The mutual goal of the National Comprehensive Cancer Network (NCCN) and the American Cancer Society (ACS) partnership is to provide patients and the general public with state-of-the-art cancer treatment information in an easy-to-understand language. This information is to assist you in a discussion about your treatment options with your doctor.

To ensure that you have the most up-to-date version of the treatment guidelines, consult the Web sites of the ACS (www.cancer.org) or NCCN (www.nccn.org). You may also call the ACS at 1-800-ACS-2345 or the NCCN at 1-888-909-NCCN for the most recent information.
Since 1995, doctors have looked to the NCCN for advice on treating cancer. The NCCN Clinical Practice Guidelines were developed by a diverse panel of experts from 19 of the nation’s leading cancer centers. The guidelines are a statement of consensus of its authors regarding the scientific evidence and their views of currently accepted approaches to treatment.

For more than 85 years, the public has relied on the American Cancer Society for information about cancer. The Society’s books and patient education materials provide reliable and understandable information to hundreds of thousands of patients, their families, and caregivers.

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UNMC/Eppley Cancer Center at the Nebraska Medical Center
Introduction

With this report, patients have information on the way colon and rectal cancer is treated at the nation’s leading cancer centers. Originally developed for cancer specialists by the National Comprehensive Cancer Network (NCCN), these treatment guidelines have now been written for the general public by the American Cancer Society (ACS). To obtain another copy of these guidelines, call the ACS at 1-800-ACS-2345, or the NCCN at 1-888-909-NCCN, or visit these organizations’ Web sites at www.cancer.org (ACS) and www.nccn.org (NCCN).

These patient guidelines will help you better understand your cancer treatment options. We urge you to discuss them with your doctor and ask the following questions:

- Where is my cancer located?
- How far has my cancer spread? What is the stage of my cancer? How does this stage influence my outlook for cure and survival and my treatment options?
- What treatment options do I have?
- What are the risks or side effects associated with each of my treatment options and how are they likely to affect my quality of life?
- What should I do to be ready for treatment, reduce side effects of treatment, and hasten my recovery?
- What support services are available to me and my family?

In addition to these questions, be sure to write down some of your own. For instance, you might want more information about how long it will take you to recover from surgery so you can plan your work schedule. Or you may want to ask about clinical trials.

Making Decisions About Colon and Rectal Cancer Treatment

Colon cancer and rectal cancer have many features in common. They are often referred to together as “colorectal cancer,” and in some sections of this document, they are discussed together. In other sections, however, colon and rectal cancers are discussed separately to reflect ways in which treatments differ.

Colorectal cancer is the third most common cancer (excluding skin cancer) of both men and women in the United States. The ACS estimates that about 106,000 new cases of colon cancer and 41,000 new cases of rectal cancer are diagnosed each year. About 57,100 people die of colorectal cancer each year.

Most colorectal cancers are adenocarcinomas (cancers of the glandular cells that line the inside of the colon and rectum). The information here refers to colorectal adenocarcinomas only. Other tumors that can involve the colon or rectum, such as carcinoid tumors, stromal tumors, and lymphomas, are much less common. The treatment and prognosis for these rarer types of colorectal tumors differ from that of adenocarcinomas and are not covered in this document.

Although colorectal cancer is a serious disease, it can be treated by a team of health care professionals. The team may include a gastroenterologist, surgeon, radiation oncologist, medical oncologist, pathologist, oncology nurse, social worker, radiologist, and
enterostomal therapist. This information is intended to help you understand the treatment options available to people with colon and rectal cancers so that you and your doctor can work together to decide which ones best meet your medical and personal needs.

On the following pages you’ll find flow charts that doctors call decision trees. The charts represent different stages of colon or rectal cancer, and each one shows how you and your doctor can arrive at the choices you need to make about your treatment. You will also find information on colorectal cancer, an explanation of colorectal cancer stages, what tests are needed to diagnose and stage your cancer, and treatment options with possible side effects for each option. A glossary of medical terms is also included; words in italics are found in the glossary.

About the Colon and Rectum

Understanding a little about the normal function and anatomy of the colon and rectum can help you understand how colorectal cancers spread and what is removed by the operations we will discuss later in this booklet.

The colon and rectum are parts of the large intestine, or bowel, which is part of the digestive system. The digestive system processes food for energy and rids the body of solid waste matter.

After food is chewed and swallowed, it travels through the esophagus to the stomach. There it is partly broken down and then sent to the small intestine, also called the small bowel. The small intestine continues breaking down the food and absorbs most of the nutrients. The small intestine joins the colon, a muscular tube about 5 feet long. The large intestine continues to absorb water and mineral nutrients from the food and stores waste matter, called feces or stool. The waste matter left after this process passes out of the body through the anus. The first 4 1/2 feet or so of the large intestine is called the colon, and the remainder is the rectum. The colon has 4 sections. The small intestine is connected to the first of these, called the ascending colon because it extends upward on the right side of the abdomen. The part where the ascending colon joins the small intestine is called the cecum. The second section is called the transverse colon because it goes across the body from the right to the left side. There it joins the third section, the descending colon,
which continues downward on the left side. The fourth section is known as the sigmoid colon because of its S-shape. The sigmoid colon joins the rectum, which in turn joins the anus.

Each of these sections of the colon and rectum has several layers. (See diagram on page 11.) Colorectal cancers start in the innermost layer and can grow through some or all of the other layers. Knowing a little about these layers is important because the stage (extent of spread) of a colorectal cancer depends to a great degree on which of these layers it affects. This is discussed further in the section on Colon and Rectal Cancer Stages.

The lymphatic system carries fluid throughout the body. Lymph is a clear fluid that contains waste products and immune system cells. Lymphatic vessels carry this fluid to lymph nodes (small, bean-shaped collections of immune system cells important in fighting infections). Most lymphatic vessels of the colon or rectum lead to nearby (regional) lymph nodes. Cancer cells may enter lymph vessels and travel to lymph nodes, where they can continue to grow. If cancer cells grow in these lymph nodes, they are more likely to have spread to other organs of the body as well.

The walls of the colon and rectum are nourished by blood from arteries. After flowing through these body parts, the blood flows into veins. Veins from the colon and rectum lead to the liver and then back to the heart. This pattern of blood flow is important, because cells may break off from a colorectal cancer, enter veins leaving these organs, and travel to the liver. This is why the liver is the most common site for colorectal cancer to spread (metastasize).

**Colon and Rectal Cancer Work-Up (Evaluation)**

If there is reason to suspect that you have colon or rectal cancer, the doctor will take a complete medical history and do a physical exam. Also, one or more of the following tests will be done to find out if the disease is really present and to determine its stage (how far the cancer has spread).

**Medical history and physical exam:** When your doctor “takes a history,” he or she will ask you a series of questions about your symptoms and risk factors. Some colorectal cancers may be found because of symptoms such as a change in bowel habits, blood in the stool, weakness or fatigue, abdominal pain, loss of appetite, nausea, weight loss, and straining during a bowel movement. Of course, many noncancerous conditions and some other cancers can cause one or more of these symptoms. But if these symptoms are present, a medical evaluation is the only way to determine their cause so that the most appropriate treatment can be chosen. A physical exam for patients thought to have colorectal cancer will include a digital rectal examination (DRE), careful examination of the abdomen to feel for masses or enlarged organs, and a general survey of the rest of the body.

**Colonoscopy:** A colonoscope is a long, flexible, lighted tube about the thickness of a finger. It is inserted through the rectum up into the colon. A colonoscope is longer than a sigmoidoscope and allows the doctor, in most cases, to see the entire colon lining. The colonoscope is connected to a video camera
and video display monitor so that the doctor can look closely at the inside of your colon. Before this test, you will take strong laxatives to cleanse your bowel and on the morning of the test you will also take an enema. Colonoscopy lasts about 15 to 30 minutes and is generally not painful because a mild sedative is given.

**Biopsy:** If a mass or any other abnormal areas are seen through the flexible sigmoidoscope or through the colonoscope, a sample will be taken. A *pathologist* will examine the sample under a microscope to determine whether it is a cancer or some benign condition. Some abnormalities, such as small polyps, may be entirely removed through a colonoscope. If the abnormal area is large, a *biopsy* (small tissue sample) is taken. The biopsy sample is usually about $\frac{1}{8}$-inch across and is removed with instruments that are used through the scope.

If you have questions about pathology results or any other aspect of the diagnostic process, do not hesitate to ask your doctor. You can obtain a pathology review by having microscope slides containing thin slices of your specimen sent to a consulting pathologist at an NCCN cancer center or other laboratory recommended by your doctor.

**Blood counts and blood chemistry:** Your doctor will order a blood test that will determine if you are anemic. Many people with colorectal cancer become anemic because of bleeding from the tumor. A blood test will also show how your liver is functioning. Colorectal cancer can spread to the liver and cause changes in blood proteins and enzymes.

**Tumor markers:** Colon and rectal cancers produce substances such as carcinoembryonic antigen (CEA) and CA 19-9 that are released into the bloodstream. Blood tests for these “tumor markers” are used most often with other tests to watch patients who already have been treated for colorectal cancer. They may provide an early warning that a cancer has returned.

Because the CEA level in the blood can be high for reasons other than cancer or may be normal in a person who has cancer, it is not used to find cancer in people who have never had cancer and appear to be healthy.

**Chest x-ray:** This familiar imaging test can often detect the spread of colorectal cancer to the lungs.

**Ultrasound:** This imaging test uses a device called a transducer that produces sound waves, which are reflected by nearby body tissues and organs. The pattern of sound wave echoes is detected by the transducer and analyzed by a computer to create an image of the area being studied. Since normal body tissues and tumors reflect sound waves differently, ultrasound is sometimes used to find masses that indicate local or distant spread of cancer. Two special types of ultrasound examinations are used to evaluate people with colon and rectal cancer. Endorectal ultrasound uses a special transducer that can be inserted into the rectum. This test is used to see how far a rectal cancer may have grown and whether it has spread to nearby organs or tissues. Intraoperative ultrasound is done after the surgeon has opened the abdominal cavity. The transducer can be placed against the surface of the liver, making this test very useful in detecting metastases of colorectal cancer to the liver.
**Computed tomography:** Commonly referred to as CT or a CAT scan, this test uses a rotating x-ray beam to create a series of pictures of the body from many angles. A computer combines the information from these pictures, producing a detailed cross-sectional image. Contrast material is usually injected into a vein before CT scanning to help produce clearer pictures. A CT scan can often detect the spread of colorectal cancer to internal organs such as the liver, lungs, or elsewhere in the abdomen. Spiral CT uses a special scanner that can provide greater detail and is sometimes useful in finding metastases from colorectal cancer. For a spiral CT with portography, contrast material is injected into veins that lead to the liver, to help find metastases from colorectal cancer to that organ.

**CT-guided needle biopsy:** If a metastasis is discovered, this test is often done. For this test, the patient remains on the CT scanning table while a radiologist places a biopsy needle in the mass. CT scans are repeated until the doctors are confident that the needle is within the mass. A fine needle biopsy sample (tiny fragment of tissue) or a core needle biopsy sample (a thin cylinder of tissue about \( \frac{1}{2} \)-inch long and less than \( \frac{1}{8} \)-inch in diameter) is removed and examined under a microscope.

**Magnetic resonance imaging:** Like computed tomography, magnetic resonance imaging (MRI or an MRI scan) displays a cross-section of the body. However, MRI uses powerful magnetic fields instead of radiation. The procedure can show cross-sectional views from several angles and is useful in locating metastases from colorectal cancer that are sometimes hard to see on standard x-rays and CT scans. A special MRI can show the doctor more about rectal tumors.

**Positron emission tomography:** Positron emission tomography (PET or a PET scan) uses glucose (a form of sugar) that contains a radioactive atom. The cancer cells will absorb the glucose and can be detected by a scanner. PET is often useful in identifying cancers that have spread and is used in patients with a rising CEA or suggested metastatic disease by other tests.

**Angiography:** For this test, a catheter (thin tube) is placed in a blood vessel and moved until it reaches the area to be studied. Contrast dye is injected rapidly, and a series of x-ray images is then taken. When the pictures are complete, the catheter is removed. Angiography is sometimes used to show surgeons the location of blood vessels next to a liver metastasis from colorectal cancer so that an operation can be planned.

**Colon and Rectal Cancer Stages**

*Staging is a process that tells the doctor how widespread the cancer may be — that is, whether the cancer has spread and how far. The stage of a cancer is one of the most important factors in selecting treatment options and predicting outcome. If you have any questions about your stage, please discuss them with your doctor.*

A staging system is a standardized way in which the cancer care team describes the extent to which a cancer has spread. Staging
systems for colorectal cancer include the older Dukes and Astler-Coller systems as well as the more modern AJCC/TNM system. This document uses the American Joint Committee on Cancer (AJCC) system, also called the TNM System. All 3 systems describe the spread of the cancer in relation to the layers of the wall of the colon or rectum, nearby lymph nodes, other organs next to the colon and rectum, and organs farther away.

In addition, there are 2 types of AJCC stages. The clinical stage is based on physical examination and some imaging studies done before surgery. The clinical stage is used to decide which, if any, operations should be done for people with colorectal cancer. After colorectal surgery, the pathologic stage is determined by examining the body tissue that has been removed. The pathologic stage is used to decide which patients with colon and rectal cancer should receive adjuvant treatment and, if so, exactly which treatment.

The TNM System describes the extent of the primary tumor (T), the absence or presence of metastasis (spread) to nearby lymph nodes (N), and the absence or presence of distant metastasis (M).

**T Categories for Colorectal Cancer**

T stages of colorectal cancer describe how far the cancer has spread through the layers that form the wall of the colon and rectum. These layers, from the inner to the outer, include the mucosa (the lining) which includes the muscularis mucosae (a thin layer of muscle tissue beneath the mucosa), the submucosa (connective tissue beneath this thin muscle layer), the muscularis propria (a thick layer of muscle that contracts to force the contents of

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the intestines along), the subserosa (a thin layer of connective tissue), and the serosa (a thin layer that covers the outer surface of some parts of the large intestine).

**Tis:** The cancer is in the earliest stage. It has not grown beyond the mucosa (inner layer) of the colon or rectum. This stage is also known as carcinoma in situ or intramucosal carcinoma.

**T1:** The cancer has grown through the mucosa and extends into the submucosa.

**T2:** The cancer has grown through the mucosa and the submucosa and extends into the thick muscle layer.

**T3:** The cancer has grown through the mucosa, the submucosa, and completely through the thick muscle layer. It has spread to the subserosa but not to any nearby organs or tissues.

**T4:** The cancer has spread completely through the wall of the colon or rectum into nearby tissues or organs.

**N Categories for Colorectal Cancer**

**N0:** No lymph node involvement.

**N1:** Cancer cells found in 1 to 3 regional lymph nodes.

**N2:** Cancer cells found in 4 or more regional lymph nodes.

**M Categories for Colorectal Cancer**

**M0:** No distant spread.

**M1:** Distant spread is present.

**Stage grouping**

Once a patient’s T, N, and M categories are known, this information is combined to determine the stage, expressed in Roman numerals from stage I (the least advanced
Stage 0: Tis, N0, M0: The cancer is in the earliest stage. It has not grown beyond the inner layer (mucosa) of the colon or rectum. This stage is also known as carcinoma in situ or intramucosal carcinoma.

Stage I: T1, N0, M0, or T2, N0, M0: The cancer has grown through the mucosa into the submucosa (T1) or it may also have grown into the muscularis propria (T2), but it has not spread into nearby lymph nodes (N0) or distant sites.

Stage IIA: T3, N0, M0: The cancer has grown through the wall of the colon or rectum, into the outermost layers (T3). It has not yet spread to the nearby lymph nodes (N0) or distant sites.

Stage IIB: T4, N0, M0: The cancer has grown through the walls of the colon or rectum into other nearby tissues or organs (T4). It has not yet spread to the nearby lymph nodes (N0) or distant sites.

Stage IIIA: T1-2, N1, M0: The cancer has grown through the mucosa into the submucosa (T1) or it may also have grown into the muscularis propria (T2), and it has spread to 1 to 3 nearby lymph nodes (N1) but not distant sites.

Stage IIIB: T3-4, N1, M0: The cancer has grown through the mucosa into the submucosa (T1) or it may also have grown into the muscularis propria (T2), and it has spread to 1 to 3 nearby lymph nodes (N1) but not distant sites.

Stage IIIC: Any T, N2, M0: The cancer has grown through the mucosa into the submucosa (T1) or it may also have grown into the muscularis propria (T2), and it has spread to 1 to 3 nearby lymph nodes (N1) but not distant sites.

Stage IV: Any T, Any N, M1: The cancer has spread to other sites as well, including the liver, lungs, or other organs (M1).
Stage IIIB: T3-4, N1, M0: The cancer has grown through the wall of the colon or rectum (T3) or into other nearby tissues or organs (T4) and has spread to 1 to 3 nearby lymph nodes (N1) but not distant sites.

Stage IIIC: Any T, N2, M0: The cancer can be any T but has spread to 4 or more nearby lymph nodes but not distant sites.

Stage IV: Any T, Any N, M1: The cancer can be any T, any N, but has spread to distant sites such as the liver, lung, peritoneum (the membrane lining the abdominal cavity), or ovary (M1).

The Dukes system uses letters A through C, and the Astler-Coller system uses A through D. If your stage is reported in either of these systems, this table can be used to find the matching AJCC/TNM stage:

<table>
<thead>
<tr>
<th>AJCC/TNM</th>
<th>DUKES</th>
<th>ASTLER-COLLER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>I</td>
<td>A</td>
<td>A, B1</td>
</tr>
<tr>
<td>II</td>
<td>B</td>
<td>B2, B3</td>
</tr>
<tr>
<td>III</td>
<td>C</td>
<td>C1, C2, C3</td>
</tr>
<tr>
<td>IV</td>
<td>–</td>
<td>D</td>
</tr>
</tbody>
</table>

Types of Treatment for Colon and Rectal Cancers

The 4 main types of treatment for colon and rectal cancer are surgery, radiation therapy, chemotherapy, and immunotherapy. Depending on the stage of the cancer, 2 or even 3 of these types of treatment may be combined at the same time or after one another.

After your cancer has been found and staged, your doctor will recommend one or more treatment options. It is important to take time and think about all of the choices. You may want to ask for a second opinion. This can provide more information and help you feel more confident about the treatment plan you choose.

Surgery

Colon surgery: Surgery is the main treatment for colon cancer. The usual operation is called a segmental resection or partial colectomy. To prepare for this surgery you will be given laxatives and enemas. Just before the surgery you will be given general anesthesia, which puts you into a deep sleep. During this surgery, the cancer and a length of normal tissue on either side of the cancer as well as the nearby lymph nodes are removed. The remaining sections of the colon are then attached back together. When you wake up you will have some pain and will need to be given pain medicines, usually morphine for the first day or two. This operation rarely causes any major permanent problems with digestive functions. Sometimes, a temporary colostomy may be needed. In a colostomy, the colon is attached to the abdominal wall and fecal material drains through an opening in the wall into a bag. Even more rarely, a permanent colostomy may be needed. Patients can usually leave the hospital about 5 to 7 days after surgery and resume usual activities in 6 weeks. Of course, hospitalization and recovery times depend on each patient’s specific medical condition.

It is sometimes possible to remove some very early colon cancers by surgery through a
colonoscopy. When this is done, the surgeon does not have to cut into the abdomen.

Some very advanced colon cancers can block the flow of feces. When it is not possible to remove the cancer, the flow of feces can be diverted to a colostomy. This operation is called a diverting colostomy. If there is blockage, surgery is more likely to lead to complications because the bowel cannot be cleansed with enemas, which help prevent infection. Also, a complete colonoscopy cannot be done.

It is sometimes possible to remove segments of the colon and nearby lymph nodes through a laparoscope. This instrument is a long, lighted viewing tube through which the doctor can operate with special surgical instruments. The viewing tube and instruments are placed into the abdomen through several small surgical incisions. The NCCN guidelines recommend laparoscopic colectomy as an option because clinical trials have shown that laparoscopic colectomy is as good a procedure as abdominal colectomy.

**Rectal surgery:** Several methods are used for removing or destroying rectal cancers. Local resection is an option for some people with stage I rectal cancer. It involves cutting through all layers of the rectum to remove invasive cancers as well as some surrounding normal rectal tissue. This procedure can be done through the anus without cutting through the abdomen and it leaves the rectum intact. This procedure is called “transanal resection.” Because complete removal of the cancer is so important, local resection is not an option for people whose cancers cannot be completely removed by that procedure. Doctors consider the cancer’s size, its exact location within the rectum, and how far around the circumference of the rectum it extends in order to select which patients should have a local resection.

Many stage I and most stage II and stage III rectal cancers are removed by either low anterior (LA) resection or abdominoperineal (AP) resection. LA resection is used for cancers near the upper part of the rectum, close to where it connects with the sigmoid colon. After LA resection, the colon is attached to the lower rectum and waste is eliminated in the usual way.

AP resection is used for cancer in the lower part of the rectum, close to its outer connection to the anus. Because the cancer is close to the anus, the anus is also removed. After AP resection, a permanent colostomy is needed. Some patients with stage IV rectal cancers will need a diverting colostomy. In this operation the surgeon does not remove a rectal cancer that is blocking fecal flow, but instead bypasses the blockage and diverts fecal flow to a colostomy. Some patients may now have a stent (a plastic or metal tube) placed to keep the colon or rectum from becoming blocked if the tumor cannot be removed. Heating the rectal tumor with a laser beam aimed through the anus, called photocoagulation, is another option for relieving or preventing rectal blockage in patients with stage IV cancer.

**Surgical treatment of colorectal cancer metastases:** For patients whose colorectal cancer has spread to a few areas in the liver, lungs, or elsewhere in the abdomen, removing these metastases can cure the cancer in some instances. Other times, destroying metastases without surgery, although not curative, can help the patient live longer. Liver metastases
may also be destroyed by freezing the tumor (cryosurgery) or by heating them with microwaves (radio frequency ablation). The freezing probe or microwave probe is placed through the skin and guided to the tumor by CT scans or ultrasound images.

**Radiation Therapy**

Radiation has a major role in the treatment of rectal cancers. Radiation therapy uses high-energy x-rays or particles to kill cancer cells. In treating rectal cancer, radiation treatment is usually given by *external beam radiation*. External beam radiation is usually given with a linear accelerator, 5 days a week for several weeks. This must be planned, using diagnostic x-ray machines, such as a simulator or a CT scanner. Radiation can be given either before surgery — to cause the tumor to shrink to allow easier removal or to decrease the risk of complications — or after surgery if there is a risk of the cancer coming back in the tumor area. Chemotherapy with the drug fluorouracil (5-FU) is given by continuous infusion through an intravenous (IV) line (placed in a vein) at the same time as radiation to make the radiation more effective. Studies have shown that for cases of rectal cancer, radiation along with surgery will often decrease the risk of the cancer coming back (recurrence).

**Chemotherapy**

Chemotherapy is the use of cancer-fighting drugs injected into a vein or taken by mouth. Chemotherapy is a systemic treatment. The drugs enter the bloodstream and reach all areas of the body, making this treatment useful for cancers that have spread beyond the organ they started in.

Fluorouracil (5-FU) is the chemotherapy drug most often used to treat colorectal cancer. It is usually given together with other drugs, such as leucovorin, that increase its effectiveness. As stated above, 5-FU is also given by continuous infusion along with radiation therapy to increase the effectiveness of the radiation.

In the past, 5-FU was usually given slowly into a vein over about 5 minutes. If these injections were given for 5 days, which was a typical treatment, no other chemotherapy would be given for about 3 weeks while the patient recovers from the drug’s side effects. Some doctors would use a schedule of once weekly injections. This cycle was repeated for 6 to 8 months.

Recently it has been found that a different way of giving these drugs may be better. With this treatment, called the de Gramont regimen, the 5-FU is given continuously over 2 days as well as by rapid injection on each day. The leucovorin is given on each day over 2 hours. The de Gramont regimen is given every other week.

In some cases, particularly along with radiation therapy, 5-FU is given as a continuous infusion into a vein. The patient wears a small battery-operated pump that continuously releases 5-FU into an IV line. For patients with spread of colon or rectal cancer to their liver, 5-FU or a related drug, floxuridine (FUDR), may be given directly into the artery that supplies blood to the liver. This approach to treatment of liver metastases is called hepatic artery infusion.
Irinotecan is another chemotherapy drug that is used with 5-FU. This treatment is called FOLFIRI. It adds irinotecan to the de Gramont 5-FU/leucovorin regimen. Recent studies have shown a chance of excessive side effects when 5-FU, leucovorin, and irinotecan are combined. If this combination of drugs is used, the starting doses may be reduced and your doctor will carefully watch you so that your doses can be adjusted if necessary. If excessive side effects occur, dosages may be adjusted.

Oxaliplatin is another drug that is effective when combined with 5-FU and leucovorin and may be used instead of irinotecan. Like irinotecan, it is often used with the de Gramont 5-FU/leucovorin regimen. This treatment is called FOLFOX.

Capecitabine, a chemotherapy drug given by mouth, is changed to 5-FU once it gets inside the body to the tumor site. This drug can be used instead of intravenous 5-FU and acts as if the 5-FU was being given continuously.

Immunotherapy
Immunotherapies use natural substances produced by the immune system. These substances may kill cancer cells, slow their growth, or activate the patient’s immune system to fight cancer more effectively.

Antibodies are produced by the immune system to help fight infections. Similar antibodies called monoclonal antibodies can be made in the laboratory. Instead of attacking germs as usual antibodies do, some monoclonal antibodies can be designed to attack cancer cells. Two new monoclonal antibodies have been approved by the US Food and Drug Administration (FDA) to attack colon cancer cells.

The first new agent, bevacizumab, works by preventing the growth of new blood vessels that supply tumor cells with the blood, oxygen and other nutrients they need to grow. Bevacizumab is used with chemotherapy as first line treatment for patients with advanced or metastatic colon or rectal cancer.

The second new agent, cetuximab, works by binding to a special site on the cell surface which stops the cell’s growth and promotes cell death. It is used either alone or in combination with a chemotherapy agent as a second line treatment for patients with advanced cancer or metastatic colon or rectal cancer whose disease is no longer responding to the chemotherapy agent, irinotecan, or for patients who cannot take irinotecan.

Adjuvant Treatment and Neoadjuvant Treatment

The terms *adjuvant treatment* and *neoadjuvant treatment* refer to radiation therapy and/or chemotherapy given before (neoadjuvant) or after (adjuvant) surgery. Adjuvant treatment is given after surgery when there is a chance that a small number of cancer cells have already spread to distant sites. Neoadjuvant therapy is given before surgery for large rectal tumors, particularly if the cancer appears to have spread to lymph nodes.

**Adjuvant treatment:** After surgery, the tissue that has been removed is examined under a microscope to determine the cancer’s stage (how far it has spread). If the
cancer is large or has spread to lymph nodes, even though no remaining cancer can be seen, doctors believe it is possible that a few scattered cancer cells may remain in the patient’s body. In this situation more treatment in the form of chemotherapy or radiation therapy may be given.

Neoadjuvant treatment: If the tumor appears large or has spread to lymph nodes, radiation therapy along with chemotherapy may be recommended before surgery. The purpose of neoadjuvant treatment is to shrink tumors so that they can be more completely removed by surgery and prevent the cancer from coming back in the pelvis.

Talking with an enterostomal therapist: NCCN guidelines recommend that people with rectal cancer be referred to an enterostomal therapist (a health care professional, often a nurse, trained to help people with their colostomies) as part of their initial work-up. The enterostomal therapist can address concerns about how a colostomy might affect their daily activities. A colostomy is an opening in the abdomen where a section of the colon is attached to allow for passage of body waste. A bag is attached to the skin with adhesives to collect waste. Discussing these issues shortly after diagnosis can help patients make informed decisions about treatment options, some of which may involve a colostomy.

A discussion with an enterostomal therapist is also recommended for the few people with colon cancer who need a temporary or permanent colostomy. If a patient’s surgical treatment requires a colostomy, the enterostomal therapist will provide information and training on care of the colostomy. The ACS and many cancer centers can refer patients with colostomies to support groups and other programs that provide additional information and support.

Treatmen of Pain and Other Symptoms
Most of this document discusses ways to remove or destroy colorectal cancer cells or to slow their growth. But it is important to realize that maintaining the lifestyle you have always enjoyed is an important goal. Don’t hesitate to discuss your symptoms or any other concerns with your cancer care team. There are effective and safe ways to treat pain, most other symptoms of colorectal cancer, and most of the side effects caused by colorectal cancer treatment. (Refer to the ACS/NCCN treatment guidelines for patients on the following topics: cancer pain, nausea and vomiting, cancer-related fatigue, and fever and neutropenia.)

Alternative or Complementary Therapies
If you are considering any alternative or complementary therapies, it is best to discuss this openly with your cancer care team and request information from the ACS or the National Cancer Institute (NCI). Any treatment that has not be studied in clinical trials and proved to be safe and effective might interfere with standard medical treatments or cause serious side effects.
Side Effects of Colon and Rectal Cancer Treatments

Side Effects of Surgery
Side effects that can occur as a result of colorectal surgery include bleeding from the surgery, blood clots in the legs, and damage to nearby organs during the operation. Rarely, the connections between the ends of the intestine may not hold together completely and leak. If an infection occurs, it is possible that the incision might open up, causing a gaping wound. Later after the surgery, you might develop what are called adhesions, which could cause the bowel to become blocked.

Side Effects of Radiation
Side effects of radiation occur mainly in the area where the radiation is given and may include skin irritation, diarrhea, rectal irritation, and bladder irritation. Nausea and fatigue may also occur. These slowly build up during treatment and often disappear on completion of treatment. Long-term effects such as scarring or bleeding are possible. Irritation of the rectum is called radiation proctitis, and irritation of the colon is called radiation colitis. Occasionally, chronic irritation of the rectum or bladder persists.

Side Effects of Chemotherapy
Chemotherapy drugs kill cancer cells but also damage some normal cells. Therefore, careful attention must be given to avoiding or reducing side effects, which depend on the type of drugs, the amount taken, and the length of treatment. The most common side effects might include loss of appetite, mouth sores, diarrhea, which can sometimes be quite severe and life threatening (particularly if irinotecan is given), or a rash on the patient’s hands and feet. Hair loss can also occur. Because chemotherapy can damage the blood-producing cells of the bone marrow, patients may have low blood cell counts. This can result in an increased chance of infection (due to a shortage of white blood cells), bleeding or bruising after minor cuts or injuries (due to a shortage of blood platelets), and fatigue (sometimes due to low red blood cell counts). Fatigue also occurs often even when blood counts are normal.

Most side effects disappear once treatment is stopped. Hair will grow back after treatment ends. There are remedies for many of the temporary side effects of chemotherapy. For example, antinausea drugs to prevent or reduce nausea and vomiting can be given (see the ACS/NCCN Nausea and Vomiting Treatment Guidelines for Patients with Cancer).

Side Effects of Immunotherapy
Although monoclonal antibodies are similar to normal parts of the immune system, treatment with them can cause side effects. Common side effects of these agents are high blood pressure, blood clots, diarrhea, fatigue, decreased white blood cell counts, headache, and skin rashes like acne.

Body Image and Sexuality Issues
Surgery and radiation therapy may sometimes affect how people feel about their body and may lead to specific physical problems that affect sexuality. Men who have an AP resection can have “dry” orgasms following surgery because of damage to the nerves that control ejaculation. Sometimes the surgery only causes
retrograde ejaculation, which means the semen goes backward into the bladder. AP resection should not stop your erections or ability to reach orgasm. However, your pleasure at orgasm may be less intense. Radiation may also cause sexual dysfunction in men. Women who have an AP resection should not expect any loss of normal sexual function.

Your cancer care team can discuss these issues with you, so don’t hesitate to share your concerns and ask questions.

Other Things to Consider During and After Treatment

During and after treatment for your colon or rectal cancer, you may be able to hasten your recovery and improve your quality of life by taking an active role. Learn about the benefits and disadvantages of each of your treatment options, and ask questions of your cancer care team if there is anything you do not understand. Learn about and watch for side effects of treatment, and report these promptly to your cancer care team so that they can take steps to reduce them.

Remember that your body is as unique as your personality and your fingerprints. Although understanding your cancer’s stage and learning about your treatment options can help predict what health problems you may face, no one can say how you will respond to cancer or its treatment.

You may have special strengths such as a history of excellent nutrition and physical activity, a strong family support system, or a deep faith, and these strengths may make a difference in how you respond to cancer. There are also experienced professionals in mental health services, social work services, and pastoral services who may assist you in coping with your illness.

You can also help in your own recovery from cancer by making healthy lifestyle choices. If you use tobacco, stop now. Quitting will improve your overall health, and the full return of the sense of smell may help you enjoy a healthy diet during recovery. If you use alcohol, limit how much you drink. Have no more than 1 or 2 drinks per day. Good nutrition can help you get better after treatment. Eat a nutritious and balanced diet, with plenty of fruits, vegetables, and whole grain foods. Ask your cancer care team if you might benefit from a special diet — they may have specific recommendations for people who have had radiation therapy, a colostomy, or other colorectal surgery.

If you are being treated for cancer, be aware of the battle going on in your body. Radiation therapy and chemotherapy add to the fatigue caused by the disease itself. Give your body the rest it needs so that you will feel better as time goes on. Ask your cancer care team about including a regular program of exercise in your daily routine to help in your recovery.

A cancer diagnosis and its treatment are major life challenges, with an impact on you and everyone who cares for you. Before you reach the point of feeling overwhelmed, consider attending a meeting of a local support group. If you need individual assistance in other ways, contact your hospital’s social service department or the ACS for help in contacting counseling or other services.
About Clinical Trials

Studies of promising new or experimental treatments in patients are known as clinical trials. A clinical trial is only done when there is some reason to believe that the treatment being studied may be valuable to the patient. Treatments used in clinical trials are often found to have real benefits. Researchers conduct studies of new treatments to answer the following questions:

- Is the treatment helpful?
- How does this new type of treatment work?
- Does it work better than other treatments already available?
- What side effects does the treatment cause?
- Are the side effects greater or less than the standard treatment?
- Do the benefits outweigh the side effects?
- In which patients is the treatment most likely to be helpful?

Types of clinical trials: A treatment is studied in 3 phases before it is eligible for approval by the US FDA.

Phase I clinical trials: The purpose of a phase I study is to find the best way to give a new treatment and how much of it can be given safely. The treatment has been well tested in laboratory and animal studies, but the side effects in patients are not completely known. Doctors conducting the clinical trial start by giving very low doses of the drug to the first patients and increasing the dose for later groups of patients until side effects appear. Although doctors are hoping to help patients, the main purpose of a phase I study is to test the safety of the drug.

Phase II clinical trials: These studies are designed to see if the drug works. Patients are given the highest dose that doesn’t cause severe side effects (determined from the phase I study) and closely observed for an effect on the cancer. The doctors also look for side effects.

Phase III clinical trials: Phase III studies involve large numbers of patients. Some clinical trials may enroll thousands of patients. One group (the control group) receives the standard (most accepted) treatment. The other groups receive the new treatment. All patients in phase III studies are closely watched. The study will be stopped if the side effects of the new treatment are too severe or if one group has had much better result than the others.

If you are participating in a clinical trial, you will have a team of experts taking care of you and monitoring your progress very carefully. The study is especially designed to pay close attention to you. However, there are some risks. No one involved in the study knows in advance whether the treatment will work or exactly what side effects will occur. That is what the study is designed to discover. Although most side effects disappear in time, some can be permanent or even life threatening. Keep in mind, though, that even standard treatments have side effects. Depending on many factors, you may decide to enroll in a clinical trial.

Deciding to enter a clinical trial: Enrollment in any clinical trial is completely up to you. Your doctors and nurses will explain the study in detail to you and will give you a form to read and sign indicating your desire to take part. This process is known as
giving your informed consent. Even after signing the form and after the clinical trial begins, you are free to leave the study at any time, for any reason. Taking part in the study will not prevent you from getting other medical care you may need.

To find out more about clinical trials, talk to your cancer care team. Among the questions you should ask are:

• Is there a clinical trial for which I would be eligible?
• What is the purpose of the study?
• What kinds of tests and treatments does the study involve?
• What does this treatment do?
• What is likely to happen in my case with, or without, this new research treatment?
• What are my other choices and their advantages and disadvantages?
• Will I know which treatment I receive?
• How could the study affect my daily life?
• What side effects can I expect from the study? Can the side effects be controlled?
• Will I have to be hospitalized? If so, how often and for how long?
• Will the study cost me anything? Will any of the treatment be free?
• If I am harmed as a result of the research, what treatment would I be entitled to?
• What type of long-term follow-up care is part of the study?
• Has the treatment been used to treat other types of cancers?

The American Cancer Society offers a clinical trials matching service for patients, their family, and friends. You can find this service on our Web site (www.cancer.org) or through our national call center at 1-800-ACS-2345. Based on the information you provide about your cancer type, stage, and previous treatments, this service will compile a list of clinical trials that match your medical needs.

You can also get a list of current clinical trials by calling the National Cancer Institute’s Cancer Information Service toll free at 1-800-4-CANCER or by visiting the NCI clinical trials Web site at www.cancer.gov/clinical_trials/.
The decision trees on the following pages represent different stages of colorectal cancer. Each one shows you step-by-step how you and your doctor can arrive at the choices you need to make about your treatment.

Keep in mind that this information is not meant to be used without the expertise of your own doctor, who is familiar with your situation, medical history, and personal preferences. You may even want to review this booklet together with your doctor, who can show you which of the decision trees apply to you. We’ve left some blank spaces in the decision trees for you or your doctor to add notes about the treatments. You also might use this space to write down some questions to ask your doctors about the treatments.

Participating in a clinical trial is an option for people with any stage of colorectal cancer. Taking part in the study does not prevent you from getting other medical care you may need.

The NCCN guidelines are updated as new significant data become available. To ensure you have the most recent version, consult the Web sites of the ACS (www.cancer.org) or NCCN (www.nccn.org). You may also call the NCCN at 1-888-909-NCCN or the ACS at 1-800-ACS-2345 for the most recent information on these guidelines or on cancer in general.
Treatment for Cancerous Polyps

Selecting treatment for patients with colon cancer involves considering many factors. These factors are considered in a stepwise manner, starting with the doctor’s initial impression of the patient’s medical situation (called the clinical situation).

Sometimes a patient is thought to have a non-cancerous, or benign, polyp of the colon that is a mushroom-shaped growth of glandular tissue (called an adenomatous polyp). Only after the growth is removed and studied under a microscope can the doctors see that part of what was thought to be a benign growth has started to turn cancerous. If that is the case, then colonoscopy should be done and the site marked with metal clips for further study by x-ray.

If the cancerous part of the growth has been completely removed and is limited to the head of the polyp (the part that resembles the cap of a mushroom), no more treatment is needed. If it appears that the cancer cells are spreading along the stalk of the polyp or to lymphatic channels, or if the cancer cells are highly abnormal in appearance, suggesting spread is likely (high grade), or if there are cancer cells in the edges of the removed tissue margin, or if the margins cannot be completely evaluated, then surgery to remove the cancer...
## Treatment for Cancerous Polyps

### Findings After Polyp Removal

- Cancer limited to tip of polyp that has been completely removed
- One or more of the following:
  - Spread into polyp’s stalk
  - Spread to lymphatic channels
  - High grade (very abnormal-looking cells)
  - Surgical margins (edge of tissue) contain cancer cells or cannot be evaluated

- Cancer is superficial, completely removed as a single tumor, and there are no cancer cells in edge of tissue
- One or more of the following:
  - Stage T1 or higher
  - Cancer removed in fragments
  - Surgical margins (edge of tissue) contain cancer cells or cannot be evaluated
  - Spread to lymphatic channels
  - High grade (very abnormal-looking cells)

### Surgery

- No additional surgery needed
- Surgery with removal of cancer along with part of colon and nearby lymph nodes
- No additional surgery needed
- Surgery with removal of cancer along with part of colon and nearby lymph nodes

See Adjuvant Treatment for Colon Cancer (pages 26–29)

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along with removal of nearby lymph nodes is recommended.  

If the adenomatous growth is a villous adenoma, it does not have a distinct stalk but instead has a broad base. If doctors are certain that all of the adenoma and cancer has been removed, and the cancer is not growing into the bowel lining, no more treatment is needed.  

But, if the cancer is growing into the bowel wall if it is removed in pieces or fragments, if there are cancer cells in the edges of the specimen, or if the margins cannot be seen very well, or if there is growth into lymphatic channels, or if the cancer is high grade, then colon resection along with removal of lymph nodes is recommended.
## Treatment for Colon Cancer

If a cancer invades the wall of the colon, then there should be a complete evaluation with a pathology review, colonoscopy, if not already done, blood tests, chest x-ray, and CT scans of the abdomen and pelvis. If the cancer appears to be completely removable, then surgery should be done to remove the part of the colon containing the cancer and nearby lymph nodes.

If a large cancer is blocking the flow of feces and the bowel couldn’t be cleansed with enemas before surgery (this is always necessary before any colorectal surgery) there are 3 options.

The first is for the surgeon to remove the cancer and nearby lymph nodes.

In the second option the surgeon can do a smaller operation to remove just the cancer and create a temporary colostomy. The bowel

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### Clinical Presentation

- Colon cancer that looks like it can be removed and has not spread to distant sites
- Colon cancer that appears to have spread to distant sites

### Work-Up (Evaluation)

- Pathology review
- Colonoscopy
- Blood counts
- Blood chemistry tests
- CEA blood test
- CT scan of abdomen and pelvis
- Chest x-ray

### Findings of Work-up

- Surgeon can remove all visible cancer
- Surgeon can remove all visible cancer, but cancer is blocking the bowel (obstruction) and it could not be cleansed with enemas before surgery
- The cancer cannot be removed

### Findings of Work-up (Colon Cancer with Metastases)

- See Colon Cancer with Metastases (pages 30–31)
can then be cleansed and the full operation done with more of the colon removed and nearby lymph nodes removed. The colostomy is repaired so the colon is intact again.

The third option is to relieve the obstruction with a plastic tube or stent, cleanse the colon, and then do a colon resection and removal of nearby lymph nodes.

If it turns out the cancer cannot be completely removed, then either a colostomy can be done or a stent placed. Later, the tumor may be removed to prevent future complications.

If the cancer appears to have spread to distant sites, then a completely different treatment is used (see page 30).
Pathological Stage

**Stages 0 or I:** Tumor is small, doesn’t invade past muscular layer, and has not spread to lymph nodes or distant sites (Tis, T1–2, N0, M0)

**Stage IIA:** Tumor is larger and invades through bowel wall, but has not spread to lymph nodes or distant sites (T3, N0, M0)

**Stage IIB:** Same as above but the cancer is high grade (very abnormal-looking cells), has grown into blood or lymphatic vessels, or has obstructed the colon (T3, N0, M0)

**Stage IIB:** There is a hole in the bowel wall, or there is cancer at the edge of the surgical specimen (T3, N0, M0)

**Stage IIB:** The cancer has grown into surrounding tissues but has not spread to lymph nodes or distant sites (T4, N0, M0)

**Stage IIIA, B, C:** The tumor is of any size and has spread to lymph nodes but not distant sites (T1–4, N1–2, M0)

Adjuvant (Additional) Treatment

**No treatment**

**No treatment, or Clinical trial**

**No treatment, or Consider 5-FU and leucovorin, or Capecitabine or FOLFOX, or Clinical trial**

**No treatment, or Consider 5-FU and leucovorin or capecitabine or FOLFOX, possibly with radiation to the site of the cancer if there is a perforation (hole) in the bowel wall, or Clinical trial**

**5-FU and leucovorin or capecitabine or FOLFOX regimen (5-FU, leucovorin and oxaliplatin). Radiation may be added to 5-FU/leucovorin for T4 tumors**

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**Adjuvant Treatment for Colon Cancer**

**Stages 0 or I:** Tis; T1–2, N0, M0: The tumor is small and doesn’t invade past the muscle layer. It has not spread to nearby nodes or distant sites. Because the risk of cancer returning after surgery is low, adjuvant, or additional, treatment is not given.

**Stage IIA:** T3, N0, M0: The tumor is larger and invades through the bowel wall. It has not spread to nearby nodes or distant sites. There is no evidence that adjuvant treatment is helpful, but this is not certain. Either no treatment or participation in a clinical trial is appropriate.
Adjuvant Treatment for Colon Cancer

Follow-Up Tests and Examinations

**Stage IIB: T3, N0, M0:** If the cancer is high grade, invades blood or lymphatic vessels, or has blocked the bowel, the cancer might have a higher chance of coming back. Because there is still no evidence proving that adjuvant treatment is helpful, no treatment is appropriate. Chemotherapy with 5-FU and leucovorin or participation in a clinical trial would also be appropriate. If there is a hole or perforation in the bowel, radiation might be added to the chemotherapy.

**Stage IIB: T4, N0, M0:** The cancer has grown through the bowel wall and invaded surrounding tissues. Because there is still no evidence proving that adjuvant treatment is helpful at this stage, no treatment would be
appropriate. But, chemotherapy with 5-FU and leucovorin, or capecitabine, or FOLFOX, or participation in a clinical trial would also be appropriate. Radiation might be added to the chemotherapy.

**Stages III A, B, C:** T1–3, N1–2, M0 and T4, N1–2, M0: The cancer has spread to nearby lymph nodes but not distant sites. Patients whose tumors have spread to surrounding lymph nodes have a greater chance of having their tumors recur. Studies have shown that giving adjuvant chemotherapy can lower the risk of recurrence. The recommended chemotherapy is 5-FU and leucovorin or 5-FU leucovorin and oxaliplatin (FOLFOX) or capecitabine. Radiation therapy may be added for T4 tumors.

**Follow-up tests and examinations for colon cancer:** After treatments are finished, follow-up tests are routinely done. The purpose
of these tests is to find colorectal cancer that has recurred (come back) as soon as possible, when further treatments are most likely to be helpful.

You should see your doctor for a checkup regularly — first every 3 months and then, after 2 years, every 6 months for at least 5 years. If you are healthy enough to have surgery to remove cancer that comes back in the liver or lungs, a CEA blood test should be done at the same time as your checkup. Colonoscopy to detect new polyps should be done in a year or in 3 to 6 months if your cancer was blocking the bowel and it couldn’t be done just before surgery. If polyps are found, the colonoscopy should be repeated in a year. If none are found, then it can be done every 3 years. A CT scan may be performed for patients that are considered high risk.
Colon Cancer With Metastases

Any T, any N, M1: The cancer has spread to distant sites. Work-up may include colonoscopy, blood work, CT scans of the abdomen and pelvis, a chest x-ray, and a needle biopsy of suspected metastasis. If the liver is the only area of suspected distant spread, more tests may need to be done, such as spiral CT, MRI, laparoscopy, PET scan, angiogram, and/or portography, especially if considering chemotherapy directly into the blood supply to the liver. This is called hepatic artery infusion, or HAI.

When spread to distant organs is suspected or proven when a colon cancer is diagnosed, but before the colon and lymph node surgery is done, the next step is to determine whether the metastases can be completely removed by surgery. This decision is based on the number of metastatic tumors present and their exact localization.
location. One tumor or a few tumors of metastatic colorectal cancer can often be removed from the liver, lungs, or abdomen. Although not curative, destroying the tumor but not removing it by surgery is another option, and it can be accomplished by heating the tumors with radiofrequency waves or by freezing them with cryosurgery (a very low-temperature needle precisely aimed into the tumor). More tumors or tumors in certain critical parts of these organs may be impossible to remove without severely damaging the organs in which they are found. Whenever possible, the surgeon will try to remove all visible cancer, since this offers the best chance for cure or long-term survival.
Colon Cancer and Liver Metastases

If the cancer has already spread, but only to the liver, doctors will decide if it is possible to safely remove it. If only a few metastases are present and they can be removed with surgery, the NCCN recommends surgery to remove the colon cancer and nearby lymph nodes along with the liver metastases.

Another option is to remove the liver metastases 6 weeks after the colon surgery or to give chemotherapy after the colon surgery and then operate on the liver metastases.

After surgery, adjuvant chemotherapy might be given with a number of different chemotherapy combinations, including chemotherapy given directly into the liver.
For patients who received chemotherapy before liver resection, not giving chemotherapy is also an option. In addition to the standard follow-up outlined on page 27, the NCCN suggests CT scans of the chest, abdomen, and pelvis every 3 to 6 months.

If there are too many liver metastases to remove safely and successfully, the tumor in the colon may need to be removed to keep it from blocking the bowel later on. The liver metastases can be destroyed with cryosurgery (freezing), radiofrequency ablation, or alcohol injections. This may help some patients feel better, but it is not curative. Chemotherapy may also be given.

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See Chemotherapy for Advanced or Metastatic Disease (pages 38–39)
Colon Cancer and Spread to Sites Other Than the Liver

If the cancer has spread only to the lungs, doctors will decide if it is possible to remove it safely. If the cancer can be removed from the lungs, then surgery is recommended to remove the colon cancer and nearby lymph nodes. At that time or later, the lung metastases can be removed.

After surgery, adjuvant chemotherapy might be given with any of the combinations listed. Not giving chemotherapy is also an option for those who received chemotherapy before lung resection. In addition to the standard follow-up, the NCCN suggests CT scans of the chest, abdomen, and pelvis every 3 to 6 months for 2 years then every 6 to 12 months for at least 5 years.
If there are too many lung metastases to remove safely, the tumor in the colon may need to be removed to keep it from blocking the bowel later on. The metastases should be treated with chemotherapy.

The cancer may have already spread to the lungs, liver, or other areas and can’t be removed. To prevent colon blockage, the primary (original) colon tumor may need to be removed by surgery. This may be followed with chemotherapy.

Finally, if the cancer looks like it may block the bowel eventually even though it may have also spread elsewhere, it still needs treatment. This can be with surgery that removes the cancer, or leaves the cancer in place but creates a colostomy to empty feces into a bag, or that leaves the cancer in place but bypasses the obstruction. Chemotherapy after surgery is an option.
Recurrent Colon Cancer

CEA levels that rise steadily after initial treatment strongly suggest that a colorectal cancer is recurring and indicate the need for a thorough search for the recurrent cancer. There may be other reasons to suspect a recurrence, such as symptoms or something not normal on examination. The search includes colonoscopy, x-rays, CT and PET scans. If no cancer is found, these tests are repeated at regular intervals. Some patients may have an elevated CEA level for months or years before recurrent disease is found. Patients are not given chemotherapy based on a rising CEA level alone. If recurrent cancer is found by imaging tests, a biopsy...
may be done to be certain that this is cancer and not some other disease. In most cases, this involves a needle biopsy procedure that uses a CT scan for guidance.

Recurrent cancer may be treated in 2 ways. In the first, the recurrent tumor may be completely removed with surgery, and cure is possible. Before this is done, a PET scan might be done to make sure there isn’t any cancer elsewhere. After surgery, adjuvant chemotherapy is recommended if it hasn’t been given before. If the tumor cannot be totally removed, the second way uses chemotherapy to control the recurrent disease.
Chemotherapy for Advanced or Metastatic Colon Cancer

For patients whose recurrences or metastases are too large or numerous to remove completely, treatment options depend on whether they are in good health apart from the cancer and are able to care for themselves. Many studies have shown that patients who are too ill to care for themselves almost never benefit from chemotherapy.

For patients able to tolerate intensive chemotherapy, the options include intravenous chemotherapy with these combinations:
Chemotherapy for Advanced or Metastatic Colon Cancer

Additional Treatment for Recurrent or Metastatic Cancer

Chemotherapy with 1 of the following:
- 5-FU/leucovorin/oxaliplatin (FOLFOX) +/- bevacizumab
- 5-FU/leucovorin/irinotecan (FOLFIRI) +/- bevacizumab
- 5-FU/leucovorin/irinotecan given IV push (IFL)
- Bevacizumab and 5-FU/leucovorin with or without oxaliplatin or irinotecan

If cancer continues to grow or treatment causes serious side effects, try another chemotherapy if patient continues to function well. Otherwise change to different treatment of either oxaliplatin-containing or irinotecan-containing chemotherapy regimens if not already given, or irinotecan alone if not given earlier, or cetuximab with or without irinotecan.

Chemotherapy with 1 of the following:
- Capecitabine
- 5-FU/leucovorin (except if 5-FU/leucovorin was given as an adjuvant within the last 6 months)
- 5-FU given continuously into a vein or IV push along with leucovorin (bevacizumab may also be given)

If functioning improves, chemotherapy might be an option.

Chemotherapy no longer effective

- 5-FU given as a continuous infusion with leucovorin and oxaliplatin with or without bevacizumab
- 5-FU given as a continuous IV infusion with leucovorin and irinotecan with or without bevacizumab
- 5-FU, leucovorin and irinotecan given IV push
- bevacizumab with 5-FU and leucovorin, with or without oxaliplatin or irinotecan.

Supportive care

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If less intense treatment is more appropriate, the options are:

- continuous intravenous infusion of 5-FU with leucovorin, or
- capecitabine, or
- 5-FU given IV push and not as an infusion and leucovorin with or without bevacizumab — if these latter had not been received as adjuvant treatment within the last 6 months.

In either case, if the cancer continues to grow or begins to grow after shrinking with the chemotherapy, a different chemotherapy from the one selected to try first may be given.
if the patient remains well. In addition, single agent irinotecan or cetuximab with or without irinotecan may be appropriate. If chemotherapy is no longer effective, then supportive care only should be given.

For patients who are in poor health and unable to care for themselves, supportive care to relieve symptoms and maintain a patient’s well-being is recommended. Sometimes, patients can improve so that they can tolerate chemotherapy.
Treatment of Rectal Cancer

The work-up (evaluation) for patients with a rectal tumor begins with a medical history, physical examination, biopsy and a pathology review of the specimen, colonoscopy, CEA blood levels, CT scans of the abdomen and pelvis, a chest x-ray, and an endorectal ultrasound or endorectal MRI examination.
Consultation with a therapist or nurse trained in colostomy care is recommended if it is likely that a colostomy will be needed.

Further treatment depends on the doctor’s estimate of the stage, depending on what the physical examination and imaging tests show.
Treatment of Early Stage Rectal Cancer

If the cancer does not invade deeper than the muscular layer of the rectal wall (T1, T2) and doesn’t appear to have spread to nearby lymph nodes, surgery is the first treatment recommended. An abdominal operation, either low abdominal resection or AP resection is appropriate depending on where the cancer lies in the rectum.

But if the tumor is small enough — less than 3 cm in size (about an inch) and less than 8 cm from the anus (about 3 inches) and has no bad features such as very abnormal
cells or invasion of blood or lymphatic vessels — the cancer might be removed by operating through the anus. This procedure is called transanal resection.

After surgery, the stage of the cancer is determined by the pathologist who examines the tumor and lymph nodes under the microscope.
If the cancer is removed by an abdominal operation and does not grow past the muscle layer or spread to lymph nodes, then no further treatment is needed. If the cancer is found by the pathologist to have spread into the muscle layer or to lymph nodes, further treatment is needed. First, chemotherapy with 5-FU with or without leucovorin is given for 1 or 2 cycles. Radiation therapy to the pelvis along with either a continuous infusion of 5-FU or capecitabine pills follow this. When this is complete, another 2 cycles of 5-FU with or without leucovorin are given.

If the cancer is removed through the anus and does not invade the muscle layer and the edges of the specimen are free of cancer, no further treatment is needed. But, if it is found that cancer is present at the edges of the specimen or the cancer has invaded lymphatic or blood vessels, then an abdominal operation should be done. If the tumor has invaded the muscle layer and the doctors can
not determine whether the cancer had spread to lymph nodes, then either an abdominal operation should be done or the patient should receive radiation treatment to the pelvis along with a 5-FU infusion.

After treatment, patients should see their doctor for a checkup every 3 months for 2 years, then every 6 months for at least 5 years. CEA blood tests should be done along with the checkups for lesions that are T2 or greater with positive lymph nodes. Colonoscopy should be done 1 year after surgery. If polyps are found, it should be repeated in a year. If the colonoscopy is normal, it can be repeated in 2 to 3 years. If colonoscopy could not be done before surgery, then it should be done within 3 to 6 months after surgery. A CT scan may be done for patients considered to be at high risk for recurrence.
Treatment of Large Rectal Cancers

If the cancer has grown through the muscle layer (T3) or there are enlarged lymph nodes on MRI or ultrasound (N1–2) the first treatment would be either radiation along with a continuous infusion of 5-FU or capecitabine pills, or an abdominal operation.

If the radiation is given first, then an abdominal operation to remove the cancer should be done. This is followed by chemotherapy with 5-FU with or without leucovorin or the FOLFOX treatment (continuous infusion FU/leucovorin/oxaliplatin).
If surgery is done first, further treatment depends on the pathologist’s findings. If it turns out that the tumor has not invaded through the muscle layer and spread to lymph nodes, no further treatment is recommended. But if it has spread through the muscle layer or to lymph nodes, further treatment is recommended. This would be chemotherapy with 5-FU with or without leucovorin for 1 or 2 cycles followed by radiation therapy to the
pelvis along with either a continuous infusion of 5-FU or capecitabine pills. When this is complete, another 2 cycles of 5-FU with or without leucovorin or FOLFOX (5-FU/leucovorin/oxaliplatin) should be given.

If the cancer has invaded through the rectal wall into nearby tissues or organs, the NCCN recommends that treatment begin with radiation therapy to the pelvis and continuous 5-FU infusion or capecitabine pills. Afterwards, the tumor should be removed surgically by an abdominal operation if possible. Following surgery, 5-FU with or without leucovorin should be given for 3 to 4 cycles. FOLFOX may also be considered.
After treatment, patients should see their doctor for a checkup every 3 months for 2 years, then every 6 months for 5 years. If isolated metastases can be removed, then a CEA blood test should be done along with the checkups. Colonoscopy should be done 1 year after surgery. If polyps are found, it should be repeated in a year. If the colonoscopy is normal, it can be repeated in 2 to 3 years. If colonoscopy could not be performed before surgery, then it should be done within 3 to 6 months after surgery.
Rectal Cancer With Spread to Distant Sites (metastases)

Treatment for people whose rectal cancer has spread to distant organs such as the lungs or liver (M1 cancers) depends on whether the metastases can be removed completely by surgery. If the metastases can be completely removed by surgery, there are several options.

Radiation to the pelvis along with continuous infusion of 5-FU can be given before surgery. Then surgery can be done to remove...
the metastases and the rectal tumor. This should be followed by chemotherapy with either 5-FU with or without leucovorin or FOLFOX (5-FU/leucovorin/oxaliplatin) or FOLFIRI (5-FU/leucovorin/irinotecan).

The third option is to do the surgery first and remove the rectal tumor and the metastases. If the tumor is early stage and has not grown past the muscle layer or into lymph nodes then the only treatment after surgery...
would be chemotherapy. This could be either 5-FU with or without leucovorin or FOLFOX (5-FU/leucovorin/oxaliplatin) or FOLFIRI (5FU/leucovorin/irinotecan) given for 4 to 6 months. If it grew through the muscular layer or spread to lymph nodes, then the NCCN recommends 5-FU with or without leucovorin for 1 to 2 cycles or FOLFOX, then continuous infusion of 5-FU along with radiation therapy, then 5-FU and leucovorin for 3 to 4 cycles or FOLFOX (5-FU/leucovorin/oxaliplatin).
All these patients should see their doctor for a checkup every 3 months for 2 years, then every 6 months for at least 5 years. A CEA blood test should be done with the checkups. Colonoscopy should be done 1 year after surgery. If polyps are found, it should be repeated in a year. If the colonoscopy is normal, it can be repeated in 2 to 3 years. If colonoscopy could not be done before surgery, then it should be done within 3 to 6 months after surgery. A CT scan may be considered for patients who are considered at high risk for recurrence.
Rectal Cancer With Spread to Distant Sites That Cannot Be Removed

Patients with metastases that cannot be completely removed by surgery have several options for treatment of the rectal tumor. An operation may be done to remove it, or it may be treated with radiation therapy together with 5-FU infusion or capecitabine pills.
Other options are to destroy it by laser photocoagulation or simply bypass the tumor with a diverting colostomy. Another possible treatment is to keep the rectum open with a stent. Chemotherapy can be given with any of these options or just by itself. Chemotherapy treatment is described in the decision tree on pages 62–63.
Treatment of Recurrent Rectal Cancer

After surgery or radiation therapy and any adjuvant treatments are finished, checkups and follow-up tests are routinely done. The purpose of these tests is to find rectal cancer that has recurred (come back) as soon as possible, when further treatments are most likely to be helpful.

CEA levels that rise steadily after the first treatment strongly suggest that a colorectal cancer is coming back or regrowing. There also may be other reasons to suspect a recurrence, such as symptoms or something abnormal found when the doctor examines the patient. The search for recurrence should include colonoscopy, x-rays, and CT scans. A PET
A scan is useful if a recurrence in the pelvis is suspected. If no cancer is found, these tests are repeated at 3 month intervals. Some patients may have an elevated CEA level for months or years before clinical evidence (imaging test or physical exam results) of recurrent disease is found. Patients are not given chemotherapy based on a rising CEA level alone.

If recurrent cancer is found by imaging tests, a biopsy may be done to confirm cancer, not some other disease. In most
cases, this involves a needle biopsy procedure that uses a CT scan for guidance. Recurrent cancer may be treated in 2 ways.

- In the first, the recurrent tumor can be completely removed with surgery.

Before this is done, a PET scan might be done to make sure there isn’t any cancer elsewhere. After surgery, adjuvant chemotherapy is recommended if it hasn’t been given before.
• If the recurrence appears to be only in the pelvis or at the site of surgery, then it can be treated with radiation and continuous 5-FU or capecitabine if this hasn’t been done before. After this, if it is possible, it may be removed with surgery. Sometimes further radiation to the tumor can be given during the operation.

If the tumor cannot be totally removed, chemotherapy is used to control the recurrent disease.
Chemotherapy for Advanced Disease or Distant Spread That Cannot Be Removed

For patients whose cancer is too large or numerous to remove completely, treatment options depend on whether they are in good health apart from the cancer and are able to care for themselves. Many studies have shown that patients who are too ill to care for themselves are not likely to benefit from chemotherapy.

If the cancer continues to grow or begins to grow after shrinking with the chemotherapy, a different chemotherapy from the one
selected to try first may be given if the patient remains well. In addition, giving just irinotecan or cetuximab with or without irinotecan may be appropriate.

For patients who are in poor health and unable to care for themselves, supportive care to relieve symptoms and maintain a patient’s well-being is recommended.
For patients with widespread disease who are able to tolerate intensive chemotherapy, the options include intravenous chemotherapy with:

- irinotecan combined with 5-FU continuous infusion and leucovorin,
- oxaliplatin combined with 5-FU continuous infusion and leucovorin
- 5-FU, leucovorin, and oxaliplatin given IV push
- bevacizumab in combination with 5-FU and leucovorin.
If less intense therapy is more appropriate, the options are:

- continuous intravenous infusion of 5-FU,
- capecitabine
- 5-FU, given as an IV push and not an infusion, and leucovorin — if these latter had not been received as adjuvant therapy within the last 6 months.

If one chemotherapy is not successful in shrinking the cancer or it continues to grow, then other different treatments may be tried as long as the patient remains reasonably well. If the patient becomes too ill or frail to care for himself or herself, then chemotherapy is best stopped and only supportive care should be given.
Abdominoperineal (AP) resection
Surgery that removes cancer located in the lower part of the rectum, close to its outer connection to the anus.

Ablation
Destroying a tumor by heating it with microwaves or freezing. This does not usually involve surgery, but may sometimes be done during surgery.

Adenocarcinoma
Cancer of the glandular cells, for example, those that line the inside of the colon and rectum.

Adenomatous polyp or adenoma
A benign growth of glandular cells, for example, those that line the inside of the colon or rectum. There are 3 types of colorectal adenomas: tubular, villous, and tuberovillous.

Adjuvant treatment
Treatment used in addition to the main treatment. It usually refers to chemotherapy, radiation therapy, immunotherapy, or hormonal therapy added after surgery to increase the chances of curing the disease or keeping it in check. Adjuvant therapy is given to treat tumor cells in small numbers that may remain after surgery but cannot be detected.

Alternative therapy
Use of an unproven treatment instead of standard (proven) treatment. Some alternative therapies have dangerous or even life-threatening side effects. With others, the main danger is that the patient may lose the opportunity to benefit from standard therapy.

Anastomosis or anastomotic line
The site where 2 structures are surgically joined together. For example, after removal of a segment of colon containing a cancer, the ends of the colon are reconnected.

Anus
The outlet of the digestive tract through which stool passes out of the body.

Ascending colon
The first of the 4 sections of the colon. It extends upward on the right side of the abdomen and leads to the transverse colon.

Benign
Not cancer; not malignant.

Biopsy
The removal of a sample of tissue to see whether cancer cells are present. There are several kinds of biopsies. In an endoscopic biopsy, a small sample of tissue is removed using instruments operated through a colonoscope.

Bowel
The intestine.
**Colectomy**
Surgical removal of all (total) or part (partial colectomy or hemicolectomy, for example) of the colon.

**Colon**
Part of the large intestine. The colon is a muscular tube about 5 feet long. It is further divided into 4 sections: the ascending, transverse, descending, and sigmoid colon. It continues the process of absorbing water and mineral nutrients from food.

**Colonoscope**
A slender, flexible, hollow lighted tube about the thickness of a finger. It is inserted through the rectum up into the colon. A colonoscope is much longer than a sigmoidoscope and usually allows the doctor to see the entire lining of the colon. The colonoscope is connected to a video camera and video display monitor so that the doctor can look closely at the inside of the colon. If abnormalities are found, the doctor can take a biopsy (tissue sample) or remove polyps, using instruments operated through the colonoscope.

**Colostomy**
An opening from the colon onto the skin of the abdomen (stomach) for getting rid of body waste (stool). A colostomy is sometimes needed after surgery for cancer of the rectum. People with colon cancer sometimes have a temporary colostomy, but they rarely need a permanent one.

**Complementary therapy**
Therapies used in addition to standard treatments. Some complementary therapies may help relieve certain symptoms of cancer, relieve side effects of standard cancer therapy, or improve a patient’s sense of well-being.

**Computed tomography (CT or CAT scan)**
A test that uses a rotating x-ray beam to create a series of pictures of the body from many angles. A spiral CT uses a special scanner that can provide greater detail and is sometimes useful in finding metastases from colorectal cancer.

**Cryosurgery**
Use of extreme cold to freeze and destroy cancer cells.

**Descending colon**
The third section of the colon. It comes after the transverse colon, continues downward on the left side of the abdomen, and leads to the sigmoid colon.

**Digestive system**
Also called the gastrointestinal tract, or GI tract. It processes food to obtain energy and rids the body of solid waste matter.

**Double contrast barium enema**
A method used to help diagnose colorectal cancer. Barium sulfate, a chalky substance, is used to partially fill and open up the colon. When the colon is about half-full of barium, air is inserted to cause the colon to expand. This allows x-rays films to show abnormalities of the colon.

**Endocavitary radiation therapy**
A type of radiation therapy used for treating rectal cancer. The radiation beam is aimed through the anus, into the rectum.
Enterostomal therapist
A health professional, often a nurse, who teaches people how to care for ostomies (surgically created openings such as a colostomy) and other wounds.

External beam radiation
The most common way to deliver radiation to a cancer. Radiation is focused from a source outside the body on the area affected by the cancer. It is much like getting a diagnostic x-ray, but for a longer time.

Familial adenomatous polyposis (FAP)
A hereditary condition that is a risk factor for colorectal cancer. People with this syndrome typically develop hundreds of polyps in the colon and rectum at an early age. Usually 1 or more of these polyps becomes cancerous if preventive surgery is not done.

Fecal occult blood test (FOBT)
A test for occult (hidden) blood in the stool. The presence of such blood could be a sign of cancer.

Feces
Solid waste matter; bowel movement or stool.

Hereditary nonpolyposis colorectal cancer (HNPCC)
People with this condition are at increased risk of developing colorectal cancer without first having many polyps.

Immunotherapy
Treatments to help the immune system recognize and destroy cancer cells more effectively. These may include cancer vaccines and monoclonal antibody therapy.

Laparoscope
A long, slender tube inserted into the abdomen through a very small incision. Surgeons with experience in laparoscopy can do some types of surgery for colorectal cancer using special surgical instruments operated through the laparoscope.

Low anterior (LA) resection
Surgery that removes a cancer and the normal tissue around it near the upper part of the rectum, close to where it connects with the sigmoid colon.

Lymph nodes
Small bean-shaped collections of immune system cells that help fight infections and also have a role in fighting cancer. Also called lymph glands. Cancers of the colon and rectum may spread to regional (nearby) lymph nodes.

Margin
Edge of the tissue removed during surgery. A negative surgical margin is usually a sign that no cancer was left behind near the area it was removed from. A negative surgical margin does not guarantee a cure because cancer cells may have spread to other areas of the body before surgery. A positive surgical margin indicates that cancer cells are found at the outer edge of the tissue removed and is usually a sign that some cancer remains in the body.

Metastasis
The spread of cancer cells to distant areas of the body by way of the lymph system or bloodstream.
**Monoclonal antibody**
Immune substance made in the laboratory that attacks cancer cells

**Neoadjuvant therapy**
Treatment given before the primary treatment of radiation or surgery. However, radiation can also be a part of neoadjuvant treatment.

**Pathologist**
A doctor who specializes in diagnosis and classification of diseases by laboratory tests such as examination of tissue and cells under a microscope. The pathologist determines whether a tumor is benign or cancerous, and, if cancerous, the exact cell type and grade.

**Polyp**
A benign growth commonly found in the rectum or the colon. Adenomatous polyps sometimes turn into cancer. Many other types of polyps (inflammatory polyps, hyperplastic polyps) do not.

**Radiation colitis**
Irritation of the colon caused by radiation therapy. Problems can include pain, cramping, and diarrhea.

**Radiation proctitis**
Irritation of the rectum caused by radiation therapy. Problems can include pain, bowel frequency, bowel urgency, bleeding, chronic burning, or rectal leakage.

**Rectum**
The lower part of the large intestine, just above the anus.

**Recurrence**
Cancer that has come back after treatment. Local recurrence means that the cancer has come back at the same place as the original cancer. Regional recurrence means that the cancer has come back after treatment in the lymph nodes or tissues near the primary site. Distant recurrence is when cancer metastasizes after treatment to organs or tissues (such as the lungs, liver, bone marrow, or brain) farther from the original site than the regional lymph nodes.

**Risk factor**
Anything that increases a person’s chance of getting a disease such as cancer. Different cancers have different risk factors. For example, unprotected exposure to strong sunlight is a risk factor for skin cancer. Some risk factors, such as smoking or an unhealthy diet, can be controlled. Others, like a person’s age or family history, can’t be changed.

**Screening**
The search for disease, such as cancer, in people without symptoms. For example, screening tests for early detection of colorectal cancer include fecal occult blood test, flexible sigmoidoscopy, colonoscopy, and double contrast barium enema.

**Segmental resection**
In this surgery, the cancer and a length of normal tissue on either side of the cancer as well as the nearby lymph nodes are removed. The remaining sections of the colon are then attached back together.

**Sigmoid colon**
The fourth section of the colon is known as the sigmoid colon because of its S-shape. The sigmoid colon joins the rectum, which in turn joins the anus, or the opening where waste matter passes out of the body.
**Sigmoidoscope**
A slender, flexible, hollow, lighted tube about the thickness of a finger. It is inserted through the rectum up into the colon. This allows the doctor to look at the inside of the rectum and part of the colon for cancer or for polyps.

**Small intestine**
The small intestine is the longest section of the GI tract. It breaks down food and absorbs most of the nutrients. The small intestine joins the colon.

**Stage**
Extent of disease. *Clinical stage* refers to the extent of disease determined by the physical examination and imaging tests. The *pathologic stage* is determined by examination of the tissue after surgery.

**Stool**
Solid waste matter; feces.

**Supportive care**
Treatment directed at keeping a patient feeling as well as possible without specifically treating the underlying disease (in this case, cancer).

**Transanal Resection**
A procedure in which the doctor cuts through all layers of the rectum, through the anus, without cutting through the abdomen in order to remove cancerous tissue.

**Transverse colon**
The second section of the colon, following the ascending colon and leading to the descending colon. It is called the transverse colon because it goes across the body to the left side.

**Tumor**
An abnormal lump or mass of tissue. Tumors can be benign (not cancerous) or malignant (cancerous).

**Ulcerative colitis**
A type of inflammatory bowel disease. In this condition, the colon is inflamed for a long time. This increases a person’s risk of developing colon cancer, so starting colorectal cancer screening earlier and doing these tests more often is recommended.

**Ultrasound**
High frequency sound waves used to produce images of body tissue. Two special types of ultrasound examinations are used to evaluate people with colon and rectal cancer. The *endorectal ultrasound* uses a special transducer that can be inserted directly into the rectum. This test is used to see how far a rectal cancer may have penetrated and whether it has spread to nearby organs or tissues. The *intraoperative ultrasound* is done after the surgeon has opened the abdominal cavity. It is used for detecting colorectal cancer that may have spread to the liver.

**Upper endoscopy**
Inspection of the upper part of the digestive system using a flexible, lighted tube known as an endoscope.
Current NCCN Treatment Guidelines for Patients

Advanced Cancer and Palliative Care Treatment Guidelines (English and Spanish)

Bladder Cancer Treatment Guidelines for Patients (English and Spanish)

Breast Cancer Treatment Guidelines for Patients (English and Spanish)

Cancer Pain Treatment Guidelines for Patients (English and Spanish)

Cancer-Related Fatigue and Anemia Treatment Guidelines for Patients (English and Spanish)

Colon and Rectal Cancer Treatment Guidelines for Patients (English and Spanish)

Distress Treatment Guidelines for Patients (English and Spanish)

Fever and Neutropenia Treatment Guidelines for Cancer Patients (English and Spanish)

Lung Cancer Treatment Guidelines for Patients (English and Spanish)

Melanoma Cancer Treatment Guidelines for Patients (English and Spanish)

Nausea and Vomiting Treatment Guidelines for Patients With Cancer (English and Spanish)

Non-Hodgkin's Lymphoma Treatment Guidelines for Patients (English and Spanish)

Ovarian Cancer Treatment Guidelines for Patients (English and Spanish)

Prostate Cancer Treatment Guidelines for Patients (English and Spanish)
The *Colon and Rectal Cancer Treatment Guidelines for Patients* were developed by a diverse group of experts and were based on the NCCN clinical practice guidelines. These patient guidelines were translated, reviewed, and published with help from the following individuals:

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