# Truly Individual Health Care: Genetic Testing for Cancer

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We have "personalized" ads and product recommendations delivered "just for us," but what if that could be applied to health care? Advances in genetic technology are making this possible. Genetic tests have become more accurate, and scientists better understand the health associations with specific genes. This information is equipping doctors and patients to make better informed decisions. Genetic tests are increasingly being used to identify someone's risk of developing certain cancers like breast or colorectal. While genetic testing for cancer can be a powerful healthcare tool, there are some limitations to understand.

**Understanding Genetic Testing for Cancer**

Testing for specific gene changes is about as individual as health care can get. Genes are passed down from parents to their offspring and may determine specific traits. This can be hair color, eye color, height, inherited medical conditions or even risks for some cancers. Through exhaustive research, doctors have identified specific gene changes associated with certain cancers, known as hereditary cancer markers. These changes can indicate a type of inherited disorder in which there is a higher-than-normal risk of certain types of cancer called "hereditary cancer syndrome." Experts estimate that these markers contribute to 5 to 10% of all cancers.[1]

In hereditary cancer syndrome, certain patterns of cancer may be seen within families. This could be the same type of cancer in multiple immediate family members or cancer that develops earlier than expected. But just like how blue-eyed parents don't always have blue-eyed children, a parent with a hereditary cancer marker may not have passed it on to their children. This is where genetic testing can be most informative. The goal of genetic testing is to provide information to better measure cancer risk and choose the right medical approach, or in the case of a negative test, avoid unnecessary treatment. The results can be an important asset in making medical decisions.[2]

**Who should consider genetic testing for cancer?**

The most important factor in weighing the value of genetic testing is patterns of cancer in a family. According to the National Cancer Institute, genetic testing may be considered if there is a presence or combination of the following factors:[3]

- Cancer was diagnosed at an unusually young age
- Several different types of cancer occurred in the same person
- Cancer in both organs in a set of paired organs, such as both kidneys or both breasts

[1] National Cancer Institute, "Genetic Testing for Inherited Cancer Susceptibility Syndromes"
[2] National Cancer Institute, "Hereditary Cancer Syndrome"
[3] National Cancer Institute, "Genetic Testing for Inherited Cancer Susceptibility Syndromes"

- Several first-degree relatives (the parents, siblings, or children of an individual) have the same type of cancer (for example, a mother, daughter, and sisters with breast cancer); family members with breast or ovarian cancer; family members with colon cancer and endometrial cancer
- Unusual cases of a specific cancer type (for example, breast cancer in a man)
- The presence of birth defects that are known to be associated with inherited cancer syndromes
- Several family members with cancer

However, not all cancers have a genetic component, and since these markers and risks are potentially—not definitely—passed down, doctors recommend that a family member who has already been diagnosed with cancer get tested first if possible. This will identify if the marker is even present.

If the marker is present, then it could be helpful for other relatives and descendants to be tested. If it is not present, then it is unlikely to be shared with other relatives or inherited by children. Either way, a positive or negative result would provide helpful information about cancer risk for descendants.[4]

**Risks and Benefits of Genetic Testing for Cancer**

Genetic testing can be used to evaluate risk and inform treatment choices for the over 50 hereditary cancer syndromes that have been identified. For instance, breast and ovarian cancer risk is one of the most common genetic tests. Doctors have identified specific genes, commonly known as BRCA1 and BRCA2, that are strongly associated with increased breast and ovarian cancer risk.

Someone with a family history of breast cancer may consult with a genetic counselor and choose to undergo BRCA testing. They may choose a more proactive prevention plan if the test shows an increased risk. This could include earlier or more frequent screenings and mammograms, or more aggressive preventive treatment. Likewise, a negative test could provide some relief or avoid unnecessary tests. These decisions would be made in consultation with their doctor and genetic counselor.[5]

Since genetic tests for cancer are typically simple blood tests, there is little physical risk, but there can be an emotional impact. Waiting for and understanding results related to something as serious as cancer can be very stressful, and the tests are not always conclusive. Most important to remember is that these tests cannot provide a definitive answer whether someone will or won't develop cancer. It evaluates the risk of cancer based upon certain genetic changes. For example, a positive result doesn't always mean someone will develop cancer. On the other hand, a negative result doesn't guarantee that a certain disorder won't develop, just that there isn't a genetic component increasing risk.

Meeting with a doctor and genetic specialist is essential to understanding the results and evaluating options.

**Does Insurance Cover Genetic Testing for Cancer?**

Many health insurance plans cover the costs of genetic testing for cancer when recommended by a doctor. However, this testing isn't necessary for everyone, and for it to be covered by insurance, there are often several criteria that do need to be met to consider it medically necessary. Most of all, there needs to be a known family

[4] National Cancer Institute, "Genetic Testing for Inherited Cancer Susceptibility Syndromes"
[5] Mayo Clinic, "BRCA gene test for breast and ovarian cancer risk"

history of cancer including some of the factors previously discussed. Of course, anyone considering genetic testing should check with their insurance company or employee advocate for coverage and required pre-approvals. Specifically, the Affordable Care Act requires insurance plans to cover genetic counseling and BRCA testing for women without cost-sharing when recommended by a doctor.[6]

The potential of genetic testing for cancer is very exciting as long as its limitations are also understood. While genetic testing won't be appropriate for many people, it can provide valuable medical information for those who may be especially at risk. Before pursuing genetic testing, be sure to talk to your doctor to evaluate your risk factors, potential benefits and whether it would be helpful in making healthcare decisions.

[6] Centers for Medicare and Medicaid, "Affordable Care Act Implementation FAQs - Set 12"