To Your Health

BRCAvantage™

Patient Support Guide: Genetic testing for Hereditary Breast and Ovarian Cancer (HBOC) syndrome

Sonora Quest Laboratories™

A Subsidiary of Laboratory Sciences of Arizona

Do you need to know?

Some women want to know if they have a high risk for getting cancer of the breast or ovary. These women usually have close relatives who have one or both of these cancers. They may have Hereditary Breast and Ovarian Cancer (HBOC) syndrome. Women with HBOC syndrome have an increased risk for getting cancer in the breast and/or ovary. Men with HBOC syndrome have an increased risk for getting cancer in the breast and/or prostate. HBOC syndrome also increases the risk for pancreatic cancer and melanoma in both men and women.

There is a genetic test that can help you find out if you have HBOC syndrome. It is called the BRCAvantage™ test. This Patient Support Guide will help you understand the test, so you can decide if it's for you.

Once you know your risk, you and your doctor can decide what the next steps should be. If you are at high risk, there are steps you can take to decrease your risk. Taking steps today can help keep you healthy tomorrow and in the years to come.

Life has enough mysteries. Don't let your risk for HBOC syndrome be one of them.

The BRCAvantage™ test

The BRCAvantage test looks for mutations (changes) in 2 genes. These genes are called *BRCA1* and *BRCA2*. Changes in the *BRCA1* and *BRCA2* genes can lead to hereditary cancer in the breast, ovary, pancreas, or prostate. They can lead to hereditary melanoma too. So people with a mutation have HBOC syndrome and are at high risk for these cancers. Cancers of the breast and ovary are fairly common. About a quarter of a million women will be diagnosed with one of these cancers this year. But only some of them will be hereditary cancers. Hereditary cancer can happen when a parent passes on a change in a *BRCA1* or *BRCA2* gene to a son or daughter. Changes in these 2 genes cause:

- About 3% to 5% of all cancers in the breast
- Up to 15% of all cancers in the ovary

Below are some questions that people often ask about the test.

How do I know if I should be tested?

This test is only for certain people. You might want to talk with your doctor or genetic counselor about getting tested if you:

- Have had breast cancer before the age of 50
- Have had 2 separate (primary) breast cancers at any age
- Have had a triple negative (ER, PR, and HER2 negative) breast cancer
- Have had ovarian cancer at any age
- Are a man who has had breast cancer
- Have a strong family history of breast and/or ovarian cancer
- Have a blood relative with a *BRCA1* or *BRCA2* mutation
- Are Ashkenazi Jewish

Will the test results tell me if I will get breast or ovarian cancer?

No. The test cannot tell you if you will get cancer. The test will tell you if you have a mutation (change) in a *BRCA1* or *BRCA2* gene. If you do have a mutation, though, you are at higher risk of getting cancer.

If I have a BRCA mutation, will someone else in my family have one too?

Maybe. Your mother, father, brother, sister, and child each has a 50% chance of having the same mutation. Other relatives are also at risk.

Relative	Their Risk
Identical Twin	100%
Parent, sibling, child	50%
Grandparent, aunt, uncle, niece nephew	25%
First cousin	12.5%

At what age should I have this test?

First you must meet the criteria for testing. If you do, you can be tested at any age. But, this test is not recommended for people under 18 years old.

Where can I get the BRCAvantage test done?

You can get the test through your doctor. The first step is to talk with your doctor or genetic counselor. They'll help you learn more about the test. Then if you still want to be tested and your doctor agrees, he/she can order the test for you.

How is the BRCAvantage test done?

First, a sample of your blood is collected at your doctor's office or at a Sonora Quest Laboratories Patient Service Center. The sample is then sent to Sonora Quest Laboratories for testing. After the test, results are sent to your doctor.

Does insurance cover the cost of the test?

That depends on your insurance company. Many do cover it. To find out if your insurance company covers it, you can:

- Call them
- Ask someone at your doctor's office to help you
- Ask our pre-authorization concierge service (available through our parent company Quest Diagnostics) to help you; call 866.GENE.INFO (866.436.3463).

If needed, your doctor can send your insurance company a letter to help support your claim. This letter is called a letter of medical necessity.

Could I lose my health insurance if I test positive?

No. A law called the Genetic Information Nondiscrimination Act (GINA) protects you. If you test positive, the insurance company cannot:

- Cancel your insurance
- Increase your premium
- Claim a pre-existing condition
- Require a relative to get tested

Note that GINA does not apply to the military, veterans, Indian Health Service, and federal employees. But these groups have policies that provide similar protections.

Making sense of your test results

Your doctor or genetic counselor will tell you what your results are. He/she will also help you understand what they mean. Together, you can decide on the next steps.

There are 3 possible results:

1. **Negative:** No *BRCA1* or *BRCA2* mutations were found. This does not mean you won't get cancer. Your doctor or genetic counselor can help you understand what your revised risk is.

2. **Positive:** A *BRCA1* or *BRCA2* mutation was found. If you are a woman, you have a higher risk for hereditary cancer in the breast and ovary. If you are a man, you have a higher risk for hereditary cancer in the breast and prostate. Both women and men have a higher risk for hereditary cancer in the pancreas and for melanoma. But this doesn't mean that you actually have cancer or will get cancer.

3. **Inconclusive:** A "variant of unknown significance" was found. This means there is a change in your *BRCA1* or *BRCA2* gene. But scientists don't know if this means you have a higher risk or not. Over time, scientists may learn more about the change. So, check with your doctor or genetic counselor each year to see if they can update your risk.

Below are some questions that people often ask about the test results.

Does a negative result mean I'm not at risk for hereditary breast or ovarian cancer?

No. A negative result means your risk is lower than if you had a positive result. But you could still be at risk. There are rare mutations in the *BRCA1* and *BRCA2* genes that this test can't detect. There are also rare mutations in other genes that could cause hereditary breast or ovarian cancer.

I have a positive result. Does this mean I will get cancer?

No. A positive result means you have a mutation that could lead to cancer. But people with a positive result do not always get cancer. There is no way to know if you will actually get cancer or not. But you do have a greater chance of getting cancer. So it's important that you talk with your doctor to find out what you can do to lower it.

I have a positive result. What are my chances of the mutation causing cancer?

The chances for breast and ovarian cancer are in the table below. Men also have a higher chance of getting prostate cancer. And both women and men have a higher chance of getting melanoma and cancer of the pancreas.

Cancer	Risk of Cancer		
	With BRCA1 Mutation	With BRCA2 Mutation	Without BRCA Mutation
Women			
Breast cancer by age 70	55% - 65%	45% - 47%	9%
Ovarian cancer by age 70	39%	11 - 17%	1%
2nd breast cancer in lifetime	83%	62%	15%
Men			
Breast cancer by age 70	1%	7%	0.06%

What are the chances of the results being wrong?

The BRCAvantage test is very accurate. But it does not detect all causes of HBOC syndrome. A rare mutation in the *BRCA1* or *BRCA2* gene might not be detected. And the BRCAvantage test will not detect rare mutations in other genes that cause hereditary cancer in the breast or ovary.

I have a positive result. Should anyone else in my family be tested?

Yes, if they are a blood relative and they decide they want to be tested. Testing will help them know where they stand and if they need to do something to lower their risk.

Your parents, brothers, sisters, and children each have a 50% chance of having the mutation you have. Your other blood relatives have some risk too. So be sure to share your test results with your family. That way each person can decide if he/she wants to be tested.

Lowering Your Risk

Making Your Choices

If you have a negative BRCAvantage test result, you can breathe a little easier. But since you could still be at risk, it's important you do what you can. Talk with your doctor to see what cancer screens he/she recommends for you. If your result is positive, you are at higher risk. It's very important for you to learn about the things that can help lower it. These things could include:

- Increased cancer screening
- Surgery
- Medicines (chemoprevention)

Talk with your doctor or genetic counselor to find out what is best for you. If your result is inconclusive, it doesn't tell you if you're at higher risk or not. Testing family members might tell you more. Start by talking with your doctor or genetic counselor.

Below are some questions that people often ask about the next steps.

Will increased cancer screening keep me from getting cancer?

No. But it might detect cancer sooner. And, as you know, early detection improves your chances of beating it.

Will surgery help keep me from getting cancer?

Studies have shown that surgery can sometimes be helpful. But surgery is not for everyone. There are down sides to having surgery. So, talk with your doctor or genetic counselor to learn more.

How good are medicines at lowering cancer risk?

The answer to this question is unclear. Talk with your doctor or genetic counselor to get more information.

Is It Time To Know What You Don't Know?

Some women have a high risk of getting breast and ovarian cancer. This can come from having a change (mutation) in a *BRCA1* or *BRCA2* gene. The mutation can be passed down from parent to child. When this happens, cancers in the breast, ovary, pancreas, and/or prostate may be more common among family members. Melanoma might also be more common in the family.

You don't have to wait and wonder if you are at high risk. The BRCAvantage test can help you find out if you have a BRCA mutation. To learn more about the BRCAvantage test and to find out if it's right for you, go to SonoraQuest.com/BRCA. The knowledge you gain will give you the power to do something about your risk.

But the BRCAvantage test isn't for everyone. If you think you might be at risk for HBOC syndrome, talk with your doctor. Find out if the BRCAvantage test is right for you. If it is, you can soon begin to take control of your cancer risk.