Quest Diagnostics™

The benefit of **knowing**

Genetic testing for hereditary cancer

Quest Vantage™
Cancer Testing Solutions

A patient support guide

Does cancer run in **your family?**

Cancer is more common in some families. Sometimes cancer is caused by a change in a gene, called a mutation. Mutations may also be referred to as pathogenic/likely pathogenic variants. About 5% to 10% of the time, these cancers run in families. This is called hereditary cancer. Hereditary cancer can be passed down from parent to child. People who have an inherited mutation have a higher risk of developing cancer than people who do not have a mutation.

Review this guide with your healthcare provider to learn if one of these tests is right for you.

Some words in this guide are highlighted, **like this**. You will find the definitions in the back of the brochure under **Important terms to know**.

How can genetic testing for hereditary cancer help?

A blood test is available to help you find out if you have a **mutation**. It can help you and your healthcare provider learn more about your cancer risk. If the test finds a mutation, you have options to lower your risk for cancer.

Getting tested can also give important information to your family. It can help your family members understand *their* risk for cancer.

Who should consider testing?

Talk with your healthcare provider about testing if any of the statements below are true about you or someone in your family:

- Have had cancer diagnosed under age 50
- Have had two or more cancers diagnosed in the same person
- Have had two or more family members (on the same side of the family) diagnosed with cancer
- Have been diagnosed with a rare cancer
- Have a family member with a cancer **gene** mutation

Any one of these could be a reason to consider **genetic** testing for **hereditary cancer**.

Which test is right for me?

Talk to your healthcare provider to decide which test may be best for you. The right test depends on many factors. Tell your healthcare provider if anyone in your family has a gene mutation.

Tests available from Quest Diagnostics

For the complete test offering, go to QuestVantage.com or ask your healthcare provider.

Test name	Genes tested for
BRCAvantage® Comprehensive Tests for genes associated with BRCA-related breast and ovarian cancer syndrome	*BRCA1, BRCA2*
Lynch Syndrome Panel Tests for genes associated with Lynch syndrome	*EPCAM, MLH1, MSH2, MSH6, PMS2*
GIvantage™ Hereditary Colon Cancer Panel Tests for risk of hereditary colon and gastric cancers	*APC, BMPR1A, CDH1, EPCAM, MLH1, MSH2, MSH6, MUTYH (MYH), PMS2, PTEN, SMAD4, STK11, TP53*
MYvantage™ Hereditary Comprehensive Cancer Panel Tests for risk of hereditary breast, colorectal, uterine, melanoma, ovarian, pancreatic, prostate, stomach, and other cancers	*APC, ATM, BARD1, BMPR1A, BRCA1, BRCA2, BRIP1, CDH1, CDK4, CDKN2A (p14, p16), CHEK2, EPCAM, MEN1, MLH1, MSH2, MSH6, MUTYH (MYH), NBN (NBS1), NF1, PALB2 (FANCN), PMS2, POLD1, POLE, PTEN, RAD51C, RAD51D, RET, SDHB, SDHC, SDHD, SMAD4, STK11, TP53, VHL*
Single Site and Single Gene Testing	Select appropriate genes

What will the results tell me?

These tests can tell you if you have a mutation that causes a higher risk for one or more types of cancer. It is important to remember that not everyone with a mutation will develop cancer.

If testing finds a mutation, what does this mean for my family members?

We share some of our genes in common with our relatives. If someone in the family has a gene mutation, there is a chance other family members will have the same mutation and an increased risk for cancer. Most mutations in genes that cause hereditary cancer are dominant. This means if you inherit a mutation from either your father or your mother, then you have a higher risk for cancer. If you have a mutation, your brothers, your sisters, and your children each have a 50% chance of having the same mutation. Other relatives are also at risk. This is why it is important to share your test results with your family.

Relative	Their chances of having the same mutation
Identical twin	100%
Parent, sibling, child, fraternal twin	50%
Grandparent, uncle, aunt, niece, nephew	25%
First cousin	12.5%

Sometimes mutations in genes that cause hereditary cancer are recessive. This means that your cancer risk is higher if you inherit two mutations, one from each of your parents.

The genetic testing process

The first step is to talk with your healthcare provider or genetic counselor about your personal and/or family history of cancer. This will help you figure out if testing is right for you. If you and your provider decide to move forward with testing, your provider can order the test.

The next step is to have your blood drawn. When the test is finished, your healthcare provider will get your results and talk to you about them.

At what age should I consider getting tested?

Adults can be tested at any age. Most of the time genetic testing is not recommended for people under the age of 18. But there are some exceptions. For example, if there is a mutation in your family that can cause childhood cancer, it may be a good idea to be tested at a younger age.

How long will it take for my results to come back?

Your doctor will receive the results 14 to 21 days on average from receipt of the sample and complete documentation.

Does insurance cover the cost of genetic testing?

It depends on your insurance company. Your insurance may cover some or all of the cost. To find out if your test will be covered, ask your doctor's office for help. Healthcare providers can contact your insurance company directly or they can give you the details you need to contact your insurance company. Quest Diagnostics can also help; call Quest Genomics Client Services at **1.866.GENE.INFO** (1.866.436.3463). Ask to speak to our concierge team.

Could I lose my health insurance based on my test results?

Most likely not. There is a federal law called the Genetic Information Nondiscrimination Act (GINA). It protects most patients who have genetic testing. Because of this law, health insurance companies cannot use a genetic test result or family health history to:

- Cancel your health insurance
- Increase your insurance premium
- Refuse coverage

There are some exceptions. GINA does not offer protections for life insurance or long-term disability insurance. You can visit **http://ginahelp.org** for more information.

Questions about insurance?

Call Quest Genomics Client Services at **1.866.GENE.INFO** (1.866.436.3463). Ask for our concierge service.

Making sense of your test results

Your healthcare provider or genetic counselor will review your test results with you. There are three possible results:

- Negative

The test did not detect a mutation. If a mutation was already found in a relative and your test is negative, then your cancer risk is not higher than the average person's. If, however, the cause of the cancer in the family is not known and your test results are negative, then your risk for cancer may still be increased. In some cases, testing for other genes may then be recommended. Testing your family members may also be suggested.

+ Positive

The test did detect a mutation. This means that you have a higher risk for some types of cancer. You and your healthcare provider can use this information to discuss options to lower your risk.

VUS Variant of unknown clinical significance

It is not uncommon to find changes in genes with uncertain effect and clinical consequence. We call these "**variants** of unknown clinical significance (VUS)." Over time, we may learn more. Check with your healthcare provider each year for updates about VUS.

Would a negative result mean I'm not at a higher risk for cancer?

It depends. If there is a known mutation in your family and your test results are negative, then you are not at a higher risk for cancer. However, if the cause for the cancer in your family is not known and your test results are negative, then your risk for cancer may still be increased. There could be a mutation in a different gene that caused the cancer in your family. Scientists are always learning more about the causes of hereditary cancer, and new genes are discovered each year. Be sure to let your healthcare provider know about any changes in your personal or family history. You may wish to have additional genetic testing in the future.

Would a positive result mean I will develop cancer?

Not necessarily. A positive result means you have a mutation that puts you at higher risk for some types of cancer. The good news is that there are often options to help you lower your risk or prevent cancer altogether. You and your healthcare provider will create a plan that you're comfortable with to lower your risk.

Lowering your risk for cancer if you have a positive result

If your results are positive for a hereditary cancer mutation, then you likely have a higher risk for cancer.

What you can do to lower your risk for cancer

If you have a gene mutation, there are options to lower your risk of cancer, such as:

- Increased cancer screening
- Certain cancer screenings at a younger age
- Surgery
- Medication
- Lifestyle changes

You should consult with your treating physician to determine what options are best for you.

Important terms to know

DNA—the molecules that contain the biological instructions for making all the components of the cells in your body

Gene—a set of instructions, made of **DNA,** that tell your body how to develop and function

Genetic—having to do with a person's genes

Hereditary cancer—cancer caused by a genetic change or mutation passed down from one generation to the next

Inherited—passed down from one generation to the next

Mutation—a permanent change in DNA; may also be referred to as pathogenic/likely pathogenic variants

Variation or **variant**—a DNA sequence change; sometimes referred to as a mutation, especially if thought to have a harmful effect

Feel good about genetic testing.
The more you know, the more you can do to enjoy better health.

Quest Diagnostics™

Quest Diagnostics: **empowering better health** with diagnostic insights

Quest Diagnostics empowers people to take action to improve health outcomes. As one of the world's largest providers of clinical laboratory testing services, our diagnostic insights reveal new avenues to identify and treat disease, inspire healthy behaviors, and improve healthcare management. Quest annually serves one in three adult Americans and half the physicians and hospitals in the United States. We're here every day to support the health and well-being of you and your family.

QuestDiagnostics.com