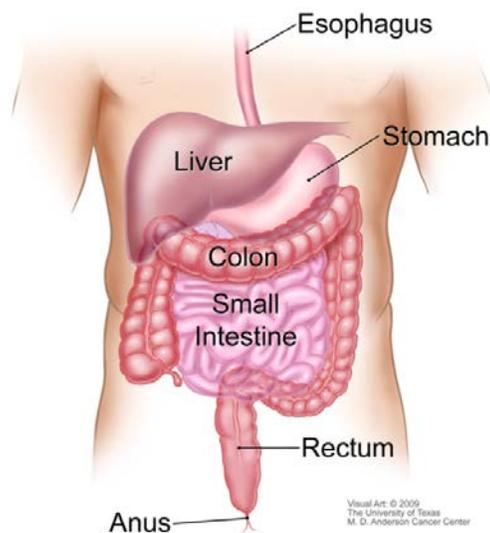


## Colon Cancer

### What is the colon?

The esophagus, stomach, small intestine, colon and rectum are part of the body's digestive system. See image. The digestive system removes nutrients from food and stores the waste until it passes out of the body.

The large bowel, called the colon and rectum, starts in the lower right part of the abdomen at the end of the small intestine. It is about five or six feet in length. The large bowel is divided into six main segments. These segments include the cecum, right (or ascending) colon, transverse colon, left (or descending) colon, sigmoid colon and rectum. After the small intestine meets the cecum, the colon follows a horseshoe shape up the right side, across, then down the left side to the sigmoid colon.



The colon and nearby organs

### What are the colon's functions?

The large intestine is the final part of your digestive tract. There are five main functions of the large bowel. These five functions are: absorption, secretion, motility (movement), formation and elimination of stool (bowel movement). Undigested food enters your large intestine from your small intestine. It then reabsorbs water that is used in digestion and gets rid of undigested food and fiber. This causes food waste products to harden and form stool, which is then eliminated with each bowel movement.

### What is colon cancer?

Many kinds of cells make up all organs, like the colon. Cells are the basic unit of life. Normally, cells grow, divide and produce more cells because they are needed to keep the body healthy and functioning properly. Sometimes, however, cells can grow abnormally – they keep dividing when new cells are not needed. The mass of extra cells forms a growth or tumor. Tumors can be either benign (not cancerous) or malignant (cancerous).

Cancer that begins in the colon is called colon cancer. Most tumors in the colon begin when normal tissue in the colon wall forms a polyp. Polyps are benign growths on the inner wall of the colon. A specific type of polyp, called an adenoma, can turn into cancer. They are common in people over the age of 50 and vary in size and shape. The majority of colon cancers are adenocarcinomas, also known as cancerous tumors.

### **Familial Colon Cancer**

Familial adenomatous polyposis (FAP) is a rare, inherited condition. In classic FAP, hundreds to thousands of polyps form in the colon and rectum. If not treated, virtually all affected patients will develop colorectal cancer by the age of 45. In a less severe form of FAP, patients can have less than one hundred adenomatous polyps.

FAP is caused by a mutation in the APC gene and affects approximately one in 8,000 people, or 1 percent of colon cancers diagnosed in the United States. Children of affected individuals have a 50 percent risk of having FAP. Family members of patients with FAP should undergo genetic testing to determine if they also have the same abnormal gene.

Hereditary non-polyposis colorectal cancer (HNPCC) is another genetic syndrome caused by a mutation (or change) in one of several genes. HNPCC accounts for about 3 to 5 percent of all colorectal cancer. Persons affected by HNPCC, can develop a single or multiple colorectal cancers rather than numerous polyps, as in FAP.

Individuals with the HNPCC gene mutations have an 80 percent lifetime risk of developing colorectal cancer. Testing a tumor sample for microsatellite instability (MSI) can often provide a helpful way to determine whether genetic testing for HNPCC is appropriate. Approximately 90 percent of tumors from people with HNPCC show gene instability or absence of protein expression. (The DNA sequence is longer or shorter than normal.) In these patients, genetic testing is recommended because children of affected individuals have a 50 percent risk of developing HNPCC.

### **What are the symptoms?**

Some people with colon cancer have few to no symptoms. However, the most common symptoms include those listed below:

- A change in bowel habits, most commonly constipation
- Sometimes there is blood in the stool or dark-black stool if the cancer in the colon is bleeding. This can also cause anemia, which is a decreased amount of oxygen in the blood.
- If you have anemia, you may feel more tired, get short of breath easily, become pale or have a fast heart beat.
- Stomach pain

### **What happens after diagnosis?**

After your cancer is diagnosed, other tests and exams are ordered to determine the extent of the cancer. This process is called staging. Staging determines whether the disease has spread to other

parts of the body. Some of the tests and exams that are used to determine stage are described below.

### **Colonoscopy**

A colonoscopy is a test that examines the entire colon using an instrument called a colonoscope, a flexible, lighted instrument inserted through the anus/rectum.

### **Colon Biopsy**

A biopsy is the removal of a tissue sample from the colon for examination under a microscope to make a diagnosis. The biopsy can be performed during the colonoscopy.

### **Blood Tests**

Blood tests are performed before, during and after cancer treatment. The testing will include a CEA (carcinoembryonic antigen) level, which is a value that is frequently elevated in patients with colon cancer.

### **Computerized Tomography (CT) Scan**

A CT scan, commonly referred to as a CAT scan, takes multiple highly detailed pictures of your internal organs.

Other tests may include a chest X-ray and MRI (Magnetic Resonance Imaging).

After your tests are complete, your doctor will explain the status of your cancer to you in more detail. You may want to write down your questions so that you and your doctor can discuss them when you meet. Your personal wishes and general health are important factors to consider when planning and deciding your treatment.

### **Staging**

The stage of colon cancer is determined utilizing the TNM staging system. T stands for tumor, N stands for lymph nodes, and M stands for metastasis (spread of disease to other organs). It is based on radiology results, the findings of the surgeon at the time of surgery, and the surgical pathology. Surgical pathology is an evaluation of the removed tumor specimen by a pathologist, a doctor who specializes in examination of normal or diseased tissue by using two pieces of information, the X-ray results and surgical pathology results. Your doctor needs to know the TNM stage of your colon cancer in order to plan the best treatment for you.

Listed below is a simplified description of the various stages of colon cancer:

**Stage I:** The cancer has invaded into the innermost layers of the bowel wall.

**Stage II:** The cancer has invaded through the bowel wall but has not yet spread to the lymph nodes.

**Stage III:** The cancer has spread to nearby lymph nodes but not to other parts of the body.

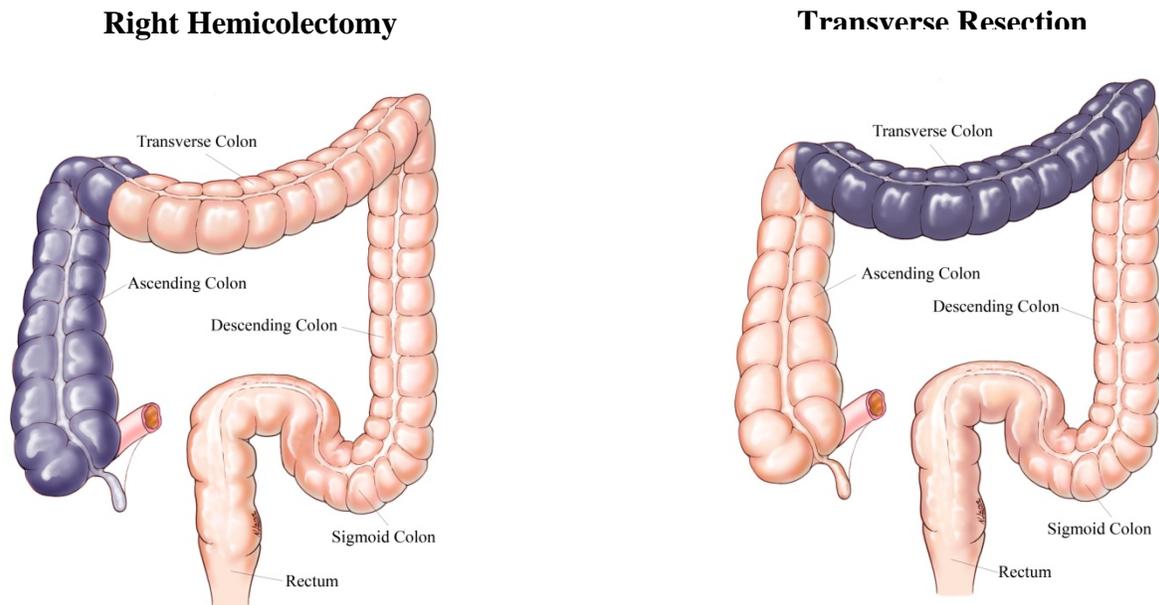
**Stage IV:** The cancer has metastasized – spread to other organs in the body. The most common areas of colon cancer metastasis are the liver and lungs.

## How is colon cancer treated?

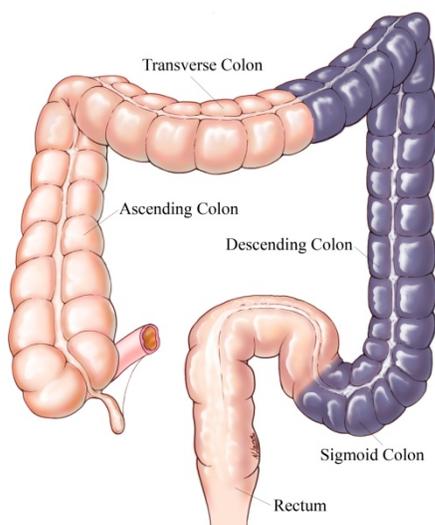
The treatment of colon cancer may involve multiple types of treatment such as surgery, chemotherapy and radiation therapy. Your treatment depends on the stage of disease and your symptoms. In most cases, surgery will be the first treatment and may be the only one required. In other cases, chemotherapy will be recommended. In certain situations radiation may also be suggested.

### Surgical Treatment

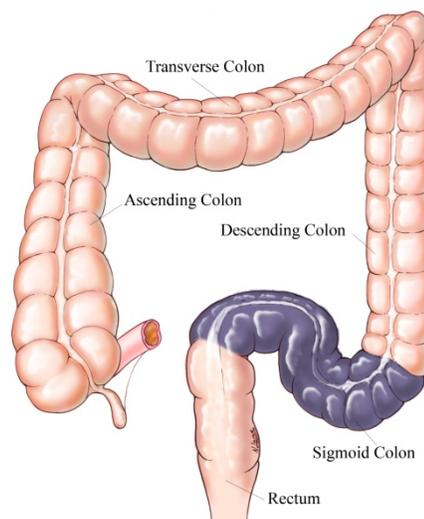
Surgery is the most common treatment for all stages of colon cancer. During surgery, the cancer and a portion of healthy colon on either side of the cancer and nearby lymph nodes are removed. Then the two ends of the bowel are sewn or stapled together. This reconnection of the bowel is called an anastomosis. The type of surgery used is based on tumor location and size and is called a colon resection or colectomy. For example, if the cancer is in the right side of the colon, then a “right colon resection” is performed. In some instances, your surgeon may offer laparoscopic surgery, a new technique utilizing telescopes and very small incisions to treat your colon cancer. The types of colon cancer surgeries are shown in the images below and on Page 5. The shaded areas represent the portion of the colon that is removed during surgery. Your health care team will discuss your type of surgery in detail with you.



## Left Hemicolectomy



## Low Anterior Resection



## Chemotherapy

Not all patients with colon cancer need chemotherapy. Recommendations for treatment are based on the pathologic stage of the cancer. In general, stages III and IV colon cancers will require chemotherapy. Sometimes chemotherapy is recommended for stage II cancers. Chemotherapy uses cancer-fighting medicines to kill cancer cells. They may be prescribed alone or in combination with other medications and administered intravenously (into your veins) or by mouth. Currently, several types of chemotherapy medications are used to treat colon cancer.

When taking chemotherapy medicines, normal cells as well as the cancer cells can be damaged. Therefore, most patients will experience some side effects. These side effects may include nausea, vomiting, appetite loss, diarrhea and mouth sores. There are, however, very good medications available to help decrease these side effects and help you through your chemotherapy treatment without too much discomfort. If you have side effects, tell your doctor so that he or she can make your treatment experience as comfortable as possible for you. Chemotherapy can also affect the bone marrow (which produces blood) by decreasing your blood counts. This can result in an increased risk of infection, bleeding, bruising or fatigue. Therefore, your blood counts will be carefully monitored before you begin each chemotherapy treatment.

## Radiation Treatment

Radiation treatment uses high-energy X-rays to treat or control the cancer. Radiation therapy is used infrequently to treat colon cancer. Your physician will make an appointment for you to see a radiation doctor, if they believe you would benefit from this treatment.

## Clinical Trials

Clinical trials are in progress to find the best ways to treat colon cancer. New chemotherapy drugs and combinations are being studied in clinical trials as treatments for cancer that has

spread and as a way to try to relieve symptoms of the disease. Your doctor will tell you if you are eligible for a clinical trial.

## **What can I expect after treatment?**

Follow-up care is very important, and it should be part of your routine for the rest of your life. This care will help protect you and allow for early detection if your cancer returns. Follow-up care may include physical examinations, blood tests, x-rays and colonoscopies. The frequency of your follow-up appointments and tests will depend on the stage of your cancer and your current medical status.

You can help yourself recover from cancer by making healthy lifestyle choices. Choose to eat a healthy diet rich in fruits, vegetables and whole grains. Choose to exercise on a regular basis, but also allow yourself time to rest. Choose to quit smoking, limit alcohol intake, and avoid drug use. These choices will help you live a healthier life, and most importantly, make you feel better.

It is also important to maintain your overall medical well-being. You should schedule appointments with your primary care provider for annual physical examinations and routine screening tests that may include cholesterol testing, cardiovascular evaluations, mammograms, pelvic exams and prostate exams.

## **MD Anderson Resources**

### **The Learning Center**

The Learning Center is a consumer health library with the latest information on cancer care, support, prevention and general health and wellness issues.

- Theodore N. Law Learning Center, Main Building, Floor 4, 713-745-8063
- Levit Family Learning Center, Mays Clinic, Floor 2, 713-563-8010
- Holden Foundation Learning Center, Jesse H. Jones Rotary House International, 713-745-0007

### **Videos-on-Demand**

MDA-TV offers patient education videos that your doctor or nurse may ask you to watch. To see the complete list of videos, please ask your nurse for a copy of the “Patient Education Guide” or visit The Learning Center. You may watch the videos in:

- your hospital room,
- The Learning Center,
- your hotel room at the Jesse H. Jones Rotary House International (limited titles), or
- on myMDAnderson at <https://my.mdanderson.org> (limited titles).

These videos may be helpful to you:

#### **1. Understanding and Managing Your Bowel Function - #115**

This video provides information on how the bowel works and helpful hints for bowel management. It also discusses appropriate questions to ask and when to seek professional help related to bowel function.

2. **In Control: Life After Your Ostomy - #281**  
This video explains ostomies, including information about an ileostomy and a colostomy. Several patients who lead active, fulfilling lives share advice and experiences.
3. **Guide to Managing Your Chemotherapy Treatment - #250**  
This video provides information about chemotherapy and related side effects. Patients discuss their experiences with chemotherapy.

### **The University of Texas MD Anderson Cancer Center Colon Cancer Page**

[www.mdanderson.org/diseases/colorectal/](http://www.mdanderson.org/diseases/colorectal/)

This site provides news and information on treatment, research, clinical trials, prevention, screening guidelines, community resources and more.

### **Bowel Management Class**

- **Main Building - Held every Wednesday at 11 a.m. - noon in the Patient Education Classroom, Main Building, Floor 4, near Elevator A, through The Learning Center, in Room R4.1121.**
- **Mays Clinic - Held the second and fourth Tuesday of every month at 1:30 - 2:30 p.m. in the Mays Clinic Patient Education Classroom, Floor 2 near the Tree Sculpture, behind the Learning Center, in Room ACB2.1049.**

### **More Resources**

The following organizations provide accurate, up-to-date information on colon cancer to patients and their families.

#### **American Cancer Society**

800-227-2345

[www.cancer.org](http://www.cancer.org)

The American Cancer Society (ACS) is a voluntary national health organization with local offices around the country. The ACS supports research, provides information about cancer, and offers many programs and services to patients and their families.

#### **Cancer Information Service**

800-422-6237

The Cancer Information Service (CIS) is a program of the National Cancer Institute (NCI). People who call the CIS speak with highly trained and caring information specialists who can answer questions about cancer screening tests, risks, symptoms, how cancer is diagnosed, the latest treatments and support organizations.

#### **National Cancer Institute**

[www.cancer.gov](http://www.cancer.gov)

The National Cancer Institute has valuable cancer-related health information for over 200 cancer types, clinical trials, cancer statistics, prevention, screening, treatment and news.

**United Ostomy Associations of America, Inc.**

800-826-0826

[www.uoaa.org](http://www.uoaa.org)

The United Ostomy Associations of America, Inc. (UOAA) is an association of affiliated, non-profit support groups committed to improving the quality of life of people who have or will have an intestinal or urinary diversion. Call the toll-free number to locate the support group nearest you.