BRCA*ssure*®

Are you concerned about your risk for having hereditary breast or ovarian cancer?

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WHEN YOU REVIEW YOUR FAMILY'S MEDICAL HISTORY, YOU MAY FIND A STRONG FAMILY HISTORY OF BREAST, OVARIAN, OR OTHER CANCERS.

Genetic testing is available for individuals who are at increased risk to carry a *BRCA1/BRCA2* mutation based on their personal or family history of cancer. The purpose of testing is to see if you have a *BRCA* mutation and are therefore at increased risk for developing breast, ovarian, or other cancers.[1,2] Having this information allows your healthcare provider or genetics professional to provide the appropriate additional screening and/or prevention options that could help to reduce your risk of developing cancer.

This brochure will provide you with general information on *BRCA* testing in order to help you understand if testing may be right for you. It is always important to speak to your healthcare provider or a genetics professional for additional information or to answer any other questions you may have.

What are the *BRCA1/BRCA2* genes

BRCA1 and *BRCA2* (breast cancer 1 and 2) are two genes found within everyone's normal genetic material. Mutations, or alterations called pathogenic variants, in these genes can cause an increased risk for several specific types of cancer, including breast cancer and ovarian cancer.[1,2] A *BRCA* mutation can be inherited and passed down through a family. *BRCA* mutations are inherited in an autosomal dominant fashion, which means that having just one copy of an altered *BRCA1* or *BRCA2* gene can increase your chance of developing certain cancers.[3] When either your mother or father carries a *BRCA* mutation, there is a 50% chance you will also have the same mutation.[4] It is important to remember that individuals who carry a *BRCA* mutation have an increased risk of developing cancer; however, not everyone who inherits a *BRCA* mutation will develop cancer.

BRCA mutations
are present in

10 to 15%

of all breast cancers.[4]

Who is at risk of having a *BRCA* mutation?

BRCA mutations can occur in both men and women of any ethnic or racial background. The estimated frequency of a *BRCA* mutation occurring in the general population is 1 in 400. However, specific ethnic groups have a higher risk for having a *BRCA* mutation. The Ashkenazi Jewish population has a high risk of carrying a *BRCA* mutation with a frequency of 1 in 40.[5]

Having a *BRCA* mutation significantly increases your risk of developing breast, ovarian, or other specific types of cancers (see table).[5]

Risk of Cancer in individuals with a *BRCA1* or *BRCA2* Pathogenic Variant[5]

Cancer Type	General Population (no mutation)	Individuals with Mutation	
		BRCA1	*BRCA2*
Breast	12%	46%-87%	38%-84%
Ovarian	1-2%	39%-63%	16.5%-27%
Male Breast	0.1%	1.2%	Up to 8.9%
Prostate	6% through age 69	8.6% by age 65	15% by age 65; 20% lifetime
Pancreatic	0.5%	1%-3%	2%-7%

Who should consider *BRCA* testing?

Reviewing your family history is important when considering if *BRCA* testing is right for you. Both the American College of Obstetricians and Gynecologists[6] and The National Comprehensive Cancer Network[7] support testing in individuals with a high risk or strong family history of breast or ovarian cancer.

Testing may be more appropriate for those with a personal or family history such as:[6,7]

- Breast cancer at a young age (at or before age 45 years)
- Ovarian cancer

- Triple-negative breast cancer diagnosed at or before 60 years of age
- Male breast cancer
- Breast cancer diagnosed at any age in an individual of Ashkenazi Jewish heritage
- Two or more relatives with breast cancer, with one diagnosed at or before age 50
- Three or more relatives with breast cancer at any age
- A previously identified *BRCA1* or *BRCA2* pathogenic variant in the family

In general, genetic testing for hereditary breast and ovarian cancer is not recommended for at-risk individuals younger than 18 years of age unless it would impact medical management.[5,7]

What do the results mean?

BRCA testing is reported as positive, negative, or an uncertain result. In all cases, you should discuss the results and any appropriate follow-up with your healthcare provider.

Positive results

A positive test result means that you have inherited a *BRCA* mutation and have an increased risk of developing breast and other cancers. This test result does not indicate if you will actually develop cancer.

A positive test result could also have important implications for your family members. You would have inherited this mutation from your mother or your father, and therefore your relatives could also be at risk for carrying a *BRCA* mutation. There is also a chance that you will pass this mutation on to your children. It can be helpful to discuss this test result with your family members so they too can decide if genetic testing is right for them.

Negative results

A negative result means that your chance of carrying a *BRCA* mutation is greatly reduced, but not completely eliminated. This does not mean that you cannot

develop cancer. Most people diagnosed with breast cancer do not carry a *BRCA* mutation.[4] Individuals with negative results should discuss appropriate surveillance and any further genetic testing with their healthcare provider.

Uncertain results

An uncertain result means that an alteration in the *BRCA1* or *BRCA2* gene has been detected but, at this time, it is not clear if the specific gene alteration may lead to an increased risk of cancer. Genetic researchers are learning more about mutations in the *BRCA1/BRCA2* genes and their associated cancer risks every day. Individuals with uncertain results should discuss appropriate surveillance and follow up with their healthcare provider.

What options do I have if I carry a *BRCA* mutation?

If you are positive for a *BRCA* mutation, there are several options that you and your healthcare provider could consider to reduce your risk for developing cancer. Your options may include:[5]

- Increased or enhanced screening for cancer
- Proactive (prophylactic) surgery
- Drug therapy (chemoprevention)
- Evaluation of your family members' risk

It is important to discuss these and other options with your healthcare provider and/or your genetic counselor to understand which option is best for you.

Genetic counseling for BRCA*ssure*®

Your healthcare provider may refer you to a genetic counselor to discuss your risk for hereditary cancer and your testing options. A genetic counselor is a health care professional with a master's degree in human genetics or genetic counseling. The role of a genetic counselor is to help you better understand your genetic risks and the tests available to you. The training they receive enables genetic counselors to discuss technical genetic information in practical, useful terms.

What happens during a hereditary cancer genetic counseling session?

The genetic counselor will lead you through a discussion to evaluate your medical history for relevant information, review your family history and construct a family tree. They will use this information in order to:

- Evaluate your risk for cancer and your risk of being a carrier for a mutation that is associated with a hereditary cancer syndrome
- Discuss the genetic testing options that may be appropriate for you
- Explain the potential results of testing and what those results may mean in the context of your family history
- Provide an overview of cancer screening options and risk reduction measures

The decision to accept or decline any recommended genetic testing is up to you.

How do I schedule an appointment with a genetic counselor?

If your healthcare provider recommends genetic counseling with Integrated Genetics, you can schedule an appointment online at www.integratedgenetics.com/schedulecounseling.

Toll-free
(within the US)

800.848.4436

www.integratedgenetics.com
www.integratedoncology.com
3400 Computer Drive
Westborough, Massachusetts 01581

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gen-228-v5-0518 | L12479-0518-5