits of the possible is by going beyond them into the impossible."

-Arthur C. Clarke (December 16, 1917-March 19, 2008)

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