Breast Cancer

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What is it?

Breast cancer represents a group of about eight separate types of malignant tumors that are found in the breast. Over 70% of all breast cancers are *ductal carcinomas* which start out in the cells that line the milk ducts. The remaining 30% of breast cancers represent a variety of other tumors which vary in their appearance and course.

What causes it?

It's still not clear what causes breast cancer. Researchers are investigating the role of viruses and diet in the development of the disease. We do know that there are some risk factors which place certain women at high risk of developing breast cancer. The biggest risk factor is getting older.

Risk Factors

Not modifiable:

- Age over 50
- Early *menarche* (starting periods before 12)
- Late *menopause* (stopping periods after 55)
- Family history of breast cancer before age 50 in mother or sister
- Atypical hyperplasia or carcinoma-in-situ on previous biopsy

Modifiable:

- Obesity – BMI > 30
- Excessive alcohol consumption > 2 per day
- Hormone therapy
- First child after age 35
- Never having children

Do not place too much faith in being "safe" if you have none of these risk factors - what puts you at greatest risk for breast cancer is that you are a woman. The majority of women who are diagnosed with breast cancer do not fall into any special "high risk" category.

Who gets it?

The average age at diagnosis is 61. Your lifetime chance of developing breast cancer is 1 in 8 if you are female and live to age 90. Caucasians over age 45 are more likely than other races to have breast cancer and death rates are higher in urban areas. About 115,000 new cases of breast cancer are diagnosed each year with approximately 40,000 female and 400 male deaths.

What are the symptoms?

Breast cancer generally presents as lumps in the breast which are hard to the touch and may or may not be growing in size. In advanced stages they may cause visible dimpling of the skin or retraction and inversion of the nipple. Often an additional lump is found in the armpit representing a *lymph node* which drains from the breast. The lumps either in the breast or in the armpit may or may not be painful. Occasionally there may be discharge from your nipples which can vary in color, but often is bloody.

The main thing to look for is any change in your breast. It's normal for your breasts to be slightly different in size. A firm ridge in the lower curve of your breast is also normal. Any lumps which are new should be examined by your family physician.

How do you prevent it?

The only way to reliably prevent breast cancer is to remove both breasts, a double mastectomy. However this is recommended only for women at very high risk for breast cancer based on genetic markers.

For most women the best option is to understand the benefits, harms, and uncertainties of screening in an effort to detect cancer at an earlier stage so that treatment will be potentially more effective. National health task forces from the US, Canada, and Europe have revised their guidelines recently changing previous recommendations based on newer studies and improved treatments. In general, they acknowledge that screening has a smaller effect than previously believed. A 2013 Cochrane review of 10 trials involving more than 600,000 women showed that screening did not reduce breast cancer death contrary to popular belief.

Mammography –A digital mammogram currently is the most commonly recommended screening test to find breast cancer early, up to two years before the lump is even large enough to feel. A mammogram is a special kind of X-ray of your breast. Mammograms are considered safe because the amount of radiation used in the X-ray is very small.

However, like other early cancer detection efforts, screening mammography involves trade offs between benefits and harms. The majority of women have overly optimistic expectations of mammography benefit. In fact, a 2014 review showed among 1000 US women aged 50 who are screened annually for 10 years, 1 will avoid a breast cancer death, but 490-670 will have at least 1 false alarm, 70-100 an unnecessary biopsy, and 3-14 will be overdiagnosed (finding breast cancer that does not cause harm) and treated needlessly.

The US Preventive Services Task Force (USPSTF) is now recommending routine screening mammography every 2 years for women age 50 to 74. The decision to start regular, biennial screening mammography before the age of 50 should be an individual one and take into account a patient's values regarding specific benefits and harms.

After age 75, the USPSTF concludes that the current evidence is insufficient and further screening mammography is optional. Some lower quality studies have suggested extended screening to older women who have a life expectancy of at least 10 years (average for age 75 US woman is 12.5 more years). Modeling studies estimate 2 fewer breast cancer deaths/1000 women who continue screening at this age. However, harms include false positive mammograms in 200/1000 women and overdiagnosis in 13/1000 women.

Clinical breast examination – Although previously performed routinely with female wellness exams, the USPSTF concludes that the current evidence does not support clinical breast exam in average women beyond mammography. However, if you feel something abnormal, your family doctor or nurse practitioner is trained to distinguish what may be a problem tumor from a normal lump. Please let them know so that a proper evaluation can be done. Also, if you are high risk based on history or risk scoring, then routine breast examination is recommended.

Prevention medication – Women over age 35 who are at increased risk can consider taking medication (tamoxifen, raloxifene) to reduce the risk of breast cancer. Specifically high risk women are those who have close family history of early age breast cancer, previous abnormal biopsy, or a Gail model 5-year risk score >3%. The Gail model can be found at www.cancer.gov/bcrisktool. Use of these medications can reduce risk of invasive cancer by 7-9/1000 women over 5 years, about 40% reduction. Breast cancer death, however, did not decrease.

However, when taking these medications the risk of blood clots increase 4-7/1000 and tamoxifen increases the risk of uterine cancer by 4/1000 over 5 years.

BRCA Mutation testing – An estimated 5-10% of breast cancers are inherited. If you have family members with breast, ovarian, tubal, or peritoneal cancer, you may need additional screening. A simple screening tool is the Referral Screening Tool found at www.breastcancergenescreen.org/public.aspx. Women with positive screening should receive counseling and a blood test for a potentially harmful mutation in the breast cancer gene BRCA.

Can it be treated?

Of course it's natural to be concerned if a lump has been found in your breast. But 80% of all breast lumps are *benign*, which means no cancer is present. If this is the case, treatment may be a simple as observation and rechecking later, or perhaps a small *needle aspiration* which may remove some fluid and reduce the size of the lump.

However, if in fact you have been diagnosed with breast cancer there are several treatment options. No single treatment is right for all breast cancer patients. Treatment varies according to age, overall health, patient and physician preference, kind and extent of cancer, and other considerations.

- **Lumpectomy and Radiation** is a procedure where only the tumor and some surrounding tissue are removed. After surgery, radiation therapy to the specific area is generally required.

- **Modified radical mastectomy** involves the removal of the breast and lymph nodes in the armpit. Breast reconstruction can often be done immediately or soon after this type of surgery.

- **Hormonal therapy** involves using drugs to prevent the growth of hormone-dependent cancers.

- **Chemotherapy treatment** destroys tumors directly with anti-cancer drugs.

In summary

- All women are at risk for breast cancer.
- Mammography is still the most effective way to find breast cancer but also has potential harms.
- Most breast lumps are benign.
- For more information review the USPSTF page www.uspreventiveservicestaskforce.org/uspstf/uspsbrca or the Canadian Task Force on Preventive Health Care canadiantaskforce.ca/ctfphc-guidelines/2011-breast-cancer.