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# About Colorectal Cancer

## Overview and Types

If you've been diagnosed with colorectal cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Is Colorectal Cancer?](#)

## Research and Statistics

See the latest estimates for new cases of colorectal cancer and deaths in the US and what research is currently being done.

- [Key Statistics for Colorectal Cancer](#)
  - [What's New in Colorectal Cancer Research?](#)
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# What Is 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?](#)<sup>1</sup>

## 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](#)<sup>2</sup>.

### 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](#)<sup>3</sup>.

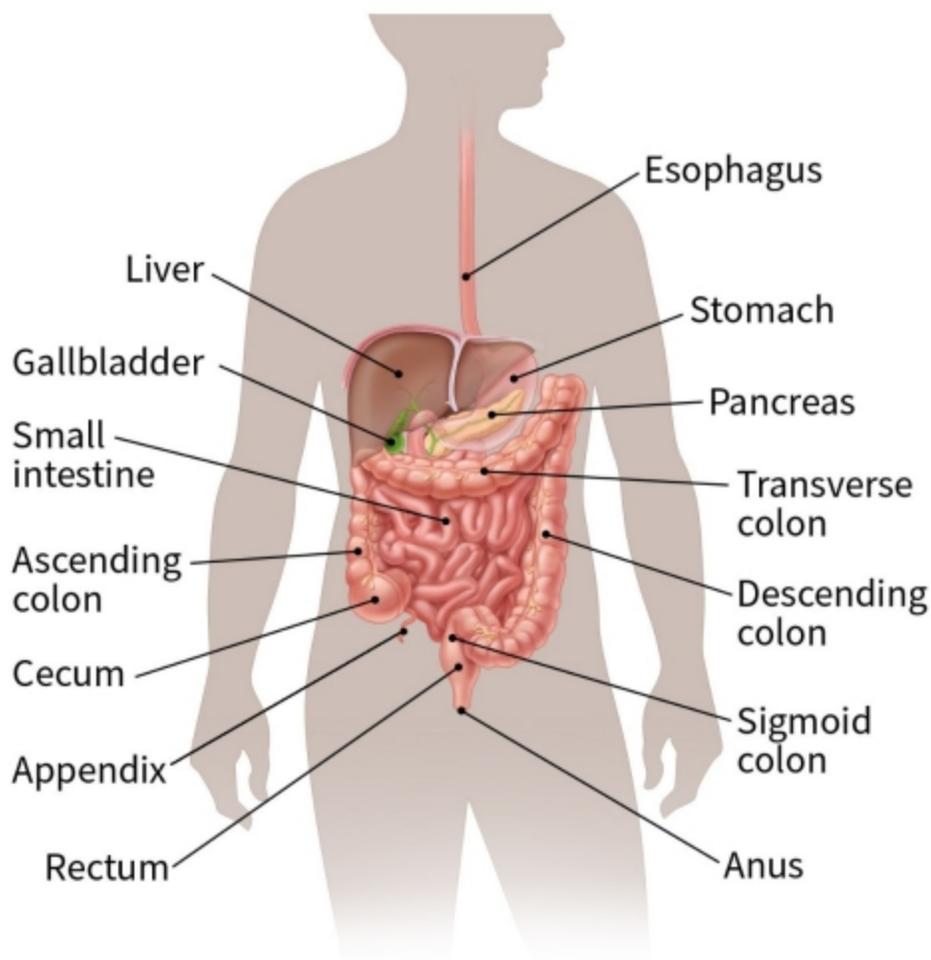
## Where does colorectal cancer grow?

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 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](#)<sup>4</sup>.
- **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 \(GIST\)](#)<sup>5</sup>.
- **Lymphomas** are cancers of immune system cells. They mostly start in [lymph nodes](#)<sup>6</sup>, 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](#)<sup>7</sup>.
- **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](#)<sup>8</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/cancer-basics/what-is-cancer.html](http://www.cancer.org/cancer/cancer-basics/what-is-cancer.html)
2. [www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-pathology-report/colon-pathology/colon-polyps-sessile-or-traditional-serrated-adenomas.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-pathology-report/colon-pathology/colon-polyps-sessile-or-traditional-serrated-adenomas.html)
3. [www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/staged.html](http://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/staged.html)
4. [www.cancer.org/cancer/gastrointestinal-carcinoid-tumor.html](http://www.cancer.org/cancer/gastrointestinal-carcinoid-tumor.html)
5. [www.cancer.org/cancer/gastrointestinal-stromal-tumor.html](http://www.cancer.org/cancer/gastrointestinal-stromal-tumor.html)
6. [www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html](http://www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html)
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8. [www.cancer.org/cancer/soft-tissue-sarcoma.html](http://www.cancer.org/cancer/soft-tissue-sarcoma.html)

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## 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](#)<sup>1</sup>) 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](#)<sup>2</sup> 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 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](#)<sup>3</sup>

Visit the [American Cancer Society's Cancer Statistics Center](#)<sup>4</sup> for more key statistics.

## Hyperlinks

1. [www.cancer.org/cancer/colon-rectal-cancer/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/colon-rectal-cancer/causes-risks-prevention/risk-factors.html)
2. [www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/screening-tests-used.html](http://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/screening-tests-used.html)
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4. <https://cancerstatisticscenter.cancer.org/>

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Lifetime Risk (Percent) of Being Diagnosed with Cancer by Site and Race/Ethnicity:

Males, 18 SEER Areas, 2011-2013 (Table 1.16)

[http://seer.cancer.gov/csr/1975\\_2013/browse\\_csr.php?sectionSEL=1&pageSEL=sect\\_01\\_table.16.html](http://seer.cancer.gov/csr/1975_2013/browse_csr.php?sectionSEL=1&pageSEL=sect_01_table.16.html)

Females, 18 SEER Areas, 2011-2013 (Table 1.17)

[http://seer.cancer.gov/csr/1975\\_2013/browse\\_csr.php?sectionSEL=1&pageSEL=sect\\_01\\_table.17.html](http://seer.cancer.gov/csr/1975_2013/browse_csr.php?sectionSEL=1&pageSEL=sect_01_table.17.html). Accessed on April 5, 2017.

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## What's New in Colorectal Cancer Research?

Research is always going on in the area of [colorectal cancer](#). Scientists are looking for causes and ways to prevent colorectal cancer, better ways to find it early (when it's small and easier to treat), and ways to improve treatments. Here are some examples of

current research. Treatment in a [clinical trial](#)<sup>1</sup> is often the only way to get these treatments.

## Reducing colorectal cancer risk

Many studies are looking to identify the [causes of colorectal cancer](#)<sup>2</sup>. The hope is that this might lead to new ways to help prevent it.

Other studies are looking to see if certain types of diets, dietary supplements, or medicines can lower a person's risk of colorectal cancer. For example, many studies have shown that aspirin and pain relievers like it might help lower the risk of colorectal cancer, but these drugs can have serious side effects. Researchers are now trying to figure out if the benefits might outweigh the risks for certain groups of people thought to be at high colorectal cancer risk.

## Early detection

Doctors are looking for better ways to find [colorectal cancer early](#)<sup>3</sup> by studying new types of screening tests (like blood tests) and improving the ones already being used. Researchers are also trying to figure out if there's any test or screening plan that clearly works best.

They're also looking for ways to educate and encourage people to get the routine [screening tests](#)<sup>4</sup> that are available today and known to help reduce the number of deaths from this cancer.

## Diagnosis

Researchers are trying to define colorectal cancer sub-types. This means grouping colorectal cancers based on things like the genetic mutations in the cancer cells, how the cells look and behave, how fast the cells are dividing, and features of the tumor itself. As has been found with other cancer types, this might lead to better understanding of disease progression and outcomes, as well as more clearly defined treatment plans (precision medicine).

## Lab tests to help plan treatment

Lab tests have been developed to help predict which patients have a higher risk of colorectal cancer recurrence (the cancer coming back after treatment). These tests

look at different genes inside the person's colorectal cancer cells. These tests are being studied to see if they might help decide which treatment plan is best for each person. They might also be helpful in deciding if more treatment is needed after surgery.

As doctors continue to learn more about the genetic changes in colorectal cancer cells, they're also looking for better ways to predict outcomes and adjust treatment plans for each patient. Early studies have already shown that certain cancer cell changes can affect the response to certain chemo drugs, but more research is needed. Identifying changes that are only found in the cancer cells could also lead to better screening tests that look for these specific changes.

## Treatment

Researchers are always looking for better ways to treat colorectal cancer.

### Surgery

Surgeons continue to improve the [operations used for colorectal cancers](#)<sup>5</sup>. Research looking at the benefits of [laparoscopic and robotic](#)<sup>6</sup> surgeries compared to open surgeries (where bigger cuts are made in the skin) is common. Rectal cancer [surgery done through the anus](#)<sup>7</sup>, without cutting the skin, is also being studied.

Organ preservation -- keeping your body working the way it normally does -- is another research goal. For instance:

- Doctors are looking at the ideal timing of surgery after chemo is used to shrink a rectal tumor and how to know when they've got the best response in each patient.
- Studies are also looking for better ways to reattach the ends of the colon after the length with the tumor has been removed.
- Surgery that saves the anal sphincter muscle that controls the passing of stool is a rectal cancer research interest.

Sometimes when colorectal cancer recurs (comes back), it spreads to the peritoneum (the thin lining of the abdominal cavity and organs inside the abdomen). These cancers are often hard to treat. Surgeons have been studying a procedure called **hyperthermic intraperitoneal chemotherapy (HIPEC)**. First, surgery is done to remove as much of the cancer in the belly as possible. Then, while still in the operating room, the abdominal cavity is bathed in heated chemotherapy drugs. This puts the chemo right into contact with the cancer cells, and the heat is thought to help the drugs work better. Some patients are living longer with this type of treatment, but more studies are needed to

know which patients it can help. Doctors and nurses with special training and specialized equipment are needed, so it's not widely available.

## Chemotherapy

[Chemotherapy](#)<sup>8</sup> is an important part of treatment for many people with colorectal cancer, and doctors are constantly trying to make it more effective and safer. Different approaches are being tested in clinical trials, including:

- Testing new chemo drugs or drugs that are already used against other cancers.
- Looking for new ways to combine drugs already known to work against colorectal cancer to see if they work better together.
- Studying the best ways to combine chemotherapy with radiation therapy, targeted therapies, and/or immunotherapy.

Better ways to identify, prevent, and treat chemo [side effects](#)<sup>9</sup> are other areas of research interest.

## Targeted therapy

[Targeted therapy](#)<sup>10</sup> drugs work differently from standard chemotherapy drugs. They affect specific parts of cancer cells that make them different from normal cells. Several [targeted therapy drugs](#)<sup>11</sup> are already used to treat advanced colorectal cancer. Researchers are studying the best way to give these drugs and looking for new targeted therapy drugs. Studies are also looking at colorectal cancer cells to try to find specific gene changes (mutations) that might be targeted as part of treatment.

Studies are being done to see if using targeted therapy along with chemotherapy in earlier-stage cancers can help reduce the risk of recurrence.

## Immunotherapy

An exciting area of research is the field of [immunotherapy](#)<sup>12</sup>. This is treatment that uses the body's own immune system to fight cancer.

**Immune checkpoint inhibitors:** An important part of the immune system is its ability to tell between normal cells in the body and those it sees as “foreign.” This lets the immune system attack the foreign cells while leaving the normal cells alone. To do this, it uses “checkpoint” proteins on certain immune cells. These proteins act like switches, needing to be turned on (or off) to start an immune response. Cancer cells sometimes

use these checkpoints to keep from being attacked by the immune system.

Newer drugs that target checkpoint proteins hold a lot of promise as cancer treatments. Colorectal cancer cells that have specific gene changes, such as high levels of microsatellite instability (MSI-H), or changes in one of the mismatch repair (MMR) genes, tend to have a lot of other changes that make them different from normal colorectal cells. This might make them more visible to the immune system. Studies are looking at whether cancers with these changes are being helped by treatment with new drugs that focus on these cell changes.

**Cancer vaccines:** Researchers are studying several vaccines to try to treat colorectal cancer or keep it from coming back after treatment. Unlike vaccines that prevent infectious diseases, these vaccines are meant to boost the person's immune system to better find and fight colorectal cancer cells.

Many types of vaccines are being studied. For example, some vaccines are created by removing some of the person's own immune system cells (called *dendritic cells*) from the tumor, treating them with a substance that will help them find and attack cancer cells, and then putting them back into the person's body.

## Hyperlinks

1. [www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html](http://www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html)
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9. [www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html)
10. [www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html](http://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/targeted-therapy.html)
11. [www.cancer.org/cancer/colon-rectal-cancer/treating/targeted-therapy.html](http://www.cancer.org/cancer/colon-rectal-cancer/treating/targeted-therapy.html)
12. [www.cancer.org/cancer/colon-rectal-cancer/treating/immunotherapy.html](http://www.cancer.org/cancer/colon-rectal-cancer/treating/immunotherapy.html)

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