
CANCER FACTS

National Cancer Institute • National Institutes of Health
Department of Health and Human Services

Colorectal Cancer Screening: Questions and Answers

Key Points

- Colorectal cancer is a disease in which cells in the colon or rectum become abnormal and divide without normal control or order, forming a mass called a tumor (see Question 1).
- The exact causes of colorectal cancer are not known. However, studies show that certain factors increase a person's chance of developing colorectal cancer (see Question 2).
- Health care providers may suggest one or more tests for colorectal cancer screening, including fecal occult blood test (FOBT), sigmoidoscopy, colonoscopy, double contrast barium enema (DCBE), or digital rectal exam (DRE) (see Question 4).
- People should talk with their health care providers about when to begin screening for colorectal cancer, what tests to have, the benefits and risks of each test, and how often to schedule appointments (see Question 5).
- New ways to screen for colorectal cancer are under study (see Question 8).

1. What is colorectal cancer?

Colorectal cancer is a disease in which cells in the colon or rectum become abnormal and divide without normal control or order, forming a mass called a tumor. (The colon and rectum are parts of the body's digestive system that remove water and nutrients from food and store solid waste until it passes out of the body.) Cancer cells invade and destroy the tissue around them. They can also break away from the tumor and spread to form new tumors in other parts of the body.



Colorectal cancer is the third most common type of non-skin cancer in men (after prostate cancer and lung cancer) and in women (after breast cancer and lung cancer). It is the second leading cause of cancer death in the United States after lung cancer. The rate of new cases and deaths resulting from this disease is decreasing. Still, over 147,000 new cases are diagnosed, and more than 57,000 people die from colorectal cancer each year.

2. Who is at risk for colorectal cancer?

The exact causes of colorectal cancer are not known. However, studies show that certain factors are linked to an increased chance of developing colorectal cancer:

- **Age**—Colorectal cancer is more likely to occur as people get older. Although the disease can occur at any age, most people who develop colorectal cancer are over the age of 50.
- **Polyps**—Polyps are growths that protrude from the inner wall of the colon or rectum. They are relatively common in people over age 50. Most polyps are benign (noncancerous); however, experts believe that most colorectal cancers develop in certain polyps, called adenomas. Therefore, detecting and removing these growths may help prevent colorectal cancer. The procedure to remove polyps is called a polypectomy.

Familial adenomatous polyposis, or FAP, is a rare, inherited condition in which hundreds of polyps develop in the colon and rectum. Because this condition is extremely likely to lead to colorectal cancer, it is often treated with surgery to remove the colon and rectum (colectomy). Rectum-sparing surgery may be an option. Also, the FDA has approved an anti-inflammatory drug, celecoxib, for the treatment of FAP. Doctors may prescribe this drug, in addition to surveillance and surgery, to manage FAP.

- **Personal history**—A person who has already had colorectal cancer is at an increased risk of developing colorectal cancer a second time. Also, research studies show that some women with a history of ovarian, uterine, or breast cancer have a higher-than-average chance of developing colorectal cancer.
- **Family history**—Close relatives (parents, siblings, or children) of a person who has had colorectal cancer are somewhat more likely to develop this type of cancer themselves, especially if the family member developed the cancer at a young age. If many family members have had colorectal cancer, the chances increase even more.
- **Ulcerative colitis or Crohn's colitis**—Ulcerative colitis is a condition that causes inflammation and sores (ulcers) in the lining of the colon. Crohn's colitis (also called Crohn's disease) causes chronic inflammation of the gastrointestinal tract, most often the small intestine (the part of the digestive tract that is located between the stomach and the large intestine). People who have ulcerative colitis

or Crohn's colitis may be more likely to develop colorectal cancer than people who do not have these conditions.

- **Diet**—Some evidence suggests that the development of colorectal cancer may be associated with a diet that is high in fat and calories and low in foods with fiber, such as whole grains, fruits, and vegetables. Researchers are exploring what role these and other dietary components play in the development of colorectal cancer.
- **Exercise**—Some evidence suggests that a sedentary lifestyle may be associated with an increased risk of colorectal cancer. In contrast, people who exercise regularly may have a decreased risk of developing colorectal cancer.

3. What is screening, and why is it important?

Screening means checking for health problems before they cause symptoms. Screening can find polyps that may eventually become cancerous (precancerous polyps), as well as some cancers in an early stage, before they spread to other parts of the body.

Colorectal cancer screening is used to detect cancer, precancerous polyps, or other abnormal conditions. If screening detects an abnormality, diagnosis and treatment can occur promptly. In addition, finding and treating polyps may be one of the most effective ways to prevent the development of cancer altogether. Colorectal cancer is generally more treatable when it is found early.

4. What methods are used to screen people for colorectal cancer?

Health care providers may suggest one or more of the tests listed below for colorectal cancer screening.

- A **fecal occult blood test (FOBT)** checks for hidden blood in the stool. Studies have proven that this test, when performed every 1 to 2 years in people ages 50 to 80, reduces the number of deaths due to colorectal cancer by as much as 30 percent.
- A **sigmoidoscopy** is an examination of the rectum and *lower* colon using a lighted instrument called a sigmoidoscope. Sigmoidoscopy can find precancerous or cancerous growths in the rectum and lower colon. Studies suggest that regular screening with sigmoidoscopy after age 50 can reduce the number of deaths from colorectal cancer.
- A **colonoscopy** is an examination of the rectum and *entire* colon using a lighted instrument called a colonoscope. Colonoscopy can find precancerous or cancerous growths throughout the colon, including the upper part of the colon, where they would be missed by sigmoidoscopy. However, it is not known whether this benefit outweighs the risks of colonoscopy, which include bleeding and puncturing of the lining of the colon. More research is needed to address these issues.

- A **double contrast barium enema (DCBE)** is a series of x-rays of the entire colon and rectum. The x-rays are taken after the patient is given an enema with a barium solution and air is introduced into the colon. The barium and air help to outline the colon and rectum on the x-rays. Research shows that DCBE may miss small polyps.
- A **digital rectal exam (DRE)** is often part of a routine physical examination. The health care provider inserts a lubricated, gloved finger into the rectum to feel for abnormal areas. DRE allows for examination of only the lower part of the rectum.

Scientists are still studying colorectal cancer screening methods, both alone and in combination, to determine how effective they are. Studies are also under way to clarify the risks of each test.

See Question 5 for a table outlining some of the advantages and disadvantages of colorectal cancer screening tests. Additional information about these tests is available from the National Cancer Institute's (NCI) Web site at [http:// www.cancer.gov/colon](http://www.cancer.gov/colon) on the Internet.

5. How can people and their health care providers decide which colorectal cancer screening test(s) to use and how often to be screened?

Several major organizations, including the U.S. Preventive Services Task Force (a group of experts convened by the U.S. Public Health Service), the American Cancer Society, and professional societies, have developed guidelines for colorectal cancer screening. Although some details of their recommendations vary regarding which screening tests to use and how often to be screened, all of these organizations support screening for colorectal cancer.

People should talk with their health care provider about when to begin screening for colorectal cancer, what tests to have, the benefits and risks of each test, and how often to schedule appointments.

The decision to have a certain test will take into account several factors:

- Person's age, medical history, family history, and general health;
- Accuracy of the test;
- Risks associated with the test;
- Preparation required before the test;
- Sedation necessary during the test;
- Follow-up care after the test;
- Convenience of the test; and
- Cost and insurance coverage of the test.

The following table outlines some of the advantages and disadvantages of the colorectal cancer screening tests described in this fact sheet.

Table: Advantages and Disadvantages of Colorectal Cancer Screening Tests

Test	Advantages	Disadvantages
Fecal Occult Blood Test (FOBT)	<ul style="list-style-type: none"> • No preparation of the colon is necessary. • Samples can be collected at home. • Cost is low compared to other colorectal cancer screening tests. • FOBT does not cause bleeding or tears in the lining of the colon. 	<ul style="list-style-type: none"> • This test fails to detect most polyps and some cancers. • False positive results are possible. (“False positive” means the test suggests an abnormality when none is present.) • Dietary and other limitations, such as increasing fiber intake and avoiding meat, certain vegetables, vitamin C, iron, and aspirin, are often recommended for several days before the test. • Additional procedures, such as colonoscopy, may be necessary if the test indicates an abnormality.
Sigmoidoscopy	<ul style="list-style-type: none"> • The test is usually quick, with few complications. • Discomfort is minimal. • In some cases, the doctor may be able to perform a biopsy (the removal of tissue for examination under a microscope by a pathologist) and remove polyps during the test, if necessary. • Less extensive preparation of the colon is necessary with this test than for a colonoscopy. 	<ul style="list-style-type: none"> • This test allows the doctor to view only the rectum and the lower part of the colon. Any polyps in the upper part of the colon will be missed. • There is a very small risk of bleeding or tears in the lining of the colon. • Additional procedures, such as colonoscopy, may be necessary if the test indicates an abnormality.

Test	Advantages	Disadvantages
Colonoscopy	<ul style="list-style-type: none"> • This test allows the doctor to view the rectum and the entire colon. • The doctor can perform a biopsy and remove polyps during the test, if necessary. 	<ul style="list-style-type: none"> • The test may not detect all small polyps and cancers, but it is the most sensitive test currently available. • Thorough preparation of the colon is necessary before the test. • Sedation is usually needed. • Although uncommon, complications such as bleeding and/or tears in the lining of the colon can occur.
Double Contrast Barium Enema (DCBE)	<ul style="list-style-type: none"> • This test usually allows the doctor to view the rectum and the entire colon. • Complications are rare. • No sedation is necessary. 	<ul style="list-style-type: none"> • The test may not detect some small polyps and cancers. • Thorough preparation of the colon is necessary before the test. • False positive results are possible. • The doctor cannot perform a biopsy or remove polyps during the test. • Additional procedures are necessary if the test indicates an abnormality.
Digital Rectal Exam (DRE)	<ul style="list-style-type: none"> • Often part of a routine physical examination. • No preparation of the colon is necessary. • The test is usually quick and painless. 	<ul style="list-style-type: none"> • The test can detect abnormalities only in the lower part of the rectum. • Additional procedures are necessary if the test indicates an abnormality.

6. Do insurance companies pay for colorectal cancer screening?

Insurance coverage varies. People should check with their health insurance provider to determine their colorectal cancer screening benefits. Medicare covers several colorectal cancer screening tests for its beneficiaries. Specific information about Medicare benefits is available on the Medicare Web site at <http://www.medicare.gov/health/overview.asp> on the Internet.

7. What happens if a colorectal cancer screening test shows an abnormality?

If screening tests find an abnormality, the health care provider will perform a physical exam and evaluate the person's personal and family medical history. Additional diagnostic tests may be ordered. These may include x-rays of the gastrointestinal tract, sigmoidoscopy, or most often, colonoscopy (see Question 4). The health care provider may also order a blood test called a CEA assay to measure carcinoembryonic antigen, a protein that is sometimes present in higher levels in patients with colorectal cancer.

If an abnormal area is found during a colonoscopy, a biopsy is performed to determine if cancer is present. If an abnormal area is found during a sigmoidoscopy, a biopsy may be performed during the test, and a colonoscopy may be recommended.

More information about colorectal cancer screening tests is available in *Colorectal Cancer (PDQ®): Screening*. This summary of information from PDQ, the NCI's comprehensive cancer information database, can be found at <http://www.cancer.gov/cancerinfo/pdq/screening/colorectal/patient/> on the Internet.

The NCI booklet *What You Need To Know About™ Cancer of the Colon and Rectum* provides more information about the diagnosis and treatment of colorectal cancer. This publication and other resources are available from the NCI Publications Locator at <http://www.cancer.gov/publications> on the Internet, or by calling the Cancer Information Service (CIS) toll-free at 1-800-4-CANCER (1-800-422-6237) (see below). Additional information about colorectal cancer is available on the NCI's Web site at <http://www.cancer.gov/cancerinfo/types/colon-and-rectal/> or <http://www.cancer.gov/colon> on the Internet.

8. Are new tests under study for colorectal cancer screening?

New tests for colorectal cancer screening are under study. For example, virtual colonoscopy (also called computed tomographic colonography) is a procedure that uses special x-ray equipment to produce pictures of the colon. A computer then assembles these pictures into detailed images that can show polyps and other abnormalities. Because it is less invasive and does not require sedation, virtual colonoscopy may cause less discomfort and take less time than conventional colonoscopy. However, as with conventional colonoscopy and DCBE, thorough preparation of the colon is necessary before the test.

Unlike conventional colonoscopy, it is not possible to remove polyps or perform a biopsy during virtual colonoscopy. An additional procedure, such as conventional colonoscopy, is needed if the virtual procedure finds a potential problem. Clinical trials (research studies with people) are under way to compare the advantages and disadvantages of virtual colonoscopy with those of other colorectal cancer screening tests.

Genetic testing of stool samples is also under study as a possible way to screen for colorectal cancer. The lining of the colon is constantly shedding cells into the stool.

Testing stool samples for genetic alterations that occur in colorectal cancer cells may help doctors find evidence of cancer or precancerous polyps. Research conducted thus far has shown that this test can detect colorectal cancer in people already diagnosed with this disease by other means. However, more studies are needed to determine whether the test can detect colorectal cancer or precancerous polyps in people who do not have symptoms.

Additional information about clinical trials to test new methods for colorectal cancer screening is available from the NCI's Web site at <http://www.cancer.gov/clinicaltrials/> on the Internet, or by calling the CIS at 1-800-4-CANCER (1-800-422-6237).

Selected References

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Related Resources

Publications (available at <http://www.cancer.gov/publications>)

- *Men Eat 9 A Day*
- *Time To Take Five: Eat 5 Fruits and Vegetables Every Day*
- *What You Need To Know About™ Cancer of the Colon and Rectum*

National Cancer Institute (NCI) Resources

Cancer Information Service (toll-free)

Telephone: 1–800–4–CANCER (1–800–422–6237)
TTY: 1–800–332–8615

Online

NCI's Web site: <http://www.cancer.gov>
LiveHelp, NCI's live online assistance:
<https://cissecure.nci.nih.gov/livehelp/welcome.asp>

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