

Breast Cancer Risk Factors

Family or Personal History of Cancer or Benign Breast Disease

History of breast or ovarian cancer: Women with a first degree or second degree relative who has been diagnosed with breast or ovarian cancer are at increased risk of developing breast cancer, especially if that family member was diagnosed at a young age. Similarly, women with a personal history of ovarian cancer may be at increased breast cancer risk. ⁱ

BRCA1 and BRCA2: A small portion of breast cancer cases (5-10%) are thought to result directly from inherited genetic mutations. Mutations in the BRCA1 and BRCA2 genes are considered the most common cause of heredity breast cancer. For some people with mutations in the BRCA1 or BRCA2 genes, the risk of developing breast cancer may be as high as 80%. Breast cancers linked with BRCA1 or BRCA2 gene mutations are more likely to occur in younger women and are more likely to affect both breasts. Mutations in BRCA1 and BRCA2 genes are also linked with an increased risk of ovarian cancer. There are other less common genes like P53, PTEN, and other genes that are also associated with an increased risk for breast cancer and other cancers. ⁱ

History of breast biopsy: A higher number of breast biopsies is associated with an increased risk of breast cancer, although the biopsies themselves are not thought to be causally related to an increased breast cancer risk. Athena uses the number of breast biopsies a woman has gone through, along with a number of other factors, to help estimate her risk of developing breast cancer. The National Cancer Institute's Breast Cancer Risk Assessment Tool, which uses the same Gail Model employed in the Athena risk assessment process, uses the total number of breast biopsies to calculate a woman's risk. ⁱⁱ

History of benign breast disease: Women diagnosed with certain benign breast conditions, like atypical ductal hyperplasia, lobular carcinoma in-situ, and others, may be at an increased risk of breast cancer. ⁱ

Hormones

Natural Estrogen Exposure: Certain hormones associated with menstruation, such as estrogen and progesterone, are thought to play a role in some types of breast cancer. Women who begin menstruating at a younger age (13 years old and younger) and women who go through menopause at a later age (55 years old and older) may be at increased breast cancer risk. Similarly, women who never give birth and women who are 30 years old or older at the birth of their first child may be at increased risk of breast cancer. ⁱ

Hormone Replacement Therapy (HRT): Women who took estrogen and progesterone combined HRT for five years or more may be at higher breast cancer risk. ⁱ

Oral contraceptive use: Women who use or recently used oral contraceptives may have a slightly higher breast cancer risk than those women who never took oral contraceptives. However, there appears to be no increased breast cancer risk for women who have *NOT* used oral contraceptives for at least the past ten years. ⁱ

Ethnicity

Race/Ethnicity: Some genetic mutations that are associated with increased breast cancer risk are found more often in populations with Ashkenazi Jewish ancestry compared to the general population. Overall, white women are more likely to develop breast cancer. African-American women are more likely to develop breast cancer at a younger age and to die of breast cancer than are white women.ⁱ

Lifestyle Risk Factors

Smoking: Cigarette smoking has been linked to increased breast cancer risk in certain groups of women, particularly young women. Patients should not smoke, or if they do smoke they should quit smoking.ⁱ

Physical Activity: Research has found a link between regular exercise and reduced breast cancer risk. The American Cancer Society reports findings that showed as little as 1.25-2.5 hours of brisk walking per week was associated with lower breast cancer risk.ⁱ

Weight: Women who are overweight or obese may be at an increased risk of developing breast cancer, particularly after menopause, possibly due to the estrogenic impact of excess body fat.ⁱ

Alcohol: Alcohol use has been shown to be associated with increased risk of breast cancer. In a recent review, experts recommended that women consume at most one drink per day and that women at elevated risk for breast cancer consume alcohol only occasionally, if at all.^{i,iii}

Other Risk Factors

Age: A woman's breast cancer risk increases as she ages. Approximately 2 out of 3 invasive breast cancers are found in women age 55 or older.ⁱ

Dense breast tissue: Women with denser breast tissue have an increased risk of breast cancer. Moreover, dense breast tissue can make detecting cancers on mammograms more difficult.ⁱ

Radiation exposure: Women who had radiation therapy to the chest at a young age, such as women who were treated for pediatric cancers like Hodgkin's lymphoma, may be at an increased risk of breast cancer.ⁱ

Breastfeeding: Some studies have found that women who breastfeed, especially women who breastfeed for more than a year, may be *at lower risk of breast cancer*.ⁱ

Diethylstilbestrol (DES) exposure: Women who took the drug Diethylstilbestrol (DES) may have an increased risk of vaginal cancer, breast cancer, and other cancers. Moreover, women whose mothers took the drug while they were pregnant may now be at an increased risk for vaginal, breast, and other cancers themselves.ⁱ

Chemical Exposure: Research has associated some chemicals found in cosmetics, agricultural pesticides, hormones, antibiotics, as well as plastics with cancer, at certain exposure levels. However, a definitive link between breast cancer risk and these substances has not been found.ⁱ

Night work: Research has found an association between women who work shifts at night and increased breast cancer risk. More research is needed to better understand this association.ⁱ

Breast Cancer Risk Myths

Diet and vitamins: No clear link between diet and breast cancer risk has been found, but obesity and being overweight have been associated with increased breast cancer risk.ⁱ

Antiperspirants: To date, there is little evidence to implicate underarm antiperspirants in breast cancer risk.ⁱ

Bras: There is little evidence that wearing bras can increase a woman's breast cancer risk.ⁱ

Induced abortion: There is robust evidence that abortion, either spontaneous or induced, does not impact a woman's breast cancer risk.ⁱ

Breast implants: Research suggests that breast implants do not increase a woman's breast cancer risk.ⁱ

Potential Interventions

The following clinical interventions are offered to aid Primary Care Providers in advising their patients around breast health. These recommendations are meant to be interpreted and weighed in the context of a patient's overall health. Patients with additional questions related to breast cancer risk can be referred to an Athena Breast Health Specialist.

| Breast Cancer Risk Factor | Potential Intervention |
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| History of breast or ovarian cancer | Consider risk-reducing consultation |
| History of breast biopsy | Consider risk-reducing consultation |
| History of benign breast disease | Consider risk-reducing consultation |
| BRCA1 and BRCA2 | Tamoxifen or Aromatase inhibitors reduce breast cancer risk by at least 50% with 5 years of use Bilateral Risk-Reducing Mastectomies (RRM) reduce breast cancer risk by at least 90% Risk reducing salpingo-oophorectomies (RRSO) reduces ovarian cancer risk by approximately 80 to 90% when performed at any age.(Recommended at 35 to 40 year of age or on completion of child bearing if later than 40 years). RRSO reduces breast cancer risk by 50% in premenopausal women Oral contraceptive use for 3 to 5 years to reduce the risk of ovarian cancer by greater than 50% may be considered for women in their 20's or 30's who have a BRCA1 or BRCA2 gene mutation ^{iv} |
| Hormone Replacement Therapy (HRT) | Women should not use HRT for five years or more ⁱ |
| Smoking | Patients should not smoke, or if they do smoke they should quit smoking ⁱ |
| Physical Activity | As little as 1.25-2.5 hours of brisk walking per week has been associated with lower breast cancer risk ⁱ |
| Alcohol | Women should consume at most one drink per day. Women at elevated risk for breast cancer should consume alcohol only occasionally, if at all ⁱⁱⁱ |

ⁱ More information is available through the American Cancer Society at: <http://www.cancer.org/Cancer/BreastCancer/DetailedGuide/breast-cancer-risk-factors>

ⁱⁱ For more information, visit: www.cancer.gov/bcrisktool/

ⁱⁱⁱ Seitz, H. K., Pelucchi, C., Bagnardi, V., & La Vecchia, C. (2012). Epidemiology and pathophysiology of alcohol and breast cancer: Update 2012. *Alcohol and Alcoholism*, 0(0), 1-9.

^{iv}Daly, Mary B, et al. "Genetic/Familial High-Risk Assessment: Breast and Ovarian, Version 1.2012." *Journal of the National Comprehensive Cancer Network* (2012). (This is better known as the "NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast and Ovarian.")