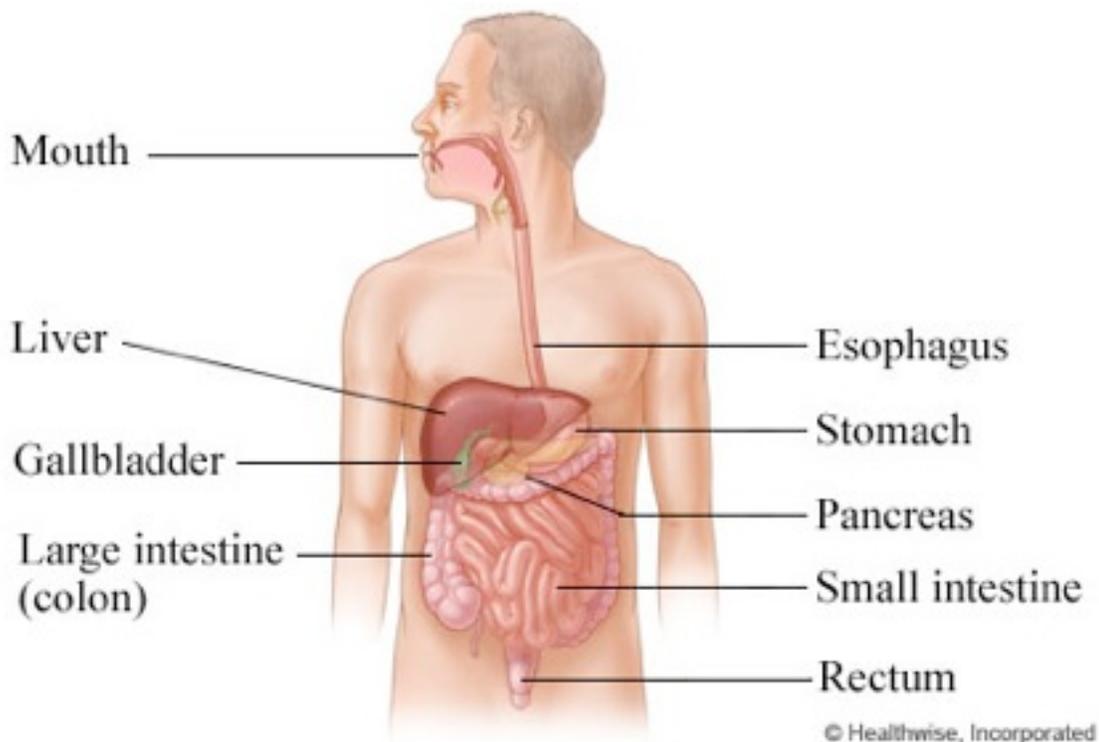

Your Guide to Colorectal Cancer Treatment



Colon and Rectal Surgery Associates, Ltd.
Minnesota Oncology, P.A.

Colorectal Cancer

Colorectal cancer is the third most common cancer in both men and women in the United States. Over 150,000 Americans are expected to be diagnosed with colorectal cancer this year.

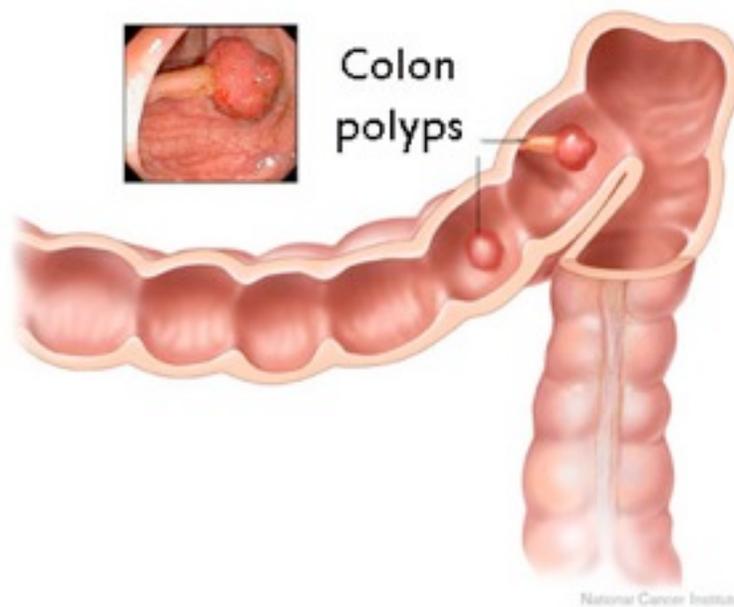


Anatomy

Colorectal cancer occurs in the colon or the rectum, the end portions of the digestive tract. The digestive tract begins with the mouth, esophagus, and stomach where food is ingested and then broken down. The contents of the stomach are then delivered to the small intestine where absorption of nutrients occurs. The small intestine leads to the colon and rectum, which are collectively referred to as the large intestine. The function of the colon is to absorb water, salts, and fatty acids from the stool. The rectum serves as a reservoir for stool until an appropriate time for having a bowel movement. Finally, stool is expelled through the anus. Combined, the colon and rectum measure 5-8 feet in length.

Polyp Progression

Colorectal cancer usually develops from a noncancerous polyp or growth. Some polyps will go on to develop abnormalities that eventually lead to cancer formation. This progression from a benign growth to a cancer is thought to take close to 10 years to occur. A colonoscopy is a recommended procedure that allows the entire colon and rectum to be evaluated and polyps to be removed. Theoretically, if a noncancerous polyp is removed in the early stages of its progression, cancer can be prevented. Early detection of polyps and cancers and advancements in treatment have led to improved survival rates for patients who have been diagnosed with colorectal cancer.

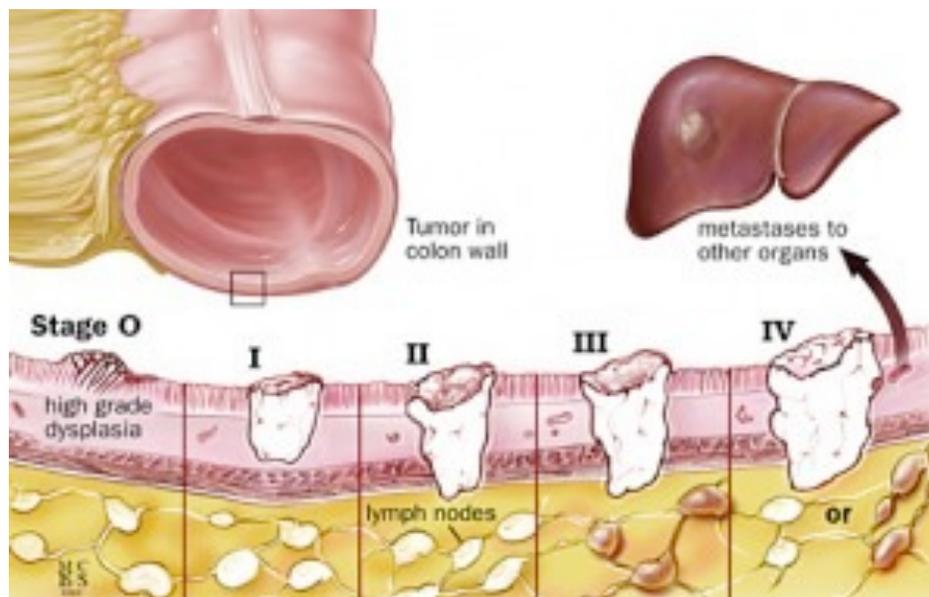


Screening

Routine screening is recommended for everyone age 50 or older, unless personal or family health history suggests an earlier evaluation. Several types of screening tests exist: fecal occult blood test (FOBT), fecal immunochemical test (FIT), double-contrast barium enema, flexible sigmoidoscopy, and colonoscopy. Discuss with your physician which test is best for you.

Stages of Colorectal Cancer

There are five basic stages of colorectal cancer: 0, I, II, III, and IV.



Stage 0: The cancer resides only in the inner surface of the colon.

Stage I: The cancer has grown into the wall, but has not spread beyond the wall.

Stage II: The cancer has grown through the wall and possibly the nearby tissues, but has not spread into the *lymph nodes*.

Stage III: The cancer has grown through the wall, possibly the nearby tissues, as well as the lymph nodes.

Stage IV: The cancer has spread to other parts of the body (i.e. liver, lungs, bone, brain, or kidney).

Determining the degree of spread of tumor helps establish a “stage” of the cancer. Colorectal cancer is staged on the basis of:

1. The depth of invasion of the tumor into the bowel wall.
2. The presence of tumor within the lymph nodes
3. The presence of tumor in distant locations (i.e. liver or lung)

To evaluate whether tumor is present in a distant location (*metastasis*), pre-treatment imaging tests will be ordered. Such tests may include: *CT scan*, *MRI*, and *PET scan*. Descriptions of each of these tests are available in the glossary. Blood tests, including a tumor marker (*CEA*- carcinoembryonic antigen) level, will be drawn.

An *endorectal ultrasound* (ERUS) may be ordered in the case of rectal cancer to assess the depth of invasion into the wall of the rectum and lymph node involvement. This test is usually performed by a colon and rectal surgeon

who inserts a small ultrasound probe into the rectum to obtain images of the cancer.

Treatment of Colorectal Cancer

The choice of treatment depends mainly on the location of the tumor- colon or rectum- and the stage of the disease. Although similarities exist for the treatment of colon cancer versus the treatment of rectal cancer, there may also be differences. Treatment may include surgery, chemotherapy, or radiation therapy.

Colon Cancer

Colon cancer treatment typically involves surgery with the possibility of chemotherapy, and, less commonly, radiation.

All patients with colon cancer **stage I to III** are treated with surgery. Postoperative (*adjuvant*) chemotherapy can be added to the treatment of **high-risk stage II** colon cancer and almost all patients with **stage III** colon cancer.

Patients with cancer that has spread beyond the colon and lymph nodes (**stage IV or metastatic cancer**) are mainly treated with chemotherapy. Surgery and radiation therapy may be used in certain situations (i.e. pain control or removal of single metastatic lesions in the lung or liver).

Stage	Surgery	Chemotherapy	Radiation
I	+	-	-
II	+	in high risk stage II	-
III	+	+	possibly
IV	possibly	+	possibly

Rectal Cancer

Rectal cancer treatment commonly involves a combination of surgery, chemotherapy, and radiation therapy.

Stage I rectal cancer can usually be treated with surgery alone. Surgical options may include transanal (through the rectum) excision of the tumor or the removal of the rectum through an abdominal incision.

Stage II and III rectal cancers may require preoperative (*neoadjuvant*) radiation and chemotherapy. Once the treatment has been completed, surgery will take place several weeks later. Stage III cancers will typically require postoperative (*adjuvant*) chemotherapy, as well.

Stage IV rectal cancer is most commonly treated with chemotherapy, and possibly radiation therapy. If the cancer responds well to this treatment, surgery may be warranted in specific patients.

Stage	Surgery	Chemotherapy	Radiation
I	+	-	-
II	+	+	+
III	+	+	+
IV	possibly	+	possibly

Chemotherapy

Chemotherapy is medicine that kills cancer cells by traveling through the bloodstream. It is administered either *intravenously* (through the vein) or in a pill form. The need for chemotherapy is based on the stage of your cancer.

Medications that are used in chemotherapy for colon and rectal cancer include: 5-Fluorouracil or 5-FU (oral form is called capecitabine or Xeloda®), oxaliplatin (Eloxatin®), irinotecan (Camptosar®), leucovorin, cetuximab (Erbix®), panitumumab (Vectobix®), and bevacizumab (Avastin®). Chemotherapy is given as a combination or regimen depending on the stage and aggressiveness of your cancer.

Chemotherapy may be used preoperatively (*neoadjuvant*), postoperatively (*adjuvant*), in combination with radiation, or as *palliative* treatment.

The goal of *neoadjuvant* chemotherapy is to shrink the existing tumor, making surgery easier, and to prevent the spread of cancer cells.

Adjuvant chemotherapy is given to decrease the chance of cancer coming back.

Chemotherapy may be administered with radiation therapy to treat particular cancers, especially rectal cancer. In this situation, the chemotherapy helps make cancer cells more susceptible to radiation. This combined treatment is usually given prior to surgery.

Chemotherapy is used as a *palliative* treatment in situations where surgery is not feasible due to the extensive spread of the cancer (*metastasis*) or when surgery is considered too risky given a patient's medical condition. The goal of palliative chemotherapy is to shrink the size of a tumor, thereby reducing symptoms and lengthening survival. Palliative therapy is not intended to cure advanced cancer, but can improve symptoms and the quality of life.

Radiation Therapy

Radiation therapy is the use of radiation energy to kill and prevent the growth of rapidly reproducing cancer cells. It is most commonly used in conjunction with chemotherapy and surgery to treat colorectal cancer. Radiation therapy can be delivered in several forms. *External beam radiation* is the most common form of radiation therapy used to treat colorectal cancer. As the name implies, *external beam radiation* involves the delivery of radiation from a specialized radiation machine to a specific location inside the body. The dose of radiation needed to treat a particular patient's cancer and the frequency of treatments is determined by a *radiation oncologist*, a physician who specializes in radiation therapy. A *radiation therapist* operates the specialized equipment which delivers the intended dose of radiation.

Vascular Access Device

Patients who will need intravenous chemotherapy may need to have a *vascular access device* (VAD), such as an implanted catheter or port. These devices are surgically placed in a large vein and can stay in place for long periods of time. A VAD eliminates the need to have small catheters repeatedly placed in arm veins. These devices are surgically inserted, either by an interventional radiologist or a surgeon. They are placed under the skin in the upper chest or in the arm. They will appear as a "bump" under the skin.



Possible Risks and Side Effects of Chemotherapy and Radiation

Short-term:

1. Fatigue
2. Nausea and vomiting
3. Loss of appetite
4. Diarrhea
5. *Neuropathy*: sensation changes in the hands and feet
6. Mouth sores
7. Skin changes
8. Decreased *blood counts* (especially *white blood cell count*)

Long-term:

1. *Neuropathy*
2. Impaired memory
3. Decreased attention span
4. Impaired fertility
5. Altered organ function: i.e. liver, bowel, bladder or kidney

If you will require chemotherapy and/or radiation for the treatment of colorectal cancer, you will be able to attend a class about these treatments. This class is offered at your oncologist's office.

Surgery

The surgical procedure that you will require is determined by several factors:

1. Location of the tumor
2. History of prior abdominal surgery
3. Technical expertise of the surgeon

The term *colectomy* refers to the removal of a segment of the colon. Surgery for colorectal cancer includes removal of a segment of colon, along with its associated blood supply and the *lymph nodes* that reside near the blood supply.



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Lymph nodes are small glands that help filter blood that flows to certain areas of the body. In addition to the segment of colon, the lymph nodes that are removed will be evaluated in the lab by the *pathologist*. If the tumor has spread beyond the colon, tumor cells may be located within the lymph nodes.

Type of Colectomies

The type of colon resection or colectomy you will require is based on the location of the cancer. For example, if the cancer was found in the right or left colon, you will need a *right or left colectomy*. Similarly, if the cancer was found in the sigmoid colon, a *sigmoid colectomy* will be performed.

The term *anterior resection* is used to describe the removal of the upper rectum. A *low anterior resection (LAR)* is the removal of the majority of the

rectum, specifically performed when cancers are found in the middle and lower rectum. An *abdominoperineal resection (APR)* is a procedure that involves the removal of a portion of the sigmoid colon, the entire rectum and anus with the creation of a permanent *colostomy*. A colostomy is a surgically created opening in the colon which is brought through the abdominal wall that allows for the elimination of stool. More detail about colostomies can be found in the section, **“Will I Need a Bag?”: Ostomy/Stoma Creation.**

Surgical Approach

There are several approaches to performing the same operation for colorectal cancer.

1. **Traditional “open” surgery:** This surgery involves making an abdominal incision approximately 5-10cm in length.
2. **Minimally invasive surgery:** This surgery involves making 2-3 smaller incisions approximately 0.5cm in length and one slightly larger incision (4-5cm). Several types of minimally-invasive surgery exist:
 - a. **Laparoscopic-assisted surgery:** This surgical approach involves the use of small ports that are inserted through the abdominal wall. Fine instruments are passed through a channel in these ports to perform the surgery.
 - b. **Robotically-assisted surgery:** This type of surgery is most commonly performed for tumors located in the sigmoid colon or rectum. This involves the use of surgeon-guided, robotic arms that help perform precise dissection with enhanced visualization.

Benefits of Minimally Invasive Surgery:

1. Smaller incisions
2. Less postoperative pain
3. Decreased use of pain medication
4. Shorter hospital stay

Not all patients are candidates for minimally invasive surgery due to prior surgical history, overall fitness for surgery, and stage of the cancer. Discuss with your surgeon which approach is appropriate for you.

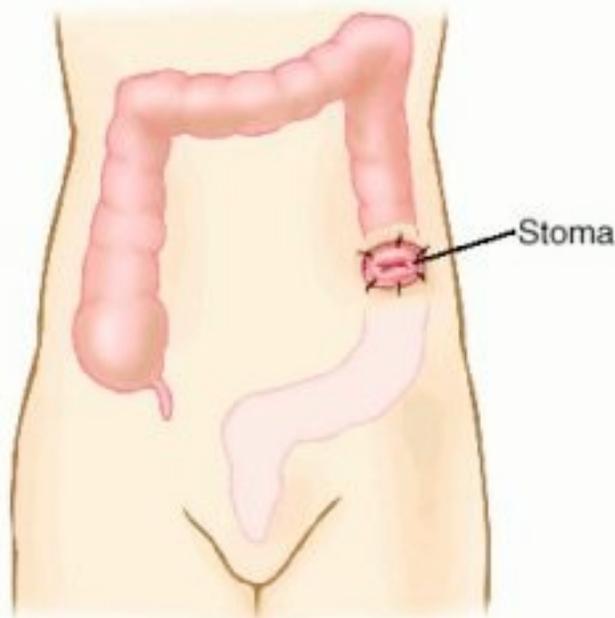
“Will I Need a Bag?”: Ostomy/Stoma Creation

In certain situations, a temporary or permanent *ostomy* or *stoma* may need to be created during surgery. An ostomy is a surgically created opening in the colon (*colostomy*) or small intestine (*ileostomy*) that allows for the elimination of stool. The ostomy is brought through the abdominal wall and then pouched with a specific appliance or adhesive “bag” to capture the stool.

A permanent colostomy may be needed when cancer involves the descending colon or rectum, depending on the location and degree of invasion of the cancer. An abdominoperineal resection (APR) is the name of the procedure where the rectum and anus is removed and a permanent colostomy is created.

An permanent ileostomy may be needed when the majority of colon needs to be removed. It is common for a temporary ileostomy to be needed when a resection is performed for a cancer low in the rectum. This allows for healing of a very low anastomosis without stool passing through the area. Typically, this temporary ileostomy can be reversed several months after surgery. Your surgeon will discuss with you whether you will need a permanent or temporary ostomy to treat your particular cancer.

If you will require an ostomy, prior to surgery, you will meet with an *enterostomal therapist* (ET) or *wound ostomy care nurse* (WOCN) who will provide more education about how to live with an ostomy. This nurse may also mark your abdomen with a permanent marker to suggest an appropriate location for the ostomy, based on how you wear your pants or belt. This can help your surgeon during the operation, however, it is not essential if you are unable to have this marking performed. After surgery, the WOCN will visit you in the hospital and help teach you how to manage the ostomy and change the pouches.



Risks and Possible Complications of Surgery

Complications may occur after surgery despite the best efforts of the surgical team. The most notable complications for colorectal surgery include:

1. **Superficial wound infection:** This type of infection occurs in the skin and/or soft tissue of the abdominal wall. It occurs in about 5-10% of all colon surgeries. Redness around the incision and/or a foul-smelling drainage may be noted. Treatment may require the opening of the incision(s) or administration of antibiotics.
2. **Postoperative ileus:** An *ileus* is the disruption or slowing of normal bowel activity. This is common after major surgery. Usually, an ileus will resolve with bowel rest alone. Sometimes, a temporary *nasogastric tube (NG)* may need to be inserted through the nose into the stomach to help decompress the intestinal secretions that can accumulate in the stomach when an ileus occurs.
3. **Anastomotic leak:** After the resection of a piece of colon or intestine, an *anastomosis* or connection of the remaining two ends of colon or intestine is performed. A leak may occur when there is incomplete healing of the connection. Sometimes a leak can be managed with bowel rest, antibiotics, and time. If an abscess develops at the site of a leak, a drain may need to be placed into the abscess. This is usually done in the radiology department. If the leak cannot heal on its own or if *sepsis* (widespread infection) occurs, emergent surgery may be required to fix the leak. On occasion, a temporary ileostomy or colostomy may be required to manage the sepsis that develops.
4. **Incisional hernia:** An incisional hernia is a weakened area of the abdominal wall that results when there is incomplete healing of an incision. A hernia may present as a bulge at or near an incision site. Typically, an incisional hernia becomes evident several months to years after surgery. Individuals who smoke, strain, have poor nutrition, are immunocompromised, or are obese have a higher risk of developing this complication. This can usually be repaired once a patient has quit smoking and improved his/her overall health.
5. **Bowel obstruction:** Bowel obstruction most commonly occurs when scar tissue develops internally, causing an obstruction or kinking of the bowel. If the obstruction is partial, it typically resolves with bowel rest via *nasogastric tube* suctioning. Surgery may be required for complete bowel obstructions or for obstructions that do not resolve with bowel rest.
6. **Bladder dysfunction:** Some individuals may experience difficulty in emptying the bladder after surgery. A urinary catheter is usually left in the bladder for several days following surgery and then removed. If the bladder does not empty on its own at that time, a urinary catheter may need to be replaced and left in place for a period of time. Occasionally, a consultation by a *urologist*

(bladder, kidney, and urinary tract specialist) may be needed to address any longstanding difficulties with urination.

7. **Sexual dysfunction:** Physical changes may occur as a result of colorectal cancer development, surgery or radiation therapy that may alter your sexual function. Men may experience impotence or difficulties with erections. Women may experience vaginal swelling, pain and dryness that may make sexual activity difficult or unenjoyable. Some of these changes may be temporary, while others may be permanent. Discuss in further detail with your surgeon and/or oncologist what possible changes might be expected, specific to your particular cancer and treatment plan.
8. ***Clostridium difficile*** :*Clostridium difficile* (*C. diff*) is a bacterium that can be found in the hospital and nursing home setting. When antibiotics are administered, healthy bacteria in the intestine can be eliminated, allowing *C. difficile* to multiply and create toxins that damage the intestine. This can lead to diarrhea and, in more serious situations, inflammation of the colon (colitis). Symptoms of *C. difficile* infection include watery diarrhea and abdominal cramping. Your stool may be tested for this infection if you develop diarrhea while in the hospital. Treatment typically includes a course of oral antibiotics. In rare circumstances, surgery may be warranted for colitis that does not respond to antibiotics.
9. **Deep vein thrombosis (DVT) and pulmonary embolus (PE):** A deep vein thrombosis is a blood clot that may form in one of the larger veins of the legs, arms, or pelvis. This may cause pain, redness, and swelling in the upper or lower extremities. If the blood clot becomes dislodged, it could travel to the lungs causing a pulmonary embolus (PE). This occurs in about 3% of all patients who develop a DVT. A pulmonary embolus can be a life-threatening event. A DVT or PE is treated with blood thinning medication which help dissolve the clot and prevent enlargement of the clot.

Day of Surgery

You will need to arrive to the hospital 2 hours prior to your procedure. Once admitted, a nurse will review your medical history, including your current medications and allergies. An IV will be placed for intravenous medications, including antibiotics.

Prior to surgery, your surgeon will meet with you and review the operation. Consent forms for the procedure will need to be signed prior to proceeding with surgery. This is a good time to ask any additional questions that you may not have discussed with your surgeon.

You will also meet the anesthesia team which typically consists of a *certified nurse anesthetist (CRNA)* and an *anesthesiologist*. They will discuss with you options for anesthesia during the operation and pain control after the procedure has been completed.

The length of surgery varies with each patient. Discuss with your surgeon what the estimated length of time may be for your particular procedure.

After surgery, you will be taken to the post-anesthesia care unit (PACU) where you will recover for about an hour. Then, you will be taken up to your room in the surgical ward. Your family may join you once you are discharged from the PACU.

Postoperative Expectations

Activity

Activity is an important part of your recovery process. Beginning on the day of surgery, you will be encouraged to start a program of light physical activity. This may consist of sitting on the edge of the bed and dangling your feet or sitting up in your recliner to begin with. Walking in the hallways with assistance will follow as you progress. In general, we suggest 4-6 walks daily. Walking helps decrease your risks of several postoperative complications such as blood clot formation, pneumonia, and ileus.

Prior to going home, you will need to demonstrate that you can get out of bed and walk in the halls independently. If there is a concern about your strength and balance, a physical therapy and/or *occupational therapy* consultation may be ordered in the hospital. Sometimes, a short stay in a skilled nursing facility is necessary to help you regain your strength prior to returning home.

After major surgery, it is very common to feel significantly fatigued and deconditioned. It is important to work with the nursing staff and the therapists to help speed up your recovery. Surgery is a very stressful event and it is common to feel “run down” for weeks and even months after surgery. Make sure that you are resting enough. It is normal to take naps on a daily basis during the recovery period.

Diet

Following surgery, you will likely start with a diet consisting of ice chips and small sips of water. As you progress and demonstrate evidence of bowel function (passing gas and bowel movements), the diet will be slowly advanced. Levels of diet generally include clear liquids (juices, gelatin, broth), followed by full liquids (cream soups, pudding, oatmeal), and finally, a soft or low fiber diet (foods that are easily digested). The

physician or physician assistant (PA) who visits with you daily will decide when the diet should be advanced depending on your progress.

If you have significant nausea, vomiting, or bloating, you may need to return to water and ice chips or remain *npo* (nothing by mouth) until your bowel function returns.

Prior to discharge, diet recommendations will be made to help guide you when you are home. Specific diet descriptions can be found at the back of the handbook. It is important to remain well hydrated when you are at home. A minimum of 8 8-oz. glasses of water or non-caffeinated beverages should be consumed daily.

Pain Control

Adequate pain control will be an important priority following surgery. Pain control options include *epidural anesthesia*, *patient-controlled anesthesia (PCA)*, IV pain medication, and oral pain medication. Ideally, your pain will be a level in which you are able to actively take part in your rehabilitation as outlined above. Narcotic pain medications can delay the return of gastrointestinal function. A careful balance in the amount of narcotic pain medication administered must be achieved. Non-narcotic pain management modalities such as acetaminophen (Tylenol®), ibuprofen (Motrin®) and other non-steroidal anti-inflammatory medications (NSAIDs), ice packs and heating pads are also used.

Lung function

After surgery, you will be encouraged to perform certain activities that keep your lungs active and expanding in order to prevent lung complications such as pneumonia. The first of these activities is walking. We recommend walking a minimum of 4-6 times daily with assistance, as needed.

In addition, you will be asked to use an *incentive spirometer*. This is a small hand-held device that enables the user to measure how well the lungs are being filled while taking deep breaths. The nurses will instruct you on its use when you arrive to your hospital room after surgery. In general, you should use the incentive spirometer 10 times per hour while awake.

Prevention of Blood Clot Formation

There is an increased risk of developing a *deep vein thrombosis* (DVT), or blood clot, following surgery. Immobilization or lying in bed for a prolonged period of time can also increase this risk. Specific measures implemented to help minimize your risk of developing a DVT include: the administration of medication that prevents blood from clotting, such as

heparin, utilization of compression stockings worn on the legs throughout your hospital stay, and the use of mechanical compression devices (pneumatic boots that intermittently inflate) worn on the lower legs. Walking is another very important component of blood clot prevention.

Wound Care

Wound care will depend on the type and size of your incisions. Larger incisions may need to be covered for a period of time to help absorb any drainage that may occur. Thin yellow or blood-tinged drainage is common to see. If you have undergone laparoscopic or robotic-assisted surgery, you may have very small incisions that require little to no particular wound care.

Bowel Movements After Surgery

Following colorectal surgery, it is quite normal and expected that you will experience a change in your bowel habits. Common changes include loose or softer stools, more frequent bowel movements, or the feeling of an immediate need to reach the bathroom. This sensation will diminish over time as the stools once again become more formed.

Resuming Sexual Activity

Cancer treatment, especially surgery, may alter your body and self-image which may affect your desire and/or ability to engage in sexual activity. It is important to give yourself time to heal from the psychological impact of the diagnosis of cancer, as well as, the treatment. Discuss with your surgeon when it is safe to resume sexual activity after surgery.

Discharge Instructions

Upon discharge from the hospital, you will be given written instructions from your nurse outlining your discharge instructions, which may include:

Follow up

You will need to call our office to schedule a follow-up appointment with your surgeon upon discharge from the hospital. This appointment is typically scheduled 2-4 weeks after discharge. You may also need to see your primary care provider after discharge, depending on other medical

conditions that you have (i.e. high blood pressure, diabetes). If you will need to see an oncologist, this appointment should be scheduled 3-4 weeks after discharge.

Lifting

You will be placed on a lifting restriction for approximately 6 weeks following abdominal surgery. Heavy lifting may increase your risk of developing a *hernia*, a weakening in the abdominal wall, until complete healing has occurred. Your doctor or PA will discuss appropriate weight limits for you based on your strength and fitness level.

Bathing

Discuss with your surgeon or PA when you may shower or bathe. You may be asked to keep the incisions covered for a period of time. Typically, it is safe to shower and get incisions wet 24-48 hours after surgery. Refrain from swimming or soaking in a tub for approximately 3 weeks from surgery, or until the incision has completely closed over.

Staples and Butterfly Bandages

If you have staples and/or butterfly bandages over your incision, these will likely be removed at your first post-operative appointment. You may still shower and allow the incision to get wet if you have staples or butterfly bandages.

Abdominal Drains

Many times, the surgeon will place a drain into the abdomen during surgery to facilitate drainage of excess fluid that may accumulate following surgery. This is typically removed before discharge from the hospital. Occasionally, a drain may be left in place after discharge. Your nurse will instruct you on how to empty and measure this drain output daily. The drain will then be removed during a postoperative appointment.

Urinary Catheter

A urinary catheter is placed at the time of surgery to facilitate bladder emptying and to monitor urine output. Generally, this is removed 1-3 days following surgery. In some cases, the catheter may remain in place for several days after discharge. The nurse will instruct you on how to care for the urinary catheter before discharge. It will then be removed in the clinic during a postoperative appointment.

Wound Care

It is important to look at your incisions daily in order to identify a developing wound infection. Common signs of a wound infection include redness of the surrounding skin, increasing tenderness of the wound, foul-smelling drainage, and fever. If you have concerns about wound infection once you are home, call your surgeon's office. Antibiotics may be prescribed or you may be asked to come to the clinic for evaluation.

In some cases, an incision will be left partially open, requiring daily dressing changes until it has completely healed. Your nurse will practice dressing changes with you before you go home to ensure you are able to do the changes on your own. Other times, home health care services may be ordered to assist with wound care once you are discharged.

Ostomy Care

If your surgery involves creation of a temporary or permanent colostomy or ileostomy, you will be visited by the enterostomal nurses in the hospital after surgery. The nurses will teach all aspects of stoma care including pouch changes and trouble-shooting techniques so that you are comfortable with the care prior to discharge. Home health care may be arranged for you if you are unable to independently perform this care. Follow-up appointments with the enterostomal nurse are recommended once you are discharged home.

When to call your surgeon after discharge:

1. Fever >100.5 F
 2. Persistent nausea and/or vomiting.
 3. Worsening abdominal, rectal, or perineal pain.
 4. Redness around the incision site(s).
 5. Foul-smelling drainage from the incision site(s).
 6. Bleeding that does not stop with applied pressure.
 7. Pain or burning with urination.
 8. Calf pain or swelling.
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Oncology Follow-up and Surveillance

Patients on chemotherapy are seen by an oncologist or nurse practitioner (NP) at the beginning of each chemotherapy cycle and sometimes more frequently, depending on a patient's particular situation.

Radiographic studies such as CT scans, PET scans, and MRIs are regularly arranged to follow the response to the treatment, as well as, to investigate for possible recurrence of the cancer. Blood tests are a very important part of follow-up visits.

After achieving the best response, patients are initially followed by an oncologist every 2-3 months, depending on the stage of the cancer and the response to the therapy. Specific details should be discussed with your treating oncologist.

In the case of stage I and II colorectal cancer, follow-up is over 5 years; stage III over 10 years; stage IV is life-long.

Colonoscopy

A colonoscopy should be done to evaluate for recurrence of cancer and new growths one year after your original diagnosis or surgery. If normal, your next surveillance colonoscopy is recommended 3 years later. If that colonoscopy is normal, you will then be asked to return for another surveillance colonoscopy in 5 years.

If there are abnormal findings during your surveillance colonoscopy, your surgeon or gastroenterologist will indicate when you should have your next colonoscopy.

Endorectal Ultrasound (ERUS)

For patients with rectal cancer, follow-up endorectal ultrasounds will be an important part of surveillance. You will be scheduled to have an ERUS every four months for the first three years after surgery, then every six months for the next two years after surgery. The goal of these ultrasounds is to evaluate the anastomosis and surrounding tissues. Biopsies may be taken at the time of the ultrasound to evaluate suspicious tissue. You will not require ERUS if you have undergone an *abdominoperineal resection (APR)*, as the anus and rectum are removed during that procedure. By adhering to a strict follow-up protocol, the hope is that a possible recurrence of the rectal cancer can be identified early and then treated appropriately.

Glossary

1. **Abdominoperineal resection (APR):** The surgical resection of the anus, rectum, and a portion of the sigmoid colon with the creation of a permanent colostomy.
2. **Adjuvant therapy:** Treatment that is given in addition to the primary treatment to improve its effectiveness. (Example: chemotherapy or radiation given after surgery has been performed.)
3. **Anastomosis:** The surgical connection of two ends of bowel after a segment has been removed.
4. **Anesthesiologist:** A physician who provides anesthesia (i.e. pain control and sedation medications) before, during, and after surgery. Usually, an anesthesiologist works together with a certified nurse anesthetist (CRNA) to provide care for surgical patients.
5. **Anterior resection:** The surgical removal of the upper part of the rectum.
6. **Blood counts:** A term used to collectively describe red blood cell, white blood cell, and platelet counts.
7. **CEA (carcinoembryonic antigen):** A tumor marker which can be found in the blood that is used for identifying cancer recurrence after surgical resection. It is not reliable for diagnosing cancer or as a screening test.
8. **Certified nurse anesthetist (CRNA):** A registered nurse who specializes in administering anesthesia. A CRNA works under the supervision of an anesthesiologist.
9. **Chemotherapy:** The treatment of cancer with anti-cancer drugs or with a combination of such drugs.
10. **Colostomy:** A surgically-created opening of the colon, brought through the abdominal wall to facilitate the excretion of waste.
11. **Computed tomography (CT) scan:** A computerized radiologic test that produces cross-sectional images of the body using x-rays.
12. **Cycle:** The time between chemotherapy treatments, usually 2-3 weeks.
13. **Deep vein thrombosis (DVT):** A blood clot that occurs in the larger veins of the pelvis, leg, or arms.
14. **Enterostomal therapist (ET):** A specialized nurse who teaches and cares for patients with ostomies.
15. **External beam radiation:** The medical use of radiation energy delivered by a source outside of the body.
16. **Ileostomy:** A surgically-created opening in the ileum (a portion of the small intestine), brought through the abdominal wall to facilitate the excretion of waste.
17. **Ileus:** A slowing of the movement of the intestines. Sometimes this is referred to as a temporary paralysis of the intestines.
18. **Incentive spirometer:** A patient-controlled medical device used to improve lung function, especially after surgery.
19. **Intravenous:** Method of delivering fluids and medications through a vein.
20. **Left colectomy:** The surgical removal of the left colon.

21. **Low anterior resection (LAR):** The surgical removal of the majority of the rectum.
 22. **Lymph node:** Small glands that filter blood from a particular area of the body. These glands also make and store infection-fighting white blood cells.
 23. **Magnetic resonance imaging (MRI):** a type of imaging study that uses a combination of radio waves and a strong magnet instead of x-rays.
 24. **Metastasis:** The spread of cancer to other sites of the body.
 25. **Neoadjuvant:** Treatment that is given before the primary treatment to improve its effectiveness. (Example: chemotherapy and radiation given prior to surgery.)
 26. **NPO:** *nil per orum*, Latin for “nothing by mouth”
 27. **Neuropathy:** Nerve damage. Most common neuropathy caused by chemotherapy is *peripheral* neuropathy or nerve damage to the sensory and motor nerves of the hands and feet. Symptoms may include pain, a tingling sensation (pins and needles) in the fingers and toes, trouble using your fingers to grip, and balance issues.
 28. Occupational therapy:
 29. **Oncologist:** A physician who specializes in the medical treatment of cancer.
 30. **Ostomy:** Opening of the digestive or urinary tract that is brought through the abdominal wall to facilitate the excretion of waste. Also known as a *stoma*.
 31. **Palliative treatment:** Treatment that is not designed to cure a disease, but rather improve its symptoms, leading to enhanced quality of life.
 32. **Positron emission tomography (PET) scan:** a scanning device that uses low-dose radioactive tracers to detect cancer in the body.
 33. **Radiation oncologist:** A physician who specializes in the treatment of cancer utilizing radiation energy.
 34. **Remission:** The response of cancer to a particular therapy. Remission can be partial or complete.
 35. **Right colectomy:** The surgical removal of the right colon.
 36. **Sepsis:** Invasion of the body by harmful microorganisms; widespread infection.
 37. **Sigmoid colectomy:** the surgical removal of the sigmoid colon.
 38. **Stoma:** see *ostomy*.
 39. **Tumor marker:** A substance in the blood that can be elevated in cancer. The CEA is a tumor marker in colon and rectal cancer. *See CEA in the glossary.*
 40. **Urologist:** A surgeon who specializes in the kidneys and urinary tract.
 41. **Vascular access device (VAD):** A surgically-placed port or catheter through which chemotherapy, antibiotics, or blood products can be infused into the bloodstream.
 42. **Wound ostomy care nurse (WOCN):** A specialized nurse who teaches and cares for patients with wounds and ostomies.
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Diet Descriptions

1. **Clear liquid diet:** A clear liquid diet helps maintain adequate hydration, provides some important electrolytes, and gives some energy at a time when a full diet is not possible or recommended. This diet includes water, fruit juices without pulp (apple juice, grape juice or cranberry juice), clear, fat-free broth, clear sodas, gelatin, honey, popsicles without pulp, tea or coffee without milk or cream.
2. **Full liquid diet:** A full liquid diet consists of both clear and opaque liquid foods with a smooth consistency. It includes clear liquids, milk, milkshakes, ice cream, puddings, strained cream soups, fruit juices with pulp, smooth cooked cereals such as porridge and cream of wheat, and carbonated beverages.
3. **Low residue diet:** A low fiber diet consists of less than 10 grams of fiber daily. Low fiber foods are typically more easily digested by the GI tract. Examples of low fiber foods include milk products, fish, ground meat, tofu, poultry, eggs and white bread.
4. **High calorie diet:** A high calorie diet is designed for patients who are malnourished or need additional nutritional support. It includes meats, milk, cheese, butters, sauces and peanut butter.
5. **High fiber diet:** Fiber promotes movement of material through the GI tract, resulting in softer and bulkier stools. A high fiber diet consists of 25-35 grams of fiber daily. Examples of fibrous foods include whole grains, fresh fruits, legumes, root and green leafy vegetables.
6. **Ileostomy diet:** When an ileostomy is created, the colon is either bypassed or removed. The main function of the colon is to reabsorb fluid. There is an increased risk of development of dehydration with an ileostomy. Certain foods slow the passage of material through the intestines, decreasing the risk of dehydration. Examples include bananas, applesauce, rice, peanut butter, tapioca and marshmallows. Foods that increase the passage of intestinal material that should be avoided in individuals with an ileostomy include beans, chocolate, coffee, prune juice, spinach and broccoli.



Recommended reading

Websites:

1. Colon and Rectal Surgery Associates, Ltd.: www.colonrectal.org
2. Minnesota Oncology, P.A: www.mnoncology.com
3. American Cancer Society: www.cancer.org
4. American Society of Colon and Rectal Surgeons: www.fascrs.org
5. National Care Institute: www.cancer.gov
6. Wound, Ostomy, and Continence Nurses' Society: www.wocn.org
7. United Ostomy Association: www.uoa.org or www.ostomy.org
8. The Lance Armstrong Foundation: www.livestrong.org
9. American Society of Clinical Oncology patient information: www.cancer.net

Books:

1. Complete Guide to Colorectal Cancer. The American Cancer Society's guide. Edited by Bernard Levin, et al.
2. Colon Cancer: Causes, Symptoms, Signs, Diagnosis, Treatments, Stages: Everything You Need to Know About Colon Cancer. U.S. Department of Health and Human Services, National Cancer Institute, and National Institute of Health.