Colorectal Cancer Screening

What is colorectal cancer?

Colorectal cancer (CRC) happens when an adenomatous polyp or pre-cancerous growth forms from the normal tissue lining your colon. This process can take 10-15 years or longer. Many people have no symptoms of this polyp or growth. Some may have symptoms such as bleeding, weight loss, or a change in bowel habits.

How often is colorectal cancer found?

There are about 150,000 new cases of colorectal cancer diagnosed in the United States each year. The risk of colon cancer is much higher if you have a family history of colorectal cancer, especially in the well-defined inherited cases of familial adenomatous polyposis (FAP) and hereditary nonpolyposis colorectal cancer (HNPCC).

Your chance of having a polyp or cancer goes up as you get older, especially for people in their 50s-80s. It is important that polyp(s) are found before they become cancerous and/or to find cancer in its earliest stage. When colorectal cancers are found in the earliest stage, the five-year survival rate is 9 out of 10 people.

How are pre-cancerous polyps or early cancers found?

Pre-cancerous polyps or early cancers are found with screening tests. There are a few tests that screen for colorectal cancers. The test you have is based on:

- Your preference.
- Availability of the test.
- Cost.

Talk with your healthcare provider about when you should start having routine screenings done and what test would be best for you.

The American Cancer Society (ACS), the US Multi-Society Task Force on Colorectal Cancer (USMSTF), and the American College of Radiology have developed guidelines for screening. Below are the tests that are available, how they are done, and how well they work.

Screening with Stool Testing

There are two groups of stool testing:

- Those that test to find out if there is blood in the stool.
- Those that test if there is abnormal DNA in the cancer or precancerous polyps.

One limitation of both of these is they are not good at finding (detecting) the smaller, pre-cancerous polyps than other tests can detect. They are most successful in detecting cancer or more advanced, larger polyps (polyps that are likely to turn into cancer). Below are the types of stool testing.

Fecal Occult Blood Testing

The least expensive colorectal cancer (CRC) screening test is the fecal occult blood test (FOBT). Occult means

hidden or not seen by the eye. These tests take a sample of stool and use a chemical solution to see if there is blood in the stool. For this test, there are a few things you should do to prepare. These restrictions lower the chance of having a false-positive result.

- You cannot take aspirin and NSAID products (ibuprofen, Naprosyn) for 7 days before the testing.
- For 3 days before testing, avoid vitamin C, iron, eating red meat, and some raw vegetables (including broccoli, beets, bananas).
- The test must be done on two or three bowel movements that are consecutive (one after the other).

For it to be most useful, this test should be done every year. If the test is positive, you will have a colonoscopy to find and treat the cause of the positive test. How reliable the stool blood test is varies greatly from one brand of test to another and is also affected by the procedure used to process the test.

Fecal Immunochemical Test

FIT (fecal immunochemical test) is more specific for human blood and is not affected by diet. You will not need to follow the dietary restrictions mentioned above. The test costs more than FOBT and it is not clear yet if it is better. While it seems that 2 FIT test results are better than 1, the perfect number of tests per year is not yet known.

Stool testing for blood is certainly better than no screening at all. The concern is that advanced adenomas or early cancers are not likely to bleed all the time so they may not be detected by this test. You may have a negative test even though there is cancer in your colon. The tests must be done more than once and repeated each year to have the best chance of detecting cancer. These tests are less effective in detecting tumors on the right side of the colon than on the left. Studies have found that more than half of the cancers are found on the right side of the colon in women and on the left side in men.

Stool DNA Testing

Stool DNA Testing (sDNA) checks to see if there are DNA changes in the bowel that mean there are cancer or adenomas present. These cells contain abnormal DNA, which is shed from the lining of the bowel and passed in the stool. Since each cancer can have different DNA changes, the test looks for a few abnormalities but does not detect all the possible DNA changes found in different people. So, some tumors are not detected. While the stool blood detection tests use a small sample of stool, for sDNA, the whole stool specimen is needed.

Some patients will receive a false-positive result and no cancer will be found on further testing. Studies are being done to figure out how well this test detects adenomas (pre-cancers), though it appears to be far less sensitive for these. The test is also less sensitive in detecting tumors on the right side of the colon than on the left. As with FOBT, if you have a positive sDNA test you will need to have a diagnostic colonoscopy done.

Screening with Endoscopy

Endoscopy uses a camera on the end of a thin, flexible tube to view the bowel and look for any polyps or tumors. There are two types of endoscopy used for colorectal cancer screening: sigmoidoscopy and colonoscopy.

Sigmoidoscopy

Sigmoidoscopy uses a sigmoidoscope-- a thin, flexible tube that can view about 1/3 of the colon (the left side). If a polyp or tumor is found with this test, some providers can do a biopsy with sigmoidoscopy, while others must refer the patient for a full colonoscopy and biopsy. If an adenomatous polyp is found during flexible sigmoidoscopy, then you should have a colonoscopy because there is a higher risk of an adenoma on the right side of your colon. Future screening tests should then be done with a colonoscopy.

For flexible sigmoidoscopy, you will need to do less bowel prep than colonoscopy (2 enemas) and you do not need to be sedated (made sleepy and unaware), so it may be done in a provider’s office and you will not need

recovery time. The test is only as good as the person performing it (their training and if they follow guidelines for the test) and how well you are prepared (a poorly done bowel prep will limit the sensitivity of the test). Although rare, the main risk of sigmoidoscopy is perforation of the bowel (injury/harm to the bowel wall)which can happen with or without a biopsy.

When used for CRC screening, the ACS and USMSTF recommend sigmoidoscopy be performed every 5 years.

Colonoscopy

The colonoscope is like the sigmoidoscope but is longer and can view the whole colon (left and right sides). If a polyp is found, the provider can remove it using a cutting tool in the scope and send it to a pathology lab to see if it is adenomatous (precancerous). Colonoscopy is thought to be the gold standard of CRC screening but is only as good as the provider (called an endoscopist) doing the test. Given the slow growth of polyps, a colonoscopy (in the general population) should be done every 10 years. Those at higher risk (such as those with family history, prior test with polyps, personal history of ulcerative colitis (UC), HNPCC, or FAP) should be screened more often. Talk with your provider about how often you should have one.

To prepare for colonoscopy you must clean out your bowel. To do this, you must follow a low-fiber, clear liquid diet for one to two days before and do a bowel cleansing or prep, which is done with laxative solutions or tablets you take by mouth. Your provider will give you specific instructions.

During the test, the bowel is filled with air, so the endoscopist can look at your colon. You will likely need to be sedated, so you will need someone to pick you up and take you home after the procedure. You will likely need to take the day off from work. The main risks of colonoscopy are bleeding after the removal of a polyp and perforation of the bowel.

Colonoscopy Follow-Up

You are at an increased risk for future findings if you have either:

- 3 or more adenomas.
- High-grade dysplasia.
- Villous features (growths that are likely to turn into polyps).
- An adenoma 1 centimeter (cm) or larger in size.

If you are at an increased risk, it is recommended by the USMSTF that you have a 3-year follow-up colonoscopy and keep having them every 3 years. Those at lower risk can have a follow-up in 5 to 10 years. Those with hyperplastic polyps should only have a 10-year follow-up as average-risk individuals. More frequent screening is recommended for people with suspected or proven genetic syndromes (HNPCC and FAP). It is unclear how a family history without a genetic syndrome should affect screening intervals.

Additional Screening Tests

Virtual Colonoscopy

Virtual colonoscopy (VC), is a way of looking at the colon from outside the body, using a CT scan. For the procedure, you will lay on a table that passes through a donut-like machine that takes pictures from different angles around your body. The 2-dimensional images of the colon are turned into three-dimensional images and then looked at by a trained radiologist or gastroenterologist.

You will only be in the scanner for about 10 minutes, but the whole test takes about 30 minutes. The 30 minutes includes reading and interpretation, which does add to the cost of the procedure. For these images to be accurate, patients must do bowel prep similar to a colonoscopy (dietary restrictions and oral laxatives). However, for the virtual scan, the bowel may need to be a bit clearer. This is because during a normal colonoscopy, the provider can clear away any stool that is left behind, but they cannot do this with VC. You will also have a drink called a contrast medium the night before your test. This helps the provider see the

difference between stool that is leftover in the colon and polyps.

A tube is put into the rectum and air or carbon dioxide is pumped into the colon. This happens just before the CT to expand the colon so that it can be more clearly seen. In some centers, patients are given an IV (intravenous) medication called glucagon, causing the bowel walls to relax and to improve seeing the bowels, but this is now less common. No sedation is used, so patients do not need any recovery time, but some say they feel more discomfort than normal colonoscopy.

VC is better at detecting cancers and larger polyps than smaller polyps or flat lesions (also called non-polypoid lesions). Some providers have suggested that smaller polyps are less likely to turn into cancer, so the decreased ability to detect them may not be significant.

As with most CRC screening tests, it is only as good as the provider doing the test and many of the studies were performed with the best equipment and well-trained radiologists, which may overestimate how good the test is. If polyps are detected, you may be referred for a normal colonoscopy for polyp removal and biopsy.

There is a very small risk of bowel perforation while air is pumped into the bowel. There is concern among some experts about the lifetime dose of radiation received during this and other radiology exams, but this risk is not yet well understood. Because the test is a CT scan and includes other areas of the abdomen, findings outside the colon may require further workup. As a screening method, VC should begin for average-risk individuals at age 50. How often you should have this test has not been studied, but it is recommended the test be done every 5 years.

Double Contrast Barium Enema

A double-contrast barium enema (DCBE) is done by placing a small tube into the rectum and coating the inside of the colon with barium (a contrast agent) and pumping in air to distend (stretch) the colon. X-rays are taken in different positions to look at the lining of the colon. You will need to do bowel prep, similar to that used with traditional colonoscopy, with diet changes and oral laxatives. No sedation is used for the procedure. You may have discomfort during or after the test, which takes 20 to 40 minutes. The test looks at the whole colon and can often detect most cancers and significant polyps, though formal clinical studies have not been done. The test may be a good option for people who could not have a colonoscopy (due to a blockage or contraindication).

If a polyp greater than 5 millimeters (mm) is found, you will need to have a colonoscopy to biopsy this finding. As with many CRC screening tests, the test is only as good as the provider doing and reading the test and your bowel prep before the test. Because the colon is being looked at from the outside, leftover stool in the bowel can be mistaken for polyps or can hide other findings. The test is safe, though bowel perforation remains a low risk. The use of the DCBE has decreased over the past 10 years, with the test being largely replaced with colonoscopy. When used for colorectal cancer screening, DCBE should be done every 5 years in average-risk adults over 50 years of age.

Screening Guidelines

There are guidelines for CRC screening by the ACS and the USPSTF (US Preventive Services Task Force). People of average risk should start screening at age 45 according to the ACS and the USPSTF. Keep in mind that the best screening test is one that is actually done. You should talk with your provider about your options and their recommendations based on your risk factors, preference, and insurance coverage/cost.

- Flexible sigmoidoscopy: Every 5 years.
- Colonoscopy: Every 10 years.
- Double-contrast barium enema: Every 5 years.
- CT colonography (virtual colonoscopy): Every 5 years.
- Fecal occult blood test (FOBT): Every year.

- Fecal immunochemical test (FIT): Every year.
- Stool DNA test (sDNA): Every 3 years.

If your baseline screening detects polyps or cancer, you will need to plan with your provider how often you should be tested and which test is best. You should talk about your risk with your provider, but the following factors increase risk and therefore increase the screening recommendations:

- Personal history of an adenomatous polyp or colorectal cancer.
- Presence of inflammatory bowel disease (Crohn's disease or ulcerative colitis).
- If a family member has had colorectal cancer or adenomatous polyps, and if so, how many polyps and at what age. Also, whether they are a first-degree relative (parent, sibling, child) is important to your risk. Screening often will begin 10 years before the age of your relative's diagnosis.
- If the family has a known or suspected genetic syndrome (HNPCC or FAP).

The best way to prevent colon cancer is through screening. It is important to work with your care providers to determine what test will work best for you, how your health insurance covers it, and what to do if abnormalities are detected.

To learn about factors that could affect your cancer risk, use the Reduce My Risk tool.