



Breast and Ovarian Cancer Susceptibility Genes

Should you be tested?

Genes are the instructions that guide the growth and development of your body. Your genes are located in each cell of your body. You are born with two copies of each gene - one inherited from your mother and the other inherited from your father.

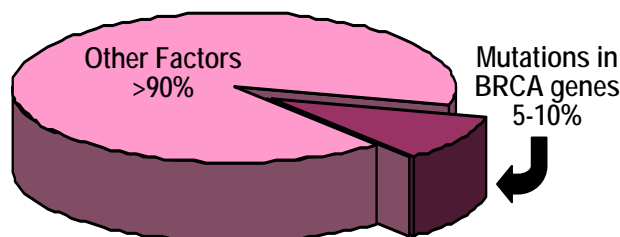
What are breast and ovarian cancer susceptibility genes?

There are genes that are important for controlling growth of cells in the breasts and ovaries. These genes are called breast cancer susceptibility genes. The two most common breast cancer susceptibility genes are called BRCA1 and BRCA2. There are other breast cancer susceptibility genes, but BRCA1 and BRCA2 are responsible for most **inherited** breast and ovarian cancer susceptibility.

How do these genes cause cancer?

Everyone has two copies of BRCA1 and BRCA2 - one copy from each parent. In some families, there is a mutation (genetic change) in one of the BRCA genes. The BRCA mutation can come from either side of the family. A woman with a BRCA mutation has a much higher chance, or susceptibility, for developing breast and ovarian cancer. Even men in these families have a higher chance of developing breast cancer. While a BRCA mutation results in a higher *chance* of developing breast and ovarian cancer, *it does not cause cancer*. Not everyone who inherits a BRCA mutation will develop breast or ovarian cancer.

Causes of Breast and Ovarian Cancer



Does my family history of breast or ovarian cancer mean that I have a BRCA mutation?

Not necessarily. Most breast and ovarian cancers are not due to a BRCA mutation, but are caused by other factors. Only about 5-10% of breast and ovarian cancers are related to inherited mutations in a BRCA gene.

Could I carry a BRCA mutation?

BRCA mutations have been identified in families worldwide. There are certain risk factors that help identify who might carry a BRCA mutation. You have a higher chance of carrying a BRCA mutation if you answer “yes” to one or more of the following statements:

- I have had invasive breast cancer **and** ovarian cancer
- I have had invasive breast cancer in both breasts
- I had invasive breast cancer before age 40
- I had invasive breast cancer before age 50 or ovarian cancer **and** my ancestry is Central or Eastern European (Ashkenazi) Jewish.
- I have had invasive breast cancer (especially before 50) or ovarian cancer **and** I have one or more close relatives with invasive breast cancer and/or ovarian cancer
- I am a male who has had invasive breast cancer
- I have a strong family history of invasive breast cancer (especially before age 50) and/or ovarian cancer

What if I do not have any risk factors?

Testing is most useful for individuals who are at high risk. If your personal or family history of cancer does not show any special risk factors, then you do not need to have genetic counseling or consider testing. However, you should still follow the routine screening recommendations for breast cancer.

Breast and Ovarian Cancer Susceptibility Genes

What if I have one or more risk factors?

Talk with your provider about your concerns. After reviewing your family history and your personal health history, your provider may refer you to a genetic counselor. Genetic counseling is the **first** step in determining if a BRCA mutation is in your family, and estimating the chance that you may have inherited this mutation. During counseling, the genetic counselor will review your medical records, your health history and your family history of cancer.

How is a BRCA mutation identified?

A blood test is available to look for mutations in the BRCA1 and BRCA2 genes, but the test is not for everyone. Testing is most useful when your personal and family history of cancer shows a pattern of an inherited susceptibility to cancer. Your genetics consultation will help determine whether or not testing is indicated.

What do I need to think about before having BRCA testing?

Deciding about testing for a cancer susceptibility gene is very personal. It can have complex, and sometimes unexpected, emotional effects. One important part of genetic counseling is helping you explore what testing means for you and your family. Your genetic counselor will discuss the pros and cons of genetic testing, including emotional aspects, impact on the family, confidentiality of results, and cancer screening options.

What does it mean if the BRCA test is positive?

A positive BRCA test means a mutation has been identified in one of the BRCA genes. A woman with a BRCA mutation has a lifetime chance of developing breast cancer that may be as high as 85%; there is still at least a 15% chance that she will never develop breast cancer. It also means she has a high risk of ovarian cancer. Men with a BRCA mutation may be at higher risk for breast cancer and other cancers compared to men without a BRCA mutation.

What are some of the benefits of BRCA testing?

Some people who get a negative test result are relieved. Others who test positive use the results to help plan their medical care and personal decisions. Screening more often and starting at a younger age, may help find breast cancer early. There are also risk-reducing surgeries that could be considered.

What are some of the drawbacks to BRCA testing?

A negative test may give some women a false sense of security, so they may not come in for the recommended routine mammograms and breast exams. Testing positive can create stress, especially if no clear plan of action is in place to deal with the results.

SCREENING FOR BREAST CANCER

All women are at risk for breast cancer. Screening helps find breast cancer early, when it is most treatable and curable. There are three important steps you can take for yourself, regardless of your family history:

1. Monthly breast self-exam
2. Breast exam by a doctor or nurse
3. Regular mammograms.

Mammograms are strongly recommended for all women who are between the ages of 50 to 69. If you are age 40 to 49, talk with your health care provider about when to begin regular mammograms. If you are considered high risk your provider may suggest that you begin mammograms earlier.

Are there ways to lower my risk of breast cancer?

Some risk factors for breast cancer can not be changed, like gender, age, and genetic risks. However, choosing a healthy, low-fat diet, getting regular exercise, limiting alcohol, and not smoking may lower your chance of developing cancer in general.