



Patient Support Guide to Genetic Testing for Hereditary Breast Cancer

The More You Know, The More You Can Do

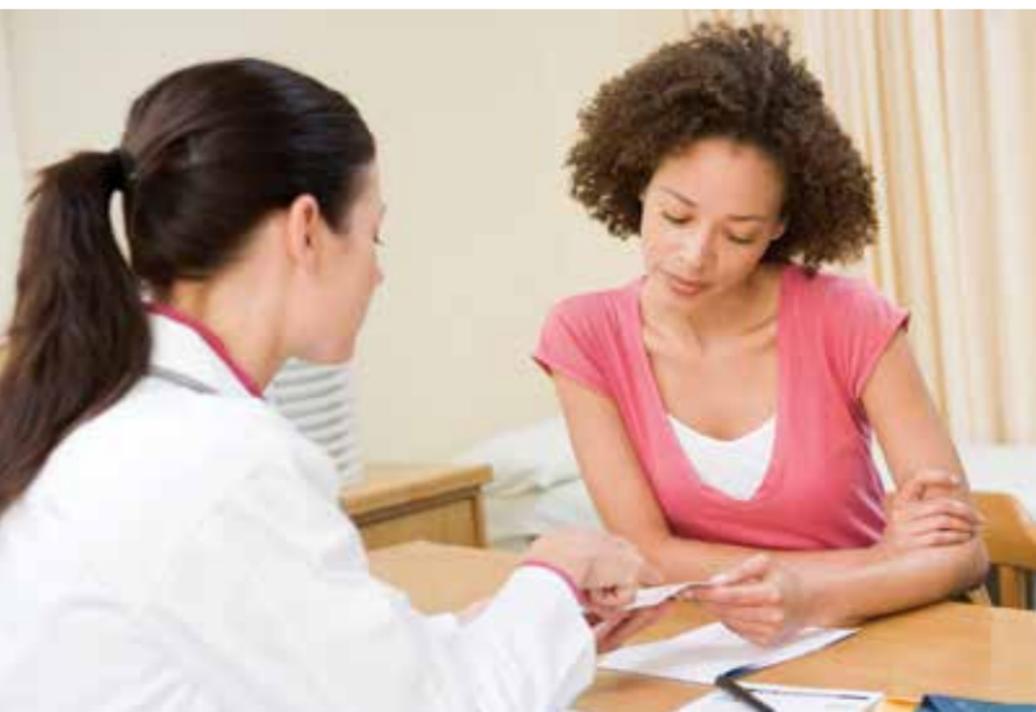
Do You Need to Know?

Breast cancer is fairly common in some families. Women in these families might want to know if they are at high risk for breast cancer. High risk can come from a change in DNA called a mutation. Sometimes a mutation is passed down from a parent. Breast cancer caused by a mutation passed down from a parent is called *hereditary* breast cancer. This type of breast cancer is not very common. Only 5% to 10% of all breast cancers are caused by mutations passed down from parents. But people with this type of mutation are at higher risk for breast cancer than people without such a mutation.

There are genetic tests that can help you find out if you have mutations linked to hereditary breast cancer. They are called the BRCA[®] tests. This Patient Support Guide will help you understand the tests, so you and your doctor can decide if one of them is for you.

If you do take a test, you will have a better idea of your risk. You and your doctor can then 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 hereditary breast cancer be one of them.



The BRCAVantage® Tests

The 2 main BRCAVantage tests are:

- BRCAVantage, Comprehensive
- BRCAVantage Plus™

The BRCAVantage, Comprehensive test looks for mutations (changes) in 2 genes. These genes are called *BRCA1* and *BRCA2*. Changes in these genes cause 15% to 20% of hereditary breast cancers. They can also lead to cancer in the ovary, pancreas, or prostate. They can lead to melanoma too. So, people with a mutation in *BRCA1* or *BRCA2* are at high risk for all of these cancers.

The BRCAVantage Plus test looks for mutations in *BRCA1*, *BRCA2*, and 5 other genes. These other genes are called *TP53*, *PTEN*, *CDH1*, *STK11*, and *PALB2*. Changes in these 5 genes cause another 3% to 4.5% of hereditary breast cancers. They can lead to other types of hereditary cancer too.

Below are some questions that people often ask about these tests.

FAQ

How do I know if I should be tested?

These tests are 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 male blood relative 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

The BRCAVantage Plus test is for other people too. You might want to talk with your doctor or genetic counselor if cancer of any type is common in your family.

Which BRCAvantage test is right for me?

The right test depends on your history of cancer. It also depends on your family's history of cancer. Talk to your doctor or genetic counselor. They can help you decide which test is right for you.

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

No. The test cannot tell you if you will get cancer. The test will tell you if you have a mutation in one of the genes included in your test. If you do have a mutation, you are at higher risk of getting cancer.

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

Possibly. Your mother, father, brother, sister, and child each has a 50% chance of having the same mutation. Other relatives might have the mutation too.

Relative	Their Chance of Having the Same Mutation
Identical twin	100%
Fraternal twin	50%
Parent, sibling, child	50%
Grandparent, uncle, aunt, niece, nephew	25%
First cousin	12.5%

At what age should I get tested?

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 a BRCAvantage test done?

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

How is a BRCAvantage test done?

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

How long will it take to get results?

Your doctor will get the results in about 14 days.

Does insurance cover the cost of a BRCAVantage 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 Quest Diagnostics to help you; call Quest Genomics Client Services at 1-866-GENE-INFO (1-866-436-3463). Ask to speak to a Concierge Team member

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. You are protected by federal laws. If you test positive, the insurance company cannot:

- Cancel your insurance
- Increase your premium
- Refuse to cover you based on the test result



BRC Advantage® Tests Results

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:

- **Negative:** No mutations (changes) were found in the genes included in your test. This does not mean you won't get cancer. But your risk for getting cancer is lower than if you had a positive result. Your doctor or genetic counselor can help you understand what your revised risk is.
- **Positive:** A mutation was found. This means that you have higher risk for breast cancer. It also means you have a higher risk for other types of cancer. The types of cancer depend on which gene has the mutation. But this doesn't mean that you actually have cancer or will get cancer.
- **Inconclusive:** A "variant of unknown significance" was found. This means you have a change in one of the genes included in your test. 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.

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



FAQ

Does a negative result mean I'm not at risk for hereditary breast 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 that this test can't detect. These rare mutations could be in the genes included in your test. Or they could be in other genes.

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 your chance of getting cancer.

I have a positive result. What are my chances of developing breast cancer?

The chances for breast cancer depend on the mutation. If you have a mutation in *BRCA1* or *BRCA2*, your risk for breast cancer is in the table below.

If you have a mutation in one of the other genes, your risk varies from 35% to 85%. It depends on which gene has the mutation.

Cancer	Risk of Cancer		
	With <i>BRCA1</i> Mutation	With <i>BRCA2</i> Mutation	Without <i>BRCA</i> Mutation
Women			
Breast cancer by age 70	55% to 65%	45% to 47%	9%
2nd breast cancer in lifetime	83%	62%	15%
Men			
Breast cancer by age 70	1%	7%	0.06%

I have a positive result. What other types of cancer am I at risk for?

That depends on which gene your mutation was found in. Each gene is linked to a different condition, called a syndrome. Each syndrome is linked to a different group of cancers. You can use the table below to find out which types of cancer you are at risk for. Look for the gene your mutation was found in. Below it is the syndrome and the types of cancer linked to it.

Gene	BRCA1	BRCA2	TP53	PTEN	CDH1	STK11	PALB2
Syndrome	HBOC	HBOC	LF	Cowden	HDGC	PJ	None
Associated Cancer							
Breast	•	•	•	•	•	•	•
Colorectal			•	•	•	•	
Endometrial			•	•		•	
Stomach			•		•	•	
Melanoma	•	•	•	•			
Ovarian	•	•	•			•	
Pancreatic	•	•	•			•	•
Prostate	•	•	•				
Other			•	•		•	

HBOC – Hereditary breast and ovarian cancer

LF – Li-Fraumeni

HDGC – Hereditary diffuse gastric cancer

PJ – Peutz-Jeghers

What are the chances of my results being wrong?

The BRCAVantage tests are very accurate. But they do not detect all causes of hereditary breast cancer. Some rare mutations might not be detected in your test. These rare mutations could be in genes included in your test. Or they could be in other genes.

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

Possibly. 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. They should talk with their doctors to decide if they want to be tested. Testing could help them know where they stand and if they need to do something to lower their risk of getting cancer. Be sure to share your test results with your family.

Lowering Your Risk

Making Your Choices

If you have a **negative** BRCAVantage test result, you can breathe a little easier. Your risk is lower than if you had a positive result. 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.

FAQ

Will increased cancer screening keep me from getting cancer?

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

Will surgery help keep me from getting cancer?

Studies have shown that surgery reduces the risk of breast cancer. 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?

Some medicines lower cancer risk in some people. How well medicine works varies from patient to patient. It also depends on the type of medicine. 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 cancer. This can come from having a change (mutation) in one of the genes included in your test. The mutation can be passed down from parent to child. When this happens, breast cancer and other types of cancer may be more common among family members.

You don't have to wait and wonder if you are at high risk. A BRCAVantage test can help you find out if you have a mutation in a gene related to breast cancer. To learn more, go to **BRCAVantage.com**. The knowledge you gain will give you the power to do something about your risk.

The BRCAVantage test isn't for everyone. If you think you might be at risk for hereditary breast cancer, talk with your doctor. Find out if a BRCAVantage test is right for you. If it is, you can soon begin to take control of your cancer risk.



About Quest Diagnostics

At Quest Diagnostics, our vision is *Empowering Better Health with Diagnostic Insights*. This means that we want to give you information that helps you be healthier.

We've been listed in Fortune Magazine's list of the "World's Most Admired Companies" since 2008. Our products have been featured by the Edison Institute for Leadership in Diagnostic Innovation. But what's most important to us is that we:

- Support your health and well-being
- Partner with healthcare workers who dedicate themselves to their patients

For more information about our tests and services, visit **QuestDiagnostics.com**.

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