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Genetic Testing for Cancer Risk [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board \[2\]](#), 05/2016

Genetic testing can help estimate your chance of developing cancer in your lifetime. It does this by searching for specific changes in your genes, chromosomes, or proteins. These changes are called mutations.

Genetic tests are available for breast, ovarian, colon, thyroid, and some other cancers. Genetic testing may help:

- Predict your risk of a particular disease
- Find if you have genes that may pass increased cancer risk to your children
- Manage increased cancer risk by having more regular cancer screening or taking steps to lower risk

No genetic test can say you will, certainly, develop cancer. However, a test can tell you if you have a higher risk of developing cancer than most people.

Only some people with a gene mutation will develop cancer. For example, a woman with a 75% chance of breast cancer may never develop the disease. Meanwhile, a woman with a 25% chance may develop breast cancer.

Risk factors for hereditary cancer

A hereditary cancer is any cancer caused by a gene mutation. The following factors suggest that a person may be at risk:

- **Family history of cancer.** Having 3 or more relatives on the same side of the family with the same or related forms of cancer
- **Cancer at an early age.** Having 2 or more relatives diagnosed with cancer at an early age, which may be different depending on the [type of cancer](#) [3]
- **Multiple cancers.** Having 2 or more types of cancer occurring in the same relative

Reasons to consider genetic testing for cancer

Genetic testing is a personal decision made for various reasons. And it's a complex decision best made in collaboration. Engage your family, doctor, and genetic counselor in the process.

ASCO recommends considering genetic testing in the following cases:

- You have a personal or family history that suggests a genetic cause of cancer
- The test can clearly show a specific genetic change
- Results help with diagnosis or management of the genetic condition or cancer(s). For example, you may choose steps to lower your risk. Steps may include surgery, [medication](#) [4], frequent screening, or lifestyle changes.

In addition, ASCO recommends genetic counseling before and after genetic testing. Learn more about ASCO's latest recommendations on [genetic testing for cancer susceptibility](#) [5].

Additional factors to consider

Genetic testing has limitations and emotional implications.

- **Depression, anxiety, or guilt.** A positive test result means a gene mutation exists. This result may bring difficult emotions. Some people may think of themselves as sick, even if they never develop cancer. Others may experience guilt if family members have a mutation but they don't.
- **Family tension.** A person may feel responsible for telling family members about test results. This information may complicate family dynamics. Learn more about [sharing](#)

[genetic test results with your family](#) [6].

- **A false sense of security.** A negative result means that a person doesn't have a specific genetic mutation. However, a person with a negative result may still develop cancer. A negative result only means the person's risk is average. Additionally, each person's risk is affected by lifestyle, environmental factors, and medical history.
- **Unclear results.** A gene may have a mutation not linked with cancer risk. This is called a variant of unknown significance. It means it's unclear whether the mutation will increase risk. Or, a person may have a mutation that current tests cannot detect. Many cancers are not yet tied to a specific gene. Moreover, some genes may interact unpredictably with other genes or environmental factors. And these interactions may cause cancer. Thus, it may be impossible to calculate the cancer risk.
- **High cost.** Genetic testing can be expensive. It's particularly expensive if insurance doesn't pay for it.
- **Discrimination and privacy concerns.** Some people fear genetic discrimination from test results. Others worry about the privacy of their genetic information. The Genetic Information Nondiscrimination Act (GINA) protects against [employment or health coverage discrimination](#) [7] based on genetic information. Discuss concerns about potential employment, health, or life insurance discrimination with a genetic counselor or doctor.

Questions to ask yourself about genetic testing

Before undergoing genetic testing, learn about its risks and limitations. Identify your reasons for wanting a test. And consider how you will cope with test results.

Here are some questions to help you make a decision:

- Do I have a family history of cancer?
- Have I developed cancer at an earlier-than-average age?
- How will I interpret the results of genetic testing? Who will help me use this information?
- Will the test results affect my medical care or the medical care of my family?

- If I have a genetic condition, can I lower my cancer risk?

A genetic counselor can help address these questions. This professional is trained to advise about genetic testing's risks and benefits. A genetic counselor also helps people through the genetic testing process. Learn more about [what to expect when meeting with a genetic counselor](#) [8].

More Information

[Understanding Cancer Risk](#) [9]

[The Genetics of Cancer](#) [10]

[Understanding Statistics Used to Estimate Risk and Recommend Screening](#) [11]

Additional Resource

National Human Genome Research Institute: [Issues in Genetics](#) [12]

Links

[1] <http://www.cancer.net/navigating-cancer-care/cancer-basics/genetics/genetic-testing-cancer-risk>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/cancer>

[4] <http://www.cancer.net/node/24973>

[5] <http://www.asco.org/asco-in-action/asco-releases-updated-policy-statement-genetic-and-genomic-testing-cancer>

[6] <http://www.cancer.net/node/24906>

[7] <http://www.cancer.net/node/25298>

[8] <http://www.cancer.net/node/24907>

[9] <http://www.cancer.net/node/25007>

[10] <http://www.cancer.net/node/24897>

[11] <http://www.cancer.net/node/24960>

[12] <https://www.genome.gov/10000006/>