CONDITION

Colorectal cancer

Colorectal cancer is cancer that begins in the colon or rectum, often from an abnormal growth called a polyp.

WHAT IT IS
Cancer arising in the colon or rectum

BODY SYSTEM
Digestive system

MAIN SYMPTOMS
Rectal bleeding, bowel changes, abdominal pain, unexplained tiredness

WHAT CAUSES IT
Acquired DNA changes, sometimes inherited

HOW IT IS DIAGNOSED
Colonoscopy with biopsy; scans determine spread

MAIN TREATMENT
Surgery, chemotherapy, radiotherapy, and biomarker-guided medicines

CAN IT BE CURED?
Sometimes - treatment works best before spread

IS IT AN EMERGENCY?
Sometimes - bowel blockage, perforation, or heavy bleeding

LONG-TERM OUTLOOK
Best when found early; advanced cancer may be controllable

Overview

Colorectal cancer begins in the colon or rectum. The colon is the longest part of the large bowel. The rectum is the final section, just above the anus. "Bowel cancer" is another commonly used name, although that term can also include rarer cancers elsewhere in the bowel.

Most colorectal cancers are adenocarcinomas. These begin in gland-forming cells lining the bowel. Many develop from a polyp, which is a growth on the inner bowel wall. Most polyps do not become cancer, but certain types can slowly develop harmful cell changes.

Cancer cells can grow through the bowel wall and reach nearby lymph nodes. Lymph nodes are small structures that help the immune system. Colorectal cancer can also spread to other organs, most often the liver or lungs.

Finding the cancer before it has spread usually gives the best chance of successful treatment. Screening can find some cancers before symptoms appear. It can also prevent some cancers by finding and removing precancerous polyps.

Symptoms

Early colorectal cancer may cause no symptoms. When symptoms occur, they can include:

Bleeding may look bright red, dark red, or mixed into the stool. Sometimes blood loss is too small to see. Over time, it can cause iron-deficiency anaemia, meaning there are not enough healthy red blood cells because the body lacks iron. This can lead to tiredness, pale skin, dizziness, or breathlessness.

These symptoms have many possible causes. Haemorrhoids, infections, inflammatory bowel conditions, and medicines can cause similar problems. However, new or persistent bleeding and bowel changes should not automatically be assumed to be harmless.

The location of a tumour can affect symptoms. A growth in the lower colon or rectum may cause visible bleeding or difficulty passing stool. A growth higher in the colon may be more likely to cause hidden blood loss and anaemia.

- Blood in or on the stool
- A lasting change in bowel habits, such as diarrhoea or constipation
- Narrower stools or a feeling that the bowel has not emptied
- Abdominal pain, cramping, bloating, or discomfort
- Unexplained tiredness, weakness, or breathlessness
- Unplanned weight loss or reduced appetite

Causes and risk factors

Colorectal cancer develops when DNA changes cause bowel cells to grow and survive when they should not. DNA contains the instructions that control how cells behave. In most cases, the exact reason these changes developed is not known.

Risk increases with age, although younger adults can also develop colorectal cancer. Other factors linked with a higher risk include:

Having a risk factor does not mean that you will develop cancer. Some people with several risk factors never do, while others develop colorectal cancer without an obvious risk factor.

Most colorectal cancers are not caused by a single inherited change. However, genetic assessment may be important if cancer occurs at a young age, several relatives have related cancers, or tumour testing suggests an inherited condition.

- A previous colorectal cancer or certain types of bowel polyps
- A close relative with colorectal cancer, especially at a younger age
- Long-standing ulcerative colitis or Crohn's disease affecting the colon
- Inherited conditions such as Lynch syndrome or familial adenomatous polyposis
- Smoking
- Heavy alcohol use
- Excess body weight and low physical activity
- A diet high in processed meat or large amounts of red meat

Diagnosis

A healthcare professional will ask about your symptoms, health history, medicines, and family history. The assessment may include an abdominal examination and a rectal examination.

Blood tests can look for anaemia and check how the liver and kidneys are working. A stool test may detect small amounts of blood, but it cannot confirm or rule out cancer by itself.

Colonoscopy is the main test used to examine the whole colon. A thin, flexible tube with a camera is passed through the anus while you are given medicine to make the procedure more comfortable. Any suspicious area can be sampled.

A biopsy confirms the diagnosis. During a biopsy, a small piece of tissue is removed and examined under a microscope. The pathologist reports the cancer type and may also assess features that help guide treatment.

Once cancer is confirmed, tests are used to establish its stage. Staging describes how deeply it has grown, whether lymph nodes are involved, and whether it has spread elsewhere. Tests may include CT scans of the chest, abdomen, and pelvis. MRI is particularly important for planning treatment for rectal cancer.

A blood marker called carcinoembryonic antigen, or CEA, may be measured before and after treatment. CEA can help with follow-up in some people, but it is not accurate enough to diagnose colorectal cancer on its own.

The tumour may be tested for molecular features known as biomarkers. These can include mismatch repair or microsatellite instability status and, in advanced cancer, changes involving

genes such as RAS and BRAF. Biomarker results may affect whether targeted treatment or immunotherapy is suitable.

Treatment and management

Treatment is based on the cancer's location, stage, biomarkers, and your general health and preferences. Colon and rectal cancers are related, but their treatment can differ.

Very early cancer contained within a polyp may sometimes be removed during colonoscopy. Further surgery may be recommended if testing shows a risk that cancer cells remain or have reached lymph vessels.

Surgery is the main treatment for many cancers that have not spread to distant organs. The surgeon removes the affected bowel section and nearby lymph nodes. The remaining bowel is usually joined together.

Some people need a stoma, where the bowel is brought through an opening in the abdomen so waste enters a bag. A stoma may be temporary while the bowel heals or permanent when a safe join is not possible. A specialist stoma nurse can help with skin care, equipment, diet, and daily activities.

Chemotherapy uses medicines that kill cancer cells or slow their growth. It may be offered after colon surgery when there is a meaningful risk of cancer returning. Chemotherapy can also shrink or control cancer that has spread.

For rectal cancer, chemotherapy and radiotherapy may be used before surgery. Radiotherapy directs high-energy beams at the tumour. Giving treatment before surgery can shrink the cancer and reduce the risk of it returning in the pelvis. Some people with an excellent response may be offered close monitoring instead of immediate surgery, but this requires specialist assessment and a strict follow-up plan.

Advanced colorectal cancer may be treated with chemotherapy, targeted medicines, immunotherapy, or a combination. Targeted medicines act on particular cancer features. Immunotherapy helps the immune system recognise cancer and is most effective for tumours with certain mismatch repair changes.

If spread is limited to areas such as the liver or lungs, surgery or treatments that destroy individual tumours may sometimes be possible. When cure is not likely, treatment can still aim to slow growth, ease symptoms, and protect quality of life.

Supportive and palliative care can be provided at any stage. It includes relief of pain, nausea, bowel symptoms, tiredness, and emotional distress. Palliative care does not mean that other cancer treatment must stop.

Complications

A tumour can narrow or completely block the bowel. This may cause increasing abdominal pain, swelling, vomiting, and an inability to pass stool or gas. A complete blockage needs emergency assessment.

Rarely, the bowel wall can develop a hole, called a perforation. This can release bowel contents into the abdomen and cause a serious infection.

Other possible complications include:

Treatment teams can often help manage these effects. Rehabilitation, dietetic support, pelvic-floor therapy, stoma care, pain control, and changes to treatment may all have a role.

- Ongoing bleeding and iron-deficiency anaemia
- Spread to lymph nodes, the liver, lungs, or abdominal lining
- Blood clots
- Weight loss, poor nutrition, or dehydration
- Changes in bowel, bladder, or sexual function after treatment
- Frequent or urgent bowel movements after rectal surgery
- Numbness or tingling from some chemotherapy medicines
- Skin irritation or blockage around a stoma
- Cancer returning after treatment

Prevention

Not every colorectal cancer can be prevented. This is especially true when inherited gene changes or long-standing inflammatory bowel conditions increase risk.

Screening can prevent some colorectal cancers by finding and removing certain polyps before they become cancer. It can also find cancer at an earlier stage. Screening programmes use stool tests, colonoscopy, or other bowel examinations. The recommended starting age and test schedule differ by country and personal risk.

People with a strong family history, an inherited cancer syndrome, previous high-risk polyps, or inflammatory bowel disease may need earlier or more frequent checks than the general population.

Not smoking, staying physically active, limiting alcohol, maintaining a weight that is healthy for

you, and eating plenty of fibre-rich foods are associated with a lower risk. Processed meat and large amounts of red meat are associated with a higher risk.

Do not start aspirin solely to prevent colorectal cancer without medical advice. It can cause serious bleeding, and the balance of benefits and harms is different for each person.

Living with it and what to expect

What happens over months and years is shaped mainly by the cancer's stage, location, tumour biology, response to treatment, and your overall health. Early-stage colorectal cancer can often be treated with the aim of cure. Advanced cancer may sometimes be treated for long periods, although it can also continue to progress.

Recovery from surgery takes time. Appetite, energy, and bowel habits may change for weeks or months. After rectal surgery, some people have long-term urgency, frequent stools, leakage, or difficulty emptying the bowel. These problems are sometimes grouped under the term low anterior resection syndrome. Symptoms may improve as the bowel adapts, but they do not always disappear.

Chemotherapy-related tiredness and numbness can continue after treatment ends. Some effects improve gradually, while others may be long lasting. Tell the treatment team about symptoms that affect sleep, walking, eating, work, or daily activities.

Routine follow-up commonly includes appointments, physical assessment, CEA blood tests, scans, and colonoscopy. The schedule is usually closer during the first few years and is tailored to the original stage and treatment. Follow-up looks for recurrence, new polyps, and treatment-related problems.

Many people return to work, exercise, travel, relationships, and family life. Living with a stoma may require adjustment, but it does not usually prevent normal clothing, bathing, most foods, physical activity, or intimacy. Specialist nurses and peer-support groups can provide practical help.

Fear of recurrence is common, especially around scans and appointments. Support from a cancer nurse, counsellor, psychologist, social worker, or support group may help if worry is disrupting daily life.

When to get medical help

Arrange a routine medical appointment if you develop rectal bleeding, a lasting change in bowel habits, unexplained weight loss, ongoing abdominal discomfort, or unusual tiredness.

These symptoms often have a non-cancerous cause, but they should be assessed if they persist or recur.

If you have already been treated, contact your cancer team about new symptoms, worsening treatment effects, changes around a stoma, or problems eating, drinking, or passing stool. A fever during chemotherapy needs prompt advice because treatment can reduce infection-fighting white blood cells. Follow the temperature threshold and instructions supplied by your treatment team.

Seek urgent medical care for:

Call emergency services for sudden severe abdominal pain, a hard or very swollen abdomen, collapse, severe breathing difficulty, or heavy bleeding. These may indicate perforation, complete obstruction, a blood clot, or major blood loss.

- Repeated vomiting with increasing abdominal swelling
- Severe constipation with an inability to pass gas
- Significant bleeding, dizziness, or fainting
- New severe pain or rapidly worsening symptoms
- Signs of dehydration, such as very little urine or marked weakness

Common questions

Is colorectal cancer the same as bowel cancer?

Colorectal cancer means cancer of the colon or rectum. "Bowel cancer" often means the same thing, particularly in the United Kingdom, but it can technically include cancers in other parts of the bowel.

Can colorectal cancer be cured?

Sometimes. Cure is more likely when the cancer is found before it has spread to distant organs. Some cancers that have spread to a small number of sites may also be treated with the aim of cure. Other advanced cancers are treated to control growth and symptoms.

Does blood in my stool mean I have colorectal cancer?

Not necessarily. Haemorrhoids, small tears, inflammation, and other conditions can cause bleeding. The colour and amount of blood cannot reliably identify the cause. New, unexplained, persistent, or recurrent bleeding should be medically assessed.

How fast does colorectal cancer grow?

There is no single growth rate. Many colorectal cancers develop over years from abnormal

polyps, but established cancers can behave differently depending on their cell changes and stage. Scans, biopsy findings, and changes over time provide more useful information for an individual cancer.

Will I need a colostomy bag?

Not everyone does. The need for a stoma depends on the tumour's location, the operation, and whether the bowel can be safely reconnected. Some stomas are temporary. Cancers very low in the rectum are more likely to require a permanent stoma.

Is colorectal cancer hereditary?

Most cases are not caused by a clearly inherited syndrome. However, conditions such as Lynch syndrome and familial adenomatous polyposis can greatly increase risk. Genetic counselling may be appropriate when cancer occurs young or there is a strong family history.

Sources

- National Cancer Institute. Colon Cancer Treatment (PDQ®)-Patient Version . Cancer Information Summaries
- National Cancer Institute. Rectal Cancer Treatment (PDQ®)-Patient Version . Cancer Information Summaries
- National Cancer Institute. Colorectal Cancer Prevention (PDQ®)-Patient Version . Cancer Information Summaries
- National Institute for Health and Care Excellence. Colorectal cancer: diagnosis and management . NICE guideline NG151, 2020, updated 2021
- US Preventive Services Task Force. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement . JAMA. 2021;325(19):1965-1977
- World Health Organization. Colorectal cancer . Fact sheet, 2023