



Colorectal Cancer Treatment

Colorectal cancer overview

Colorectal cancer, also called large bowel cancer, is the term used to describe malignant tumors found in the colon and rectum. The colon and rectum are part of the large intestine of the digestive system, usually referred to as the gastrointestinal tract. Typically, the colon is the upper 5 or 6 feet of the large intestine, and the rectum is the lower 5 to 7 inches located above the anal canal.

In the United States, colorectal cancer is the third most common cancer. However, the number of deaths from the disease has decreased as a result of improved tests that allow early detection of the cancer, when it can be more easily treated. Physical activity and a good diet are associated with a decreased incidence of colorectal cancer. There are approximately 140,000 cases of colon and rectal cancer diagnosed in the United States every year.



What are my treatment options?

Treatment options overview

Treatment options for colorectal cancer depend on the stage of the tumor—that is, how far it has spread or how deeply it is affecting the intestinal wall and other tissues as well as whether it is located in the colon or rectum. In general, patients with colon cancer receive post-operative chemotherapy if the lymph nodes are positive. For rectal cancer, most patients who have positive nodes or who have tumors that extend into the fat surrounding the rectum receive chemotherapy plus radiation before surgery. Treatment is also tailored to the patient's age, medical history, overall health, and tolerance for specific medications and therapies.

Standard options include:

- Partial colectomy (also called partial bowel resection)—The tumor and normal tissue on either side

of the diseased area in the colon are removed. The surgeon then reconnects the healthy colon. Sometimes the physician may have to create a temporary colostomy, or an opening for solid waste from the bowel to a special bag a patient wears outside the body, until the healthy tissue has healed. At times, the colostomy is permanent.

- Laparoscopic surgery or "keyhole" surgery—Small tube-like instruments and an extremely small camera are inserted into the abdomen through incisions made in the abdominal wall. The surgeon sees what the camera sees on a television-type screen and can cut out a large section of the bowel and adjacent tissue, called the mesentery.
- Radiation therapy—High-energy radiation is used to kill cancer cells. Radiation may be used in combination with surgery as definitive therapy, or may be used to reduce, or palliate, the symptoms of colorectal cancer such as pain, bleeding, or blockage when curative therapy is not possible. Radiation therapy is often given prior to surgery to improve outcomes in selected patients with rectal cancer. Typically, one of the following radiation therapy procedures may be used to treat Colorectal Cancer:
 - External beam therapy (EBT): a method for delivering a beam of high-energy x-rays or proton beams to the location of the tumor. The radiation beam is generated outside the patient (usually by a linear accelerator for photon/x-ray and a cyclotron or synchrotron for proton beam) and is targeted at the tumor site. These radiation beams can destroy the cancer cells, and conformal treatment plans allow the surrounding normal tissues to be spared. See the External Beam Therapy page for more information.
 - Brachytherapy: the temporary placement of radioactive source(s) within the body, usually employed to give an extra dose—or boost—of radiation to the area of the excision site or to any residual tumor. See the Brachytherapy page for more information.
 - Brachytherapy is used on rare occasions.
 - Chemotherapy—Drugs are given intravenously or orally to kill cancer cells. Low doses of chemotherapy are often given at the same time as radiation therapy in order to help the radiation work better. Some patients may need higher doses of one or more chemotherapy drugs either before or after surgery to decrease the chance of the tumor returning elsewhere in the body. Like radiation therapy, chemotherapy can also ease disease symptoms and increase length of survival for patients with metastatic or incurable tumors. It is usually given over time and alternated with periods of no treatment. This helps ease potential side effects, such as abnormal blood-cell counts, fatigue, diarrhea, mouth sores, and a compromised immune system.

How can I choose from among the options?

The team of physicians responsible for your care will provide you with information specific to your care. Your physicians will recommend the appropriate type/s of treatment for you, and will discuss these options with you. Generally, patients undergo a specific therapy because a cancer specialist, after analyzing all available data and the patient's condition, has recommended it as the best way to treat the cancer.

If you are to undergo radiation therapy, a radiation oncologist will determine what dose of radiation is

needed, to which areas of the body it should be delivered, and how many treatments will be necessary.

If I choose surgery, will radiation treatment still be required?

Radiation may be used to shrink a tumor before surgical removal or destroy any remaining cancer cells after removal.

How effective is modern radiation treatment of colorectal cancer?

Surgery remains the most effective treatment for colorectal cancer. Radiation therapy is most effective as additional or adjuvant therapy either before or after surgery. It reduces the chance of cancer spread or recurrence.

Radiation is not normally used as the only, or definitive, treatment for colorectal cancer. Radiation is usually given in combination with chemotherapy to help the radiation work better. These chemotherapy treatments may be given intravenously or by mouth.

What happens during radiation therapy?

Radiation therapy uses high energy x-rays (photons) or a stream of particles. When radiation is used at high doses—much higher than the amount used to obtain x-ray images—it can destroy abnormal cells that cause cancer. It does this by damaging the cell's DNA, which eventually causes the cell to die.

Because of the importance of treating the cancer but sparing healthy tissue, you will visit the medical center before actual therapy for treatment planning and simulation. Correct patient positions for radiation exposure are determined for accurate, effective therapeutic results. Your skin may be marked with permanent ink. Custom-made lead shields may be constructed to protect your healthy organs from the radiation, or the radiation fields may be shaped for your situation with special blocks inside the radiation machine. CT or MRI scans may be used to better represent the tumor and the sensitive normal tissues for treatment planning.

What are possible side effects of radiation therapy?

Side effects that develop during treatment vary from person to person. However, some side effects are typical.

There are usually no immediate side effects from each radiation treatment. Most patients develop mild fatigue that builds up gradually over the course of therapy. This slowly goes away one to two months following the radiation therapy. Some patients develop some reddening, dryness and itching of the skin after a few weeks. Other patients develop substantial irritation.

Skin reactions usually heal completely within a few weeks of completing radiotherapy.

Diarrhea, frequent bowel movements or appetite loss is likely to occur at some point during the course of treatment. Generally, side effects stop gradually once treatment is discontinued, but often bowel function

remains altered from what it was before the disease started.

What kind of treatment follow-up should I expect?

Colorectal cancer can recur, or reappear, in a patient previously treated for the disease. Because patients can sometimes be cured after their tumor recurs, follow-up care is critically important.

- **Physical examination.** Patients will undergo frequent physical examinations from a few weeks to many years after treatment, especially if side effects from the treatment do not subside or new symptoms develop. Symptoms of pain, unexplained weight loss, or bleeding can occur with tumor recurrence.
- **Blood tests.** Follow-up evaluation usually includes periodic blood tests. An abnormal result may indicate that the colorectal cancer has recurred (returned).
- **Colonoscopy.** Approximately one year after treatment for colorectal cancer, patients usually undergo a colonoscopy, or examination of the colon with a tiny camera at the end of a hollow, flexible tube to detect recurrence or development of new benign or malignant masses. If findings from this examination are normal, it should be repeated three years later, then every five years after that.
- **Imaging.** Also during follow-up examinations, a patient may undergo computed tomography (CT) or magnetic resonance imaging (MRI). The images obtained by using these devices can help determine treatment response and detect disease spread. Occasionally, a specialized screening procedure, called positron emission tomography (PET), can also be used to detect disease spread, but this is normally used only when other symptoms are present.

Are there any new developments in treating my disease?

- New drugs are being developed that enhance the tumor-killing ability of radiation therapy and chemotherapy. These drugs can work in a variety of ways but often enhance the normal cell-killing processes within the body.
- Innovative methods to deliver radiation therapy such as intensity modulated radiation therapy (IMRT) and proton therapy are being investigated. IMRT and proton therapy may allow for treatment with a reduced chance of long-term bowel complications. See the IMRT page and the Proton Therapy page for more information.
- Drugs are being developed to stop angiogenesis—that is, the formation of new blood vessels that nourish the cancerous tumor. This can produce tumor shrinkage or prevent disease spread.
- Immunotherapy enhances the body's immune system and increases the likelihood that the cancer cells will be killed.
- Monoclonal antibodies are proteins produced in a laboratory that can identify a cancer cell for

destruction or prevent the tumor cell from dividing.

- Vaccines are being developed that may cause the body to produce more antibodies to kill cancer cells.
- Gene therapy involves altering genetic material. Either a new gene is introduced to enhance the ability of the body to kill cancer cells or a gene is administered directly to the cancer cells, causing them to die. Getting the gene to the right cells in the body is a major challenge. The treatment is still experimental and in its early stages of development.

Clinical Trials

For information and resources about clinical trials and to learn about current clinical trials being conducted, see...

- Clinical Trials - from the National Cancer Institute's Web site

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