

What You Should Know About Genetics and Colorectal Cancer

How is Genetics Related to Colorectal Cancer?

Genes are made up of DNA, the biochemical material that gives our cells directions on how to behave. We inherit our genes from our mother and father. Genes determine how your cells work and what you look like. Sometimes, they can increase your risk for certain diseases.

It is likely that all cancers, especially colorectal cancers, have genetic factors that could increase someone's risk of getting the disease. These genetic abnormalities, or mutations, are why certain types of cancer tend to occur more often in some families. Mutations can be inherited from either or both parents or can be acquired after birth. Environmental factors such as radiation, chemicals, and viruses may trigger these types of mutations.

It is very important that you give your doctors a detailed family medical history.

What are the Types of Colorectal Cancers?

When it comes to deciding whether genetics are a factor, there are 3 general categories of colorectal cancer.

Sporadic: The cancer seems to have occurred by chance. Most people in this group are over age 50 and do not have a family history of colon cancer. About 80% of all colorectal cancers are sporadic.

Familial: There are more cases of colorectal cancers in a family than chance alone would predict, but no specific genetic abnormality is found. It is not known why some families have a higher rate of colorectal cancer but theories suggest that members of these families might share:

- a lifestyle
- an environmental factor
- a certain combination of genes

Regardless of the cause, if someone has a first degree relative (parent, brother, sister, or child) that has colorectal cancer, risk of the disease doubles for all other family members. If you fall into this category, begin screening 10 years earlier than the age of your relative when he or she was first diagnosed, or at age 50, whichever occurs first. Familial cancers account for 10% -15% of colorectal cancers.

Hereditary

Families with inherited colorectal cancer often have:

- at least 2 generations of family members whose cancer was caused by an inherited genetic mutation
- cancers that occur at a younger age, usually before age 50
- a history of developing 2 or more types of cancer

Testing

Genetic testing can often help identify family members at higher risk. In most cases, it is best to test the relative with cancer first. If they carry a genetic mutation for colorectal cancer, then other relatives may be tested.

Currently, some of the syndromes caused by identified genetic mutations include

- Lynch syndrome (HNPCC or hereditary non-polyposis colon cancer)
- FAP (familial adenomatous polyposis)
- aFAP (attenuated familial adenomatous polyposis)
- MYH associated polyposis

Genetic mutations associated with an increased risk of colon cancer include abnormal changes in the FGFR4, UVRAG, MLH1, PMS2, MSH2, MSH6, or BRCA1 genes.

If genetic testing reveals any of these abnormalities, your family should talk to the genetic counselors at Roswell Park.

What Should I Tell My Doctor About My Family History?

To help your doctor create the best prevention or treatment plan for you, always tell your doctor if you:

- have family members diagnosed with colorectal cancer or polyps - and their age(s) when diagnosed
- have family members that have ovarian or uterine cancer, or that have ever had any type of cancer
- have other diseases that run in your family

Providing these details can help your doctors evaluate your risk and may help to identify a cancer syndrome within your family. Your doctor may recommend additional actions to help uncover a familiar cancer syndrome. For example, you may be asked to have:

- a colonoscopy
- genetic testing
- genetic counseling
- regularly scheduled exams