Colorectal Cancer

Whether you or a loved one are worried about getting colorectal cancer, have just been diagnosed, are going through colorectal cancer treatment, or are trying to stay well after treatment, this detailed information can help you find the answers you need.

About Colorectal Cancer

Colorectal cancer is a cancer that starts in the colon or the rectum. These cancers can also be named colon cancer or rectal cancer, depending on where they start. Colon cancer and rectal cancer are often grouped together because they have many features in common.

Cancer starts when cells in the body start to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see What Is Cancer?

How Does Colorectal Cancer Start?

Polyps in the colon or rectum

Most colorectal cancers start as a growth on the inner lining of the colon or rectum. These growths are called *polyps*.

Some types of polyps can change into cancer over time (usually many years), but not all polyps become cancer. The chance of a polyp changing into cancer depends on the type of polyp it is. The 2 main types of polyps are:

- **Adenomatous polyps (adenomas):** These polyps sometimes change into cancer. Because of this, adenomas are called a *pre-cancerous condition*.
- **Hyperplastic polyps and inflammatory polyps:** These polyps are more common, but in general they are not pre-cancerous.

Other factors that can make a polyp more likely to contain cancer or increase someone’s risk of developing colorectal cancer include:

- If a polyp larger than 1 cm is found

- If more than 2 polyps are found
- If *dysplasia* is seen in the polyp after it's removed. Dysplasia is another pre-cancerous condition. It means there's an area in a polyp or in the lining of the colon or rectum where the cells look abnormal, but they don't look like true cancer cells.

For more details on the types of polyps and conditions that can lead to colorectal cancer, see Understanding Your Pathology Report: Colon Polyps.

How colorectal cancer spreads

If cancer forms in a polyp, it can grow into the wall of the colon or rectum over time. The wall of the colon and rectum is made up of many layers. Colorectal cancer starts in the innermost layer (the mucosa) and can grow outward through some or all of the other layers.

When cancer cells are in the wall, they can then grow into blood vessels or lymph vessels (tiny channels that carry away waste and fluid). From there, they can travel to nearby lymph nodes or to distant parts of the body.

The stage (extent of spread) of a colorectal cancer depends on how deeply it grows into the wall and if it has spread outside the colon or rectum. For more on staging, see Colorectal Cancer Stages.

Where does colorectal cancer grow?

To understand colorectal cancer, it helps to understand the parts that make up the colon and rectum. The colon and rectum make up the large intestine (or large bowel), which is part of the digestive system, also called the *gastrointestinal (GI) system* (see illustration below).

Most of the large intestine is made up of the colon, a muscular tube about 5 feet long. The parts of the colon are named by which way the food is traveling through them.

- The first section is called the **ascending colon**. It starts with a pouch called the cecum, where undigested food is comes in from the small intestine. It extends upward on the right side of the abdomen (belly).
- The second section is called the **transverse colon**. It goes across the body from the right to the left side.

- The third section is called the **descending colon** because it descends (travels down) on the left side.
- The fourth section is called the **sigmoid colon** because of its “S” shape. The sigmoid colon joins the rectum, which connects to the anus.

The ascending and transverse sections together are called the **proximal colon**. The descending and sigmoid colon are called the **distal colon**.

What do the colon and rectum do?

The colon absorbs water and salt from the remaining food matter after it goes through the small intestine (small bowel). The waste matter that's left after going through the colon goes into the **rectum**, the final 6 inches of the digestive system. It's stored there until it passes out of the body through the **anus**. Ring-shaped sphincter (SFINK-ter) muscles around the anus keeps stool from coming out until they relax during a bowel movement.

Types of cancer in the colon and rectum

Adenocarcinomas make up about 96% of colorectal cancers. These cancers start in cells that make mucus to lubricate the inside of the colon and rectum. When doctors talk about colorectal cancer, they're almost always talking about this type. Some sub-types of adenocarcinoma, such as signet ring and mucinous, may have a worse prognosis (outlook).

Other, much less common types of tumors can start in the colon and rectum, too. These include:

- **Carcinoid tumors.** These start from special hormone-making cells in the intestine. They're covered in Gastrointestinal Carcinoid Tumors.
- **Gastrointestinal stromal tumors (GISTs)** start from special cells in the wall of the colon called the *interstitial cells of Cajal*. Some are not cancer (benign). These tumors can be found anywhere in the digestive tract, but are not common in the colon. They're discussed in Gastrointestinal Stromal Tumor (GIST).
- **Lymphomas** are cancers of immune system cells. They mostly start in lymph nodes, but they can also start in the colon, rectum, or other organs. Information on lymphomas of the digestive system can be found in Non-Hodgkin Lymphoma

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- **Sarcomas** can start in blood vessels, muscle layers, or other connective tissues in the wall of the colon and rectum. Sarcomas of the colon or rectum are rare. They're discussed in Soft Tissue Sarcoma.

Key Statistics for Colorectal Cancer

How common is colorectal cancer?

Excluding skin cancers, colorectal cancer is the third most common cancer diagnosed in both men and women in the United States. The American Cancer Society's estimates for the number of colorectal cancer cases in the United States for 2019 are:

- 101,420 new cases of colon cancer
- 44,180 new cases of rectal cancer

Lifetime risk of colorectal cancer

Overall, the lifetime risk of developing colorectal cancer is: about 1 in 22 (4.49%) for men and 1 in 24 (4.15%) for women. This risk is slightly lower in women than in men. A number of other factors (described in Colorectal Cancer Risk Factors) can also affect your risk for developing colorectal cancer.

Deaths from colorectal cancer

In the United States, colorectal cancer is the third leading cause of cancer-related deaths in men and in women, and the second most common cause of cancer deaths when men and women are combined. It's expected to cause about **51,020 deaths during 2019**.

The death rate (the number of deaths per 100,000 people per year) from colorectal cancer has been dropping in both men and women for several decades. There are a number of likely reasons for this. One is that colorectal polyps are now being found more often by screening and removed before they can develop into cancers or are being found earlier when the disease is easier to treat. In addition, treatment for colorectal cancer has improved over the last few decades. As a result, there are now more than 1 million survivors of colorectal cancer in the United States. Although the overall death rate has continued to drop, deaths from colorectal cancer among people younger than age 55 have increased by 1% per year from 2007 and 2016.

Statistics related to survival among people with colorectal cancer are discussed in Survival Rates for Colorectal Cancer, by Stage

Visit the American Cancer Society's Cancer Statistics Center for more key statistics.

Colorectal Cancer Risk Factors

A risk factor is anything that affects your chance 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, 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.

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

Colorectal cancer risk factors you can change

Many lifestyle-related factors have been linked to colorectal cancer. In fact, the links between diet, weight, and exercise and colorectal cancer risk are some of the strongest for any type of cancer.

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 (especially having a larger waistline) raises the risk of colon and rectal cancer in both men and women, but the link seems to be stronger in men.

Physical inactivity

If you're not physically active, you have a greater chance of developing colon cancer. Being more active can help lower your risk.

Certain types of diets

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

Cooking meats at very high temperatures (frying, broiling, or grilling) creates chemicals that might raise your cancer risk. It’s not clear how much this might increase your colorectal cancer risk.

It’s not clear if other dietary components (for example, certain types of fats) affect colorectal cancer risk.

Smoking

People who have smoked tobacco for a long time are more likely than non-smokers to develop and die from colorectal cancer. 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 our Guide to Quitting Smoking.

Heavy alcohol use

Colorectal cancer has been linked to moderate to heavy alcohol use. Limiting alcohol use to no more than 2 drinks a day for men and 1 drink a day for women could have many health benefits, including a lower risk of many kinds of cancer.

Colorectal cancer risk factors you cannot change

Being older

Your risk of colorectal cancer goes up as you age. Younger adults can get it, but it's much more common after age 50.

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 true 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.

Inflammatory bowel disease is different from irritable bowel syndrome (IBS), which does not increase your risk for colorectal cancer.

A family history of colorectal cancer or adenomatous polyps

Most colorectal cancers are found in people *without* a family history of colorectal cancer. Still, nearly 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 45, 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 before age 45. 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* or *MSH2* gene, but changes in other genes can also cause Lynch syndrome. These genes normally help repair DNA that has been damaged.

The cancers linked to this syndrome tend to develop when people are relatively young. People with Lynch syndrome can have polyps, but they tend to only have a few. The lifetime risk of colorectal cancer in people with this condition may be as high as 80%, 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, brain, ureters (tubes that carry urine from the kidneys to the bladder), and bile duct.

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 his or her 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 years. 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.
- **Gardner syndrome** is a type of FAP that also causes non-cancer tumors of the skin, soft tissue, and bones.
- **Turcot syndrome** is a very rare inherited condition in which people have a higher risk of many adenomatous polyps and colorectal cancer, as well as brain cancer. There are actually 2 types of Turcot syndrome:

Rare inherited syndromes 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 tracts. These people are at a much higher risk for colorectal cancer, as well as other cancers, and they usually are diagnosed at a younger than usual age. This syndrome is caused by mutations in the *STK11 (LKB1)* gene.
- **MYH-associated polyposis (MAP):** People with this syndrome develop many colon polyps. These will almost always become cancer if not watched closely with regular colonoscopies. These people also have an increased risk of other cancers of the GI (gastrointestinal) tract and thyroid. This syndrome is caused by mutations in the *MYH* gene (which is involved in “proofreading” the DNA and fixing any mistakes) and often leads to cancer at a younger age.

Since many of these syndromes are linked to colorectal cancer at a young age and also linked to 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 these syndromes can be found in Genetic Testing, Screening, and Prevention for People with a Strong Family History of Colorectal Cancer.

Your racial and ethnic background

African Americans have the highest colorectal cancer incidence and mortality rates of all racial groups in the US. The reasons for this are not fully understood.

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

Having type 2 diabetes

People with type 2 (usually non-insulin dependent) diabetes have an increased risk of colorectal cancer. 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.

Factors with unclear effects on colorectal cancer risk

Night shift work

Some studies suggest working a night shift regularly may increase the risk of colorectal cancer. It's thought this might be due to changes in levels of melatonin, a hormone that responds to changes in light. More research is needed.

Previous treatment for certain cancers

Some studies have found that men who survive testicular cancer seem to have a higher rate of colorectal cancer and some other cancers. This might be because of the treatments they have received such as radiation therapy.

Several studies have suggested 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.

Can Colorectal Cancer Be Prevented?

There's no sure way to prevent colorectal cancer. But there are things you can do that might help lower your risk, such as changing the risk factors that you can control.

Colorectal cancer screening

Screening is the process of looking for cancer or pre-cancer in people who have no symptoms of the disease. Regular colorectal cancer screening is one of the most

powerful weapons for preventing colorectal cancer.

From the time the first abnormal cells start to grow into polyps, it usually takes about 10 to 15 years for them to develop into colorectal cancer. With regular screening, most polyps can be found and removed before they have the chance to turn into cancer. Screening can also find colorectal cancer early, when it's small and easier to treat.

If you're age 45 or older, you should start getting screened for colorectal cancer. Several types of tests can be used. Talk to your health care provider about which ones might be good options for you. No matter which test you choose, the most important thing is to get tested.

If you have a strong family history of colorectal polyps or cancer, talk with your doctor about your risk. You might benefit from genetic counseling to review your family medical tree to see how likely it is that you have a family cancer syndrome.

Body weight, physical activity, and diet

You might be able to lower your risk of colorectal cancer by managing some of the risk factors that you can control, like diet and physical activity.

Weight: Being overweight or obese increases the risk of colorectal cancer in both men and women, but the link seems to be stronger in men. Having more belly fat (that is, a larger waistline) has also been linked to colorectal cancer. **Staying at a healthy weight and avoiding weight gain around the midsection may help lower your risk**.

Physical activity: Increasing your level of activity lowers your risk of colorectal cancer and polyps. Regular moderate activity (doing things that make you breathe as hard as you would during a brisk walk) lowers the risk, but vigorous activity might have an even greater benefit. **Increasing the intensity and amount of your physical activity may help reduce your risk.**

Diet: Overall, diets that are high in vegetables, fruits, and whole grains (and low in red and processed meats) have been linked with lower colorectal cancer risk, although it's not exactly clear which factors are important. Many studies have found a link between red meats (beef, pork, and lamb) or processed meats (such as hot dogs, sausage, and lunch meats) and increased colorectal cancer risk. **Limiting red**

and processed meats and eating more vegetables and fruits may help lower your risk.

In recent years, some large studies have suggested that fiber in the diet, especially from whole grains, may lower colorectal cancer risk. Research in this area is still under way.

Alcohol: Several studies have found a higher risk of colorectal cancer with increased alcohol intake, especially among men. **Avoiding excess alcohol may help reduce your risk.**

For more about diet and physical activity, see the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention.

Not smoking

Long-term smoking is linked to an increased risk of colorectal cancer, as well as many other cancers and health problems. **Quitting smoking may help lower you risk of colorectal cancer and many other types of cancer, too.** If you smoke and would like help quitting, call the American Cancer Society at 1-800-227-2345.

Vitamins, calcium, and magnesium

Some studies suggest that taking a daily multi-vitamin containing folic acid, or folate, may lower colorectal cancer risk, but not all studies have found this. In fact, some studies have hinted that folic acid might help existing tumors grow. More research is needed in this area.

Some studies have suggested that vitamin D, which you can get from sun exposure, in certain foods, or in a vitamin pill, might lower colorectal cancer risk. Because of concerns that excess sun exposure can cause skin cancer, most experts do not recommend this as a way to lower colorectal cancer risk at this time. More studies are needed to determine if vitamin D can help prevent colorectal cancer.

Low levels of dietary calcium have been linked with an increased risk of colorectal cancer in some studies. Other studies suggest that increasing calcium intake may lower colorectal cancer risk. Calcium is important for a number of health reasons aside from possible effects on cancer risk. But because of the possible increased risk of prostate cancer in men with high calcium intake, the American Cancer Society does not recommend increasing calcium intake specifically to try to lower colorectal

cancer risk.

Calcium and vitamin D might work together to reduce colorectal cancer risk, as vitamin D aids in the body’s absorption of calcium. Still, not all studies have found that supplements of these nutrients reduce risk.

A few studies have found a possible link between a diet that's high in magnesium and reduced colorectal cancer risk, especially among women. More research is needed to determine if this link exists.

Non-steroidal anti-inflammatory drugs (NSAIDs)

Many studies have found that people who regularly take aspirin or other non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin, Advil) and naproxen (Aleve), have a lower risk of colorectal cancer and polyps.

But aspirin and other NSAIDs can cause serious or even life-threatening side effects, such as bleeding from stomach irritation or stomach ulcers, which may outweigh the benefits of these medicines for the general public. For this reason, most experts don’t recommend taking NSAIDs just to lower colorectal cancer risk if you are someone at average risk.

Still, for some people in their 50s who have a high risk of heart disease, where low-dose aspirin is found to be beneficial, the aspirin may also have the added benefit of reducing the risk of colorectal cancer.

Because aspirin or other NSAIDs can have serious side effects, check with your doctor before starting any of them on a regular basis.

Hormone replacement therapy for women

Taking estrogen and progesterone after menopause (sometimes called *menopausal hormone therapy* or *combined hormone replacement therapy*) may reduce a woman’s risk of developing colorectal cancer, but cancers found in women taking these hormones after menopause may be at a more advanced stage.

Because taking estrogen and progesterone after menopause can also increase a woman’s risk of heart disease, blood clots, and cancers of the breast and lung, it's not commonly recommended just to lower colorectal cancer risk.

If you're considering using menopausal hormone therapy, be sure to discuss the pros and cons with your doctor.

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