

Colon Cancer: Stages and Treatment

2.0 Contact Hours

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Colon Cancer: Stages and Treatment

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The contents of this course are taken from the National Cancer Institute, U.S. National Institutes of Health. Learning objectives and post test have been prepared by Dr. Ratnakar P. Kini

Objectives

Upon completion of this course, the learner will be able to:

1. Explain the anatomy of the colon
2. Discuss the risk factors for colon cancer
3. Explain the different signs and symptoms of colon cancer
4. Discuss the different tests used to diagnose colon cancer
5. Explain the different stages of colon cancer
6. Discuss the different treatment options available for colonic cancer

General Information About Colon Cancer

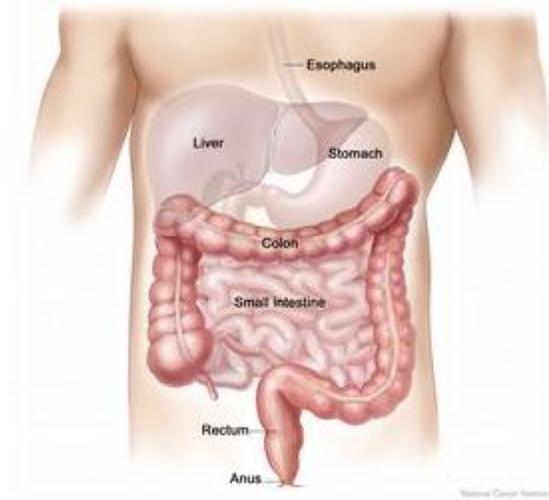
Key Points for This Section

- Colon cancer is a disease in which malignant (cancer) cells form in the tissues of the colon.
- Age and health history can affect the risk of developing colon cancer.
- Possible signs of colon cancer include a change in bowel habits or blood in the stool.
- Tests that examine the rectum, rectal tissue, and blood are used to detect (find) and diagnose colon cancer.
- Certain factors affect prognosis (chance of recovery) and treatment options.

Colon cancer is a disease in which malignant (cancer) cells form in the tissues of the colon.

The colon is part of the body's digestive system. The digestive system removes and processes nutrients (vitamins, minerals, carbohydrates, fats, proteins, and water) from foods and helps pass waste material out of the body. The digestive system is made up of the esophagus, stomach, and the small and large intestines. The first 6 feet of the large

intestine are called the large bowel or colon. The last 6 inches are the rectum and the anal canal. The anal canal ends at the anus (the opening of the large intestine to the outside of the body).

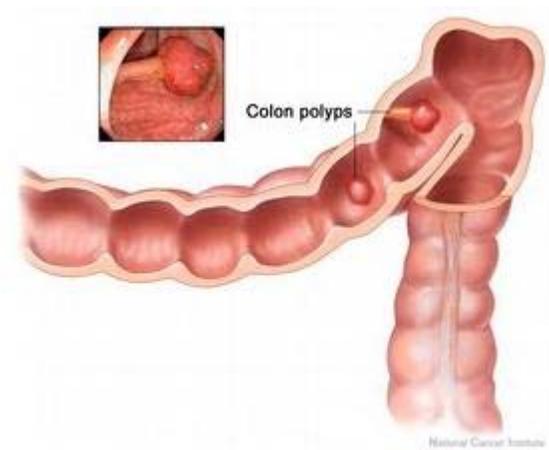


Anatomy of the lower digestive system, showing the colon and other organs.

Age and health history can affect the risk of developing colon cancer.

Risk factors include the following:

- Age 50 or older.
- A family history of cancer of the colon or rectum.
- A personal history of cancer of the colon, rectum, ovary, endometrium, or breast.
- A history of polyps in the colon.



Polyps in the colon. Some polyps have a stalk and others do not. Inset shows a photo of a polyp with a stalk.

- A history of ulcerative colitis (ulcers in the lining of the large intestine) or Crohn's disease.
- Certain hereditary conditions, such as familial adenomatous polyposis and hereditary nonpolyposis colon cancer (HNPCC; Lynch Syndrome).

Possible signs of colon cancer include a change in bowel habits or blood in the stool.

These and other symptoms may be caused by colon cancer. Other conditions may cause the same symptoms. A doctor should be consulted if any of the following problems occur:

- A change in bowel habits.
- Blood (either bright red or very dark) in the stool.
- Diarrhea, constipation, or feeling that the bowel does not empty completely.
- Stools that are narrower than usual.
- Frequent gas pains, bloating, fullness, or cramps.
- Weight loss for no known reason.
- Feeling very tired.
- Vomiting.

Tests that examine the rectum, rectal tissue, and blood are used to detect (find) and diagnose colon cancer.

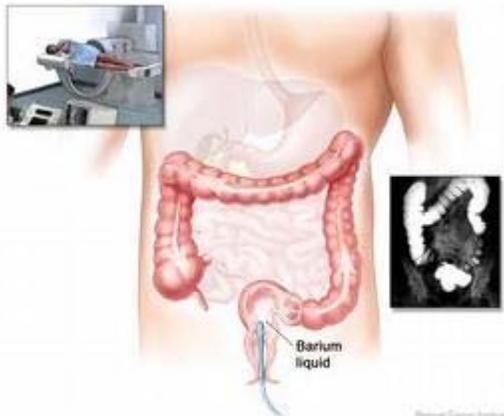
The following tests and procedures may be used:

- Physical exam and history: An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. A history of the patient's health habits and past illnesses and treatments will also be taken.
- Fecal occult blood test: A test to check stool (solid waste) for blood that can only be seen with a microscope. Small samples of stool are placed on special cards and returned to the doctor or laboratory for testing.



Fecal Occult Blood Test (FOBT) kit to check for blood in stool.

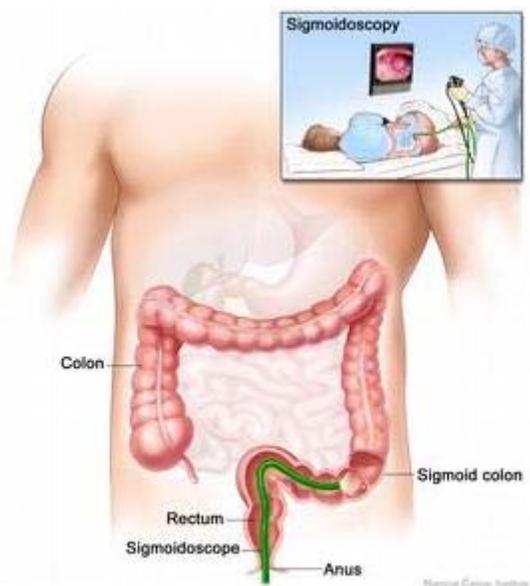
- **Digital rectal exam:** An exam of the rectum. The doctor or nurse inserts a lubricated, gloved finger into the rectum to feel for lumps or anything else that seems unusual.
- **Barium enema:** A series of x-rays of the lower gastrointestinal tract. A liquid that contains barium (a silver-white metallic compound) is put into the rectum. The barium coats the lower gastrointestinal tract and x-rays are taken. This procedure is also called a lower GI series.



Barium enema procedure. The patient lies on an x-ray table. Barium liquid is put into the rectum and flows through the colon. X-rays are taken to look for abnormal areas.

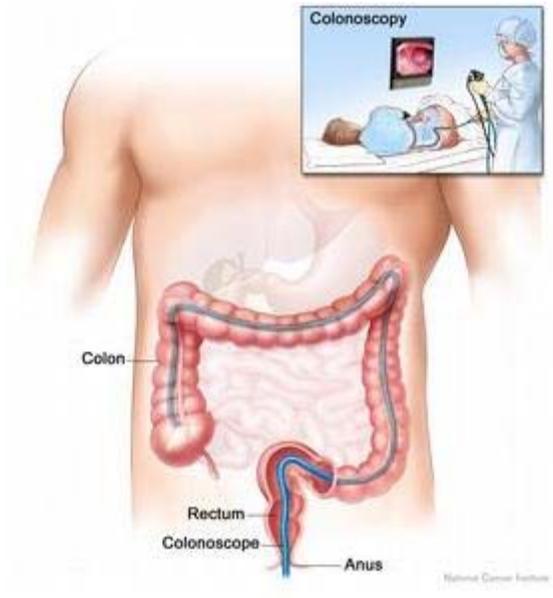
- **Sigmoidoscopy:** A procedure to look inside the rectum and sigmoid (lower) colon for polyps, abnormal areas, or cancer. A sigmoidoscope (a thin, lighted tube) is

inserted through the rectum into the sigmoid colon. Polyps or tissue samples may be taken for biopsy.



Sigmoidoscopy. A thin, lighted tube is inserted through the anus and rectum and into the lower part of the colon to look for abnormal areas.

- Colonoscopy: A procedure to look inside the rectum and colon for polyps, abnormal areas, or cancer. A colonoscope (a thin, lighted tube) is inserted through the rectum into the colon. Polyps or tissue samples may be taken for biopsy.



Colonoscopy. A thin, lighted tube is inserted through the anus and rectum and into the colon to look for abnormal areas.

- **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope to check for signs of cancer.
- **Virtual colonoscopy:** A procedure that uses a series of x-rays called computed tomography to make a series of pictures of the colon. A computer puts the pictures together to create detailed images that may show polyps and anything else that seems unusual on the inside surface of the colon. This test is also called colonography or CT colonography.

Certain factors affect prognosis (chance of recovery) and treatment options.

The prognosis (chance of recovery) depends on the following:

- The stage of the cancer (whether the cancer is in the inner lining of the colon only, involves the whole colon, or has spread to other places in the body).
- Whether the cancer has blocked or created a hole in the colon.
- The blood levels of carcinoembryonic antigen (CEA; a substance in the blood that may be increased when cancer is present) before treatment begins.
- Whether the cancer has recurred.
- The patient's general health.

Treatment options depend on the following:

- The stage of the cancer.

- Whether the cancer has recurred.
- The patient's general health.

Stages of Colon Cancer

Key Points for This Section

- After colon cancer has been diagnosed, tests are done to find out if cancer cells have spread within the colon or to other parts of the body.
- The following stages are used for colon cancer:
 - Stage 0 (Carcinoma in Situ)
 - Stage I
 - Stage II
 - Stage III
 - Stage IV

After colon cancer has been diagnosed, tests are done to find out if cancer cells have spread within the colon or to other parts of the body.

The process used to find out if cancer has spread within the colon or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The following tests and procedures may be used in the staging process:

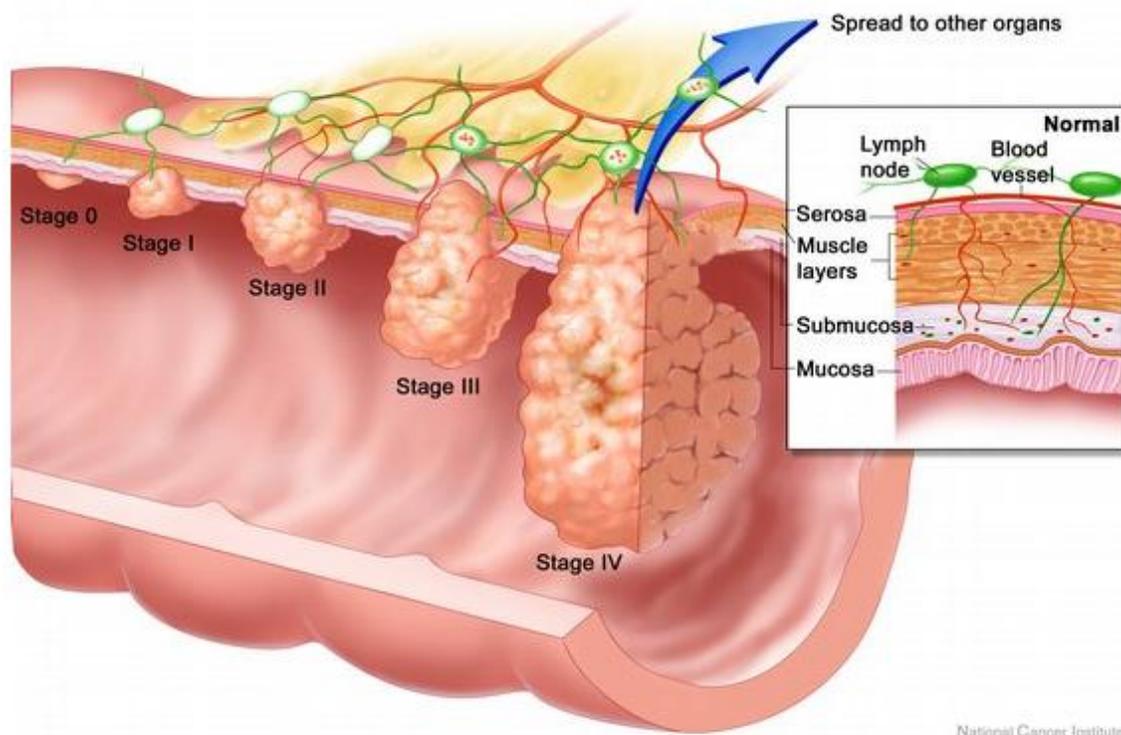
- CT scan (CAT scan): A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.
- Lymph node biopsy: The removal of all or part of a lymph node. A pathologist views the tissue under a microscope to look for cancer cells.
- Complete blood count (CBC): A procedure in which a sample of blood is drawn and checked for the following:
 - The number of red blood cells, white blood cells, and platelets.
 - The amount of hemoglobin (the protein that carries oxygen) in the red blood cells.
 - The portion of the blood sample made up of red blood cells.
- Carcinoembryonic antigen (CEA) assay: A test that measures the level of CEA in the blood. CEA is released into the bloodstream from both cancer cells and normal cells. When found in higher than normal amounts, it can be a sign of colon cancer or other conditions.

- MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the colon. A substance called gadolinium is injected into the patient through a vein. The gadolinium collects around the cancer cells so they show up brighter in the picture. This procedure is also called nuclear magnetic resonance imaging (NMRI).
- Chest x-ray: An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.
- Surgery: A procedure to remove the tumor and see how far it has spread through the colon.

The following stages are used for colon cancer:

Stage 0 (Carcinoma in Situ)

In stage 0, the cancer is found only in the innermost lining of the colon. Stage 0 cancer is also called carcinoma in situ.



As colon cancer progresses from Stage 0 to Stage IV, the cancer cells grow through the layers of the colon wall and spread to lymph nodes and other organs.

Stage I

In stage I, the cancer has spread beyond the innermost tissue layer of the colon wall to the middle layers. Stage I colon cancer is sometimes called Dukes' A colon cancer.

Stage II

Stage II colon cancer is divided into stage IIA and stage IIB.

- Stage IIA: Cancer has spread beyond the middle tissue layers of the colon wall or has spread to nearby tissues around the colon or rectum.
- Stage IIB: Cancer has spread beyond the colon wall into nearby organs and/or through the peritoneum.

Stage II colon cancer is sometimes called Dukes' B colon cancer.

Stage III

Stage III colon cancer is divided into stage IIIA, stage IIIB, and stage IIIC.

- Stage IIIA: Cancer has spread from the innermost tissue layer of the colon wall to the middle layers and has spread to as many as 3 lymph nodes.
- Stage IIIB: Cancer has spread to as many as 3 nearby lymph nodes and has spread:
 - beyond the middle tissue layers of the colon wall; or
 - to nearby tissues around the colon or rectum; or
 - beyond the colon wall into nearby organs and/or through the peritoneum.
- Stage IIIC: Cancer has spread to 4 or more nearby lymph nodes and has spread:
 - to or beyond the middle tissue layers of the colon wall; or
 - to nearby tissues around the colon or rectum; or
 - to nearby organs and/or through the peritoneum.

Stage III colon cancer is sometimes called Dukes' C colon cancer.

Stage IV

In stage IV, cancer may have spread to nearby lymph nodes and has spread to other parts of the body, such as the liver or lungs. Stage IV colon cancer is sometimes called Dukes' D colon cancer.

Recurrent Colon Cancer

Recurrent colon cancer is cancer that has recurred (come back) after it has been treated. The cancer may come back in the colon or in other parts of the body, such as the liver, lungs, or both.

Treatment Option Overview

Key Points for This Section

- There are different types of treatment for patients with colon cancer.
- Three types of standard treatment are used. These include the following:
 - Surgery
 - Chemotherapy
 - Radiation therapy
- Other types of treatment are being tested in clinical trials. These include the following:
 - Biologic therapy
- Follow-up exams may help find recurrent colon cancer earlier.

There are different types of treatment for patients with colon cancer.

Different types of treatment are available for patients with colon cancer. Some treatments are standard (the currently used treatment), and some are being tested in clinical trials. Before starting treatment, patients may want to think about taking part in a clinical trial. A treatment clinical trial is a research study meant to help improve current treatments or obtain information on new treatments for patients with cancer. When clinical trials show that a new treatment is better than the standard treatment, the new treatment may become the standard treatment.

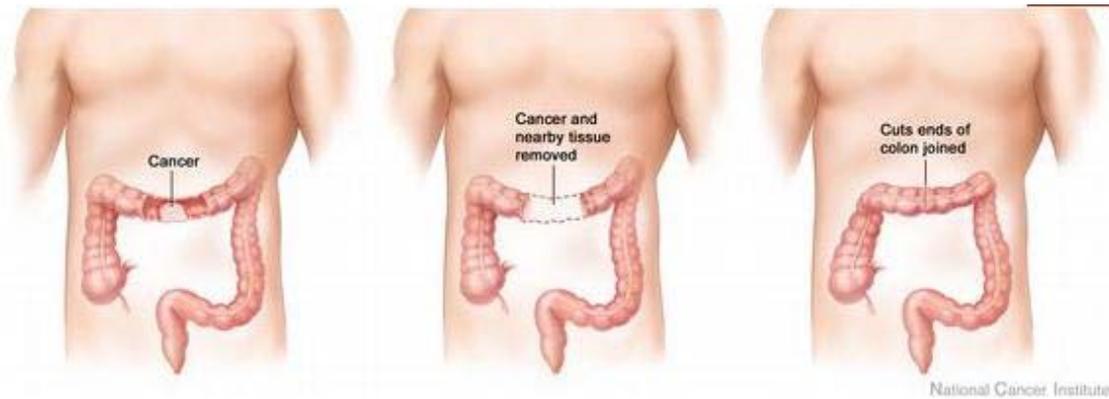
Clinical trials are taking place in many parts of the country. Choosing the most appropriate cancer treatment is a decision that ideally involves the patient, family, and health care team.

Three types of standard treatment are used. These include the following:

Surgery

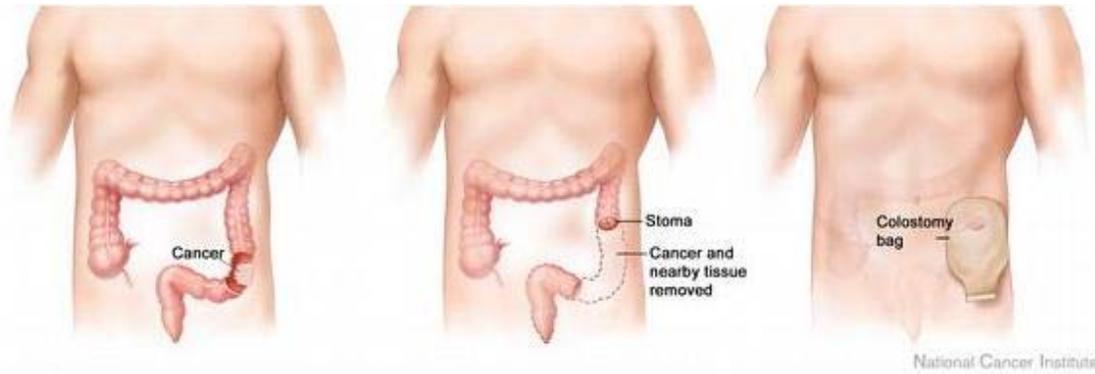
Surgery (removing the cancer in an operation) is the most common treatment for all stages of colon cancer. A doctor may remove the cancer using one of the following types of surgery:

- **Local excision:** If the cancer is found at a very early stage, the doctor may remove it without cutting through the abdominal wall. Instead, the doctor may put a tube through the rectum into the colon and cut the cancer out. This is called a local excision. If the cancer is found in a polyp (a small bulging piece of tissue), the operation is called a polypectomy.
- **Resection:** If the cancer is larger, the doctor will perform a partial colectomy (removing the cancer and a small amount of healthy tissue around it). The doctor may then perform an anastomosis (sewing the healthy parts of the colon together). The doctor will also usually remove lymph nodes near the colon and examine them under a microscope to see whether they contain cancer.



Colon cancer surgery with anastomosis. Part of the colon containing the cancer and nearby healthy tissue is removed, and then the cut ends of the colon are joined.

- **Resection and colostomy:** If the doctor is not able to sew the 2 ends of the colon back together, a stoma (an opening) is made on the outside of the body for waste to pass through. This procedure is called a colostomy. A bag is placed around the stoma to collect the waste. Sometimes the colostomy is needed only until the lower colon has healed, and then it can be reversed. If the doctor needs to remove the entire lower colon, however, the colostomy may be permanent.



Colon cancer surgery with colostomy. Part of the colon containing the cancer and nearby healthy tissue is removed, a stoma is created, and a colostomy bag is attached to the stoma.

- **Radiofrequency ablation:** The use of a special probe with tiny electrodes that kill cancer cells. Sometimes the probe is inserted directly through the skin and only local anesthesia is needed. In other cases, the probe is inserted through an incision in the abdomen. This is done in the hospital with general anesthesia.
- **Cryosurgery:** A treatment that uses an instrument to freeze and destroy abnormal tissue, such as carcinoma in situ. This type of treatment is also called cryotherapy.

Even if the doctor removes all the cancer that can be seen at the time of the operation, some patients may be given chemotherapy or radiation therapy after surgery to kill any cancer cells that are left. Treatment given after the surgery, to increase the chances of a cure, is called adjuvant therapy.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy). When chemotherapy is placed directly into the spinal column, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy).

Chemoembolization of the hepatic artery may be used to treat cancer that has spread to the liver. This involves blocking the hepatic artery (the main artery that supplies blood to the liver) and injecting anticancer drugs between the blockage and the liver. The liver's arteries then deliver the drugs throughout the liver. Only a small amount of the drug reaches other parts of the body. The blockage may be temporary or permanent, depending on what is used to block the artery. The liver continues to receive some blood from the hepatic portal vein, which carries blood from the stomach and intestine.

The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Radiation therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells. There are two types of radiation therapy. External radiation therapy uses a machine outside the body to send radiation toward the cancer. Internal radiation therapy uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer. The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Other types of treatment are being tested in clinical trials. These include the following:

Biologic therapy

Biologic therapy is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer. This type of cancer treatment is also called biotherapy or immunotherapy.

Follow-up exams may help find recurrent colon cancer earlier.

After treatment, a blood test to measure carcinoembryonic antigen (CEA; a substance in the blood that may be increased when colon cancer is present) may be done along with other tests to see if the cancer has come back.

Treatment Options for Colon Cancer

Stage 0 Colon Cancer (Carcinoma in Situ)

Treatment of stage 0 (carcinoma in situ) may include the following types of surgery:

- Local excision or simple polypectomy.
- Resection/anastomosis. This is done when the cancerous tissue is too large to remove by local excision.

Stage I Colon Cancer

Treatment of stage I colon cancer is usually resection/anastomosis.

Stage II Colon Cancer

Treatment of stage II colon cancer may include the following:

- Resection/anastomosis.
- Clinical trials of chemotherapy, radiation therapy, or biologic therapy after surgery.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied. Information about ongoing clinical trials is available from the NCI Web site 1.

Stage III Colon Cancer

Treatment of stage III colon cancer may include the following:

- Resection/anastomosis with chemotherapy.
- Clinical trials of chemotherapy, radiation therapy, and/or biologic therapy after surgery.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied. Information about ongoing clinical trials is available from the NCI Web site 1.

Stage IV and Recurrent Colon Cancer

Treatment of stage IV and recurrent colon cancer may include the following:

- Resection/anastomosis (surgery to remove the cancer or bypass the tumor and join the cut ends of the colon).
- Surgery to remove parts of other organs, such as the liver, lungs, and ovaries, where the cancer may have recurred or spread.
- Radiation therapy or chemotherapy may be offered to some patients as palliative therapy to relieve symptoms and improve quality of life.
- Clinical trials of chemotherapy and/or biologic therapy.

Treatment of locally recurrent colon cancer may be local excision.

Special treatments of cancer that has spread to or recurred in the liver may include the following:

- Radiofrequency ablation or cryosurgery.
- Clinical trials of hepatic chemoembolization with radiation therapy.

Patients whose colon cancer spreads or recurs after initial treatment with chemotherapy may be offered further chemotherapy with a different drug or combination of drugs.

Glossary Terms

abdomen (AB-doh-men)

The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

abdominal

Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

abnormal

Not normal. An abnormal lesion or growth may be cancerous, premalignant (likely to become cancer), or benign.

adjuvant therapy (A-joo-vant THAYR-uh-pee)

Treatment given after the primary treatment to increase the chances of a cure. Adjuvant therapy may include chemotherapy, radiation therapy, hormone therapy, or biological therapy.

anastomosis (an-AS-ta-MO-sis)

A procedure to connect healthy sections of tubular structures in the body after the diseased portion has been surgically removed.

anus (AY-nus)

The opening of the rectum to the outside of the body.

barium enema

A procedure in which a liquid with barium in it is put into the rectum and colon by way of the anus. Barium is a silver-white metallic compound that helps to show the image of the lower gastrointestinal tract on an x-ray.

biological therapy (BY-oh-LAH-jih-kul THAYR-uh-pee)

Treatment to stimulate or restore the ability of the immune system to fight cancer, infections, and other diseases. Also used to lessen certain side effects that may be caused by some cancer treatments. Also called immunotherapy, biotherapy, biological response modifier therapy, and BRM therapy.

biopsy (BY-op-see)

The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests on the cells or tissue. When only a sample of tissue is removed, the procedure is called an incisional biopsy. When an

entire lump or suspicious area is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy, core biopsy, or fine-needle aspiration.

blood

A tissue with red blood cells, white blood cells, platelets, and other substances suspended in fluid called plasma. Blood takes oxygen and nutrients to the tissues, and carries away wastes.

blood chemistry study

A procedure in which a sample of blood is examined to measure the amounts of certain substances made in the body. An abnormal amount of a substance can be a sign of disease in the organ or tissue that produces it.

bowel (BOW-ul)

The long, tube-shaped organ in the abdomen that completes the process of digestion. The bowel has two parts, the small bowel and the large bowel. Also called the intestine.

breast

Glandular organ located on the chest. The breast is made up of connective tissue, fat, and breast tissue that contains the glands that can make milk. Also called mammary gland.

bypass

A surgical procedure in which the doctor creates a new pathway for the flow of body fluids.

cancer

A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body. There are several main types of cancer. Carcinoma is cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is cancer that starts in blood-forming tissue such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the bloodstream. Lymphoma and multiple myeloma are cancers that begin in the cells of the immune system.

carbohydrate

A sugar molecule. Carbohydrates can be small and simple (for example, glucose) or they can be large and complex (for example, polysaccharides such as starch, chitin or cellulose).

carcinoma in situ (KAR-sih-NOH-muh in SYE-too)

Cancer that involves only cells in the tissue in which it began and that has not spread to nearby tissues.

catheter (KATH-i-ter)

A flexible tube used to deliver fluids into or withdraw fluids from the body.

CEA

Carcinoembryonic antigen. A substance that is sometimes found in an increased amount in the blood of people who have certain cancers, other diseases, or who smoke. It is used as a tumor marker for colorectal cancer.

CEA assay

A laboratory test to measure carcinoembryonic antigen (CEA), a substance that is sometimes found in an increased amount in the blood of people who have certain cancers.

cell

The individual unit that makes up the tissues of the body. All living things are made up of one or more cells.

chemoembolization

A procedure in which the blood supply to the tumor is blocked surgically or mechanically and anticancer drugs are administered directly into the tumor. This permits a higher concentration of drug to be in contact with the tumor for a longer period of time.

chemotherapy (KEE-moh-THAYR-uh-pee)

Treatment with drugs that kill cancer cells.

chest x-ray

An x-ray of the structures inside the chest. An x-ray is a type of high-energy radiation that can go through the body and onto film, making pictures of areas inside the chest, which can be used to diagnose disease.

clinical trial

A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called a clinical study.

colectomy (koh-LEK-toh-mee)

An operation to remove all or part of the colon. When only part of the colon is removed, it is called a partial colectomy. In an open colectomy, one long incision is made in the wall of the abdomen and doctors can see the colon directly. In a laparoscopic-assisted colectomy, several small incisions are made and a thin, lighted tube attached to a video camera is inserted through one opening to guide the surgery. Surgical instruments are inserted through the other openings to perform the surgery.

colon (KO-lun)

The longest part of the large intestine, which is a tube-like organ connected to the small intestine at one end and the anus at the other. The colon removes water and some

nutrients and electrolytes from partially digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus.

colon cancer (KOH-lun KAN-ser)

Cancer that develops in the tissues of the colon.

colonoscope (koh-LAH-noh-SKOPE)

A thin, tube-like instrument used to examine the inside of the colon. A colonoscope has a light and a lens for viewing and may have a tool to remove tissue.

colonoscopy (KOH-luh-NOS-koh-pee)

Examination of the inside of the colon using a colonoscope, inserted into the rectum. A colonoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

colostomy (koh-LOS-toh-mee)

An opening into the colon from the outside of the body. A colostomy provides a new path for waste material to leave the body after part of the colon has been removed.

complete blood count

CBC. A test to check the number of red blood cells, white blood cells, and platelets in a sample of blood. Also called blood cell count.

computed tomography scan (...tuh-MAH-gruh-fee...)

CT scan. A series of detailed pictures of areas inside the body taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called CT scan, computerized tomography scan, computerized axial tomography scan, and CAT scan.

constipation (KAHN-stih-PAY-shun)

A condition in which stool becomes hard, dry, and difficult to pass, and bowel movements don't happen very often. Other symptoms may include painful bowel movements, and feeling bloated, uncomfortable, and sluggish.

Crohn's disease (kronze)

Chronic inflammation of the gastrointestinal tract, most commonly the small intestine and colon. Crohn's disease increases the risk for colorectal cancer and small intestine cancer. Also called regional enteritis.

cryosurgery (KRY-o-SER-juh-ree)

A procedure performed with an instrument that freezes and destroys abnormal tissues.

cryotherapy (KRY-oh-THAYR-uh-pee)

Any method that uses cold temperature to treat disease.

CT scan

Computed tomography scan. A series of detailed pictures of areas inside the body taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called computed tomography scan, computerized tomography, computerized axial tomography scan, and CAT scan.

diarrhea

Frequent and watery bowel movements.

digestive system (dye-JES-tiv)

The organs that take in food and turn it into products that the body can use to stay healthy. Waste products the body cannot use leave the body through bowel movements. The digestive system includes the salivary glands, mouth, esophagus, stomach, liver, pancreas, gallbladder, small and large intestines, and rectum.

digital rectal examination (DIH-jih-tul REK-tul eg-zam-ih-NAY-shun)

DRE. An examination in which a doctor inserts a lubricated, gloved finger into the rectum to feel for abnormalities.

disease progression

Cancer that continues to grow or spread.

drug

Any substance, other than food, that is used to prevent, diagnose, treat or relieve symptoms of a disease or abnormal condition. Also refers to a substance that alters mood or body function, or that can be habit-forming or addictive, especially a narcotic.

endometrium (en-do-MEE-tree-um)

The layer of tissue that lines the uterus.

esophagus (ee-SOF-uh-gus)

The muscular tube through which food passes from the throat to the stomach.

excision (ek-SIH-zhun)

Removal by surgery.

external radiation (ray-dee-AY-shun)

Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external-beam radiation.

familial adenomatous polyposis (fuh-MIH-lee-ul A-deh-NOH-muh-tus PAH-lee-POH-sis)

FAP. An inherited condition in which numerous polyps (growths that protrude from mucous membranes) form on the inside walls of the colon and rectum. It increases the risk for colorectal cancer. Also called familial polyposis.

family history

A record of a person's current and past illnesses, and those of his or her parents, brothers, sisters, children, and other family members. A family history shows the pattern of certain diseases in a family, and helps to determine risk factors for those and other diseases.

fecal occult blood test (FEE-kul uh-KULT)

FOBT. A test to check for blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. Blood in the stool may be a sign of colorectal cancer.

gastrointestinal tract (GAS-tro-in-TEStih-nul)

The stomach and intestines.

general anesthesia (an-es-THEE-zha)

Drugs that cause loss of feeling or awareness and put the person to sleep.

hemoglobin (HE-muh-GLOW-bun)

The substance inside red blood cells that binds to oxygen and carries it from the lungs to the tissues.

hepatic

Refers to the liver.

hepatic artery

The major blood vessel that carries blood to the liver.

hepatic portal vein

A blood vessel that carries blood to the liver from the stomach, small and large intestines, spleen, pancreas, and gallbladder. Also called portal vein.

hereditary (ha-RED-ih-tair-ee)

Transmitted from parent to child by information contained in the genes.

hereditary nonpolyposis colon cancer (huh-REH-dih-TAYR-ee non-PAH-lee-POH-sis...)

HNPCC. An inherited disorder in which affected individuals have a higher-than-normal chance of developing colorectal cancer and certain other types of cancer, often before the age of 50. Also called Lynch syndrome.

immune system (im-YOON)

The complex group of organs and cells that defends the body against infections and other diseases.

incision (in-SIH-zhun)

A cut made in the body to perform surgery.

injection

Use of a syringe and needle to push fluids or drugs into the body; often called a "shot."

internal radiation (...RAY-dee-AY-shun)

A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, implant radiation, and interstitial radiation.

intestine (in-TES-tin)

The long, tube-shaped organ in the abdomen that completes the process of digestion. The intestine has two parts, the small intestine and the large intestine. Also called the bowel.

large intestine

The long, tube-like organ that is connected to the small intestine at one end and the anus at the other. The large intestine has four parts: cecum, colon, rectum, and anal canal. Partly digested food moves through the cecum into the colon, where water and some nutrients and electrolytes are removed. The remaining material, solid waste called stool, moves through the colon, is stored in the rectum, and leaves the body through the anal canal and anus.

liver

A large organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile.

local anesthesia (an-es-THEE-zha)

Drugs that cause a temporary loss of feeling in one part of the body. The patient remains awake but has no feeling in the part of the body treated with the anesthetic.

local cancer

An invasive malignant cancer confined entirely to the organ where the cancer began.

local therapy (...THAYR-uh-pee)

Treatment that affects cells in the tumor and the area close to it.

lung

One of a pair of organs in the chest that supplies the body with oxygen, and removes carbon dioxide from the body.

lymph node (limf node)

A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Lymph nodes filter lymph (lymphatic fluid), and they store lymphocytes (white blood cells). They are located along lymphatic vessels. Also called a lymph gland.

mineral

A nutrient required to maintain health.

MRI

Magnetic resonance imaging. A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as CT or x-ray. MRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called magnetic resonance imaging, nuclear magnetic resonance imaging, and NMRI.

nutrient

A chemical compound (such as protein, fat, carbohydrate, vitamins, or minerals) that make up foods. These compounds are used by the body to function and grow.

organ

A part of the body that performs a specific function. For example, the heart is an organ.

ovary (OH-vuh-ree)

One of a pair of female reproductive glands in which the ova, or eggs, are formed. The ovaries are located in the pelvis, one on each side of the uterus.

palliative therapy (PA-lee-uh-tiv...)

Treatment given to relieve the symptoms and reduce the suffering caused by cancer and other life-threatening diseases. Palliative cancer therapies are given together with other cancer treatments, from the time of diagnosis, through treatment, survivorship, recurrent or advanced disease, and at the end of life.

pathologist (puh-THAH-loh-jist)

A doctor who identifies diseases by studying cells and tissues under a microscope.

peritoneum (PAYR-ih-toh-NEE-um)

The tissue that lines the abdominal wall and covers most of the organs in the abdomen.

physical examination

An exam of the body to check for general signs of disease.

platelet (PLATE-let)

A type of blood cell that helps prevent bleeding by causing blood clots to form. Also called a thrombocyte.

polyp (PAH-lip)

A growth that protrudes from a mucous membrane.

polypectomy (PAH-lee-PEK-toh-mee)

Surgery to remove a polyp.

prognosis (prog-NO-sis)

The likely outcome or course of a disease; the chance of recovery or recurrence.

protein (PRO-teen)

A molecule made up of amino acids that are needed for the body to function properly. Proteins are the basis of body structures such as skin and hair and of substances such as enzymes, cytokines, and antibodies.

quality of life

The overall enjoyment of life. Many clinical trials assess the effects of cancer and its treatment on the quality of life. These studies measure aspects of an individual's sense of well-being and ability to carry out various activities.

radiation (RAY-dee-AY-shun)

Energy released in the form of particles or electromagnetic waves. Common sources of radiation include radon gas, cosmic rays from outer space, and medical x-rays.

radiation therapy (RAY-dee-AY-shun THAYR-uh-pee)

The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy.

radioactive (RAY-dee-oh-AK-tiv)

Giving off radiation.

radioactive seed

A small, radioactive pellet that is placed in or near a tumor. Cancer cells are killed by the energy given off as the radioactive material decays (breaks down).

radiofrequency ablation

The use of electrodes to heat and destroy abnormal tissue.

rectum

The last several inches of the large intestine. The rectum ends at the anus.

recur

To occur again.

recurrent cancer

Cancer that has returned after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.

red blood cell

RBC. A cell that carries oxygen to all parts of the body. Also called an erythrocyte.

regional chemotherapy (REE-juh-nul KEE-moh-THAYR-uh-pee)

Treatment with anticancer drugs directed to a specific area of the body.

resection (ree-SEK-shun)

A procedure that uses surgery to remove tissue or part or all of an organ.

risk factor

Something that may increase the chance of developing a disease. Some examples of risk factors for cancer include age, a family history of certain cancers, use of tobacco products, certain eating habits, obesity, lack of exercise, exposure to radiation or other cancer-causing agents, and certain genetic changes.

sigmoidoscope (sig-MOY-doh-skope)

A thin, tube-like instrument used to examine the inside of the colon. A sigmoidoscope has a light and a lens for viewing and may have a tool to remove tissue.

sigmoidoscopy (sig-MOY-DOS-koh-pee)

Examination of the lower colon using a sigmoidoscope, inserted into the rectum. A sigmoidoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called proctosigmoidoscopy.

small intestine (in-TES-tin)

The part of the digestive tract that is located between the stomach and the large intestine.

stage

The extent of a cancer in the body. Staging is usually based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

stage 0 colorectal cancer (...KOH-loh-REK-tul KAN-ser)

Cancer is found in the innermost lining of the colon and/or rectum only. Also called carcinoma in situ.

stage I colorectal cancer (...KOH-loh-REK-tul KAN-ser)

Cancer has spread beyond the innermost lining of the colon and/or rectum to the second and third layers and involves the inside wall of the colon and/or rectum, but it has not spread to the outer wall or outside the colon and/or rectum. Also called Dukes' A colorectal cancer.

stage II colorectal cancer (...KOH-loh-REK-tul KAN-ser)

Cancer has spread outside the colon and/or rectum to nearby tissue, but it has not gone into the lymph nodes. Also called Dukes' B colorectal cancer.

stage III colorectal cancer (...KOH-loh-REK-tul KAN-ser)

Tumor cells have spread to organs and lymph nodes near the colon/rectum. Also called Dukes' C colorectal cancer.

stage IV colorectal cancer (...KOH-loh-REK-tul KAN-ser)

Cancer may have spread to nearby lymph nodes and has spread to other parts of the body, such as the liver or lungs. Also called Dukes' D colorectal cancer.

staging (STAY-jing)

Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. It is important to know the stage of the disease in order to plan the best treatment.

standard therapy (...THAYR-uh-pee)

In medicine, treatment that experts agree is appropriate, accepted, and widely used. Health care providers are obligated to provide patients with standard therapy. Also called standard of care or best practice.

stoma (STOH-muh)

A surgically created opening from an area inside the body to the outside.

stomach

An organ that is part of the digestive system. The stomach helps digest food by mixing it with digestive juices and churning it into a thin liquid.

stool

The waste matter discharged in a bowel movement; feces.

surgery (SER-juh-ree)

A procedure to remove or repair a part of the body or to find out whether disease is present. An operation.

symptom

An indication that a person has a condition or disease. Some examples of symptoms are headache, fever, fatigue, nausea, vomiting, and pain.

systemic chemotherapy (sis-TEH-mik KEE-moh-THAYR-uh-pee)

Treatment with anticancer drugs that travel through the blood to cells all over the body.

tissue (TISH-oo)

A group or layer of cells that work together to perform a specific function.

tumor (TOO-mer)

An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancerous), or malignant (cancerous). Also called neoplasm.

ulcerative colitis

Chronic inflammation of the colon that produces ulcers in its lining. This condition is marked by abdominal pain, cramps, and loose discharges of pus, blood, and mucus from the bowel.

virtual colonoscopy (...KOH-luh-NOS-koh-pee)

A method under study to examine the colon by taking a series of x-rays (called a CT scan) and using a high-powered computer to reconstruct 2-D and 3-D pictures of the interior surfaces of the colon from these x-rays. The pictures can be saved, manipulated to better viewing angles, and reviewed after the procedure, even years later. Also called computed tomography colography.

vitamin

A key nutrient that the body needs in small amounts to grow and stay strong. Examples are vitamins A, C, and E.

vomit

To eject some or all of the contents of the stomach through the mouth.

white blood cell

WBC. Refers to a blood cell that does not contain hemoglobin. White blood cells include lymphocytes, neutrophils, eosinophils, macrophages, and mast cells. These cells are made by bone marrow and help the body fight infection and other diseases.

x-ray

A type of high-energy radiation. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.