# Treating Colorectal Cancer

If you've been diagnosed with colorectal cancer, your cancer care team will discuss your treatment options with you. It's important that you think carefully about each of your choices. Weigh the benefits of each treatment option against the possible risks and side effects.

**Local treatments**

Local treatments treat the tumor without affecting the rest of the body. These treatments are more likely to be useful for earlier stage cancers (smaller cancers that haven't spread), but they might also be used in some other situations. Types of local treatments used for colorectal cancer include:

- Surgery for Colon Cancer
- Surgery for Rectal Cancer
- Ablation and Embolization for Colorectal Cancer
- Radiation Therapy for Colorectal Cancer

**Systemic treatments**

Colorectal cancer can also be treated using drugs, which can be given by mouth or directly into the bloodstream. These are called *systemic treatments* because they can reach cancer cells throughout almost all the body. Depending on the type of colorectal cancer, different types of drugs might be used, such as:

- Chemotherapy for Colorectal Cancer
- Targeted Therapy Drugs for Colorectal Cancer
- Immunotherapy for Colorectal Cancer

### Common treatment approaches

Depending on the stage of the cancer and other factors, different types of treatment may be combined at the same time or used after one another.

- Treatment of Colon Cancer, by Stage
- Treatment of Rectal Cancer, by Stage

### Who treats colorectal cancer?

Based on your treatment options, you might have different types of doctors on your treatment team. These doctors could include:

- A **gastroenterologist:** a doctor who treats disorders of the gastrointestinal (GI or digestive) tract
- A **surgical oncologist** (oncologic surgeon): a doctor who uses surgery to treat cancer
- A **colorectal surgeon:** a doctor who uses surgery to treat diseases of the colon and rectum
- A **radiation oncologist:** a doctor who treats cancer with radiation therapy
- A **medical oncologist:** a doctor who treats cancer with medicines such as chemotherapy or targeted therapy

You might have many other specialists on your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, psychologists, nutritionists, social workers, and other health professionals.

- Health Professionals Who Are Part of a Cancer Care Team

### Making treatment decisions

It’s important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. It’s also very important to ask questions if there's anything you’re not sure about.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

- Questions to Ask About Colorectal Cancer
- Seeking a Second Opinion

### Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- Clinical Trials

### Considering complementary and alternative methods

You may hear about alternative or complementary methods to relieve symptoms or treat your cancer that your doctors haven't mentioned. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

**Complementary** methods are treatments that are used **along with** your regular medical care. **Alternative** treatments are used **instead of** standard medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- Complementary and Integrative Medicine

### Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and they can be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services - including rides to treatment, lodging, and more - to help you get through treatment. Call our Cancer Knowledge Hub at 1-800-227-2345 and speak with one of our caring, trained cancer helpline specialists. Or, if you prefer, you can use our chat feature on cancer.org to connect with one of our specialists.

- Palliative Care
- Programs & Services

**Choosing to stop treatment or choosing no treatment at all**

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it’s important to talk to your doctors as you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- If Cancer Treatments Stop Working

*The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask your cancer care team any questions you may have about your treatment options.*

# Surgery for Colon Cancer

Surgery is often the main treatment for early-stage colon cancers. The type of surgery used depends on the stage[1] (extent) of the cancer, where it is in the colon, and the goal of the surgery.



Any type of colon surgery needs to be done on a clean and empty colon. You will be put on a special diet before surgery and may need to use laxative drinks and/or enemas to get all of the stool out of your colon. This bowel prep is a lot like the one used before a colonoscopy[2].

## Polypectomy and local excision

Some early colon cancers (stage 0 and some early-stage I tumors) and most polyps can be removed during a colonoscopy. This is a procedure that uses a long, flexible tube with a small video camera on the end that's put into the person's rectum and eased into the colon. These surgeries can be done during a colonoscopy:

- For a **polypectomy**, the cancer is removed as part of the polyp, which is cut at its base (the part that looks like the stem of a mushroom). This is usually done by passing a wire loop through the colonoscope to cut the polyp off the wall of the colon with an electric current.
- A **local excision** is a slightly more involved procedure. Tools are used through the colonoscope to remove small cancers on the inside lining of the colon, along with a small amount of surrounding healthy tissue on the wall of colon.

When cancer or polyps are taken out this way, the doctor doesn't have to cut into the abdomen (belly) from the outside. The goal of either of these procedures is to remove

the tumor in one piece. If some cancer is left behind or if, based on lab tests, the tumor is thought to have a chance to spread, a type of colectomy (see below) might be the next surgery.

## Colectomy

A colectomy is surgery to remove all or part of the colon. Nearby lymph nodes[3] are also removed.

- If only part of the colon is removed, it's called a **hemicolectomy**, **partial colectomy**, or **segmental resection**. The surgeon takes out the part of the colon with the cancer and a small segment of normal colon on either side. Usually, about one-fourth to one-third of the colon is removed, depending on the size and location of the cancer. The remaining sections of colon are then reattached. At least 12 nearby lymph nodes are also removed so they can be checked for cancer.
- If all of the colon is removed, it's called a **total colectomy**. Total colectomy isn't often needed to remove colon cancer. It's mostly used only if there's another problem in the part of the colon without cancer, such as hundreds of polyps (in someone with familial adenomatous polyposis[4]) or, sometimes, inflammatory bowel disease.

### How colectomy is done

A colectomy can be done in 2 ways:

- **Open colectomy:** The surgery is done through a single long incision (cut) in the abdomen (belly).
- **Laparoscopic-assisted colectomy:** The surgery is done through many smaller incisions and special tools. A laparoscope is a long, thin lighted tube with a small camera and light on the end that lets the surgeon see inside the abdomen. It's put into one of the small cuts, and long, thin instruments are put in through the others to remove part of the colon and lymph nodes.

Because the incisions are smaller in a laparoscopic-assisted colectomy than in an open colectomy, patients often recover faster and may be able to leave the hospital sooner than they would after an open colectomy. This type of surgery requires special expertise. If you're considering this type of surgery, be sure to look for a skilled surgeon who has done many of these operations.

Overall survival rates and the chance of the cancer returning are much the same between an open colectomy and a laparoscopic-assisted colectomy.

### If the colon is blocked

When cancer blocks the colon, it usually happens slowly, and the person can become very sick over time. In cases like these, if the person is strong enough to tolerate surgery and the colon cancer is felt to be curable, it is generally recommended that they undergo surgery to remove the tumor and treat the blockage. If the person is not strong enough to undergo colon surgery or their colon cancer is not curable, a stent may be placed to treat the blockage. A **stent** is a hollow, expandable metal tube that the doctor can put inside the colon and through the small opening using a colonoscope. This tube keeps the colon open and relieves the blockage.

If a stent can't be placed in a blocked colon or if the tumor has caused a hole in the colon, surgery may be needed right away. This usually is the same type of colectomy that's done to remove the cancer, but instead of reconnecting the ends of the colon, the top end of the colon is attached to an opening (called a stoma) made in the skin of the abdomen. Stool then comes out of this opening. This is called a **colostomy** and is usually only needed for a short time. Sometimes the end of the small intestine (the ileum) instead of the colon is connected to a stoma in the skin. This is called an **ileostomy**. Either way, a bag sticks to the skin around the stoma to hold the stool.

Once the patient is healthier, another operation (known as a **colostomy reversal**or**ileostomy reversal**) can be done to put the ends of the colon back together or to attach the ileum to the colon. It might take anywhere from 2 to 6 months after the ostomy was first made for this reversal surgery to be done due to healing times or even the need to treat with chemotherapy. Sometimes, if a tumor can't be removed or a stent placed, the colostomy or ileostomy may need to be permanent.

## Colostomy or ileostomy

Some people may need a temporary or permanent colostomy (or ileostomy) after surgery. This can take some time to get used to and might require some lifestyle adjustments. If you have a colostomy or ileostomy, you'll need help to learn how and where to order the proper supplies and how to manage it. Specially trained ostomy nurses or enterostomal therapists can help. They'll usually see you in the hospital before your operation to discuss the ostomy and to mark a site for the opening. After the operation, they may come to your home or meet with you in an outpatient setting to give you more training. There may also be ostomy support groups you can be part of. This is a good way to learn from people with experience in managing this part of the treatment.

For more information, see Colostomy Guide[5] and Ileostomy Guide[6].

## Surgery for colon cancer spread

If the cancer has spread to only one or a few spots (nodules) in the lungs or liver (and apparently nowhere else), surgery may be used to remove it. In most cases, this is only done if the cancer in the colon is also being removed (or was already removed). Depending on the extent of the cancer, this might help the patient live longer, or it could even cure the cancer. Deciding if surgery is an option to remove areas of cancer spread depends on their size, number, and location.

## Possible side effects of colon surgery

Possible risks and side effects of surgery depend on several factors, including the extent of the operation and your general health before surgery. Problems during or shortly after the operation can include bleeding, infection, and blood clots in the legs.

When you wake up after surgery, you will have some pain and will need pain medicines for a few days. For the first couple of days, you may not be able to eat, or you may be allowed limited liquids, as the colon needs some time to recover. Most people are able to eat solid food in a few days.

Sometimes after colon surgery, the bowel takes longer than normal to “wake up” and start working again. This is called an *ileus*. It might be caused by the anesthesia or the actual handling of the bowel during the operation. Sometimes, too much pain medicine after the surgery can slow down the bowel function. If you develop an ileus, your doctor may want to delay eating solid food or even liquids, especially if you are having nausea and/or vomiting. More tests might also be done to make sure that the situation is not more serious.

Rarely, the new connections between the ends of the colon may not hold together and may leak. This can quickly cause severe pain, fever, and the belly to feel very hard. A smaller leak may cause you to not pass stool, have no desire to eat, and not do well or recover after surgery. A leak can lead to infection, and more surgery may be needed to fix it. It’s also possible that the incision (cut) in the abdomen (belly) might open up, becoming an open wound that may need special care as it heals.

After the surgery, you might develop scar tissue in your abdomen that can cause organs or tissues to stick together. These are called **adhesions.** Normally, your intestines freely slide around inside your belly. In rare cases, adhesions can cause the bowels to twist up and can even block the bowel. This causes pain and swelling in the belly that’s

often worse after eating. Further surgery may be needed to remove the scar tissue.

### More information about Surgery

For more general information about surgery as a treatment for cancer, see Cancer Surgery[7].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[8].

## Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
2. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/colonoscopy.html
3. www.cancer.org/cancer/diagnosis-staging/lymph-nodes-and-cancer.html
4. www.cancer.org/cancer/types/colon-rectal-cancer/causes-risks-prevention/risk-factors.html
5. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
6. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/ileostomy.html
7. www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html
8. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Surgery for Rectal Cancer

Surgery is usually the main treatment for rectal cancer. Radiation and chemotherapy are often given before or after surgery. The type of surgery used depends on the stage[1] (extent) of the cancer, where it is, and the goal of the surgery.

- Determining surgery options
- Polypectomy and local excision
- Transanal excision (TAE)
- Transanal endoscopic microsurgery (TEM)
- Low anterior resection (LAR)
- Proctectomy with coloanal anastomosis
- Abdominoperineal resection (APR)
- Pelvic exenteration
- Diverting colostomy
- Surgery for rectal cancer spread
- Possible side effects of rectal surgery
- Colostomy or ileostomy
- Sexual function and fertility

- More information about Surgery

## Determining surgery options

Before doing surgery, the doctor will need to know how close the tumor is to the anus. This will help decide what type of surgery is done. It can also impact outcomes if the cancer has spread to the ring-like muscles around the anus (anal sphincter) that keep stool from coming out until they relax during a bowel movement.

## Polypectomy and local excision

Some early-stage rectal cancers and most polyps can be removed during a colonoscopy[2]. This is a procedure that uses a long, flexible tube with a small video camera on the end that's put into the person's anus and threaded into the rectum. These surgeries can be done during a colonoscopy:

- For a **polypectomy**, the cancer is removed as part of the polyp, which is cut at its base (the part that looks like the stem of a mushroom). This is usually done by passing a wire loop through the colonoscope to cut the polyp from the wall of the rectum with an electric current.
- A **local excision** is a slightly more involved procedure. Tools are used through the colonoscope to remove small cancers on the inside lining of the rectum, along with a small amount of surrounding healthy tissue on the wall of rectum.

When cancer or polyps are taken out this way, the doctor doesn't have to cut into the abdomen (belly) from the outside. The goal of these surgeries is to remove the cancer or polyp in one piece. If some cancer is left behind or if, based on lab tests, the tumor is thought to have a chance to spread, a more complex type of rectal surgery (see below) might be the next step.

## Transanal excision (TAE)

This surgery can be used to remove some early-stage I rectal cancers that are relatively small and not too far from the anus. As with polypectomy and local excision, TAE is done with instruments that are put into the rectum through the anus. The skin over the abdomen (belly) isn't cut. TAE is usually done with local anesthesia (numbing medicine); the patient is not asleep during the operation.

In this operation, the surgeon cuts through all layers of the rectal wall to take out the

cancer, as well as some surrounding normal rectal tissue. The hole in the rectal wall is then closed.

Lymph nodes[3] are not removed during this surgery, so radiation with or without chemotherapy might be recommended after surgery if the cancer has grown deep into the rectum, was not removed completely, or has signs of spread into the lymph system or blood vessels. Sometimes, instead of chemo and radiation, a more extensive surgery, such as low anterior resection (LAR) or abdominoperineal resection (APR) (discussed below), might be recommended and then followed with chemo and radiation.

## Transanal endoscopic microsurgery (TEM)

This operation can sometimes be used for early-stage I cancers that are higher in the rectum and can't be reached using the standard transanal resection (see above). A specially designed magnifying scope is put through the anus and into the rectum. This allows the surgeon to do a transanal resection with great precision and accuracy. This operation requires special equipment and surgeons with special training and experience.

## Low anterior resection (LAR)

For patients with a cT2-4 rectal cancer (see Colorectal Cancer Stages[4]) who has a normal functioning anorectal sphincter (the muscle that keeps the anus closed and prevents stool leakage), a low anterior resection (LAR) may be recommended, with the goal to preserve the sphincter function.

A low anterior resection is done with general anesthesia (where the patient is put into a deep sleep). The surgeon makes several small incisions (cuts) in the abdomen. The cancer and a margin (edge or rim) of normal tissue around the cancer is removed, along with nearby lymph nodes and other tissues around the rectum.

The colon is then reattached to the remaining rectum so that a permanent colostomy[5] is not needed. A colostomy is needed when, instead of reconnecting the colon and rectum, the top end of the colon is attached to an opening made in the skin of the abdomen. Stool then comes out this opening.

If radiation and chemotherapy have been given before surgery, it's common for a short-term ileostomy[6] to be made. (This is where the end of the ileum, the last part of the small intestine, is connected to a hole in the skin of the abdomen.) This gives the rectum time to heal before stool moves through it again. In most cases, the ileostomy can be reversed (the intestines reconnected) about 8 weeks later.

Most patients spend several days in the hospital after the LAR, depending on how the surgery was done and their overall health. It could take 3 to 6 weeks to recover at home.

## Proctectomy with coloanal anastomosis

Some stage I and most stage II and III rectal cancers in the middle and lower third of the rectum require removing the entire rectum (called a **proctectomy**). The rectum has to be removed so that a total mesorectal excision (TME) can be done to remove all of the lymph nodes near the rectum. The colon is then connected to the anus (called a **colo-anal anastomosis**) so that the patient will pass stool in the usual way.

Sometimes when a colo-anal anastomosis is done, a small pouch is made by doubling back a short piece of colon (called a **colonic J-pouch**) or by enlarging a segment of the colon (called **coloplasty**). This small reservoir or pouch of colon provides storage for stool, like the rectum did before surgery.

When special techniques are needed to avoid a permanent colostomy, the patient may need a short-term ileostomy (where the end of the ileum, the last part of the small intestine, is connected to a hole in the abdominal skin) for about 8 weeks while the bowel heals. A second operation is then done to reconnect the intestines and close the ileostomy opening.

General anesthesia (where the patient is put into a deep sleep) is used for this operation. Most patients spend several days in the hospital after surgery, depending on how it was done and their overall health. It could take 3 to 6 weeks to recover at home.

## Abdominoperineal resection (APR)

This operation is more involved than the LAR. For patients with a cT2-4 rectal cancer (see Colorectal Cancer Stages[7]) that is unable to be fully removed without affecting the sphincter, an APR may be recommended. It's often needed if the cancer is growing into the sphincter muscle (the muscle that keeps the anus closed and prevents stool leakage) or the nearby muscles that help control urine flow (called **levator muscles**).

Here, the surgeon makes a cut or incision (or several small incisions) in the skin of the abdomen, and another in the skin around the anus. This allows the surgeon to remove the rectum, the anus, and the tissues around it, including the sphincter muscle. Because the anus is removed, a permanent colostomy is needed (the end of the colon is connected to a hole in the skin over the abdomen) to allow stool to pass.

General anesthesia (where the patient is put into a deep sleep) is used for this operation. Most people spend several days in the hospital after an APR, depending on how the surgery is done and their overall health. Recovery time at home may be 3 to 6 weeks.

## Pelvic exenteration

For patients with T4 rectal cancer (where the rectal cancer is growing into nearby organs, see Colorectal Cancer Stages[8]) and no evidence of metastatic disease, a pelvic exenteration (or multivisceral resection) may be recommended. This is a major surgery and is not commonly done. The surgeon will remove the rectum as well as any nearby organs that the cancer has reached, such as the bladder, prostate (in men), or uterus (in women).

A colostomy is needed after pelvic exenteration. If the bladder is removed, a urostomy[9] is needed, too. (This is an opening in skin of the abdomen where urine leaves the body and is held in a pouch that sticks to the skin.) It can take many months to fully recover from this complicated surgery.

## Diverting colostomy

Some patients have rectal cancer that has spread and is also blocking the rectum. In this case, surgery may be done to relieve the blockage without removing the part of the rectum containing the cancer. Instead, the colon is cut above the cancer and attached to a stoma (an opening in the skin of the abdomen) to allow stool to come out. This is called a **diverting colostomy.** It can often help the patient recover enough to start other treatments (such as chemotherapy).

## Surgery for rectal cancer spread

If rectal cancer has spread and formed just one or a few tumors in the lungs or liver (and nowhere else), surgery might be used to remove it. In most cases, this is only done if the cancer in the rectum is also being removed (or was already removed). Depending on the extent of the cancer, this might help the patient live longer, or it could even cure the cancer. Deciding if surgery is an option to remove areas of cancer spread depends on their size, number, and location.

## Possible side effects of rectal surgery

Possible risks and side effects of surgery depend on several factors, including the extent of the operation and a person's general health before surgery. Problems during or shortly after the operation can include bleeding from the surgery, infections at the surgery site, and blood clots in the legs.

When you wake up after surgery, you will have some pain and will need pain medicines for a few days. For the first couple of days, you may not be able to eat, or you may be allowed limited liquids, as the rectum needs some time to recover. Most people are able to eat solid food again in a few days.

Rarely, the new connections between the ends of the colon may not hold together and may leak. This can quickly cause severe belly pain, fever, and the belly to feel very hard. A smaller leak may cause you to not pass stool, have no desire to eat, and not do well or recover after surgery. A leak can lead to infection, and more surgery may be needed to fix it. It's also possible that the incision (cut) in the abdomen (belly) might open up, becoming an open wound that may need special care as it heals.

After the surgery, you might develop scar tissue in your abdomen (belly) that can cause organs or tissues to stick together. These are called *adhesions*. Normally, your intestines freely slide around inside your belly. In rare cases, adhesions can cause the bowels to twist up and can even block the bowel. This causes pain and swelling in the belly that's often worse after eating. Further surgery may be needed to remove the scar tissue.

## Colostomy or ileostomy

Some people need a temporary or permanent colostomy (or ileostomy) after surgery. This may take some time to get used to and may require some lifestyle adjustments. If you have a colostomy or ileostomy, you will need to learn how and where to order the proper supplies and how to manage it. Specially trained ostomy nurses or enterostomal therapists can help you. They'll usually see you in the hospital before your operation to discuss the ostomy and to mark a site for the opening. After your surgery, they may come to your home or an outpatient setting to give you more training. There may also be ostomy support groups you can be part of. This is a good way to learn from others with firsthand experience in managing this part of the treatment.

For more information, see Colostomy Guide[10] and Ileostomy Guide[11].

## Sexual function and fertility

Rectal surgery has been linked to sexual problems and quality-of-life issues. Talk to

your doctor about how your body will look and work after surgery. Ask how surgery will impact your sex life. You and your partner should know what you can expect. For example:

- **If you are a man**, an abdominoperineal resection (APR) may stop your erections or your ability to reach an orgasm. In other cases, your pleasure at orgasm may become less intense. Normal aging may cause some of these changes, but they may be made worse by the surgery. An APR can also affect fertility. Talk with your doctor if you think you want to father a child in the future. There may still be ways to do this.
- **If you are a woman**, rectal surgery (except pelvic exenteration) usually doesn't cause any loss of sexual function. Abdominal adhesions (scar tissue) may sometimes cause pain or discomfort during sex. If your uterus is removed, you won't be able to get pregnant.

If you have a colostomy, it can have an impact on body image and sexual comfort level . While it may require some adjustments, it should not keep you from having an enjoyable sex life.

For more about sexuality and fertility, see Fertility and Sexual Side Effects[12].

### More information about Surgery

For more general information about  surgery as a treatment for cancer, see Cancer Surgery[13].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[14].

## Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
2. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/colonoscopy.html
3. www.cancer.org/cancer/diagnosis-staging/lymph-nodes-and-cancer.html
4. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-

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5. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
6. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/ileostomy.html
7. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
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10. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
11. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/ileostomy.html
12. www.cancer.org/cancer/managing-cancer/side-effects/fertility-and-sexual-side-effects.html
13. www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html
14. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Ablation and Embolization for Colorectal Cancer

Ablation and embolization are sometimes used to treat colorectal cancer that has spread to other parts of the body, such as the liver or lungs.



## When are ablation and embolization used?

When colon or rectal cancer has spread and there are a few small tumors in the liver or lungs, these metastases can sometimes be removed by surgery or destroyed by other techniques, such as ablation or embolization.

When all of the primary cancer in the colon or rectum can be removed with surgery, ablation or embolization might be used to destroy small tumors in other places in the body.

Ablation and embolization might also be good options for people whose metastatic

tumors come back after surgery, whose cancer can't be cured with surgery, or who can't have surgery for other reasons. This might help a person live longer. It can also help treat problems the cancer is causing, like pain.

In most cases, patients don't need to stay in the hospital for these treatments.

## Ablation

Ablation techniques are used to destroy small tumors (less than 4 cm across) instead of removing them with surgery. There are many different types of ablation techniques. They can be used to treat tumors in other places, too.

### Radiofrequency ablation (RFA)

Radiofrequency ablation is one of the most common methods to treat cancer that has spread to the liver. It uses high-energy radio waves to kill cancer cells. A CT scan[1] or ultrasound[2] is used to guide a thin, needle-like probe through the skin and into the tumor. An electric current is then sent to the tip of the probe, releasing high-frequency radio waves that heat the tumor and destroy the cancer cells.

### Microwave ablation (MWA)

The microwave ablation method is used to treat cancer that has spread to the liver. Imaging tests are used to guide a needle-like probe into the tumor. Electromagnetic microwaves are then sent through it to create high temperatures that kill the cancer quickly. This treatment has been used to treat larger cancers (up to 6 cm across).

### Percutaneous ethanol ablation (PEI) or Alcohol ablation

Percutaneous ethanol injectiondestroys the cancer cells by injectingconcentrated alcohol into the tumor. This is usually done through the skin using a needle, which is guided by ultrasound or CT scans. Sometimes multiple treatments of PEI may be needed to treat the whole tumor.

### Cryoablation

Cryoablation destroys the tumor by freezing it with a thin metal probe. The probe is guided through the skin and into the tumor using ultrasound. Then very cold gas (usually liquid nitrogen or argon gas) is passed through the end of the probe to freeze the tumor, killing the cancer cells. This method can treat larger tumors than the other

ablation techniques, but sometimes general anesthesia (drugs used to put the patient into a deep sleep) is needed. Treatment can be repeated as needed to kill all the cancer cells.

### Side effects of ablation therapy

Possible side effects after ablation therapy include:

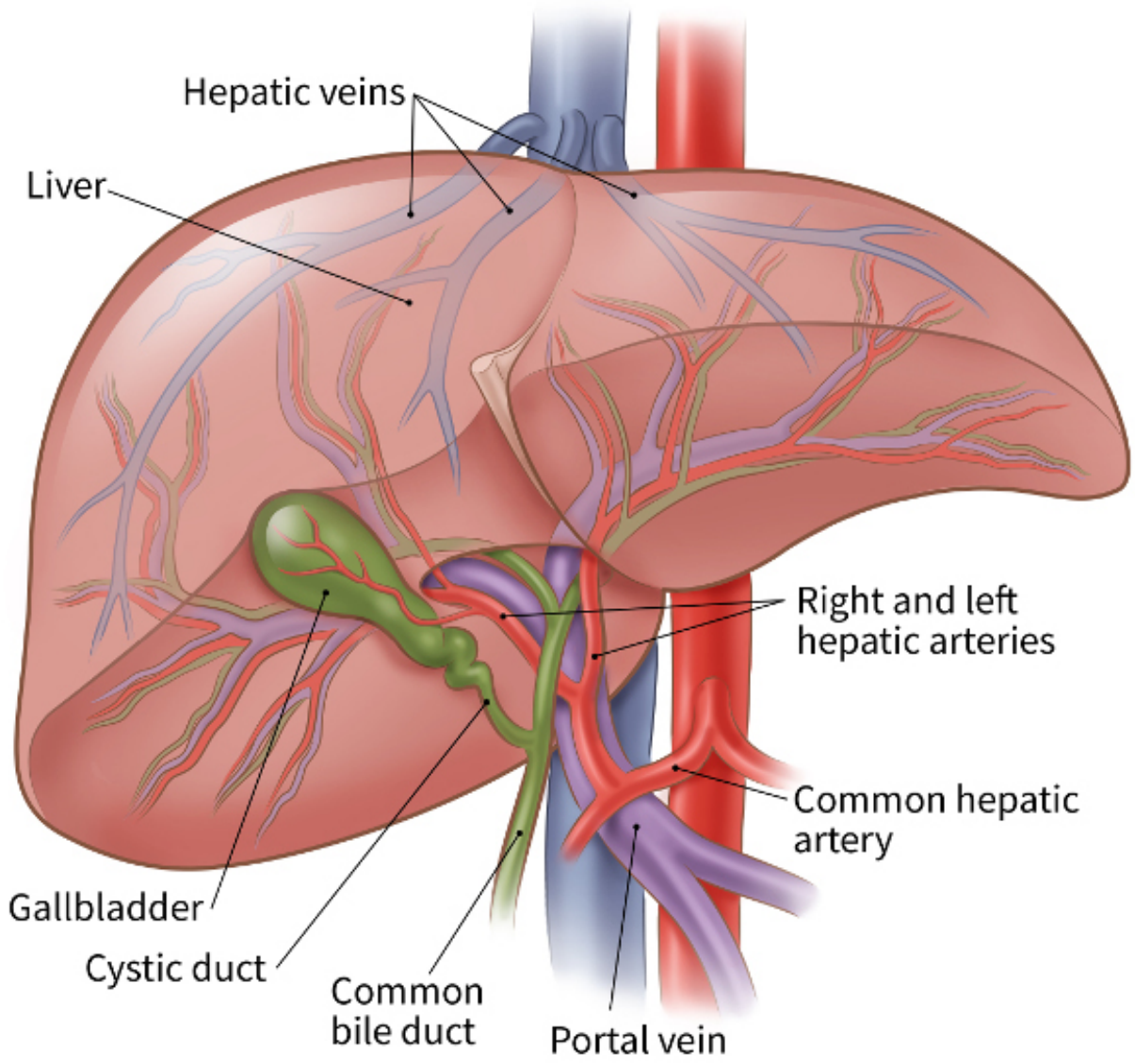
- Abdominal (belly) pain
- Infection in the liver
- Fever
- Bleeding into the chest cavity or abdomen
- Abnormal liver tests.

Serious complications are rare, but they are possible.

## Embolization

Embolization is used to treat tumors in the liver. In an embolization procedure, a substance is injected directly into an artery in the liver to block or reduce the blood flow to the tumor.

The liver is special in that it has 2 blood supplies. Most normal liver cells get blood from the **portal vein,** but cancer cells in the liver usually get their blood supply from the **hepatic artery.** Blocking the part of the hepatic artery that feeds the tumor helps kill the cancer cells, and it leaves most of the healthy liver cells unharmed because they get their blood supply from the portal vein.




Embolization can be used to treat tumors larger than 5 cm (about 2 inches) across that are often too big to be treated with ablation. It can also be used along with ablation. Embolization does reduce some of the blood supply to the normal liver tissue, so it may not be a good option for patients with liver damage from diseases like hepatitis or cirrhosis.

There are 3 main types of embolization procedures used to treat colon or rectal cancer that has spread (metastasized) to the liver:

- **Arterial embolization** is also called **trans-arterial embolization or TAE.** In this procedure, a catheter (a thin, flexible tube) is put into an artery through a small cut

in the inner thigh and eased up into the hepatic artery in the liver. A dye is usually injected into the blood to help the doctor watch the path of the catheter using x-ray[3] pictures. Once the catheter is in the right place, small particles are injected into the artery to plug it up, blocking oxygen and key nutrients from the cancer.

- **Chemoembolization** (also called **trans-arterial chemoembolization or TACE**) combines arterial embolization with chemotherapy. TACE is done by giving chemotherapy through a catheter that's put right into the artery that feeds the tumor, then plugging up the artery so the chemo can stay close to the tumor. Multiple treatments may be given over 4 to 6 weeks.
- **Radioembolization** combines embolization and radiation therapy. This is done by injecting tiny beads (called **microspheres**) coated with radioactive yttrium-90 (Y-90) into the hepatic artery. The beads lodge in the blood vessels near the tumor where they give off small amounts of radiation to the tumor site for several days. The radiation travels a very short distance, so its effects are limited mainly to the tumor.

### Possible side effects of embolization

Possible side effects after embolization include:

- Abdominal (belly) pain
- Infection in the liver
- Fever
- Gallbladder inflammation
- Blood clots in the main blood vessels of the liver
- Abnormal liver tests

Because healthy liver tissue can be affected, there is a risk that liver function will get worse after embolization. This risk is higher if a large branch of the hepatic artery is embolized. Serious complications are not common, but they are possible.

## Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ct-scan-for-

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2. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ultrasound-for-cancer.html
3. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/x-rays-and-other-radiographic-tests.html

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# Radiation Therapy for Colorectal Cancer

Radiation therapy is a treatment using high-energy rays (such as x-rays) or particles to destroy cancer cells. It is more often used to treat rectal cancer than colon cancer. For some colon and rectal cancers, treating with chemotherapy at the same time can make radiation therapy work better. Using these 2 treatments together is called **chemoradiation**.



## Radiation therapy for colon cancer

It's not common to use radiation therapy to treat colon cancer, but it may be used in certain cases:

- Before surgery (along with chemo) to help shrink a tumor and make it easier to remove.
- After surgery, if the cancer has attached to an internal organ or the lining of the belly (abdomen). If this happens, the surgeon can’t be sure that all of the cancer has been removed. Radiation therapy may be used to try to kill any cancer cells that may have been left behind.
- During surgery, right to the area where the cancer was, to kill any cancer cells that may be left behind. This is called **intraoperative radiation therapy** or **IORT.**
- Along with chemo to help control cancer if a person is not healthy enough for surgery.
- To ease symptoms if advanced colon cancer is causing intestinal blockage, bleeding, or pain.
- To help treat colon cancer that has spread to other areas, such as the bones, lungs, or brain.

## Radiation therapy for rectal cancer

For rectal cancer, radiation therapy is a more common treatment and may be used:

- Either before and/or after surgery, often along with chemotherapy, to help keep the cancer from coming back. Many doctors now favor giving radiation therapy before surgery, as it may make it easier to remove the cancer, especially if the cancer's size and/or location might make surgery difficult. This is called **neoadjuvant treatment.** Giving chemoradiation before surgery can also help lower the chances of damaging the sphincter muscles in the rectum when surgery is done. In either case, nearby lymph nodes are usually treated too.
- During surgery, right to the area where the tumor was, to kill any rectal cancer cells that may be left behind. This is called **intraoperative radiation therapy** or **IORT.**
- With or without chemo to help control rectal cancer if a person is not healthy enough for surgery or to ease symptoms if advanced rectal cancer is causing intestinal blockage, bleeding, or pain.
- To re-treat rectal tumors that come back in the pelvis after radiation was given.
- To help treat rectal cancer that has spread to other areas, such as the bones, lungs, or brain.

## Types of radiation therapy

Different types of radiation therapy can be used to treat colon and rectal cancers.

### External-beam radiation therapy (EBRT)

EBRT is the type of radiation therapy used most often for people with colon or rectal cancer. The radiation is focused on the cancer from a machine outside the body. It’s a lot like getting an x-ray, but the radiation is more intense. How often and how long a person gets radiation treatments depends on the reason the radiation is being given and other factors. Treatments might be given over the course of a few days or several weeks.

Newer EBRT techniques[1], such as three-dimensional conformal radiation therapy (3D-CRT), intensity modulated radiation therapy (IMRT), and stereotactic body radiation therapy (SBRT), have been shown to help doctors treat colorectal cancers that have spread to the lungs or liver more accurately while lowering the radiation exposure to nearby healthy tissues. They are typically used if there are only a small number of tumors and if the tumors are causing symptoms and surgery is not an option.

### Internal radiation therapy (brachytherapy)

Brachytherapy might be used to treat some rectal cancers, but more research is needed to understand how to best use and when to use brachytherapy.

For this treatment, a radioactive source is put inside your rectum next to or into the tumor. This allows the radiation to reach the rectum without passing through the skin and other tissues of the belly (abdomen), so it's less likely to damage nearby tissues.

**Endocavitary radiation therapy:** For this treatment, a small balloon-like device is placed into the rectum to deliver high-intensity radiation for a few minutes. This is typically done in 4 treatments (or less), with about 2 weeks between each treatment. This can let some patients, particularly elderly patients, avoid major surgery and a colostomy. This type of treatment is used for some small rectal cancers or in cases where radiation was already given in the pelvic area and the rectal cancer has come back. Sometimes external-beam radiation therapy is also given.

**Interstitial brachytherapy:** For this treatment, a tube is placed into the rectum and right into the tumor. Small pellets of radioactive material are then put into the tube for several minutes. The radiation travels only a short distance, limiting the harmful effects on nearby healthy tissues. It's sometimes used to treat people with rectal cancer who are not healthy enough for surgery or have cancer that has come back in the rectum. This can be done a few times a week for a couple of weeks, but it can also be just a one-time procedure.

### Radioembolization

Radiation can also be given during an embolization procedure. You can find more details in Ablation and Embolization to Treat Colorectal Cancer.

### Possible side effects of radiation therapy

If you're going to get radiation therapy, it's important to ask your doctor about the possible short- and long-term side effects so that you know what to expect. Possible side effects of radiation therapy for colon and rectal cancer can include:

- Skin irritation at the site where radiation beams were aimed, which can range from redness to blistering and peeling
- Problems with wound healing if radiation was given before surgery
- Nausea
- Rectal irritation, which can cause diarrhea, painful bowel movements, or blood in the stool
- Bowel incontinence (stool leakage)

- Bladder irritation, which can cause problems like feeling like you have to go often (called frequency), burning or pain while urinating, or blood in the urine
- Fatigue/tiredness
- Sexual problems (erection issues in men and vaginal irritation in women)
- Scarring, fibrosis (stiffening), and adhesions that cause the tissues in the treated area to stick to each other

Most side effects should get better over time after treatment ends, but some problems may not go away completely. If you notice any side effects, talk to your doctor right away so steps can be taken to reduce or relieve them.

### More information about radiation therapy

To learn more about how radiation is used to treat cancer, see Radiation Therapy[2].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[3].

## Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types/radiation/external-beam-radiation-therapy.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/radiation.html
3. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Chemotherapy for Colorectal Cancer

Chemotherapy (chemo) is treatment with anti-cancer drugs that may be injected into a vein or taken by mouth. These drugs travel through the bloodstream and reach most parts of the body. Chemo is often used to treat colorectal cancer.



## When is chemotherapy used?

Chemo may be used at different times during treatment for colorectal cancer:

- **Neoadjuvant chemo** is given (sometimes with radiation) **before surgery** to try to shrink the cancer and make it easier to remove. This is often done for rectal cancer.
- **Adjuvant chemo** is given **after surgery.** The goal is to kill cancer cells that might have been left behind at surgery because they were too small to see, as well as cancer cells that might have escaped from the main colon or rectal cancer to settle in other parts of the body but are too small to see on imaging tests. This helps lower the chance that the cancer will come back.
- **For advanced cancers** that have spread to other organs like the liver, chemo can be used to help shrink tumors and ease problems they're causing. While it's not likely to cure the cancer, this often helps people feel better and live longer.

## How is chemotherapy given?

You can get chemotherapy in different ways to treat colorectal cancer.

- **Systemic chemotherapy:** Drugs are put into your blood through a vein or you take them by mouth. The drugs enter your bloodstream and reach almost all areas of

your body.

- **Regional chemotherapy:** Drugs are put into an artery that leads to the part of the body with the cancer. This focuses the chemo on the cancer cells in that area. It reduces side effects by limiting the amount of drug reaching the rest of your body. **Hepatic artery infusion**, or chemo given directly into the hepatic artery, is an example of regional chemotherapy sometimes used for cancer that has spread to the liver.

Chemo drugs for colon or rectal cancer that are given into a vein (IV), can be given either as an injection over a few minutes or as an infusion over a longer period of time. This can be done in a doctor's office, infusion center, or in a hospital setting.

Often, a slightly larger and sturdier IV[1] is required in the vein system to administer chemo. These are known as central venous catheters (CVCs), central venous access devices (CVADs), or central lines. They are used to put medicines, blood products, nutrients, or fluids into your blood. They can also be used to take blood for testing. There are many different kinds of CVCs. The most common types are the tunneled central lines, ports, and peripherally inserted central catheter (PICC) lines.

Chemo is given in cycles, which include a rest period to give you time to recover from the effects of the drugs. Each cycle is usually 2 or 3 weeks long. The schedule varies depending on the drugs used. For example, with some drugs, the chemo is given only on the first day of the cycle. With others, it is given for a few days in a row, or once a week. Then, at the end of the cycle, the chemo schedule repeats to start the next cycle.

Adjuvant or neoadjuvant chemo is often given for a total of 3 to 6 months, depending on the drugs used. The length of treatment for advanced colorectal cancer depends on how well it is working and what side effects you have.

## Chemotherapy drugs used to treat colorectal cancer

Some drugs commonly used for colorectal cancer include:

- **5-Fluorouracil (5-FU)**
- **Capecitabine (Xeloda)**, a pill that is changed into 5-FU once it gets to the tumor
- **Irinotecan (Camptosar)**
- **Oxaliplatin (Eloxatin)**
- **Trifluridine and tipiracil (Lonsurf)**, a combination drug in pill form

Most often, combinations of 2 or 3 of these drugs are used. Sometimes, chemo drugs are given along with a targeted therapy drug.

## Possible side effects of chemo

Chemo drugs attack cells that are dividing quickly, which is why they work against cancer cells. But other cells in the body, such as those in hair follicles and in the lining of the mouth and intestines, are also dividing quickly. These cells can be affected by chemo too, which can lead to side effects.

The side effects of chemo depend on the type and dose of drugs given and how long you take them. Common side effects of chemo can include:

- Hair loss
- Mouth sores
- Loss of appetite or weight loss
- Nausea and vomiting
- Diarrhea
- Nail changes
- Skin changes

Chemo can also affect the blood-forming cells of the bone marrow, which can lead to:

- Increased chance of infections (from low white blood cell counts)
- Easy bruising or bleeding (from low blood platelet counts)
- Fatigue (from low red blood cell counts and other reasons)

Other side effects are specific to certain drugs. Ask your cancer care team about the possible side effects of the specific drugs you are getting. For example:

- **Hand-foot syndrome** can develop during treatment with capecitabine or 5-FU. It can start out as redness in the hands and feet, and then might progress to pain and sensitivity in the palms and soles. If it worsens, the skin may blister or peel, sometimes leading to painful sores. It’s important to tell your doctor right away about any early symptoms, such as redness or sensitivity, so that steps can be taken to keep things from getting worse.
- **Neuropathy** (nerve damage) is a common side effect of oxaliplatin. Symptoms include numbness, tingling, and even pain in the hands and feet. It can also cause

intense sensitivity to cold in your throat, esophagus (the tube connecting the throat to the stomach), and the palms of your hands. This can cause pain when swallowing cold liquids or holding a cold glass. If you'll be getting oxaliplatin, talk with your doctor about side effects beforehand, and let them know right away if you develop numbness and tingling or other side effects.

- **Allergic or sensitivity reactions** can happen in some people while getting the drug oxaliplatin. Symptoms can include skin rash; chest tightness and trouble breathing; back pain; or feeling dizzy, lightheaded, or weakness. Be sure to tell your nurse right away if you notice any of these symptoms while you're getting chemo.
- **Diarrhea** is a common side effect with many of these chemo drugs, but can be particularly bad with irinotecan. It needs to be treated right away – at the first loose stool – to prevent severe dehydration. This often means taking a drug like loperamide (Imodium) or even being admitted to the hospital for intravenous hydration. If you're getting a chemo drug that will likely cause diarrhea, your doctor will give you instructions on what drugs to take and how often to take them to control this problem.

Most of these side effects tend to go away over time after treatment ends. Some, such as hand and foot numbness from oxaliplatin, may last for a long time. There are often ways to lessen these side effects. For example, you can be given drugs to help prevent or reduce nausea and vomiting, or you may be told to keep ice chips in your mouth while chemo is being given to lower the chances of getting mouth sores.

Be sure to discuss any questions about side effects with your cancer care team. Also report any side effects or changes you notice while getting chemo so that they can be treated right away. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to help keep the problem from getting worse.

## More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see Chemotherapy[2].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[3].

## Hyperlinks

1. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/tubes-lines-ports-catheters.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/chemotherapy.html
3. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Targeted Therapy Drugs for Colorectal Cancer

As researchers learn more about changes in cells that cause colon or rectal cancer, they have developed new types of drugs to specifically target these changes.



## When is targeted therapy used?

Targeted drugs work differently from chemotherapy (chemo) drugs. They sometimes work when chemo drugs don't, and they often have different side effects. They can be used either along with chemo, by themselves, or in combination with another targeted therapy drug.

Like chemotherapy, these drugs enter the bloodstream and reach almost all areas of the body, which makes them useful against cancers that have spread to distant parts of the body.

Several types of targeted drugs might be used to treat colorectal cancer.

## Drugs that target blood vessel formation (VEGF)

Vascular endothelial growth factor (VEGF) is a protein that helps tumors form new blood vessels (a process known as **angiogenesis**) to get nutrients they need to grow. Drugs that stop VEGF from working can be used to treat some colon or rectal cancers. These include:

- **Bevacizumab (Avastin)**

- **Ramucirumab (Cyramza)**
- **Ziv-aflibercept (Zaltrap)**
- **Fruquintinib (Fruzaqla)**

Most of these drugs are given as infusions into your vein (IV) every 2 or 3 weeks, in most cases along with chemotherapy. Fruquinitinib is given as a capsule and not combined with chemotherapy. These drugs can often help people with advanced colon or rectal cancers live longer.

### Possible side effects of drugs that target VEGF

Common side effects of these drugs include:

- High blood pressure
- Protein in the urine
- Bleeding (from the nose or rectum)
- Headaches
- Taste changes
- Skin changes

Rare but possibly serious side effects include blood clots, severe bleeding, holes forming in the colon (called **perforations**), heart problems, kidney problems, and slow wound healing. If a hole forms in the colon, it can lead to severe infection and surgery may be needed to fix it.

Another rare but serious side effect of these drugs is an allergic reaction during the infusion, which could cause problems with breathing and low blood pressure.

## Drugs that target cancer cells with EGFR changes

Epidermal growth factor receptor (EGFR) is a protein that helps cancer cells grow. Drugs that target EGFR (**EGFR inhibitors**) can be used to treat some advanced colon or rectal cancers. These include:

- **Cetuximab (Erbitux)**
- **Panitumumab (Vectibix)**

Both of these drugs are given by IV infusion, either once a week or every other week.

These drugs typically don't work in colorectal cancers that have mutations (defects) in the *KRAS*, *NRAS* or *BRAF* gene. Doctors commonly test the tumor for these gene changes before treatment, and only use these drugs in people whose cancer cells don't have these mutations.

One exception to this is when an EGFR inhibitor is combined with the BRAF inhibitor encorafenib (see below). The combination of these two drugs appears to help people with advanced colorectal cancer live longer.

**Possible side effects of drugs that target EGFR**

The most common side effects of these drugs are skin problems such as an acne-like rash on the face and chest during treatment, which can sometimes lead to infections. An antibiotic and/or steroid cream may be needed to help limit the rash and related infections. Developing this rash often means the cancer is responding to treatment. People who develop this rash often live longer, and those who develop more severe rashes also seem to respond better than those with a milder rash. Other side effects can include:

- Headache
- Tiredness
- Fever
- Diarrhea

A rare but serious side effect of these drugs is an allergic reaction during the infusion, which could cause problems with breathing and low blood pressure. You may be given medicine before treatment to help prevent this. Other serious but rare serious side effects include eye, heart, or lung damage.

## Drugs that target cells with *BRAF* gene changes

A small portion of colorectal cancers have changes (mutations) in the *BRAF* gene. Colorectal cancer cells with these changes make an abnormal BRAF protein that helps them grow. Some drugs target this abnormal BRAF protein.

If you have colorectal cancer that has spread, your cancer will likely be tested to see if the cells have a *BRAF* gene change known as BRAF V600E, which can cause the cell to make an abnormal BRAF protein.

**Encorafenib (Braftovi)** is a **BRAF inhibitor** – a drug that attacks the abnormal BRAF

protein. When given with cetuximab or panitumumab, an EGFR inhibitor (see above), this drug can shrink or slow the growth of colorectal cancer in some people whose cancer has spread. The combination of these two drugs also appears to help people with advanced colorectal cancer live longer.

This drug is taken as capsules, once a day.

Common **side effects** of encorafenib, in combination with an EGFR inhibitor, can include skin thickening, diarrhea, rash, loss of appetite, abdominal pain, joint pain, fatigue, and nausea.

Some people treated with a BRAF inhibitor might develop new squamous cell skin cancers[1]. These cancers can often be treated by removing them. Still, your doctor will want to check your skin regularly during treatment and for several months afterward. You should also let your doctor know right away if you notice any new growths or abnormal areas on your skin.

## Drugs that target cells with HER2 changes

In a small percentage of people with colorectal cancer, the cancer cells have too much of a growth-promoting protein called HER2 on their surface. Cancers with increased levels of HER2 are called **HER2-positive**. Drugs that target the HER2 protein can often be helpful in treating these cancers.

Drugs of this type that might be used to treat HER2-positive colorectal cancer include:

- **Trastuzumab (Herceptin, other names[2])**
- **Pertuzumab (Perjeta)**
- **Tucatinib (Tukysa)**
- **Lapatinib (Tykerb)**
- **Fam-trastuzumab deruxtecan (Enhertu, T-DXd)**

For advanced, HER2-positive colorectal cancer that has already been treated with chemotherapy, the most common targeted drug regimens include trastuzumab plus either tucatinib, lapatinib, or pertuzumab. Patients who are considered to be treated with this regimen must also not have mutations in the *RAS* and *BRAF* genes.

Among these drugs, only tucatinib is FDA approved specifically to treat colorectal cancer at this time, but the others are present in treatment guidelines. Still, it's important to check with your insurance provider before getting these drugs to make sure they are

covered.

The **side effects** of HER2-targeted drugs tend to be mild overall, but some can be serious, and different drugs can have different possible side effects. Discuss what you can expect with your doctor.

Some of these drugs can cause **heart damage** during or after treatment, which might lead to congestive heart failure. Because of this, your doctor will likely check your heart function (with an echocardiogram or a MUGA scan) before treatment, and regularly while you are getting any of these drugs. Let your doctor know if you develop symptoms, such as shortness of breath, a fast heartbeat, leg swelling, and severe fatigue.

Some of these drugs can cause severe **diarrhea**, so it's very important to let your health care team know about any changes in bowel habits as soon as they happen.

Lapatinib and tucatinib can also cause **hand-foot syndrome**, in which the hands and feet become sore and red, and may blister and peel.

Lapatinib and tucatinib can cause **liver problems**. Your doctor will do blood tests to check your liver function during treatment. Let your health care team know right away if you have possible signs or symptoms of liver problems, such as itchy skin, yellowing of the skin or the white parts of your eyes, dark urine, or pain in the right upper belly area.

Fam-trastuzumab deruxtecan can cause serious **lung disease** in some people, which might even be life threatening. It's very important to let your doctor know right away if you're having symptoms such as coughing, wheezing, trouble breathing, or fever.

## Drugs that target cells with *NTRK* gene changes

A very small number of colorectal cancers have changes in one of the *NTRK* genes. This causes them to make abnormal TRK proteins, which can lead to abnormal cell growth and cancer.

**Larotrectinib (Vitrakvi)** and **entrectinib (Rozlytrek)** are drugs that target the TRK proteins. These drugs can be used to treat advanced cancers with *NTRK* gene changes that are still growing despite other treatments.

These drugs are taken as pills or an oral solution, once or twice daily.

Common **side effects** of these drugs can include dizziness, fatigue, nausea, vomiting,

constipation, weight gain, and diarrhea.

Less common but serious side effects can include abnormal liver tests, increased risk for fractures, heart problems, vision changes, and confusion.

## Drugs that target cells with *RET* gene changes

A very small number of colorectal cancers have changes in one of the *RET* genes. This causes them to make abnormal RET proteins, which can lead to abnormal cell growth and cancer.

**Selpercatinib (Retevmo)** is a drug that targets the RET protein. These drugs can be used to treat advanced cancers with *RET* gene changes that are still growing despite other treatments.

This drug is taken as a capsule twice daily.

This drug is approved to treat other types of cancer, but doctors can prescribe it off-label[3] for colorectal cancer. Still, it's important to check with your insurance provider before getting these drugs to make sure they are covered.

Common **side effects** of these drugs can include decrease in white blood cell count and calcium, changes in liver function tests, high blood pressure, fatigue, changes in kidney function, and increased cholesterol.

Less common but serious side effects can include abnormal heart function (QT interval prolongation), bleed, allergic reaction, and inability to heal from a wound.

## Drugs that target cells with *KRAS* gene changes

A very small number of colorectal cancers have the *KRAS G12C* gene mutation. This causes them to make abnormal KRAS proteins, which can lead to continued cell growth and cancer.

**Adagrasib (Krazati)** and **Sotorasib (Lumakras)** are drugs that target the KRAS proteins. Adagrasib can be given with cetuximab (EGFR inhibitor) to treat advanced cancers with *KRAS* gene changes that are still growing despite other treatments. Sotorasib is not approved specifically to treat colorectal cancer at this time. It is approved to treat other types of cancer, but doctors can prescribe them off-label for colorectal cancer. Still, it's important to check with your insurance provider before getting these drugs to make sure they are covered.

These drugs are taken as tablets, once or twice daily.

Common **side effects** of these drugs can include nausea, vomiting, diarrhea, muscle and joint pain, fatigue, decreased appetite, and changes in liver and kidney function.

Less common but serious side effects can include effects to the heart (QTc interval prolongation), liver, and lungs (interstitial lung disease).

### Other targeted therapy drugs

**Regorafenib (Stivarga)** is a type of targeted therapy known as a **multikinase inhibitor.** Kinases are proteins on or near the surface of a cell that carry important signals to the cell's control center. Regorafenib blocks several kinase proteins that either help tumor cells grow or help form new blood vessels to feed the tumor. Blocking these proteins can help stop the growth of cancer cells.

This drug can be used to treat advanced colorectal cancer, typically when other drugs are no longer helpful. It's taken as a pill.

Common side effects include fatigue, rash, hand-foot syndrome (redness and irritation of the hands and feet), diarrhea, high blood pressure, weight loss, and abdominal pain.

Less common but more serious side effects can include confusion, severe bleeding, or perforations (holes) in the stomach or intestines.

### More information about targeted therapy

To learn more about how targeted drugs are used to treat cancer, see Targeted Cancer Therapy[4].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[5].

## Hyperlinks

1. www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs/list.html

3. www.cancer.org/cancer/managing-cancer/treatment-types/off-label-drug-use.html
4. www.cancer.org/cancer/managing-cancer/treatment-types/targeted-therapy.html
5. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Immunotherapy for Colorectal Cancer

Immunotherapy is the use of medicines to help a person's own immune system better recognize and destroy cancer cells.



## Immune checkpoint inhibitors

For people with either early- or advanced-stage colorectal cancer, immunotherapy is now a cornerstone of treatment if the tumor has findings of dMMR (deficient mismatch repair) or MSI-H (microsatellite instability-high).

An important part of the immune system is its ability to keep itself from attacking the body's normal cells. To do this, it uses "checkpoints" – proteins on immune cells that need to be turned on (or off) to start an immune response. Colorectal cancer cells sometimes use these checkpoints to avoid being attacked by the immune system. Drugs that target these checkpoints help to restore the immune response against colorectal cancer cells.

Drugs called **checkpoint inhibitors** can be used for people whose colorectal cancer cells have tested positive for specific gene changes[1], specifically a high level of **microsatellite instability (MSI-H),** or changes in one of the **mismatch repair (MMR) genes.** These drugs might be given to people before surgery for early-stage colon cancer, or to treat people whose cancer can't be removed with surgery, has come back (recurred) after treatment, or has spread to other parts of the body (metastasized).

### PD-1 inhibitors

**Pembrolizumab (Keytruda)**, **nivolumab (Opdivo), and Dostarlimb (Jemperli)** are drugs that target PD-1, a protein on immune system cells called T cells that normally help keep these cells from attacking other cells in the body. By blocking PD-1, these drugs boost the immune response against colorectal cancer cells. They are only given if the tumor has had findings of dMMR or MSI-H.

Pembrolizumab can be given alone. It is given as an intravenous (IV) infusion every 3 or 6 weeks.

Nivolumab can be given alone or with ipilimumab (see below). It is typically given by itself as an IV infusion every 2 or 4 weeks. If it is used along with ipilimumab, then it is typically given every 3 weeks.

Dostarlimab can be given alone. It is given as an intravenous (IV) infusion every 3 weeks for 4 treatments, and then given at a higher dose every 6 weeks. This drug is not approved specifically to treat colorectal cancer at this time. It is approved to treat other types of cancer, but doctors can prescribe it off-label[2] for colorectal cancer. Still, it's important to check with your insurance provider before getting this drug to make sure it is covered.

### CTLA-4 inhibitor

**Ipilimumab (Yervoy)** is another drug that boosts the immune response, but it has a different target. It blocks CTLA-4, another protein on T cells that normally helps keep them in check.

This drug can be used along with nivolumab (Opdivo) to treat colorectal cancer, but it's not used alone. It is given as an intravenous (IV) infusion, usually once every 3 weeks for 4 treatments.

## Possible side effects of immunotherapy

Side effects of these drugs include fatigue, cough, nausea, diarrhea, skin rash, loss of appetite, constipation, joint pain, and itching.

Other, more serious side effects occur less often.

**Infusion reactions:** Some people might have an infusion reaction while getting these drugs. This is like an allergic reaction, and can include fever, chills, flushing of the face, rash, itchy skin, feeling dizzy, wheezing, and trouble breathing. It's important to tell your doctor right away if you have any of these symptoms while getting these drugs.

**Autoimmune reactions:** These drugs work by basically removing one of the safeguards on the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, nerves, skin, kidney, or other organs.

It's very important to report any new side effects during or after treatment with any of these drugs to your health care team promptly. If serious side effects do occur, you may need to stop treatment and take high doses of corticosteroids to suppress your immune system.

## More information about immunotherapy

To learn more about how drugs that work on the immune system are used to treat cancer, see Cancer Immunotherapy[3].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[4].

## Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/how-diagnosed.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/off-label-drug-use.html
3. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy.html
4. www.cancer.org/cancer/managing-cancer/side-effects.html

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# Treatment of Colon Cancer, by Stage

Treatment for colon cancer is based largely on the stage[1] (extent) of the cancer, but other factors can also be important.

- Treating stage 0 colon cancer
- Treating stage I colon cancer
- Treating stage II colon cancer
- Treating stage III colon cancer
- Treating stage IV colon cancer
- Treating right-sided versus left-sided colon cancer
- Treating recurrent colon cancer

People with colon cancers that have not spread to distant sites usually have surgery as

the main or first treatment. Chemotherapy may also be used after surgery (called **adjuvant treatment**). Most adjuvant treatment is given for about 3 to 6 months.

## Treating stage 0 colon cancer

Since stage 0 colon cancers have not grown beyond the inner lining of the colon, surgery to take out the cancer is often the only treatment needed. In most cases, this can be done by removing the polyp or taking out the area with cancer through a colonoscope (local excision). Removing part of the colon (partial colectomy) may be needed if a cancer is too big to be removed by local excision.

## Treating stage I colon cancer

Stage I colon cancers have grown deeper into the layers of the colon wall, but they have not spread outside the colon wall itself or into the nearby lymph nodes.

Stage I includes cancers that were part of a polyp. If the polyp is removed completely during colonoscopy, with no cancer cells at the edges (margins) of the removed piece, no other treatment may be needed.

If the cancer in the polyp is high grade[2], or there are cancer cells at the edges of the polyp, more surgery might be recommended. You might also be advised to have more surgery if the polyp couldn't be removed completely or if it had to be removed in many pieces, making it hard to see if cancer cells were at the edges.

For cancers not in a polyp, partial colectomy  surgery to remove the section of colon that has cancer and nearby lymph nodes  is the standard treatment. You typically won't need any more treatment.

## Treating stage II colon cancer

Stage II colon cancers have grown through the wall of the colon (called the **muscularis propria**), and may have even invaded into nearby tissue, but they have not spread to the lymph nodes.

Surgery to remove the section of the colon containing the cancer (partial colectomy) along with nearby lymph nodes may be the only treatment needed.

In certain cases, neoadjuvant therapy (therapy before surgery) may be recommended for stage II colon cancer, especially if the tumor has invaded or is attached to

neighboring organs (T4b). This is generally considered for locally advanced colon cancer that is not initially operable. Decisions about what type of neoadjuvant therapy to give in these cases depends on whether the tumor has dMMR or MSI-H. If the tumor is dMMR or MSI-H, neoadjuvant immunotherapy (either PD-1 inhibitor alone or combination PD-1 and CTLA-4 inhibitor) is generally recommended. The type and duration of this therapy can vary as this approach remains very new. If the tumor is *not* dMMR or MSI-H, neoadjuvant chemotherapy is generally recommended.

If you did not receive neoadjuvant chemotherapy, after you recover from the colon surgery for treatment of Stage II cancer and if the tumor is found to *not* have dMMR or MSI-H, your doctor may recommend adjuvant chemo if your cancer has a higher risk of coming back (recurring) because of certain factors, such as:

- The cancer looks very abnormal (is high grade) when viewed closely in the lab.
- The cancer has grown through the colon wall (T4).
- The cancer has grown into nearby blood or lymph vessels.
- The surgeon did not remove at least 12 lymph nodes.
- Cancer was found in or near the margin (edge) of the removed tissue, meaning that some cancer may have been left behind.
- The cancer blocked (obstructed) the colon.
- The cancer caused a perforation (hole) in the wall of the colon.

If adjuvant chemo is given for high-risk stage II colon cancers, doctors generally recommend 5-FU or capecitabine. At times, oxaliplatin may also be offered. Each patient case is different and requires discussion about the risks and benefits of adjuvant chemo, as well as which type of chemo. Not all doctors agree on when chemo should be used for stage II colon cancers. It's important for you to discuss the risks and benefits of chemo with your doctor, including how much it might reduce your risk of recurrence and what the likely side effects will be.

## Treating stage III colon cancer

Stage III colon cancers have spread to nearby lymph nodes, but they have not yet spread to other parts of the body.

Surgery to remove the section of the colon with the cancer (partial colectomy), along with nearby lymph nodes, followed by adjuvant chemo is the standard treatment for this stage.

For chemo, either the **FOLFOX** (5-FU, leucovorin, and oxaliplatin) or **CapeOx**

(capecitabine and oxaliplatin) regimens are used most often, but some patients may get 5-FU with leucovorin or capecitabine alone based on their age and health needs. In the past, most patients were recommended to received 6 months of adjuvant chemo for treatment of stage III colon cancer. Recent research has shown that 3 months of adjuvant chemo for some stage III colon cancers may be just as effective and is acceptable.

For some advanced colon cancers that cannot be removed completely by surgery (either tumor has invaded through the colon wall or presence of large bulky lymph nodes), neoadjuvant chemotherapy or neoadjuvant immunotherapy might be recommended to shrink the cancer so it can be removed later with surgery. Neoadjuvant chemotherapy is usually recommended if the tumor is pMMR or MSS. Neoadjuvant immunotherapy is usually recommended if the tumor is dMMR or MSI-H.

For some advanced cancers that have been removed by surgery but were found to be attached to a nearby organ or have positive margins (some of the cancer may have been left behind), adjuvant radiation therapy might be recommended. Radiation therapy and/or chemo may also be options for people who aren't healthy enough for surgery or for when complete resection is not possible due to tumor location.

## Treating stage IV colon cancer

Stage IV colon cancers have spread from the colon to distant organs and tissues. Colon cancer most often spreads to the liver, but it can also spread to other places like the lungs, brain, peritoneum (the lining of the abdominal cavity), or to distant lymph nodes.

In most cases, surgery is unlikely to cure these cancers. But if there are only a few small areas of cancer spread (metastases) in the liver or lungs and they can be removed along with the colon cancer, surgery may help you live longer. This would mean having surgery to remove the section of the colon containing the cancer along with nearby lymph nodes, plus surgery to remove the areas of cancer spread. In some cases, if the liver metastasis is not able to be surgically removed, ablation or embolization may be an option.

Chemo may begiven before and/or after surgery. If the metastases cannot be removed because they're too big or there are too many of them, chemo may be given before surgery (neoadjuvant chemo). Then, if the tumors shrink, surgery may be tried to remove them. Chemo might be given again after surgery.

If the cancer has spread too much to try to cure it with surgery, chemo is the main treatment. Surgery might still be needed if the cancer is blocking the colon or is likely to

do so. Sometimes, such surgery can be avoided by putting a stent (a hollow metal tube) into the colon during a colonoscopy to keep it open. Otherwise, operations such as a colectomy or a diverting colostomy (cutting the colon above the level of the cancer and attaching the end to an opening in the skin on the belly to allow waste out) may be used.

If you have stage IV cancer and your doctor recommends surgery, it's very important to understand the goal of the surgery  whether it's to try to cure the cancer or to prevent or relieve symptoms of the cancer.

Most people with stage IV cancer will get chemo and/or targeted therapies to control the cancer. Some of the most commonly used regimens include:

- FOLFOX: leucovorin, 5-FU, and oxaliplatin
- FOLFIRI: leucovorin, 5-FU, and irinotecan
- CAPEOX: capecitabine and oxaliplatin
- FOLFOXIRI: leucovorin, 5-FU, oxaliplatin, and irinotecan
- One of the above chemo combinations, plus either a drug that targets VEGF(bevacizumab, ziv-aflibercept or ramucirumab), or a drug that targets EGFR (cetuximab or panitumumab)
- 5-FU and leucovorin, with or without a targeted drug
- Capecitabine, with or without a targeted drug
- Irinotecan, with or without a targeted drug
- Cetuximab or Panitumumab
- Regorafenib, Trifluridine and tipiracil (Lonsurf), alone or in combination with Bevacizumab

The choice of regimens depends on several factors, including any previous treatments you've had and your overall health. If one of these regimens is no longer working, another may be tried.

For people whose cancer cells have changes in certain genes or proteins, targeted therapy drugs might be an option.

For people whose cancers cells have high levels of microsatellite instability (MSI) or changes in one of the MMR genes, an immunotherapy drug, such as pembrolizumab, nivolumab or Dostarlimab, may be an option.

For advanced cancers, radiation therapy can also be used to help prevent or relieve symptoms in the colon from the cancer such as pain. It might also be used to treat

areas of spread such as in the lungs or bone. It may shrink tumors for a time, but it's not likely to cure the cancer. If your doctor recommends radiation therapy, it's important that you understand the goal of treatment.

## Treating right-sided versus left-sided colon cancer

In recent years, research has shown that the genetic mutations found in colon cancer can be different depending on whether it started on the right or left side of the colon. These differences can affect how the cancer responds to certain treatments as well as a person's prognosis (how well they do after treatment).

### Right-sided colon cancer

The right-side of the colon includes the cecum, ascending colon, and about 2/3 of the transverse colon. Cancers that start on the right side of the colon are:

- Less common than left-sided colon cancer
- More likely to occur in older age
- More likely linked to a hereditary cancer syndrome
- More likely to be dMMR or MSI-H
- More likely to have a BRAF or KRAS mutation

These cancers tend to have a poorer prognosis if the cancer has advanced or spread outside the colon, compared to advanced cancers that started on the left. They are also unlikely to respond to anti-EGFR therapy, even if the tumor tests negative for RAS and BRAF mutations. Right-sided colon cancer may be more responsive to immunotherapy, compared to left-sided colon cancers.

### Left-sided colon cancer

The left-side of the colon includes the rest of the colon, which includes the remaining 1/3 of the transverse colon, the descending colon, and the sigmoid colon. Cancers that start on the left side of the colon are:

- More common than right-sided colon cancer
- More likely to occur in younger age
- More likely to be diagnosed at an earlier stage due to symptoms
- More likely to have a HER2 mutation

These cancers tend to have a better prognosis if the cancer has advanced or spread outside the colon, compared to advanced cancers that started on the right. They are also more responsive to anti-EGFR therapy, if tests are negative for RAS and BRAF mutations. Left-sided colon cancers may be more responsive to chemotherapy, compared to right-sided colon cancers.

## Treating recurrent colon cancer

Recurrent cancer means that the cancer has come back after treatment. The recurrence may be local (near the area of the initial tumor), or it may be in distant organs.

### Local recurrence

If the cancer comes back locally, surgery (often followed by chemo) can sometimes help you live longer and may even cure you. If the cancer can't be removed surgically, chemo might be tried first. If it shrinks the tumor enough, surgery might be an option. This might be followed by more chemo.

### Distant recurrence

If the cancer comes back in a distant site, it's most likely to appear in the liver first. Surgery might be an option for some people. If not, chemo may be tried to shrink the tumor(s), which may then be followed by surgery to remove them. Ablation or embolization techniques might also be an option to treat some liver tumors.

If the cancer has spread too much to be treated with surgery, chemotherapy ,targeted therapies, and/or immunotherapy may be used. Possible treatment schedules are the same as for stage IV disease.

Your options depend on which, if any, drugs you had before the cancer came back and how long ago you got them, as well as your overall health. You may still need surgery at some point to relieve or prevent blockage of the colon or other local problems. Radiation therapy may be an option to relieve symptoms as well.

Recurrent cancers can often be hard to treat, so you might also want to ask your doctor if clinical trials[3] of newer treatments are available.

For more on recurrence, see Understanding Recurrence[4].

## Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
2. www.cancer.org/cancer/diagnosis-staging/tests/biopsy-and-cytology-tests/understanding-your-pathology-report/colon-pathology/adenocarcinoma-starting-in-a-colon-polyp.html
3. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html
4. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html

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# Treatment of Rectal Cancer, by Stage

Treatment for rectal cancer is based mainly on the stage[1] (extent) of the cancer, but other factors can also be important.

- Treating stage 0 rectal cancer
- Treating stage I rectal cancer
- Treating stage II rectal cancer
- Treating stage III rectal cancer
- Treating stage IV rectal cancer
- Treating recurrent rectal cancer

People with rectal cancers that have not spread to distant sites are usually treated with surgery. Treatment with radiation and chemotherapy (chemo) may also be given before or after surgery.

## Treating stage 0 rectal cancer

Stage 0 rectal cancers have not grown beyond the inner lining of the rectum. Removing or destroying the cancer is typically all that's needed. You can usually be treated with surgery, such as a polypectomy (removing the polyp), local excision, or transanal resection. In rare cases, a more extensive surgery might be needed.

## Treating stage I rectal cancer

Stage I rectal cancers have grown into deeper layers of the rectal wall but have not spread outside the rectum itself.

This stage includes cancers that were part of a polyp. If the polyp is removed completely during colonoscopy, with no cancer at the edges, no other treatment may be needed. If the cancer in the polyp was high grade (see Colorectal Cancer Stages[2]), or if there were cancer cells at the edges of the polyp, you might be advised to have more surgery. More surgery may also be advised if the polyp couldn't be removed completely or if it had to be removed in many pieces, making it hard to see if there were cancer cells at the edges (margins).

For other stage I cancers, surgery is usually the main treatment. Some small stage I cancers can be removed through the anus without cutting the abdomen (belly), using transanal resection or transanal endoscopic microsurgery (TEM). For some, a low

anterior resection (LAR), proctectomy with coloanal anastomosis, or an abdominoperineal resection (APR) may be needed, depending on exactly where the cancer is located within the rectum.

Additional treatment typically isn't needed after these operations, unless the surgeon finds the cancer is more advanced than was thought before surgery. If it is more advanced, a combination of chemo and radiation therapy is usually given. 5-FU and capecitabine are the chemo drugs most often used.

If you're not healthy enough to have surgery, you may be treated with chemotherapy given with radiation therapy.

## Treating stage II rectal cancer

Many stage II rectal cancers have grown through the wall of the rectum and might extend into nearby tissues. They have not spread to the lymph nodes.

For treatment of stage II rectal cancer that is pMMR or MSS, chemotherapy, radiation therapy, and surgery are usually given, although the order of these treatments might be different for some people. Recent studies have shown that an approach called total neoadjuvant therapy (TNT) may be effective and potentially allow people from having to undergo transabdominal surgery. TNT is when a patient is treated with both chemotherapy and radiation before surgery. Here is  a common approach to treating these cancers:

- Many people get both chemo and radiation therapy (called **chemoradiation**) as their first treatment. The chemo given with radiation is usually either 5-FU or capecitabine .
- This may be followed by more chemotherapy (without radiation) for several months. The chemo may be the FOLFOX regimen (oxaliplatin, 5-FU, and leucovorin) or CAPEOX (capecitabine plus oxaliplatin) based on what's best suited to your health needs.
- Afterward, surgery, such as a low anterior resection (LAR), proctectomy with coloanal anastomosis, or abdominoperineal resection (APR), may be done, depending on where the cancer is in the rectum. If the chemo and radiation therapy shrink the tumor enough, sometimes a transanal resection can be done instead of a more invasive LAR or APR. This might help you avoid having a colostomy. But not all doctors agree with this method, because it doesn't let the surgeon check the nearby lymph nodes for cancer.
- Another option might be to get chemotherapy alone, followed by chemoradiation

followed by surgery.

For treatment of stage II rectal cancer that is dMMR or MSI-H, immunotherapy is preferred, but chemotherapy combined with radiation (TNT) is also an option. If you and your doctor choose to be treated with immunotherapy, it is usually given for 6 months. If there are no findings of cancer after the immunotherapy treatment by imaging and scope, no further therapy is given. If there are finding of persistent cancer after the immunotherapy treatment, combined chemo and radiation may then be given, followed by surgery.

## Treating stage III rectal cancer

Stage III rectal cancers have spread to nearby lymph nodes but not to other parts of the body.

Treatment for stage III rectal cancer is very similar to that of stage II rectal cancer (see above).

## Treating stage IV rectal cancer

Stage IV rectal cancers have spread to distant organs and tissues, such as the liver or lungs. Treatment options for stage IV rectal cancer is very similar to that of Stage IV colon cancer. For more details, refer to Treatment of Colon Cancer, by Stage. For rectal cancers that don't shrink with chemo and widespread cancers that are causing symptoms, treatment is done to relieve symptoms and avoid long-term problems, such as bleeding or blockage of the intestines. Treatments may include one or more of these:

- Removing the rectal cancer with surgery
- Surgery to create a colostomy and bypass the rectal cancer (a diverting colostomy)
- Using a special laser to destroy the cancer within the rectum
- Placing a stent (hollow metal tube) within the rectum to keep it open; this does not require surgery
- Chemoradiation therapy
- Chemo alone

## Treating recurrent rectal cancer

Recurrent cancer means that the cancer has come back after treatment. It may come

back near the area of the initial rectal cancer (locally) or in distant organs, like the lungs or liver. If the cancer does recur, it's usually in the first 2 to 3 years after surgery, but it can also recur much later.

### Local recurrence

If the cancer comes back in the pelvis (locally), it's treated with surgery to remove the cancer, if possible. This surgery is often more extensive than the initial surgery. In some cases, radiation therapy may be given during the surgery (this is called **intraoperative radiotherapy**) or afterward. Chemo may also be given after surgery. Radiation therapy might be used as well if it was not used before.

### Distant recurrence

If the cancer comes back in a distant part of the body, the treatment will depend on whether it can be removed by surgery.

If the cancer can be removed, surgery is done. Chemo may be given **before** or **after** surgery, too. When the cancer has spread to the liver, chemo may be given through the hepatic artery leading to the liver.

If the cancer can't be removed by surgery, chemo and/or targeted therapy drugs may be used. For people with certain gene changes in their cancer cells, another option might be treatment with immunotherapy. The drugs used will depend on what drugs a person has received previously and on their overall health. If the cancer doesn't shrink, a different drug combination may be tried.

As with stage IV rectal cancer, surgery, radiation therapy, or other approaches may be used at some point to relieve symptoms and avoid long-term problems, such as bleeding or blockage of the intestines.

These cancers can often be hard to treat, so you might also want to ask your doctor if there are any clinical trials[3] of newer treatments that might be right for you.

For more on recurrence, see Understanding Recurrence[4].

## Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
2. www.cancer.org/cancer/types/colon-rectal-cancer/detection-diagnosis-staging/staged.html
3. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html
4. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence/coping-with-cancer-recurrence.html

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