



Fact Sheet

Hereditary Breast and Ovarian Cancer Syndrome

Brought to you by the *National Society of Genetic Counselors, Cancer Special Interest Group*

What you should know about Hereditary Breast and Ovarian Cancer syndrome

Hereditary Breast and Ovarian Cancer Syndrome (HBOC) is a genetic condition that increases a woman's chance of developing breast and/or ovarian cancer. The condition is also associated with an increased risk for breast cancer and/or prostate cancer in males. Both men and women with HBOC syndrome have an increased risk for pancreatic cancer. HBOC syndrome is due to a mutation in either the *BRCA1* or *BRCA2* gene.

Cancer Risks and Features Associated with Hereditary Breast and Ovarian Cancer syndrome

Cancer Type	General Population Risk	<i>BRCA1</i> Mutation Risk	<i>BRCA2</i> Mutation Risk
Breast	12%	65-79%	61-77%
Second Breast	1.5% per year	Up to 40% within 20 years	Up to 26% within 20 years
Ovarian	1-2%	36-53%	11-25%
Male Breast	0.10%	1.2%	7-8%
Prostate	12%	Increased	20-30%
Pancreatic	0.90%	2-3%	3-5%
Melanoma	1-2%	-	3-5%

Genetics and Inheritance of Hereditary Breast and Ovarian Cancer syndrome

Genes are our body's instructions. They provide our body with information about how to grow and develop. When there is a mutation in a gene, it can cause the gene to no longer function correctly. Each person has two copies of every gene. One copy is inherited from their mother and the other copy is inherited from their father.

HBOC syndrome is due to a mutation in the one of two genes called *BRCA1* and *BRCA2*. Cancer risks associated with HBOC syndrome are inherited in an autosomal dominant manner. This means that children, siblings and parents of individuals with a *BRCA1/2* mutation have a 50% (1 in 2) chance of having the mutation as well. Both males and females can inherit a *BRCA1/2* mutation and can pass it on to their children.

The frequency of gene mutations in *BRCA1* and *BRCA2* in the population is approximately 1 in 500 individuals. However, in some ethnicities, the frequency is higher. For example, 1 in 40 individuals of Ashkenazi Jewish ancestry carry a mutation in one of these two genes.

Managing Cancer Risks

Women

- Self-breast exam/awareness monthly at the end of the menstrual cycle beginning at age 18
- Clinical breast exam every 6-12 months beginning at age 25
- Annual breast MRI with contrast beginning at age 25 years, with annual breast MRI beginning age 30
- Consider preventative options such as removing both breasts (mastectomy) and/or medication
- At this time there is no effective screening to detect ovarian cancer. It is recommended that women have their ovaries and fallopian tubes removed at age 35-45, or after the age of child-bearing

To find a genetic counselor near you, go to www.nsgc.org



Managing Cancer Risks (Continued)

Men

- Clinical breast exam every 12 months starting at age 35
- Prostate cancer screening beginning at age 40

Men and Women

- Consider pancreatic cancer screening if there is a family history of pancreatic cancer
- Annual full-body skin examination for melanoma risk management

Genetic Counseling

In many families, the cancer history may be due to a combination of genetic and environmental factors. In addition, other genetic conditions (i.e. other gene mutations) may appear clinically similar to HBOC syndrome. For this reason, a detailed review of the family history by a genetics professional is important before pursuing genetic testing. A genetic counselor can help determine which, if any, genetic tests may be helpful for a family and review the benefits, risks and limitations of genetic testing. Genetic testing is usually performed through a blood or saliva sample.

Genetic test results can be complicated and are most useful when interpreted by a genetics professional in the context of an individual's personal and family history. To locate a genetic counselor near you, please visit www.nsgc.org and click on the 'Find a Genetic Counselor' link.

Genetic Discrimination

The Genetic Information Nondiscrimination Act (GINA) was signed into federal law in 2008. GINA prohibits health insurers and most employers from discriminating against individuals based on genetic information (including the results of genetic tests and family history information). According to GINA, health insurance companies cannot consider genetic information to be a preexisting condition, nor can they use it to make decisions regarding coverage or rates. GINA also makes it illegal for most employers to use genetic information in making decisions about hiring, firing, promotion, or terms of employment. It is important to note that GINA does not offer protections for life insurance, disability insurance, or long-term care insurance. More information about GINA can be found by contacting a local genetic counselor or by visiting www.ginahelp.org.

Resources

- Facing Our Risk of Cancer Empowered (FORCE) www.facingourrisk.org
- Bright Pink – www.brightpink.org
- Sharsheret- www.sharsheret.org

References

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