



COLORECTAL
CANCER
CANADA

UNDERSTANDING COLORECTAL CANCER

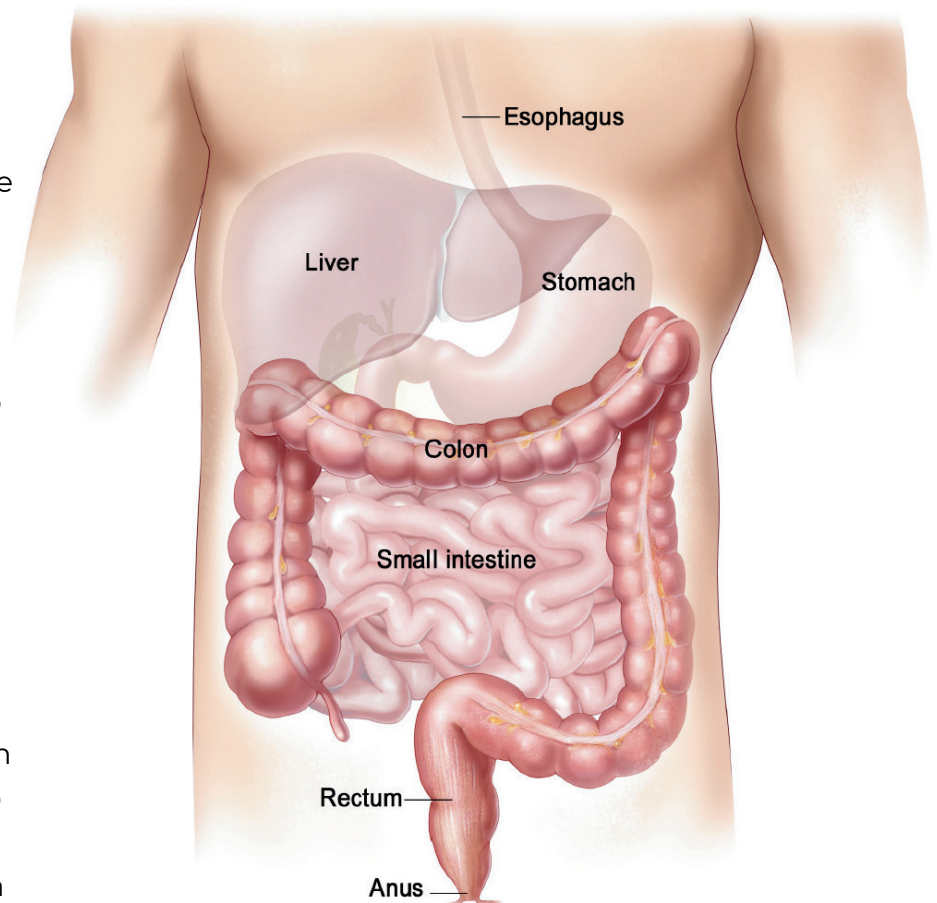




THE COLON AND RECTUM

The colon and rectum, which together form the large intestine or bowel, perform important functions in the last phases of digestion.

Digestion begins in the mouth where food is chewed into smaller pieces and swallowed. The food travels down the esophagus to the stomach where it is further broken down by gastric juices and sent to the small intestine. The small intestine continues to break down the contents in addition to absorbing most of the nutrients, including carbohydrates, proteins and vitamins. Once the contents have passed through the small intestine, the material has become mostly liquid and is moved into the colon, which measures about 150cm. The main function of the colon is to absorb water and form semi-solid matter known as stool. The colon moves the stool into the approximately 15cm long rectum, which acts as a holding chamber, until it is ready to be expelled through the anus.



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WHAT IS COLORECTAL CANCER

Because colon and rectal cancers arise from the same type of cell and have many similarities, they are often referred to collectively as “colorectal cancer”.

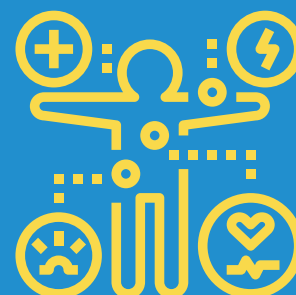
The cells lining the colon or rectum can sometimes become abnormal and divide rapidly. These cells can form benign (non-cancerous) tumours or growths called polyps. Although not all polyps will develop into colorectal cancer, colorectal cancer almost always develops from a polyp. Over a period of many years, a polyp’s cells may undergo a series of changes or mutations that cause them to become malignant (cancerous). At first these cancer cells are limited to the surface of a polyp but can grow into the wall of the colon or rectum where they can enter the blood and lymph vessels. Once this happens, the cancer can spread to the lymph nodes or other organs such as the liver or lungs. This process is called metastasis. If the cancer continues to grow, it can destroy normal healthy tissue.

SIGNS & SYMPTOMS

The symptoms of colorectal cancer can be caused by a number of different conditions. Often symptoms don’t appear until the later stages of the disease.

The following symptoms MAY indicate colorectal cancer and should be evaluated by a doctor:

- Prolonged diarrhea or constipation
- Narrower-than-normal stools
- Blood in stool
- Loss of appetite, unexplained weight loss
- Feeling that the bowel does not completely empty
- Fatigue, anemia (low red blood cell count)
- Nausea, vomiting
- Abdominal pain or discomfort



RISK FACTORS & PREVENTION

While certain risk factors including age and family history cannot be changed, there are certain things that you can do to help lower your cancer risk:



1. **Follow colorectal cancer screening guidelines.** (See Screening section on page 7)



2. **Eat foods rich in dietary fibre.** Foods rich in dietary fibre such as beans, lentils, fruits, vegetables and whole grains lower the risk of colorectal cancer.



3. **Reduce red and processed meat consumption.** Red and processed meats are linked to an increased risk of developing colorectal cancer.



4. **Reduce alcohol consumption.** Drinking more than 2 alcoholic drinks per week increases the risk of developing colorectal cancer.



5. **Quit smoking.** Long-term smoking increases the risk of a range of cancers including colorectal cancer.



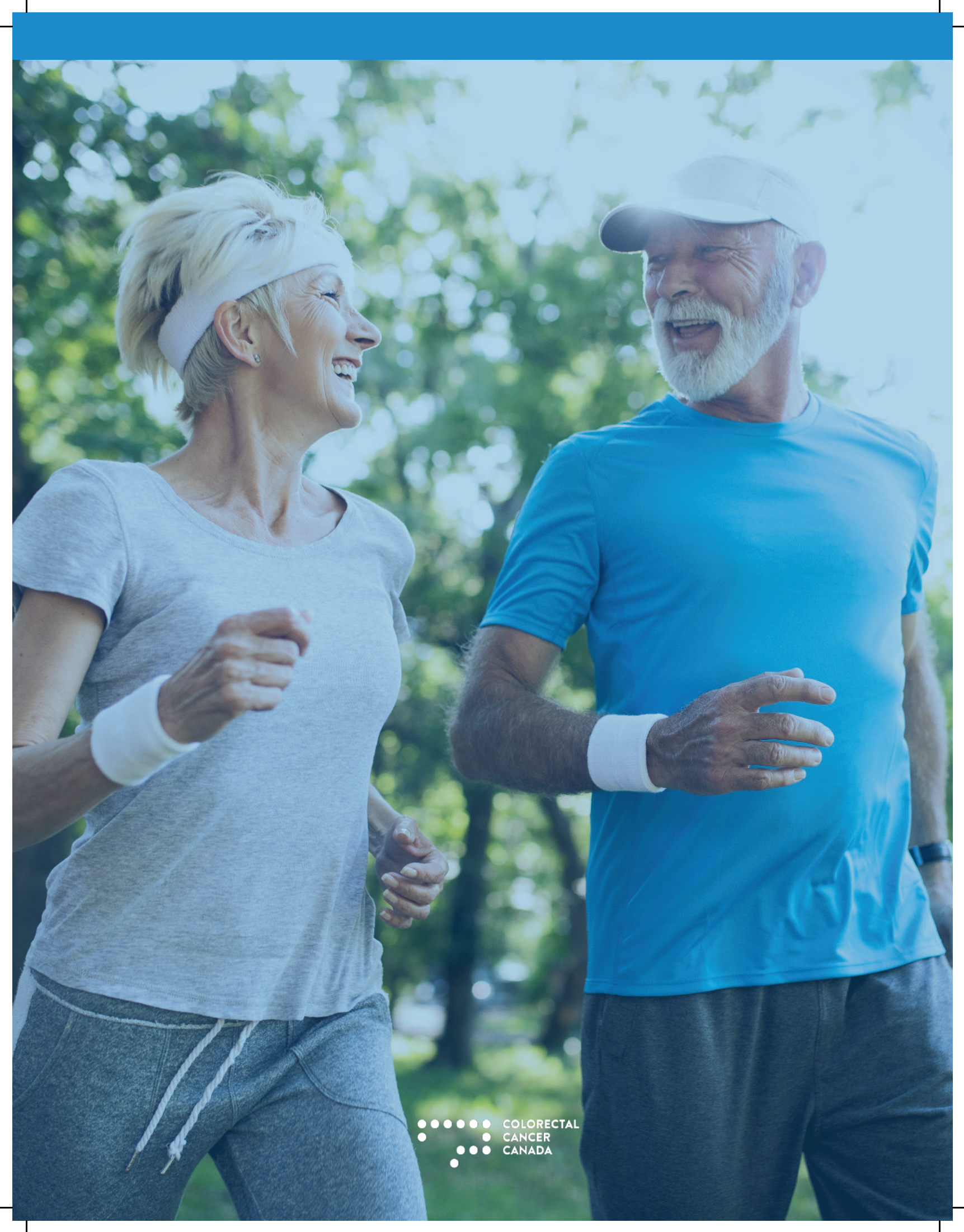
5. **Maintain a healthy body weight.** Being overweight (BMI: 25.0 – 29.9) or obese (BMI: 30.0 and above) increases the risk of developing colorectal cancer.



6. **Be physically active.** The American College of Sports Medicine recommends a minimum of 150 minutes of moderate physical activity per week (roughly 20-30 minutes per day). A 2016 analysis of 126 studies found that individuals who engaged in the highest level of physical activity were 19% less likely to develop colon cancer compared to individuals who were the least active[1]. Furthermore, evidence shows that maintaining physical activity even after a colorectal cancer diagnosis is associated with a 30% lower risk of death from colorectal cancer[2].

[1] Liu L, Shi Y, Li T, et al. Leisure time physical activity and cancer risk: evaluation of the WHO's recommendation based on 126 high-quality epidemiological studies. *British Journal of Sports Medicine* 2016; 50(6):372-378. [PubMed Abstract]

[2] Patel AV, Friedenreich CM, Moore SC, et al. American College of Sports Medicine Roundtable Report on physical activity, sedentary behavior, and cancer prevention and control. *Medicine and Science in Sports and Exercise* 2019; 51(11):2391-2402. [PubMed Abstract]



SCREENING

The term “screening” means to perform tests on people who do not show any symptoms of a disease as a method of prevention and early detection.

For the average person, age is the main risk factor for colorectal cancer, with more than 90 per cent of cases occurring in those over 50. Canadian screening guidelines recommend that all men and women age 50 and over undergo regular screening for colorectal cancer with a fecal immunochemical test (FIT) at least every two years. Positive tests should always be followed up with a colonoscopy.

FECAL IMMUNOCHEMICAL TEST (FIT)



Blood vessels at the surface of colorectal cancers and polyps are often very fragile and can become damaged with the passage of stool, releasing an amount of blood too small to be seen with the naked eye. A fecal immunochemical test (FIT) can detect very small quantities of blood in the stool.

This test is done at home by the individual and involves taking a stool sample which is sent to a laboratory for evaluation. If a FIT is positive for blood, it should always be followed up with a colonoscopy (see next page), to determine the exact cause of bleeding.

Those at a higher risk of developing the disease should talk to their doctor about earlier and more frequent screening as well as which test is most appropriate.



People at a higher risk of developing colorectal cancer include those who have:

- a first-degree relative (parent or siblings) with colorectal cancer
- a previous diagnosis of colorectal cancer
- a personal history of non-cancerous polyps
- inflammatory bowel disease such as ulcerative colitis or Crohn's disease
- a family history, or diagnosis, of hereditary syndromes linked to colorectal cancer, such as familial adenomatous polyposis (FAP) or hereditary nonpolyposis colorectal cancer (HNPCC), which is also known as Lynch Syndrome.



Colorectal cancer is over 90 per cent curable when detected in its early stages. However, this percentage drops significantly when detected at a more advanced stage.

DIAGNOSIS - TESTS FOR COLORECTAL CANCER

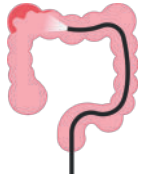
If a doctor suspects a patient may have colorectal cancer, he/she will take a complete medical history, perform a physical exam (which may include a rectal exam) and arrange for tests to determine if the disease is present. These tests may include the following:



COLONOSCOPY

A colonoscopy is a test that involves inserting a thin, flexible tube with a light and a camera on the end through the anus to examine the inside of the colon and rectum. If polyps or other abnormalities are detected, a sample (biopsy) is taken and sent to a laboratory to determine if cancer cells are present.

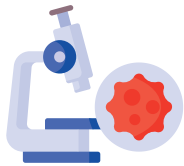
The individual is usually sedated during the procedure. Colonoscopy is considered the most effective and thorough of all the tests for colorectal cancer.



FLEXIBLE SIGMOIDOSCOPY

A flexible sigmoidoscopy is similar to a colonoscopy but it is less invasive. This test only examines the last part of the colon, including the rectum, which is known as the sigmoid colon.

A colonoscopy is required to check for growths in the entire colon.



BIOPSY

Removed tissue examined under a microscope by a pathologist (a doctor specializing in the diagnosis of diseases) is the only definitive way to make a colorectal cancer diagnosis. A biopsy sample can also determine how aggressive a cancer is and may be able to show the extent it has affected the colon or rectum wall.

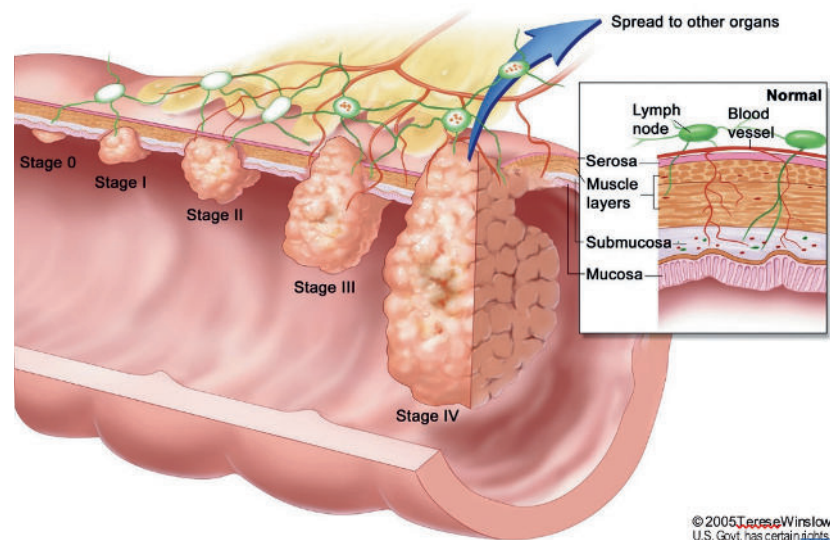
Additional blood tests and imaging tests such as computed tomography (CT) and magnetic resonance imaging (MRI) may be required to make a definitive diagnosis.

BIOMARKER TESTING

After a biopsy is taken, your doctor may recommend that the tumour sample is examined in the laboratory to look for specific genes, proteins and other characteristics that are unique to the tumour. These findings can help to decide which treatment options the tumour is most likely to respond to. Also referred to as molecular testing or molecular profiling.

STAGES OF COLORECTAL CANCER

Staging describes the extent of cancer based on how many layers of the intestinal wall are affected, whether lymph nodes are involved, and if there is spread to other organs. Treatment depends on the stage of cancer. Doctors will analyze information gathered from physical examination, biopsies, blood, and imaging tests to establish an initial stage of the cancer, called the “clinical stage”.



There are five main stages of colorectal cancer.

The higher the number, the more advanced the cancer.

- 0** - The cancer is confined to the innermost layer of the colon or rectum. It has not invaded the intestinal wall.
- 1** - The cancer has penetrated several layers of the colon or rectum wall.
- 2** - The cancer has penetrated the entire wall of the colon or rectum and may extend into nearby tissue(s).
- 3** - The cancer has spread to the lymph nodes.
- 4** - The cancer has spread to distant organs, usually the liver or lungs. Cancerous tumours found in these organs are called metastases.

TREATMENT

Although colon and rectal cancer have been discussed as one thus far, the treatment for each is quite different. Treatment for colon or rectal cancer may include a combination of the following:

SURGERY

Surgery is the main treatment for colon and rectal cancer. The standard operation, called a radical resection, involves an incision through the abdomen and removal of the tumour and surrounding intestinal tissue, as well as the adjacent blood vessels and lymph nodes. The two ends of the remaining large intestine are reattached. In some circumstances, a colostomy (where the intestine is brought through to the skin's surface to expel waste) is sometimes required, particularly when the cancer is low in the rectum and affects the anus.



RADIATION

High doses of radiation from a machine are directed to the area of the tumour from outside the body. Radiation is more frequently used to treat rectal cancer. It may be used before surgery to shrink the tumour, making it easier to remove, or after surgery to kill any remaining cancer cells.

CHEMOTHERAPY

Chemotherapy involves the distribution of cancer-killing chemicals throughout a patient's body via a vein, or in a pill form by mouth, to destroy fast-growing cancer cells that may be lingering after surgery. Chemotherapy can also be used to shrink a rectal tumour before surgery, and treat advanced (Stage IV) disease.

TARGETED THERAPIES

Targeted therapies are intravenous medications used in advanced disease that target specific biological processes involved in cancer growth. These drugs are different from chemotherapy drugs, which kill any fast-growing cells in the body, including healthy cells.

IMMUNOTHERAPY

Immunotherapy is a type of therapy that uses a person's own immune system to fight diseases such as cancer. These therapies are designed to stimulate the immune reaction against cancer cells, enabling the body to fight the disease more effectively. Not all individuals with colorectal cancer are candidates for immunotherapy, and biomarker testing (see page: 9) is an important step needed to find out whether someone will benefit from this type of treatment.



TREATMENT BY STAGE

The following is an overview of the treatment for each stage of colon and rectal cancer. It is important to remember that each patient is different and treatment plans vary.

STAGE 0

Colon cancer: Removal of the cancerous tumour through sigmoidoscopy or colonoscopy (if not done during diagnostic work-up) is usually all that is required for this stage of colon cancer. If the tumour is too large or does not have clear margins, surgery may be required.

Rectal cancer: In addition to the above, because of the rectum's location near the anus, some rectal cancers may be surgically removed through the anus.

STAGE 1

Colon cancer: Surgical resection of the tumour is normally all that is required.

Rectal cancer: The tumour is usually removed by surgery. Radiation and chemotherapy before or after this procedure may be recommended.

STAGE 2

Colon cancer: Surgery to remove the tumour is usually the only treatment that is needed, however if the cancer appears to be aggressive or extends into nearby tissue, chemotherapy may be recommended after surgery.

Rectal cancer: The tumour is removed through surgery. Radiation should be given before or after surgery. Chemotherapy may be given before and after surgery.

STAGE 3

Colon cancer: The tumour is removed by surgery. Chemotherapy should follow.

Rectal cancer: The tumour is removed through surgery. Radiation therapy should be given before or after surgery. Chemotherapy may be given before and after surgery.

STAGE 4

Colon cancer: The tumour will usually be removed by surgery. If metastases are few, they may be removed during the same operation, which can still result in a cure. If this isn't possible because metastases are too large, too numerous or close to vital structures of an organ, chemotherapy may be given to control the cancer and may even shrink metastases to the point where surgery becomes feasible. Surgery is the best hope for cure. Targeted therapies can also be added to a chemotherapy regimen to produce better results. After surgery to remove metastases, chemotherapy is routinely given. If metastases still can't be removed, it may be possible to destroy them by heating or freezing the diseased tissue (with probes through the skin) or by other non-surgical methods—these methods are used to control the cancer, not cure it, but can markedly improve quality of life and extend lifespan.

Rectal cancer: Generally the same as above, except for removal of the primary tumour which may include radiation and pre-operative chemotherapy.

FOLLOW UP

Follow-up is very important to ensure a patient remains healthy. If anything unusual is detected, it can be caught early and treated right away. Follow-up may include colonoscopy, blood, and imaging tests. Follow-up tests and interval times vary among the stages of the past cancer, the treatment received, and the individual case.

NOTES:



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