ASCOanswers

Colorectal Cancer

Trusted Information to Help Manage Your Care from the American Society of Clinical Oncology
ABOUT ASCO
Founded in 1964, the American Society of Clinical Oncology (ASCO) is the world's leading professional organization representing physicians who care for people with cancer. With nearly 40,000 members, ASCO is committed to improving cancer care through scientific meetings, educational programs and peer-reviewed journals. ASCO is supported by its affiliate organization, the Conquer Cancer Foundation, which funds ground-breaking research and programs that make a tangible difference in the lives of people with cancer. For ASCO information and resources, visit www.asco.org. Patient-oriented cancer information is available at www.cancer.net.

ABOUT CANCER.NET
Cancer.Net (www.cancer.net) brings the expertise and resources of the American Society of Clinical Oncology (ASCO), the voice of the world's cancer physicians, to people living with cancer and those who care for and care about them. ASCO is composed of nearly 40,000 members who are the leaders in advancing cancer care. All the information and content on Cancer.Net was developed and approved by the cancer doctors who are members of ASCO, making Cancer.Net an up-to-date and trusted resource for cancer information. Cancer.Net is supported by the Conquer Cancer Foundation, which provides funding for breakthrough cancer research, professional education, and patient and family support.

ASCO patient education programs are supported by:
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>2</td>
</tr>
<tr>
<td>My Health Care Team</td>
<td>3</td>
</tr>
<tr>
<td>Colorectal Cancer Basics</td>
<td>4</td>
</tr>
<tr>
<td>Colorectal cancer development</td>
<td>4</td>
</tr>
<tr>
<td>Colorectal cancer spread</td>
<td>5</td>
</tr>
<tr>
<td>Colorectal cancer genetics</td>
<td>5</td>
</tr>
<tr>
<td>Understanding Your Diagnosis</td>
<td>7</td>
</tr>
<tr>
<td>Tests and procedures</td>
<td>7</td>
</tr>
<tr>
<td>Stages</td>
<td>9</td>
</tr>
<tr>
<td>Grade</td>
<td>13</td>
</tr>
<tr>
<td>Colorectal Cancer Treatment</td>
<td>15</td>
</tr>
<tr>
<td>Surgery</td>
<td>15</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>17</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>18</td>
</tr>
<tr>
<td>Targeted therapy</td>
<td>20</td>
</tr>
<tr>
<td>Clinical trials</td>
<td>22</td>
</tr>
<tr>
<td>Managing symptoms and side effects</td>
<td>24</td>
</tr>
<tr>
<td>Developing a treatment plan</td>
<td>25</td>
</tr>
<tr>
<td>Coping With Side Effects</td>
<td>28</td>
</tr>
<tr>
<td>Physical effects</td>
<td>28</td>
</tr>
<tr>
<td>Emotional and social effects</td>
<td>29</td>
</tr>
<tr>
<td>Follow-Up Care</td>
<td>32</td>
</tr>
<tr>
<td>Recommended follow-up tests</td>
<td>32</td>
</tr>
<tr>
<td>General follow-up care schedule</td>
<td>34</td>
</tr>
<tr>
<td>Other recommendations</td>
<td>34</td>
</tr>
<tr>
<td>My follow-up care plan</td>
<td>35</td>
</tr>
<tr>
<td>Colorectal Cancer Dictionary</td>
<td>37</td>
</tr>
</tbody>
</table>

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**ASCO ANSWERS** is a collection of oncologist-approved patient education materials developed by ASCO for people with cancer and their caregivers.

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Introduction

It is one of many people’s biggest fears—sitting in the doctor’s office and hearing the word cancer. People diagnosed with colorectal cancer often say they were stunned by their diagnosis and couldn’t hear, much less remember, what was said afterward. However, absorbing the news of a cancer diagnosis is a key part of the coping process.

In the weeks to come, you may find it helpful to have family members or friends come to your appointments with you. They will not only give you some much-needed support, but they can also help listen to and remember the information your health care team gives you. Using this ASCO Answers guide may also be helpful. It was designed to explain some of the medical terms doctors may use when talking about your cancer and help you keep track of the specifics of your colorectal cancer diagnosis and treatment plan. Throughout this guide, you will find questions to ask your doctor, nurse, or another member of your health care team, as well as plenty of space to write down their answers or other important information. There are also check boxes you can use to identify the tests, procedures, and treatments that will make up your cancer care plan.

However you choose to accurately keep track of this information, it is important to do so. Getting the facts about your diagnosis will help you make the best decisions based on your situation in the coming days. Additionally, being an informed, involved patient and voicing your questions and concerns will help you and your health care team form a partnership in your care. Tell your doctor and nurse how you prefer to receive information and how much you want to know about your diagnosis, treatment, and prognosis, which is the chance of recovery. Don’t be afraid to ask questions or to let your health care team know you don’t know what questions to ask.
# My Health Care Team

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<tr>
<th>Role</th>
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<th>Specialty</th>
<th>Contact Information</th>
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<tbody>
<tr>
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<td>Medical Oncologist:</td>
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<td>Contact Information:</td>
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<td>Radiation Oncologist:</td>
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<td>Primary Care Doctor:</td>
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<td>Oncology Social Worker:</td>
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**OTHER TEAM MEMBERS:**

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<th>Specialty</th>
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Colorectal Cancer Basics

The colon and rectum make up the large intestine, which plays an important role in the body’s ability to process waste. The colon makes up the first 5 to 6 feet of the large intestine, and the rectum makes up the last 6 inches, ending at the anus. The colon has 4 sections. The ascending colon is the beginning of the large intestine into which the small intestine empties. It extends from a pouch called the cecum on the right side of the abdomen. The transverse colon crosses the top of the abdomen. The descending colon takes waste down the left side. Finally, the sigmoid colon at the bottom takes waste a few more inches, down to the rectum. Waste leaves the body through the anus.

Colorectal cancer begins when normal cells in the lining of the colon or rectum change and grow uncontrollably, forming a mass called a tumor. A tumor can be cancerous or benign. A cancerous tumor is malignant, meaning it can spread to other parts of the body. A benign tumor does not spread to other parts of the body and is rarely life-threatening.

Colorectal cancer usually begins as a polyp, a noncancerous growth that may develop on the inner wall of the colon or rectum as people get older. Most polyps bulge into the colon, forming a mound on the wall that can be easily seen during a colonoscopy. However, about 10% of colon polyps are flat and difficult to find with a colonoscopy, unless a dye is used to highlight them. If not treated or removed, both types of polyps can become cancerous, regardless of their size. These changes usually take years to occur. However, when a person has an uncommon inherited syndrome, cancer-causing changes may happen within months. Both genetic and environmental factors can cause these changes.

Most colon and rectal cancers are a type of tumor called adenocarcinoma, which is cancer of the cells that line the inside tissue of the colon and rectum. Other types of cancer that begin in the colon or rectum, but develop much less often, include carcinoid tumor, gastrointestinal stromal tumor (GIST), and lymphoma. These rare types of colorectal cancer are not addressed in this guide, but information about them can be found at www.cancer.net/cancer-types.
Colorectal cancer spread

As a cancerous tumor grows in the colon or the rectum, cancer cells may be carried to other parts of the body by the bloodstream or lymphatic system through a process called metastasis. One of the first places colorectal cancer usually spreads is to the lymph nodes, which are tiny, bean-shaped organs that fight infection.

Colorectal cancer can also spread farther away from the large intestine to other parts of the body, such as the liver, lungs, a tissue called the peritoneum that lines the abdomen, or a woman’s ovaries. It’s important to know that even if the cancer has spread, treatment is always an option.

Colorectal cancer genetics

The cause of colorectal cancer is not known, but certain factors appear to increase the risk of developing the disease. One of these factors is genetic mutations, or changes, that can be passed down from parents to their children.

Colorectal cancer is more likely to develop in a person who has had a parent, sibling, or child with colorectal cancer, particularly if the family member was diagnosed with colorectal cancer before age 60. Members of families with certain uncommon inherited conditions also have a significantly increased risk of developing colorectal cancer. These include familial adenomatous polyposis (FAP), attenuated familial adenomatous polyposis (AFAP).
Gardner syndrome, Lynch syndrome, Juvenile Polyposis syndrome (JPS), Muir-Torre syndrome, MYH-associated polyposis (MAP), Peutz-Jeghers syndrome (PJS), and Turcot syndrome. Relatives of women with uterine cancer may also have a higher risk.

Only genetic testing can determine whether a person has a genetic mutation; however, these tests are not recommended for everyone. Most experts strongly recommend that people who are considering genetic testing first talk with a genetic counselor. A genetic counselor is an expert trained to explain the risks and benefits of genetic testing.

QUESTIONS TO ASK THE DOCTOR
• Who will be part of my health care team, and what will each member do?
• If I have a family history of colorectal cancer, should I see a genetic counselor? Should my family members?
• Where can I find more information about colorectal cancer?
• Does this hospital or cancer center have a learning resource center? If so, where is it located?
• Whom should I contact if I have any questions or concerns?
Understanding Your Diagnosis

A diagnosis of colorectal cancer usually begins when a doctor discovers an abnormality during a screening test, such as a colonoscopy, sigmoidoscopy, fecal occult blood test, double contrast barium enema, or stool DNA test. After this, the doctor will use a number of tests and procedures to determine whether the abnormality is cancer. If it is, imaging tests may be used to find out whether the cancer has spread to other parts of the body.

Not every test is right for every person. Your doctor may consider factors such as your age, medical condition, signs and symptoms, and previous test results when deciding whether a specific diagnostic test is right for you. Talk with your doctor about the test(s) that will provide the most useful information about your condition.

Tests and procedures

- **Colonoscopy**
  This procedure allows the doctor to look inside the entire rectum and colon. A flexible, lighted tube called a colonoscope is inserted into the rectum while a person is sedated and then passed through the entire colon to look for polyps or cancer. During this procedure, a doctor can remove polyps or other tissue for further examination. If colorectal cancer is discovered, a complete diagnosis that accurately describes the location and spread of the cancer may not be possible until the tumor is surgically removed.

- **Biopsy**
  A biopsy is the removal of a small amount of tissue for examination under a microscope. The sample removed during the biopsy is analyzed by a pathologist. A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease. A biopsy may be performed during a colonoscopy, or the pathologist may analyze any tissue removed during surgery. Sometimes, a computed tomography (CT) scan or

Doctors use many different tests to diagnose cancer and find out if it has spread.
ultrasound is used to help perform a needle biopsy. A needle biopsy removes tissue through the skin with a needle that is guided into the tumor. Other tests can suggest that cancer is present, but only a biopsy can provide a definite diagnosis of colorectal cancer.

- **Molecular testing of the tumor**
  Your doctor may recommend running laboratory tests on a tumor sample removed during a biopsy or surgery to identify specific genes, proteins, and other factors unique to the tumor. Results of these tests will help your doctor decide whether your treatment options should include a type of treatment called targeted therapy.

- **Blood tests**
  Because colorectal cancer often bleeds into the large intestine or rectum, people with the disease may have an abnormally low level of red blood cells and become anemic. As a result, doing a complete blood count can indicate whether bleeding is occurring.

  Another blood test detects the levels of a protein called carcinoembryonic antigen (CEA). High levels of CEA may indicate that cancer has spread to other parts of the body. CEA is not an absolute test for colorectal cancer because levels are high for only about 60% of people with colorectal cancer that has spread to other organs. In addition, other medical conditions can cause CEA to increase. A CEA test is most often used to monitor colorectal cancer for people who are already receiving treatment rather than as a screening test.

- **IMAGING TESTS**
  - **CT scan**
    A CT scan creates a 3-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. For a person with colon cancer, a CT scan can check to see whether the cancer has spread to the lungs, liver, or other organs. It is often done before surgery. A CT scan can also be used to measure a tumor’s size. Sometimes, a special dye called a contrast medium is given before the scan to provide better detail on the image. This dye can be injected into a patient’s vein or given as a liquid to swallow.

  - **Magnetic resonance imaging (MRI)**
    An MRI uses magnetic fields, not x-rays, to produce detailed images of the body. A special dye called a contrast medium is given before the scan to create a clearer picture. This dye can be injected into a patient’s vein or given as a liquid to swallow. An MRI is the best imaging test to find out where colorectal cancer has grown. An MRI can also be used to measure the tumor’s size.

  - **Ultrasound**
    An ultrasound uses sound waves to create a picture of the internal organs to find out if cancer has spread. Endorectal ultrasound is commonly used to diagnose rectal cancer and find out how deeply it has grown. During an endorectal ultrasound a probe is inserted into the rectum. This test can also be used to help plan treatment. However, it cannot accurately detect cancer that has spread to nearby lymph nodes or beyond the pelvis. A traditional ultrasound may be used to view the liver, although CT scans or MRIs are preferred because they are better at finding tumors in the liver.

  - **Chest x-ray**
    An x-ray is a way to create a picture of structures inside the body, using a small amount of radiation. An x-ray of the
chest helps doctors find out whether the cancer has spread to the lungs.

- **Positron emission tomography (PET) scan**
  A PET scan is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance is injected into a patient’s body. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body.

**Stages**

People with colorectal cancer are often given a stage along with their diagnosis. The stage is a way of describing how deep the cancer has grown into the colon or rectal wall (T); if the cancer has spread to nearby lymph nodes and, if so, how many (N); and whether the cancer has spread to other parts of the body (M). Doctors use diagnostic tests to find out a cancer’s stage, so staging may not be complete until all of the tests are finished. Knowing the stage will help your doctor decide which treatment plan will be most effective and can help predict your prognosis.

Doctors assign the stage of the cancer by combining the T, N, and M. The stage is then described using a number zero (0) through four (Roman numerals I through IV) and often a letter such as A, B, or C. The stages of colorectal cancer are:

- **Stage 0.** This is called cancer in situ. The cancer cells are only found in the mucosa, or the inner lining, of the colon or rectum.

- **Stage I.** The cancer has grown through the mucosa and has invaded the muscular layer of the colon or rectum. It has not spread to nearby tissue or lymph nodes.
Stage IIA. The cancer has grown through the wall of the colon or rectum but has not spread to nearby tissues or lymph nodes.

Stage IIB. The cancer has grown through the muscle to the lining of the abdomen, called the visceral peritoneum. It has not spread to nearby lymph nodes or anywhere else in the body.

Stage IIC. The tumor has spread through the wall of the colon or rectum and has grown into nearby structures. It has not spread to nearby lymph nodes or anywhere else in the body.

Stage IIIA. The cancer has grown through the inner lining or into the muscle layers of the intestine. It has spread to 1 to 3 lymph nodes, or there are nodules made up of tumor cells found in structures near the colon that do not appear to be lymph nodes. The cancer has not spread to other parts of the body.

Stage IIIB. The cancer has grown through the bowel wall or into surrounding organs. It has spread to 1 to 3 lymph nodes, or there are nodules made up of tumor cells in structures near the colon that do not appear to be lymph nodes. However, the cancer has not spread to other parts of the body.

Stage IIIC. The cancer of the colon, regardless of how deep it has grown, has spread to 4 or more lymph nodes but not to distant parts of the body.

Stage IVA. The cancer has spread to one other part of the body, such as the liver or lungs.

Stage IVB. The cancer has spread to more than one distant part of the body.

Recurrent. The cancer has come back after treatment. The disease may be found in the colon, rectum, or in another part of the body.
STAGE IIC

STAGE IIIA

STAGE IIIB

STAGE IIIC

Regional Lymph Nodes
STAGE IVA

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Grade

Doctors may also use the term “grade” when talking about colorectal cancer. The grade describes how much cancer cells look like healthy cells when viewed under a microscope. The grade of colorectal cancer may help your doctor predict how quickly the cancer will spread.

If the cancer looks similar to healthy tissue and contains different cell groupings, it is called differentiated or a low-grade tumor. If the cancerous tissues look very different from healthy tissue, it is called poorly differentiated or a high-grade tumor. In general, the lower the tumor’s grade, the better the prognosis.

GRADE:
- GX—The tumor grade cannot be identified.
- G1—The cells are more like normal cells; called well differentiated.
- G2—The cells are somewhat like normal cells; called moderately differentiated.
- G3—The cells look less like normal cells; called poorly differentiated.
- G4—The cells barely look like normal cells; called undifferentiated.
QUESTIONS TO ASK THE DOCTOR ABOUT YOUR DIAGNOSIS

• Where is the cancer located?
• What stage and grade is the cancer? What does this mean?
• What other diagnostic tests or procedures may be necessary?
• How can I prepare myself for each test or procedure?
• Where do I need to go to have these tests?
• When will I get the results? How will I get the results (over the phone, at the next appointment, etc.)?
• Who will explain these results to me?
• Should I see another doctor for a second opinion? Can you give me names of doctors I could see?
• If I get a second opinion, will I have to repeat any tests or procedures?
• What is my prognosis?

NOTES:
Colorectal Cancer

Treatment

In cancer care, doctors with different specialties often work together to create an overall treatment plan that combines different types of treatments. For colorectal cancer, this team usually includes a gastroenterologist, which is a doctor who specializes in the function and disorders of the gastrointestinal tract, as well as a surgeon, medical oncologist, and radiation oncologist. Your treatment options will depend on several factors, including the type and stage of cancer, possible side effects, and your preferences and overall health. Your care plan may also include treatment for symptoms and side effects.

When making treatment decisions, you are also encouraged to consider participating in a clinical trial. A clinical trial is a research study that tests whether a new approach to treatment is safe, effective, and possibly better than the standard treatment.

Before treatment begins, it is important to discuss the goals and possible side effects of your treatment plan with your doctor, including the likelihood that the treatment will work and its potential effect on your quality of life. To start a conversation with your doctor, you may want to ask:

- What are my treatment options?
- Will I need more than one type of treatment?
- Based on the results of molecular testing, do you recommend targeted therapy? Why or why not?
- What treatment plan do you recommend for me? Why?
- What is the goal of the treatment(s) you are recommending? Is it to eliminate the cancer? To relieve my symptoms? Or both?
- What is the expected timeline for my treatment plan?
- When do I need to make a decision about starting treatment?

**Surgery**

Surgery is the removal of the tumor and surrounding tissue during an operation. This is the most common treatment for colorectal cancer and is often called surgical resection. Part of the healthy colon or rectum and nearby lymph nodes are also removed. Although both general surgeons and specialists may perform...
colorectal surgery, many people talk with specialists who have additional training and experience in colorectal surgery.

Some people may be able to have laparoscopic colorectal cancer surgery. With this technique, several viewing scopes are passed into the abdomen while the person is under anesthesia, a medication used to block the awareness of pain. The incisions are smaller and the recovery time is often shorter than with standard colon surgery. Laparoscopic surgery is as effective as conventional colon surgery at removing the cancer. Surgeons who perform laparoscopic surgery have been specially trained in this technique.

Sometimes as part of surgery to treat rectal cancer, a person may need to have a colostomy. This is a surgical opening, or stoma, through which the colon is connected to the abdominal surface to provide a pathway for waste to exit the body. This waste is then collected in a pouch worn by the patient. Sometimes, the colostomy is temporary to allow the rectum to heal, but it may be permanent. With modern surgical techniques and the use of radiation therapy and chemotherapy before surgery when needed, most people who receive treatment for rectal cancer do not need a permanent colostomy.

In general, the side effects of surgery include pain and tenderness in the area of the operation. The operation may also cause constipation or diarrhea, which usually goes away after a while. People who have a colostomy may have irritation around the stoma. A doctor, nurse, or specialist in colostomy management, called an enterostomal therapist, can teach a person how to clean the area and prevent infection.

Many people need to retrain their bowel after surgery, which may take some time and assistance. People should talk with their doctor if they do not regain good control of bowel function.

### QUESTIONS TO ASK THE DOCTOR ABOUT SURGERY

- Which type of surgery do you recommend? Why?
- What is the goal of this surgery?
- Will lymph nodes or any other tissue need to be removed?
- Will I need to be admitted to a hospital for this operation? If so, how long will I need to stay in the hospital?
- Will my tumor be stored? Where will it be stored? For how long? How can it be accessed in the future?
- Will I need to have a colostomy? If so, for how long?
- Will I have difficulty controlling my bowel function after surgery? If so, how will this side effect be managed?
- What kind of pain should I expect to feel after surgery? What can be done to manage this pain?
Radiation therapy

Radiation therapy is the use of high-energy x-rays to destroy cancer cells. Radiation therapy is commonly used for treating rectal cancer because this type of tumor tends to come back near where it originally started. Radiation therapy is rarely used to treat colon cancer, but there are specific situations when a doctor may recommend it. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist.

External-beam radiation therapy uses a machine located outside the body to deliver x-rays to where the cancer is located. Radiation treatment is usually given 5 days a week for several weeks and may be given in a doctor’s office or at a hospital.

For some people, specialized radiation therapy techniques may help get rid of small areas of the tumor that could not be removed with surgery. For example, intraoperative radiation therapy uses a high, single dose of radiation therapy given during surgery, and brachytherapy is the use of radioactive “seeds” placed inside the body.

Stereotactic radiation therapy is a type of external-beam radiation therapy that may be used if a tumor has spread to the liver or lungs. This type of radiation therapy delivers a large, precise radiation dose to a small area. This technique can help spare the liver and lung tissue that might be removed during surgery. However, not all cancers that have spread to the liver or lungs can be treated in this way.

For rectal cancer, radiation therapy may be used before surgery, called neoadjuvant therapy, to shrink the tumor so it is easier to remove. Radiation therapy can also be used after surgery, called adjuvant therapy, to destroy any remaining cancer cells. Chemotherapy is often given at the same time as radiation therapy, called chemoradiation therapy, to increase its effectiveness. Chemoradiation therapy is often used for rectal cancer before surgery to try to avoid a colostomy, reduce scarring of the bowel in the area where the radiation therapy was given, and decrease the chance that the cancer will recur.

Side effects from radiation therapy may include fatigue, mild skin reactions, upset stomach, and loose bowel movements. It may also cause blockage of the bowel or bloody stools from bleeding through the rectum. Most side effects go away soon after treatment is finished. Long-term side effects, such as sexual problems and infertility (the inability to have a child) in both men and women, may occur after radiation therapy to the pelvis. Before treatment begins, talk with your doctor about the possible side effects and the available options for preventing and managing them.
QUESTIONS TO ASK THE DOCTOR ABOUT RADIATION THERAPY

• Which type of radiation therapy do you recommend? Why?
• How often will my radiation treatments occur, and how long will I receive treatment?
• How much time will each treatment take?
• What will I experience when I receive radiation therapy? Will it hurt or cause me discomfort?
• Could this treatment affect my sexual function? If so, how and for how long?
• Could this treatment affect my ability to become pregnant or have children? If so, should I talk with a fertility specialist before treatment begins?

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Chemotherapy

Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping the cancer cells’ ability to grow and divide. Chemotherapy is usually given by a medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy travels through the bloodstream to reach cancer cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally).

If you will be receiving IV chemotherapy, your doctor may recommend placing a catheter directly into a large vein in the upper arm or neck instead of using a traditional IV. Catheters are long, narrow, hollow tubes made of soft plastic. The catheter is often placed completely under the skin and connected to a small plastic or metal disc called a port. This is known as a port-a-cath.

A chemotherapy regimen, or schedule, usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.
Chemotherapy may be given after surgery to eliminate any remaining cancer cells. For some people with rectal cancer, the doctor will give chemotherapy and radiation therapy before surgery to reduce the size of a rectal tumor and reduce the chance of the cancer returning after treatment.

Common chemotherapy-based treatments for colorectal cancer are:

- Fluorouracil (5-FU, Adrucil)
- 5-FU with leucovorin (Wellcovorin), a vitamin that improves the effectiveness of 5-FU
- Capecitabine (Xeloda), an oral form of 5-FU
- 5-FU with leucovorin and oxaliplatin (Eloxatin), a combination called FOLFOX
- 5-FU with leucovorin and irinotecan (Camptosar), a combination called FOLFIRI
- Irinotecan alone
- Capecitabine with either irinotecan or oxaliplatin
- Any of the above with either bevacizumab (Avastin), cetuximab (Erbitux), or panitumumab (Vectibix)
- FOLFIRI with ziv-aflibercept (Zaltrap) or ramucirumab (Cyramza)
- Regorafenib (Stivarga) alone

Chemotherapy may cause vomiting, nausea, diarrhea, and mouth sores. However, medications to prevent these side effects are available. In addition, patients may be unusually tired, and there is an increased risk of infection. Neuropathy, which is tingling, pain, or numbness in the feet or hands, may also occur with some drugs. Hair loss is an uncommon side effect of the drugs used to treat colorectal cancer.

It is important to let your doctor know if you experience any of these or other side effects so that your symptoms can be managed. If side effects are particularly difficult, the dose of drug may be lowered or a treatment session may be postponed. Most chemotherapy side effects usually go away once treatment is finished.

**QUESTIONS TO ASK THE DOCTOR ABOUT CHEMOTHERAPY**

- Which type of chemotherapy do you recommend? Why?
- How long will I need to have chemotherapy?
- How will the treatment be given?
- How will we know if it’s working?
- How will chemotherapy affect my daily life? Will I be able to work, exercise, and perform my usual activities?
- What are the potential short- and long-term side effects of each medication?
- Where can I get more information about the medication(s) I will be taking?
- If I am worried about the cost of treatment, who can help me with this concern?

**NOTES:**
Targeted therapy

Targeted therapy is a type of drug treatment that targets the cancer’s specific genes, proteins, or the tissue environment that contributes to cancer growth and survival. This type of treatment blocks the growth and spread of cancer cells while limiting damage to healthy cells. These drugs are becoming more important in the treatment of colorectal cancer.

Research studies show that not all colorectal cancers have the same targets. To find the most effective treatment, your doctor may run specialized tests to identify genes, proteins, and other factors specific to your tumor. These results help better match you with the most effective treatment option.

Currently there are 2 main types of targeted therapy used to treat colorectal cancer: anti-angiogenesis therapy and epidermal growth factor receptor (EGFR) inhibitors.

Anti-angiogenesis therapy

This targeted treatment is focused on stopping angiogenesis, which is the process of making new blood vessels. Because a tumor needs the nutrients delivered by blood vessels to grow and spread, the goal of anti-angiogenesis therapy is to “starve” the tumor.

Bevacizumab

Bevacizumab is a type of anti-angiogenesis therapy called a monoclonal antibody. When given with chemotherapy, bevacizumab increases the length of time patients with advanced colorectal cancer live. This drug may be used as a first-line or second-line therapy, along with chemotherapy.

Ziv-afibercept OR Ramucirumab

Ziv-afibercept and ramucirumab are other types of anti-angiogenesis therapies. Either can be combined with FOLFIRI chemotherapy as a second-line treatment for metastatic colorectal cancer.

Regorafenib

This drug was approved in 2012 for patients with metastatic colorectal cancer who already received certain types of chemotherapy and other targeted therapies.

EGFR inhibitors

Researchers have found that drugs that block EGFR, such as cetuximab and panitumumab, may be effective at stopping or slowing the growth of colorectal cancer. However, recent research shows that cetuximab and panitumumab do not work as well for tumors that have specific mutations, or changes, to a gene called RAS. According to a provisional clinical opinion from ASCO, all patients with metastatic colorectal cancer who may receive anti-EGFR therapy, such as cetuximab and panitumumab, should have their tumors tested for RAS gene mutations. If the tumor has a mutated form of the RAS gene, ASCO recommends against using anti-EGFR antibody therapy. In addition, the FDA recommends that both cetuximab and panitumumab only be given to patients with tumors with non-mutated, sometimes called wild type, RAS genes.

Targeted therapies often have different side effects than chemotherapy. For example, the side effects of EGFR inhibitors can include a rash on the face and upper body, which can be prevented or reduced with various treatments. Talk with your doctor about other possible side effects of targeted therapy and how they can be managed.
QUESTIONS TO ASK THE DOCTOR ABOUT TARGETED THERAPY

• Based on my test results, will I benefit from targeted therapy? Why or why not?
• How long will I need to have this treatment?
• How will the treatment be given?
• What are the possible side effects of this treatment? How will these side effects be managed?
• How will my treatment be monitored?
• If I am worried about managing the cost of treatment, who can help me with this concern?

NOTES:
Clinical trials

Doctors and scientists are always looking for better ways to treat people with colorectal cancer. To make scientific advances, doctors create research studies involving volunteers, called clinical trials.

Many clinical trials are focused on new treatments, evaluating whether a new treatment is safe, effective, and possibly better than the current (standard) treatment. These types of studies evaluate new drugs, different combinations of existing treatments, new approaches to radiation therapy or surgery, and new methods of treatment. There are also clinical trials that study new ways to ease symptoms and side effects during treatment and ways to manage late effects that may occur after treatment.

People who participate in clinical trials are often among the first to receive new treatments before they are widely available. However, there is no guarantee the new treatment will be safe, effective, or better than a standard treatment.

People decide to participate in clinical trials for many reasons. For some people with colorectal cancer, a clinical trial is the best treatment option available. Because standard treatments are not perfect, patients are often willing to face the added uncertainty of a clinical trial in the hope of a better result. Other people volunteer for clinical trials because they know these studies are the only way to make progress in treating colorectal cancer. Even if they do not benefit directly from the clinical trial, their participation may help other people with colorectal cancer in the future.

Some people worry if they participate in a clinical trial they may receive no treatment by being given a placebo or a “sugar pill.” However, placebos are usually combined with standard treatment in most cancer clinical trials. When a placebo is used in a study, it is done with the full knowledge of the participants.

If you decide to join a clinical trial, you will participate in a process known as informed consent. During informed consent, the doctor should list all of your options and help
you understand how the new treatment is different from the standard treatment. The doctor must also list all of the risks of the new treatment, which may or may not be different from the risks of the standard treatment. Finally, the doctor must explain what will be required of each patient in order to participate in the clinical trial, including the number of doctor visits, tests, the schedule of treatment, and the costs you may need to pay.

Keep in mind, even if you decide to participate in a clinical trial you may stop participating at any time for any personal or medical reason.

To learn more about clinical trials, visit www.cancer.net/clinicaltrials.

QUESTIONS TO ASK THE DOCTOR ABOUT CLINICAL TRIALS

• How do clinical trials help people with colorectal cancer?
• What clinical trials are open to me? Where are they located, and how do I find out more about them?
• What happens during a clinical trial?
• How do the costs of participating in a clinical trial compare with the costs of standard treatment?
• Where can I learn more about clinical trials?

NOTES:
Managing symptoms and side effects

In addition to treatment to slow, stop, or eliminate colorectal cancer, an important part of your care is relieving symptoms and side effects. This approach is called palliative care.

Palliative care is any treatment that focuses on reducing a person’s symptoms, improving quality of life, and supporting patients and their families. Any person, regardless of age or type and stage of cancer, may receive palliative care. Ideally palliative care should start as early as needed in the cancer treatment process and continue throughout all stages of the disease. It can be given at the same time as disease-directed treatment or on its own.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, emotional support, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, and radiation therapy, so it is important to understand the goals of each treatment in your treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and palliative care options. And during and after treatment, be sure to tell your doctor or another member of your health care team if you are experiencing a problem so it can be addressed as quickly as possible.

QUESTIONS TO ASK THE DOCTOR ABOUT PALLIATIVE CARE

• What can be done to manage any symptoms and side effects I may experience?
• Can you recommend someone who specializes in palliative care?
• Where can I receive palliative care services?
• What other support services are available to me? To my family?
• If I am worried about managing the cost of treatment, who can help me?

NOTES:

For more information about palliative care, visit www.cancer.net/palliativecare.
Developing a treatment plan

In general, colorectal cancer that has been diagnosed as stage 0, I, II, or III can usually be cured with surgery. However, many patients with stage III colorectal cancer, and some with stage II, will receive chemotherapy after surgery to increase the chance of eliminating the disease. Stage IV is rarely curable, but it is treatable, and the growth of the cancer and the symptoms of the disease can be successfully managed. Clinical trials are also a treatment option for each stage.

STAGE 0
The usual treatment is a polypectomy, or removal of a polyp, during a colonoscopy. There is no additional surgery unless the polyp cannot be fully removed. Your doctor may recommend having more frequent colonoscopies or sigmoidoscopies initially to make sure the polyp has been completely removed.

STAGE I
Surgical removal of the tumor and lymph nodes is usually the only treatment needed.

STAGE II
Some patients receive adjuvant chemotherapy to destroy any remaining cancer cells. However, cure rates for surgery alone are quite good, and there are few benefits of additional treatment for people with this stage of colon cancer. Patients should talk with their doctor about whether more treatment is needed after surgery. A clinical trial is also an option after surgery.

For patients with rectal cancer, radiation therapy is usually given in combination with chemotherapy, either before or after surgery.

STAGE III
Treatment usually involves surgical removal of the tumor followed by adjuvant chemotherapy. A clinical trial is also an option. For patients with rectal cancer, radiation therapy may be used along with chemotherapy before or after surgery.

STAGE IV (METASTATIC)
At this stage the cancer has spread to another location in the body, such as the liver, lungs, peritoneum, or a woman’s ovaries. Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer because there can be different opinions about the best treatment plan.

At this stage, surgery to remove the portion of the colon where the cancer started usually cannot eliminate the cancer, but it can help relieve blockage of the colon or other complications. Surgery may also be used to remove parts of other organs that contain cancer, called a resection, and can cure some people if a limited amount of cancer has spread to a single organ, such as the liver or lung. Even when curing the cancer is not possible, surgery may add months or even years to a person’s life. Determining who can benefit from
If colorectal cancer returns after the original treatment, it is called recurrent cancer. Cancer recurs because tiny areas of cancer cells are difficult to find and can sometimes remain in the body after treatment. Over time, these cells may multiply and grow large enough to be found and diagnosed. Colorectal cancer may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

If a recurrence occurs, the cycle of testing will begin again to learn as much as possible about the recurrence. After testing is done, you and your doctor will talk about your treatment options. Generally, the treatment options for recurrent cancer are the same as those for metastatic cancer and include surgery, chemotherapy, radiation therapy, and palliative care. However, they may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat recurrent colorectal cancer.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope.

Your health care team may also recommend a treatment plan that includes radiation therapy and/or chemotherapy, which can be used to slow the spread of the disease and often temporarily shrink a cancerous tumor. In addition, palliative care will be important to help relieve symptoms and side effects.

For most patients, a diagnosis of metastatic cancer is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, potentially through a support group.
QUESTIONS TO ASK THE DOCTOR ABOUT YOUR TREATMENT PLAN

• Who will be coordinating my overall treatment and follow-up care?
• What is the goal of my treatment plan?
• What clinical trials are open to me?
• What is my prognosis?
• Whom should I contact for support and emotional help for me? For my family?

NOTES:
Coping With Side Effects

Fearing the side effects of colorectal cancer treatment is common, but it may help to know that preventing and controlling side effects is a major focus of your health care team. Before starting treatment, talk with your health care team about which side effects are most likely to happen and which are not. Then, once treatment begins, let your health care team know what side effects you are experiencing so they can help manage them.

The specific side effects you may experience during and after treatment for colorectal cancer depend on a number of factors, including the cancer’s stage, the length and dosage of treatment(s), and your overall health. However, some of the potential physical, emotional, and social effects experienced by people receiving treatment for colorectal cancer are described in this section.

Physical effects

Fatigue. Cancer and its treatment often cause a persistent feeling of physical, emotional, or mental tiredness or exhaustion. Most people receiving cancer treatment experience some type of fatigue, which can make even a small effort, such as walking across a room, seem like too much. Fatigue can seriously affect all aspects of a person’s life, from relationships with friends and family to the ability to perform at work. It is important to tell your doctor if you are experiencing fatigue because there are things your health care team can do to help.

Changes in bowel function. Colorectal cancer and its treatment may cause bowel problems, such as diarrhea, gas, loss of control of bowel movements, and increased urgency with bowel movements. The severity of these issues usually decreases with time, and most people find they settle into a new normal following treatment. The same is true for people who have a colostomy as part of their surgery. Although it may take time to adjust, a colostomy should not restrict you from the activities of your daily life. If you have concerns about your bowel function, talk with a member of your health care team for advice about how to manage these issues.

For more information about managing side effects, visit www.cancer.net/sideeffects.
Pain. Pain can be caused by the tumor, be a side effect of cancer treatment, or result from causes not related to the cancer at all. Untreated pain can make other aspects of cancer seem worse, such as fatigue, weakness, nausea, constipation, sleep disturbances, depression, anxiety, and mental confusion. However, it is important to know that up to 95% of cancer pain can be treated successfully using medication or other strategies. Your doctor or a pain specialist can help you find an effective pain-relief strategy.

Sexual issues. Both men and women being treated for colorectal cancer may experience sexual problems, including a decrease or loss of libido (sex drive); an inability to achieve or maintain sexual arousal, such as lubrication in women or an erection in men; the delay or absence of orgasm following normal arousal, such as premature ejaculation in men; and pain during sexual intercourse. Even though it may feel awkward, it is important to discuss these issues with your doctor or another member of your health care team. In addition, couples counseling may help you have productive conversations with your spouse or partner about how to cope with sexual side effects and support each other.

Infertility. Some treatments for colorectal cancer may cause temporary or permanent infertility. If this is a concern for you, talk with your doctor before treatment begins about the possible fertility-related side effects of your treatment plan and options for preserving your fertility.

Nausea and vomiting. Nausea and vomiting are common side effects of many cancer treatments. Nausea is feeling the urge to vomit or throw up. Vomiting may happen before treatment as a result of anxiety, within 24 hours after treatment, or 2 or more days after treatment. Mild nausea and vomiting can be quite uncomfortable, but they usually do not cause serious problems. Severe vomiting, on the other hand, can cause dehydration, electrolyte imbalances (loss of minerals from the body, such as potassium and sodium), weight loss, and depression. In addition to medications that help prevent nausea and vomiting, many people find that behavioral treatments can help control these side effects. Talk with your health care team about ways to change the expectation and fear of nausea and vomiting.

Chemo brain. Cancer survivors commonly use the term “chemo brain” to describe difficulties thinking clearly after cancer treatment. Cognitive side effects vary and sometimes make it hard to complete daily activities. People who experience severe problems concentrating, multitasking, or understanding or remembering things should talk with their doctor or another member of the health care team to learn about medication, cognitive rehabilitation and training, and other ways to manage these challenges.

Emotional and social effects

In addition to physical side effects, you may experience emotional and social effects. For many people, the diagnosis and treatment of colorectal cancer is stressful and can trigger difficult emotions. Physical changes that may occur during treatment, such as having a colostomy, may make
you feel uncomfortable and self-conscious. You may also feel differently about yourself and your body because of changes that aren’t visible to others, such as fatigue, infertility, or sexual side effects.

Research has shown that sharing fears and anxieties with family, friends, counselors, clergy, or support groups helps strengthen patients emotionally, and perhaps even physically. If you don’t find it easy to open up to others, you may want to express your feelings in other ways, such as:
- Writing in a journal or starting a blog
- Doing artistic projects, such as painting
- Praying or meditating
- Reading
- Slowing down and reflecting

However, even with outlets to express their feelings, sometimes people with colorectal cancer and those closest to them continue to experience emotional and social challenges. If you are feeling anxious, depressed, or stressed about your diagnosis and treatment, talk with a member of your health care team, such as an oncology nurse. Oncology nurses not only have a wealth of experience and knowledge about cancer, cancer treatment, and side effects, but they can also provide you with emotional and social support, as well as help you develop effective coping strategies.

Another good resource is an oncology social worker. An oncology social worker can help you navigate the health care system; find support to manage the day-to-day challenges of living with cancer; and provide counseling, education, information services, discharge and home care planning services, and referrals to community resources for you and your family and friends. Oncology social workers practice in many settings, including cancer centers, hospitals, doctors’ offices, cancer-related agencies, hospices, and private practices. If there is not an oncology social worker at the place where you receive treatment, call the nearest cancer center or university/teaching hospital to ask if there is one on staff.

Learn more about coping with the physical and emotional effects of colorectal cancer at www.cancer.net/coping. For a list of support organizations and other resources, visit www.cancer.net/support.
QUESTIONS TO ASK THE DOCTOR ABOUT SIDE EFFECTS

- What are the potential short- and long-term side effects of my treatment plan?
- Are there ways to help me prepare for treatment and decrease the chance of experiencing side effects?
- What can be done to manage any side effects I may experience?
- What support services are available to me? To my family?

NOTES:
Follow-Up Care

After treatment for colorectal cancer ends, talk with your doctor about developing a survivorship care plan. This plan will include regular physical examinations and medical tests to monitor your recovery for the coming months and years. It will also involve managing any ongoing or late effects of treatment.

The tests your doctor recommends and how often you need to have them will be based on your risk of recurrence and your overall health. In general, you will visit your doctor and receive follow-up screening more often earlier in your recovery. This is because 80% of recurrences are found during the first 2 to 3 years after surgery, and 95% of recurrences are found within 5 years.

ASCO has developed a list of follow-up care recommendations. These recommendations are mainly focused on people who had stage II or stage III colorectal cancer. It is less certain what testing should be done for people who had stage I colorectal cancer because this stage is less likely to come back. If you have had surgery for metastatic colorectal cancer, it is important to talk with your doctor about creating a survivorship care plan specifically for you, since there is currently no standardized follow-up care schedule for this stage of colorectal cancer. It is also important to remember that these follow-up care recommendations are for people who had colorectal cancer that was not inherited.

Recommended follow-up tests

Regular visits with your doctor. Doctor visits are recommended every 3 to 6 months. Regularly scheduled appointments help increase the likelihood of finding a treatable recurrence, as can keeping an eye out for signs that the cancer has come back.

The symptoms of a potential recurrence include:

- A change in bowel habits
- Diarrhea, constipation, or feeling that the bowel does not empty completely
- Bright red or very dark blood in the stool
- Stools that look narrower or thinner than normal
- Discomfort in the abdomen, including frequent gas pains, bloating, fullness, and cramps
- Weight loss with no known explanation
- Constant tiredness or fatigue
- Unexplained iron-deficiency anemia
Talk with your doctor if these symptoms last for several weeks or become more severe. However, it is also possible that these symptoms may be caused by a medical condition that is not cancer, especially for general symptoms like abdominal discomfort, bloating, and irregular bowel movements.

**CEA test.** This is a blood test that detects the levels of the CEA protein. High levels of CEA may mean that a cancer has spread to other parts of the body. CEA testing is recommended every 3 to 6 months for 5 years.

**CT scan.** CT scans of the abdomen and chest are recommended each year for 3 years. If you have a high risk of recurrence, your doctor may recommend CT scans every 6 to 12 months for the first 3 years. If you had rectal cancer, a CT scan of the pelvis may also be recommended, but how often you need this test depends on your risk of recurrence.

**Colonoscopy.** This test allows the doctor to look for polyps or second cancers in the entire rectum and colon. You should expect to have a colonoscopy 1 year after surgery. How often you need this test after that depends on the results. For example, if polyps are found, you may need to have another colonoscopy sooner. However, in general, this test typically occurs every 3 to 5 years. Some people, such as those with specific inherited conditions, may require colonoscopy screening more frequently. Talk with your doctor about an appropriate schedule for colonoscopy testing based on your medical history and risk of recurrence.

**Rectosigmoidoscopy.** This test helps a doctor check the rectum for polyps, cancer, and other abnormalities. If you had rectal cancer, but did not have radiation therapy to the pelvis, this test is recommended every 6 months. However, rectosigmoidoscopy may be recommended even if you had radiation therapy for rectal cancer, but it depends on your risk of recurrence.
General follow-up care schedule

FIRST YEAR AFTER TREATMENT
☐ Physical examination and CEA testing every 3 to 6 months
☐ Abdominal and chest CT scan each year or every 6 to 12 months for people at high risk for recurrence
☐ For rectal cancer survivors, a pelvic CT scan every 6 to 12 months
☐ Colonoscopy 1 year after surgery
☐ Rectosigmoidoscopy every 6 months for people with rectal cancer who did not have radiation therapy to the pelvis

SECOND YEAR AFTER TREATMENT
☐ Physical examination and CEA testing every 3 to 6 months
☐ CT scan each year or every 6 to 12 months for people at high risk for recurrence
☐ For rectal cancer survivors, a pelvic CT scan every 6 to 12 months
☐ Rectosigmoidoscopy every 6 months for people with rectal cancer who did not have radiation therapy to the pelvis

THIRD YEAR AFTER TREATMENT
☐ Physical examination and CEA testing every 3 to 6 months
☐ CT scan each year or every 6 to 12 months for people at high risk for recurrence
☐ For rectal cancer survivors, a pelvic CT scan every 6 to 12 months
☐ Rectosigmoidoscopy every 6 months for people with rectal cancer who did not have radiation therapy to the pelvis

FOURTH YEAR AFTER TREATMENT
☐ Physical examination and CEA testing every 3 to 6 months
☐ For rectal cancer survivors, a pelvic CT scan each year

☐ Rectosigmoidoscopy every 6 months for people with rectal cancer who did not have radiation therapy to the pelvis

FIFTH YEAR AFTER TREATMENT
☐ Physical examination and CEA testing every 3 to 6 months
☐ For rectal cancer survivors, a pelvic CT scan each year
☐ Rectosigmoidoscopy every 6 months for people with rectal cancer who did not have radiation therapy to the pelvis

Other recommendations

People recovering from colorectal cancer are also encouraged to follow established guidelines for good health, such as maintaining a healthy weight, not smoking, minimizing alcohol intake, eating a balanced diet, and having recommended cancer screening tests. Talk with your doctor to develop a plan that is best for your needs. Moderate exercise can help rebuild your strength and energy level. In addition, some studies suggest that regular exercise may reduce the risk of recurrence, but more research is needed. Your doctor can help you create a safe exercise plan based on your needs, physical abilities, and fitness level.
My follow-up care plan

Use this page to help discuss your follow-up care with your doctor and keep track of his or her recommendations. Talk with a member of your health care team if you have any questions.

Need for ongoing (adjuvant) treatment for cancer:  □ Yes  □ No

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<th>Additional treatment name</th>
<th>Purpose</th>
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SCHEDULE OF FOLLOW-UP VISITS

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<th>Doctor’s name</th>
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CANCER SURVEILLANCE OR OTHER RECOMMENDED TESTS

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It is important to continue to see your primary care doctor for all general health care recommended for a person of your age, including screening tests for other cancers, when appropriate. You should also tell your doctor about:

1. Anything that could be a brand new symptom;
2. Anything that continues to be a persistent symptom;
3. Anything you are worried about that might be related to the cancer coming back.

Signs or symptoms to tell the doctor about right away:

__________________________________________________________________________________________________

Possible late- and long-term effects:

__________________________________________________________________________________________________

What concerns do you have as you transition into survivorship?

☐ Emotional and mental health  ☐ Memory or concentration loss  ☐ Stopping smoking
☐ Fatigue  ☐ Parenting  ☐ Weight changes
☐ Fertility  ☐ Physical functioning  ☐ Other: ____________________________
☐ Financial advice or assistance  ☐ Sexual health
☐ Insurance  ☐ School/Work
QUESTIONS TO ASK THE DOCTOR ABOUT FOLLOW-UP CARE

- What is the chance that the cancer will come back after treatment?
- Is there anything I can do to reduce the risk of recurrence?
- Which follow-up tests will I need, and how often will I need them?
- Who will be coordinating my follow-up care?
- What signs or symptoms should I tell you about right away?
- If I move or need to switch doctors, how do I make sure I continue with my recommended follow-up care schedule?
- What type of follow-up care do I need once I have reached 5 years after finishing treatment?

NOTES:
Colorectal Cancer Dictionary

**Adjuvant therapy:** Treatment given after the main treatment to reduce the chance of cancer coming back by eliminating any remaining cancer cells. It usually refers to chemotherapy and/or radiation therapy given after surgery.

**Benign:** A tumor that is not cancerous. The tumor does not usually invade nearby tissue or spread to other parts of the body.

**Biopsy:** The removal of a small amount of tissue for examination under a microscope. Other tests can suggest colorectal cancer is present, but only a biopsy can make a definite diagnosis.

**Brachytherapy:** Radiation treatment given using small radioactive “seeds” or pellets placed inside the body near the tumor. Also called internal radiation therapy.

**Carcinoembryonic antigen (CEA) test:** A blood test that detects the level of a protein called carcinoembryonic antigen (CEA). High levels of CEA may indicate that a cancer has spread to other parts of the body. CEA is not an absolute test for colorectal cancer because levels are high for only about 60% of people with colorectal cancer that has spread to other organs. CEA tests are most often used to monitor colorectal cancer for patients already receiving treatment and are not used as screening tests.

**Cells:** The basic units that make up the human body.

**Chemoradiation therapy:** Chemotherapy that is given at the same time as radiation therapy to increase the effectiveness of the radiation therapy.

**Chemotherapy:** The use of drugs to destroy cancer cells.

**Clinical trial:** A research study that involves volunteers. Many clinical trials test new treatments and/or prevention methods to find out whether they are safe, effective, and possibly better than the current standard of care, which is the best known treatment.

**Colonoscopy:** A screening or diagnostic test that allows the doctor to look inside the entire rectum and colon while a patient is sedated. A flexible, lighted tube called a colonoscope is inserted into the rectum and the entire colon to look for polyps or cancer. During this procedure, a doctor can remove polyps or other tissue for further examination.

**Colostomy:** A surgical opening that connects the large intestine to the abdominal surface, providing a pathway for waste to exit the body. The waste is then collected in a pouch worn by the patient.

**Complete blood count (CBC):** A CBC is a common blood test that provides important information about the amount of white blood cells, red blood cells, and platelets. It is used to help diagnose some types of cancer, tell if a cancer has spread to the bone marrow, and help determine how your body is tolerating cancer treatments. If you are being treated with chemotherapy, your doctor will likely monitor your blood cell counts regularly using CBCs.

**Computed or computerized axial tomography (CT or CAT) scan:** An imaging technique that creates a 3D picture of the inside of the body using an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors.
**Cure:** To fully restore health. This term is sometimes used when a cancer has not returned for at least 5 years after treatment. However, the concept of “cure” is difficult to apply to cancer because undetected cancer cells can sometimes remain in the body after treatment, causing the cancer to return later. Recurrence after 5 years is still possible.

**Epidermal growth factor receptor (EGFR):** In a healthy cell, EGFR allows cells to grow and divide. However, when there are too many of these receptors caused by a genetic mutation, cancer cells continue to grow and divide. Researchers have found that drugs that block EGFR may be effective for stopping or slowing the growth of colorectal cancer.

**Enterostomal therapist:** A health care professional who specializes in caring for patients with a colostomy or other stoma.

**External-beam radiation therapy:** Radiation therapy given from a machine located outside the body.

**First-line treatment:** The first treatment given to get rid of the cancer.

**Grade:** A way of describing how much a tumor looks like healthy colorectal tissue when viewed under a microscope. Healthy tissue usually contains many different types of cells grouped together. If the cancer looks similar to healthy tissue and contains different cell groupings, it is called differentiated or a low-grade tumor. If the cancerous tissue looks very different from healthy tissue, it is called poorly differentiated or a high-grade tumor. The cancer’s grade can help a doctor predict how quickly the cancer will spread. In general, the lower the tumor’s grade, the better the prognosis.

**Imaging test:** A procedure that creates pictures of internal body parts, tissues, or organs to make a diagnosis, plan treatment, check whether treatment is working, or observe a disease over time.

**In situ:** In place. Refers to cancer that has not spread to nearby tissue. Also called localized or noninvasive cancer.

**Invasive cancer:** Cancer that has spread outside the layer of tissue in which it started and has the potential to grow into other tissues or other parts of the body. Also called infiltrating cancer.

**Laboratory test:** A procedure that evaluates a sample of blood, urine, or another substance from the body to make a diagnosis, plan treatment, check whether treatment is working, or observe a disease over time.

**Late effects:** Side effects of cancer treatment that occur months or years after treatment has finished.

**Learning resource center:** A location in a hospital or cancer center where patients and families can get information about health-related topics and learn about support resources. Also called a health or hospital library.

**Lymph nodes:** Tiny, bean-shaped organs that help fight infection.

**Lymphatic system:** A network of small vessels, ducts, and organs that carry fluid to and from the bloodstream and body tissues. Cancer can spread to other parts of the body through the lymphatic system.

**Malignant:** Refers to a tumor that is cancerous. It may invade nearby healthy tissue or spread to other parts of the body.

**Metastasis:** The spread of cancer from the place where it began to another part of the body. This occurs when cancer cells break away from the primary tumor and travel through the blood or the lymphatic system to the lymph nodes, lungs, liver, or other organs.
**Neoadjuvant therapy:** Treatment given before the main treatment. It may include chemotherapy and/or radiation therapy given before surgery to shrink a tumor so it is easier to remove.

**Oncologist:** A doctor who specializes in treating cancer. The 5 main types are medical, surgical, radiation, gynecologic, and pediatric oncologists.

**Palliative care:** Any type of treatment that concentrates on reducing a patient’s symptoms or treatment-related side effects, improving quality of life, and supporting patients and their families. Also called symptom management or supportive care.

**Pathologist:** A doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease.

**Polyp:** A noncancerous growth that may develop on the inner wall of the colon or rectum as people get older. If not treated or removed, a polyp can develop into cancer. There are several forms of polyps. Adenomatous polyps, or adenomas, are growths that may become cancerous and can be detected with a colonoscopy.

**Polypectomy:** The surgical removal of a polyp.

**Positron emission tomography (PET) scan:** A diagnostic test used to detect cancer and find out the cancer’s stage. This scan is sometimes used to evaluate the effectiveness of cancer treatments, such as chemotherapy or radiation therapy. A PET scan is often used to complement information gathered from a computed tomography (CT) scan, magnetic resonance imaging (MRI), or physical examination.

**Primary site:** The area in the body where a cancer started.

**Prognosis:** Chance of recovery; a prediction of the outcome of a disease.

**Psychosocial effects:** Emotional and social concerns related to cancer and cancer treatment that can greatly affect patients’ well-being. These may include lack of information and support; emotional difficulties, including depression and anxiety; lack of transportation; disruptions to work, school, and family life; and insufficient financial resources.

**Quality of life:** An overall sense of well-being and satisfaction with life.

**Radiation therapy:** The use of high-energy x-rays or other particles to destroy cancer cells. Also called radiotherapy.

**RAS:** A gene that may be mutated, or changed, in some colorectal tumors. Research show that drugs like cetuximab and panitumumab do not work as well for tumors that have RAS mutations. Therefore, people who have a tumor with a mutated form of the RAS gene should not receive anti-EFGR therapy.

**Recurrence:** Cancer that has returned after a period during which the cancer could not be detected. Local recurrence means that the cancer has come back in the same general area where the original cancer was located. Regional recurrence refers to cancer that has come back in the lymph nodes or other tissues near the original cancer site, usually by direct spread. Distant recurrence refers to cancer that has come back and has spread to other parts of the body, usually by traveling through the lymphatic system or bloodstream.

**Regimen:** A treatment plan that includes which treatments and procedures will be done, medications and their doses, the schedule of treatments, and how long the treatment will last.

**Response:** Shrinkage of the cancer as a result of chemotherapy, radiation therapy, targeted therapy, or another type of treatment.
Risk: The likelihood of an event.

Screening: The process of checking whether a person has a disease or has an increased chance of developing a disease when the person has no symptoms.

Secondary cancer: Describes either a new primary cancer, which is a different type of cancer that develops after treatment for the first type of cancer, or cancer that has spread to other parts of the body from the place where it started. See metastasis.

Second-line therapy: Treatment given if the first treatment stops working or is no longer effective.

Side effect: An undesirable result of treatment, such as fatigue, nausea, vomiting, or skin rash.

Sigmoidoscopy: A screening or diagnostic test that allows a doctor to see inside the lower 20 inches of the sigmoid colon and rectum.

Stage: A way of describing where the cancer is located, if or where it has spread, and whether it is affecting other parts of the body.

Stoma: A surgically constructed opening, such as a colostomy.

Surgery: The removal of cancerous tissue from the body during an operation.

Survivorship care plan: A personalized schedule of follow-up examinations and tests that the doctor recommends after a patient's active treatment period. This may include regular physical examinations and/or medical tests to monitor the patient's recovery for the coming months and years. It is often used together with a treatment summary. Also called a follow-up care plan.

Targeted treatment: Treatment that targets specific genes, proteins, or other molecules that contribute to cancer growth and survival.

Tumor: A mass formed when healthy cells change and grow uncontrollably. A tumor can be cancerous or benign. A cancerous tumor is malignant, meaning it can spread to other parts of the body. A benign tumor means the tumor will not spread.

Treatment summary: A written summary of the therapy(ies) that a person had during his/her active treatment period. This is often used in conjunction with a survivorship care plan to help monitor a survivor's long-term health.

For more definitions of common terms you may hear before, during, and after treatment, visit www.cancer.net/cancerbasics.
Looking for Other Patient Information Resources?

Cancer.Net offers a variety of guides, booklets, and fact sheets to help patients learn more about their disease and treatment.

**ASCO ANSWERS GUIDES**

ASCO Answers Guides feature comprehensive information about the diagnosis, treatment, side effects, and psychosocial effects of a specific cancer type, as well as practical information for patients and families. Topics include:

- Breast Cancer
- Colorectal Cancer
- Non-Small Cell Lung Cancer
- Small Cell Lung Cancer
- Prostate Cancer
- Survivorship
- Caregiving

**ASCO ANSWERS FACT SHEETS**

ASCO Answers Fact Sheets provide a one-page (front and back) introduction to a specific type of cancer or cancer-related topic. Each includes an overview, illustration, terms to know, and questions to ask the doctor. Cancer.Net has 65 fact sheets available (including some in Spanish), covering adult and childhood cancers, diagnosis and treatment, and side effects. Some available titles are:

- Kidney Cancer
- Acute Lymphocytic Leukemia
- Appetite Loss
- Understanding Chemotherapy

**For Patients and Caregivers:** If you are interested in additional educational materials, visit www.cancer.net/ascoanswers to find all of our available materials in electronic format.

**For Oncology Professionals:** Bulk quantities are available for purchase. Bundled versions are also available for purchase. Bundles include guides for oncology professionals and patient guides. Available bundles cover survivorship, weight management, and tobacco cessation. Visit www.cancer.net estore or call 1-888-273-3508 to place your order. To request free promotional materials for your practice, please send an email to contactus@cancer.net.

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**WE WANT TO HEAR FROM YOU**

If you found this material helpful or if you have comments or suggestions about how they could be better, please let us know at contactus@cancer.net.