Colorectal Cancer Risk Factors

Researchers have found several risk factors that might increase a person's chance of developing colorectal polyps or colorectal cancer.

On this page [show]

What is a risk factor?

A risk factor is anything that raises your chances of getting a disease such as cancer.

Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person's age or family history of cancer, can't be changed.

But having a risk factor, or even many, does not mean that you will get the disease. And some people who get the disease may not have any known risk factors.

Risk factors you can change

Many lifestyle-related factors have been linked to colorectal cancer. In fact, more than half of all colorectal cancers are linked to risk factors that can be changed.

Being overweight or obese

If you are overweight or obese (very overweight), your risk of developing and dying from colorectal cancer is higher. Being overweight raises the risk of colorectal cancer in people, but the link seems to be stronger in men. Getting to and staying at a healthy weight may help lower your risk.

Diabetes mellitus, Type 2

People with type 2 diabetes mellitus are more likely than people who don't to develop colorectal cancer. Researchers suspect that this higher risk may be due to high levels of insulin in people with diabetes mellitus. Both type 2 diabetes and colorectal cancer share some of the same risk factors (such as being overweight and physical inactivity). But even after taking these factors into account, people with type 2 diabetes still have an increased risk. They also tend to have a less favorable prognosis (outlook) after diagnosis.

Certain types of diets

A long-term diet that's high in red meats (such as beef, pork, lamb, or liver) and processed meats (like hot dogs and some lunch meats) raises your colorectal cancer risk.

Cooking meats at very high temperatures (frying, broiling, or grilling) creates chemicals that might raise your cancer risk.

Having a low blood level of vitamin D may also increase your risk.

Following a healthy eating pattern that includes plenty of fruits, vegetables, and whole grains, and that limits or avoids red and processed meats and sugary drinks probably lowers risk.

Smoking

People who have smoked tobacco for a long time are more likely to develop and die from colorectal cancer than people who don't smoke. Smoking tobacco also increases the risk for people to develop colon polyps. Smoking is a well-known cause of lung cancer, but it's linked to a lot of other cancers, too. If you smoke and want to know more about quitting, see How to Quit Using Tobacco.

Alcohol use

Colorectal cancer has been linked to moderate to heavy alcohol use. Even light-to-moderate alcohol intake has been associated with some risk. It is best not to drink alcohol. If people do drink alcohol, they should have no more than 2 drinks a day for men and 1 drink a day for women. This could have many health benefits, including a lower risk of many kinds of cancer.

Colorectal cancer risk factors you cannot change

Your age

Your risk of colorectal cancer goes up as you age. Younger adults can get it, but it's much more common after age 50. Colorectal cancer is rising among people who are younger than age 50, and the reason for this remains unclear.

Your racial and ethnic background

American Indian and Alaska Native people have the highest rates of colorectal cancer in the United States, followed by African American men and women.

Jews of Eastern European descent (Ashkenazi Jews) have one of the highest colorectal cancer risks of any ethnic group in the world.

Your sex at birth

Men who have colorectal cancer are more likely to die from it than women. The reasons are not fully clear. Women who have colorectal cancer are more likely to have right-sided colon cancer, particularly if they are no longer menstruating (postmenopausal).

Cholecystectomy

People who have had their gallbladder removed (cholecystectomy) have been found to have a mildly higher risk for right-sided colon cancer. It's not fully understood why this is. Research is ongoing.

A personal history of colorectal polyps or colorectal cancer

If you have a history of adenomatous polyps (adenomas), you are at increased risk of developing colorectal cancer. This is especially true if the polyps are large, if there are many of them, or if any of them show dysplasia.

If you've had colorectal cancer, even though it was completely removed, you are more likely to develop new cancers in other parts of the colon and rectum. The chances of this happening are greater if you had your first colorectal cancer when you were younger.

A personal history of inflammatory bowel disease

If you have inflammatory bowel disease (IBD), including either ulcerative colitis or Crohn's disease, your risk of colorectal cancer is increased.

IBD is a condition in which the colon is inflamed over a long period of time. People who have had IBD for many years, especially if untreated, often develop **dysplasia**. Dysplasia is a term used to describe cells in the lining of the colon or rectum that look abnormal, but are not cancer cells. They can change into cancer over time.

If you have IBD, you may need to start getting screened for colorectal cancer when you are younger and be screened more often.

If you survived cancer in the past and as part of your treatment, received radiation to the area where your colon is (abdomen and pelvis area), your risk of colorectal cancer is increased. If you have received radiation to the abdomen or pelvis, especially as a child, you may need to start getting screened for colorectal cancer when you are younger and be screened more often.

Several studies suggest that men who had radiation therapy to treat prostate cancer might have a higher risk of rectal cancer because the rectum receives some radiation during treatment. Most of these studies are based on men treated in the 1980s and 1990s, when radiation treatments were less precise than they are today. The effect of more modern radiation methods on rectal cancer risk is not clear, but research continues to be done in this area.

A family history of colorectal cancer or adenomatous polyps

Most colorectal cancers are found in people without a family history of colorectal cancer. Still, as many as 1 in 3 people who develop colorectal cancer have other family members who have had it.

People with a history of colorectal cancer in a first-degree relative (parent, sibling, or child) are at increased risk. The risk is even higher if that relative was diagnosed with cancer when they were younger than age 50, or if more than one first-degree relative is affected.

The reasons for the increased risk are not clear in all cases. Cancers can “run in the family” because of inherited genes, shared environmental factors, or some combination of these.

Having family members who have had adenomatous polyps is also linked to a higher risk of colon cancer. (Adenomatous polyps are the kind of polyps that can become cancer.)

If you have a family history of adenomatous polyps or colorectal cancer, talk with your doctor about the possible need to start screening at a younger age. If you've had adenomatous polyps or colorectal cancer, it’s important to tell your close relatives so that they can pass along that information to their doctors and start screening at the right age.

Having an inherited syndrome

About 5% of people who develop colorectal cancer have inherited gene changes (mutations) that cause family cancer syndromes and can lead to them getting the disease.

The most common inherited syndromes linked with colorectal cancers are Lynch syndrome (hereditary non-polyposis colorectal cancer, or HNPCC) and familial adenomatous polyposis (FAP), but other rarer syndromes can increase colorectal cancer risk, too.

Lynch syndrome (hereditary non-polyposis colon cancer or HNPCC)

Lynch syndrome is the most common hereditary colorectal cancer syndrome. It accounts for about 2% to 4% of all colorectal cancers. In most cases, this disorder is caused by an inherited defect in either the *MLH1*, *MSH2,MSH6, PMS2, or EPCAM* gene, but changes in other genes can also cause Lynch syndrome. These genes, called DNA mismatch repair (MMR) genes, normally help repair DNA that has been damaged.

The cancers linked to this syndrome tend to develop when people are relatively young and tend to develop right-sided colon cancer. People with Lynch syndrome can have polyps, but they tend to have only a few. The lifetime risk of colorectal cancer in people with this condition may be as high as 50%, but this depends on which gene is affected.

Women with this condition also have a very high risk of developing cancer of the endometrium (lining of the uterus). Other cancers linked with Lynch syndrome include cancer of the ovary, stomach, small intestine, pancreas, kidney, prostate, breast, ureters (tubes that carry urine from the kidneys to the bladder), and bile duct. People with Turcot syndrome (a rare inherited condition) who have a defect in one of the Lynch syndrome genes are at a higher risk of colorectal cancer as well as a specific type of brain cancer called glioblastoma.

For more on Lynch syndrome, see What Causes Colorectal Cancer?, Can Colorectal Cancer Be Prevented?, and Family Cancer Syndromes.

Familial adenomatous polyposis (FAP)

FAP is caused by changes (mutations) in the *APC* gene that a person inherits from their parents. About 1% of all colorectal cancers are caused by FAP.

In the most common type of FAP, hundreds or thousands of polyps develop in a person’s colon and rectum, often starting at ages 10 to 12. Cancer usually develops in 1 or more of these polyps as early as age 20. By age 40, almost all people with FAP will have colon cancer if their colon hasn’t been removed to prevent it. People with FAP also have an increased risk for cancers of the stomach, small intestines, pancreas, liver, and some other organs.

There are 3 sub-types of FAP:

- In **attenuated FAP** or **AFAP**, patients have fewer polyps (less than 100), and colorectal cancer tends to occur at a later age (40s and 50s).
- **Gardner syndrome** is a type of FAP that also causes noncancerous tumors of the skin, soft tissue, and bones.
- In **Turcot syndrome**, people who have *APC* gene mutation are at a high risk of having many adenomatous polyps and colorectal cancer, but also a specific type of brain cancer called medulloblastoma.

Rare inherited conditions linked to colorectal cancer

- **Peutz-Jeghers syndrome (PJS):** People with this inherited condition tend to have freckles around the mouth (and sometimes on their hands and feet) and a special type of polyp called **hamartomas** in their digestive tract. These people are at a much higher risk for colorectal cancer, as well as other cancers, such as cancers of the breast, ovary, and pancreas. They usually are diagnosed at a younger than usual age. This syndrome is caused by mutations in the *STK11 (LKB1)* gene.
- **MUTYH-associated polyposis (MAP):** People with this syndrome develop many colon polyps. These tend to become cancer if not watched closely with routine colonoscopies. These people also have an increased risk of other cancers of the GI (gastrointestinal) tract, breast, ovary, bladder, and thyroid. This syndrome is caused by mutations in the *MUTYH* gene (which is involved in “proofreading” the DNA and fixing any mistakes) and often leads to cancer at a younger age.
- **Cystic fibrosis (CF):** CF is an inherited condition in which the cells in some body organs make mucus that is thicker and stickier than normal. This can lead to health problems, especially in the lungs and pancreas. As better medical care has helped people with CF live longer, it’s become clear that people with CF are also at increased risk for colorectal cancer, which usually occurs at a much earlier age than in people without the condition. The risk for colorectal cancer is even higher in people who have had an organ transplant, such as a lung transplant. CF is caused by mutations in the *CFTR* gene.

Since many of these syndromes are linked to colorectal cancer at a young age and other types of cancer, identifying families with these inherited syndromes is important. It lets doctors recommend specific steps such as screening and other preventive measures when the person is younger. Information on risk assessment, and genetic counseling and testing for many of these syndromes can be found in Genetic Testing, Screening, and Prevention for People with a Strong Family History of Colorectal Cancer.

Written by References

The American Cancer Society medical and editorial content team

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as editors and translators with extensive experience in medical writing.

American Cancer Society. *Cancer Facts & Figures 2023.* Atlanta, Ga: American Cancer Society; 2023.

American Cancer Society. *Colorectal Cancer Facts & Figures 2023-2025*. Atlanta, GA.

Ballester V, Rashtak S, Boardman L. Clinical and molecular features of young-onset colorectal cancer. *World J Gastroenterol*. 2016; 22(5):1736-1744.

Berger AH and Pandolfi PP. Ch 5 - Cancer Susceptibility Syndromes. In: DeVita VT, Hellman S, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott-Williams & Wilkins; 2019.

Chung DC. Clinical manifestations and diagnosis of familial adenomatous polyposis. Lamont JT and Grover S, eds. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com (Accessed on Jan 29, 2024.)

Dashti SG, Win AK, Hardikar SS, et al. Physical activity and the risk of colorectal cancer in Lynch syndrome. *Int J Cancer*. 2018;143(9):2250–2260. doi:10.1002/ijc.31611.

Grover S and Stoffel E. MUTYH-associated polyposis. Lamont JT and Robson KM, eds. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com (Accessed on Jan 29, 2024.)

Lawler M, Johnston B, Van Schaeybroeck S, Salto-Tellez M, Wilson R, Dunlop M, and Johnston PG. Chapter 74 – Colorectal Cancer. In: Niederhuber JE, Armitage JO, Dorshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa. Elsevier: 2020.

Libutti SK, Saltz LB, Willett CG, and Levine RA. Ch 62 - Cancer of the Colon. In: DeVita VT, Hellman S, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott-Williams & Wilkins; 2019.Macrae FA. Epidemiology and risk factors for colorectal cancer. Goldberg RM and Seres D, eds. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com (Accessed on Jan 29, 2024.)

National Cancer Institute. Physician Data Query (PDQ). Colorectal Cancer Prevention. 2023. Accessed at https://www.cancer.gov/types/colorectal/patient/colorectal-prevention-pdq on Jan 29, 2024.

National Cancer Institute. Genetics of Colorectal Cancer (PDQ®)–Health Professional Version. 2023. https://www.cancer.gov/types/colorectal/hp/colorectal-genetics-pdq#link/_2606. Accessed Jan 29, 2024.

Rock CL, Thomson C, Gansler T, et al. American Cancer Society guideline for diet and physical activity for cancer prevention. CA: A Cancer Journal for Clinicians. 2020;70(4). doi:10.3322/caac.21591. Accessed at https://onlinelibrary.wiley.com/doi/full/10.3322/caac.21591 on Jan 29, 2024.

Hall MJ and Neumann CC. Lynch syndrome (hereditary nonpolyposis colorectal cancer): Clinical manifestations and diagnosis. Lamont JT and Grover S, eds. UpToDate. Waltham, MA: UpToDate Inc. https://www.uptodate.com (Accessed on Jan 29, 2024.)

Zhu Z, Zhao S, Liu Y, et al. Risk of secondary rectal cancer and colon cancer after radiotherapy for prostate cancer: a meta-analysis. *Int J Colorectal Dis*. 2018;33(9):1149-1158. doi:10.1007/s00384-018-3114-7.

More in Colorectal Cancer

American Cancer Society