

Genetic Testing for Hereditary Breast/Ovarian Cancer

In 2005 the United States Preventive Services Task Force (USPSTF) issued a recommendation stating that “women whose family history is associated with an increased risk for deleterious mutations in *BRCA1* or *BRCA2* genes be referred for genetic counseling and evaluation for *BRCA* testing.” The purpose of this fact sheet is to help you understand if genetic counseling and testing for hereditary breast/ovarian cancer may be helpful to you or your family.

How are breast and ovarian cancer inherited?

- Most (70-75%) breast and ovarian cancers are **SPORADIC** - due to age and non-inherited factors.
 - *Example:* Grandmother with breast cancer diagnosed at age 75.
 - *Cancer Risk:* Same as general population.
- About 15-20% of breast and ovarian cancers are **FAMILIAL** – where multiple *minor* genetic factors interact with environment to increase risk. *Genetic testing is unlikely to be helpful for this type of family.*
 - *Example:* Mother breast cancer at 65 and sister with breast cancer at 58.
 - *Cancer Risk:* Somewhat higher than general population, but *most* women in this type of situation will not get breast or ovarian cancer.
- Approximately 5-10% of breast and ovarian cancers are **HEREDITARY** – due to inheritance of a mutation (mistake) in a single *major* cancer susceptibility gene such as *BRCA1* or *BRCA2*.
 - *Genetic testing for mutations in BRCA1/2 may be helpful to individuals with certain family history characteristics (see below).*
 - *Breast and ovarian cancer risks are greatly increased above general population, and age of diagnosis is earlier.*

The chart below shows how risk for breast and ovarian cancer will differ depending on the level of genetic risk:

Chance for a 20 year-old woman to develop cancer by age 60

	Sporadic (General Population)	Familial (Minor Genetic Risk)	Hereditary (<i>BRCA1/2</i> mutations)
Breast cancer	4-5% or 1 out of every 20-25 women	10-15% or 1 out of every 10-12 women	30-50% or 1 out of every 2-3 women
Ovarian cancer	0.5% or 1 out of every 200 women	1-2% or 1 out of every 50-100 women	10-30% or 1 out of every 3-10 women

When should I find out more about genetic testing for hereditary breast/ovarian cancer?

If any of the statements below are true of your family, you may want to talk to your health care provider about a **genetic counseling** appointment to learn more about *BRCA1/2* genetic testing.

Family History characteristics related to *BRCA1* or 2 mutations:

- Multiple (2 or more) cases of breast *and/or* ovarian cancer on the same side of the family
- Breast cancer diagnosed at a young age (*under* 50 years old)
- Cancer diagnosed in *both* breasts (bilateral breast cancer)
- Both breast *and* ovarian cancer diagnosed in the *same* person
- Breast cancer in a man
- Ashkenazi (Eastern European) Jewish Ancestry and any family history of breast or ovarian cancer

How can I find out if *BRCA1/2* genetic testing is right for me?

The best way to learn if *BRCA1/2* genetic testing will be helpful to you, is to have an appointment with someone trained to provide **Genetic Counseling** for cancer.

The process of **cancer genetic counseling** begins with the collection of a detailed family and medical history, followed by a discussion to answer the following questions:

- Am I at increased risk for breast or ovarian cancer?
- What are the *BRCA1/2* genes and how are they related to cancer?
- What is the chance that I might have a *BRCA1/2* mutation?
- How accurate is genetic testing for *BRCA1/2* mutations?
- What are the possible test results and what do they mean?
- How will knowing if I carry a *BRCA1* or 2 mutation help me to lower my risks for cancer?
- Are there risks and limitations of *BRCA1/2* genetic testing?
- How will the results of *BRCA1/2* genetic testing affect my family members?

Answering these and other questions are important so that you can make an *informed choice* about genetic testing.

Why should I consider genetic counseling and possible BRCA1/2 genetic testing?

There is now good scientific evidence that women who carry *BRCA1/2* mutations can take effective steps to prevent cancer and/or catch it at early, more curable stages. These screening and prevention strategies are *very different* from those offered to women in the general population and include:

- Screening with breast magnetic resonance imaging (MRI) *and* mammogram starting at age 20-25
- Screening more often (every six months instead of once per year)
- Taking medications that can help reduce the chance of getting breast cancer
- Undergoing surgery to remove the ovaries and/or breasts to prevent cancer

It is also important to understand that on average, only *half* the people in a hereditary breast/ovarian cancer family will inherit the *BRCA1* or *2* mutation. Thus, family members can learn they are NOT at high risk and avoid unnecessary screening, surgery, and worry.

Where can I go for more information about Genetic Counseling/Testing for Hereditary Breast/Ovarian Cancer?

The following websites provide information on cancer genetics services and hereditary breast/ovarian cancer.

- <http://www.nsgc.org/resourcelink.asp> - search for cancer genetic counselors by location: National Society of Genetic Counselors
- <http://www.cancer.gov/search/geneticsservices/> - search for cancer genetics professionals by location: National Cancer Institute
- <http://www.ncbi.nlm.nih.gov/sites/GeneTests/clinic> - search for clinics providing cancer genetic counseling/risk assessment by location
- <http://facingourrisk.org> – excellent resource for individuals at potential hereditary risk for breast/ovarian cancer
- <http://www.cancer.gov/cancertopics/UnderstandingCancer/genetesting> - NCI comprehensive summary for consumers on cancer genetics
- <http://www.cancer.gov/cancertopics/factsheet/Risk/BRCA> - National Cancer Institute Fact Sheet. *BRCA1* and *BRCA2*: Cancer Risk and Genetic Testing
- http://www.cdc.gov/genomics/resources/diseases/breast_ovarian_cancer.htm - Centers for Disease Control, Office of Public Health Genomics: Breast and Ovarian Cancer and Family Health History