



# Colorectal Cancer Prevention and Early Detection

## What is colorectal cancer?

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer, and can spread to other areas of the body. To learn more about how cancers start and spread, see *What Is Cancer?*

Colorectal cancer is a term used to refer to cancer that develops in the colon or the rectum. These cancers are sometimes called colon cancer or rectal cancer, depending on where they start. Colon cancer and rectal cancer are often grouped together because they have many features in common.

## Importance of colorectal cancer screening

Screening is the process of looking for cancer or pre-cancer in people who have no symptoms of the disease. Regular colorectal cancer screening is one of the most powerful weapons against colorectal cancer. Excluding skin cancers, colorectal cancer is the third most common cancer diagnosed in both men and women in the United States. Overall, the lifetime risk for developing colorectal cancer is a little less than 1 in 20 (5%). This risk is slightly lower for women than for men.

Colorectal cancer is the second leading cause of cancer death when numbers for both men and women are combined.

The death rate (the number of deaths per 100,000 people per year) of colorectal cancer has been dropping for several decades. One reason for this is that today, colorectal polyps are more often found by screening and removed before they can develop into cancers.

It can take as many as 10 to 15 years for a polyp to develop into colorectal cancer. Regular screening can prevent many cases of colorectal cancer altogether by finding and removing

certain types of polyps before they have the chance to turn into cancer. Screening can also help find colorectal cancer early, when it's small, hasn't spread, and is easier to treat.

When colorectal cancer is found at an early stage before it has spread, the 5-year relative survival rate is about 90%. But only about 4 out of 10 colorectal cancers are found at this early stage. When cancer has spread outside the colon or rectum, survival rates are lower.

Unfortunately, only a little more than half of people who should get tested for colorectal cancer get the tests that they should. This may be due to things like lack of public and health care provider awareness of screening options, costs, and health insurance coverage issues.

See “Colorectal cancer screening tests” for more on the tests used to screen for colorectal cancer. The section “American Cancer Society recommendations for colorectal cancer early detection” has our guidelines for using these tests to find colorectal cancer and polyps.

## **Colorectal cancer risk factors**

A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like a person's age or family history, can't be changed.

But having a risk factor, or even many risk factors, does not mean that you'll get the disease. And some people who get the disease may not have any known risk factors.

Researchers have found risk factors that might increase a person's chance of having colorectal polyps or colorectal cancer.

### **Risk factors you can change**

Many lifestyle-related factors have been linked to colorectal cancer. In fact, the links between diet, weight, and exercise and colorectal cancer risk are some of the strongest for any type of cancer.

#### **Being overweight or obese**

If you are overweight or obese (very overweight), your risk of developing and dying from colorectal cancer is higher. Being overweight raises the risk of colon cancer in both men and women, but the link seems to be stronger in men.

#### **Physical inactivity**

If you're not physically active, you have a greater chance of developing colorectal cancer. Being more active might help lower your risk.

## **Certain types of diets**

A diet that's high in red meats (beef, pork, lamb, or liver) and processed meats (such as hot dogs and some luncheon meats) can raise your colorectal cancer risk.

Cooking meats at very high temperatures (frying, broiling, or grilling) creates chemicals that might raise your cancer risk, but it's not clear how much this might increase your risk.

Diets high in vegetables, fruits, and whole grains have been linked with a **lower** risk of colorectal cancer, but fiber supplements have not been shown to help.

It's not clear if other dietary components (for example, certain types of fats) affect colorectal cancer risk.

## **Smoking**

People who have smoked for a long time are more likely than non-smokers to develop and die from colorectal cancer. Smoking is a well-known cause of lung cancer, but it's also linked to other cancers, like colorectal cancer. If you smoke and would like to learn more about quitting, see our *Guide to Quitting Smoking*.

## **Heavy alcohol use**

Colorectal cancer has been linked to heavy alcohol use. Limiting alcohol use to no more than 2 drinks a day for men and 1 drink a day for women could have many health benefits, including a lower risk of colorectal cancer.

## **Colorectal cancer risk factors you cannot change**

### **Older age**

The risk of colorectal cancer goes up as you age. Younger adults can develop colorectal cancer, but the chances increase markedly after age 50.

### **Personal history of colorectal polyps or colorectal cancer**

If you have a history of adenomatous polyps (adenomas) in the colon or rectum, you have a higher risk of developing colorectal cancer. This is especially true if the polyps are large or if there are many of them.

If you've had colorectal cancer, even though it has been completely removed, you're more likely to develop new cancers in other areas of the colon and rectum. The chances of this happening are greater if you first had colorectal cancer when you were younger.

## **Personal history of inflammatory bowel disease**

If you have inflammatory bowel disease (IBD), including either ulcerative colitis or Crohn's disease, you have a higher risk of colorectal cancer.

IBD) is a condition in which the colon is inflamed over a long period of time. People who have had IBD for many years often develop dysplasia. Dysplasia is a term used to describe cells in the lining of the colon or rectum that look abnormal (but not like true cancer cells) when seen under a microscope. These cells can change into cancer over time.

If you have IBD, you may need to start colorectal cancer screening at a younger age and be screened more often.

Inflammatory bowel disease is different from *irritable bowel syndrome (IBS)*. IBS is not linked to an increased risk for colorectal cancer.

## **Family history of colorectal cancer or adenomatous polyps**

Most colorectal cancers are found in people without a family history of colorectal cancer. Still, as many as 1 in 5 people with colorectal cancer have other family members who have had it.

People with a history of colorectal cancer in a first-degree relative (parent, sibling, or child) are at increased risk. The risk is even higher if the first-degree relative was diagnosed when they were younger than 45, or if more than one first-degree relative is affected.

The reasons for the increased risk are not clear in all cases. Cancers can “run in the family” because of inherited genes, shared environmental factors, or some combination of these.

Having family members who have had adenomatous polyps is also linked to a higher risk of colon cancer. (Adenomatous polyps are the kind of polyps that can become cancer.)

If you have a family history of adenomatous polyps or colorectal cancer, ask your doctor if you should start screening before age 50. If you have had adenomatous polyps or colorectal cancer, it's important to tell your close relatives so that they can pass along that information to their doctors and start screening at the right age.

## **Inherited syndromes**

About 5% to 10% of people who develop colorectal cancer have inherited gene defects (mutations) that can cause family cancer syndromes and lead to them getting the disease.

The most common inherited syndromes linked with colorectal cancers are familial adenomatous polyposis (FAP) and Lynch syndrome (hereditary non-polyposis colorectal cancer or HNPCC), but other rarer syndromes can also increase colorectal cancer risk.

**Familial adenomatous polyposis (FAP):** FAP is caused by changes (mutations) in the *APC* gene that a person inherits from his or her parents. About 1% of all colorectal cancers are caused by FAP.

In the most common type of FAP, hundreds or thousands of polyps develop in a person's colon and rectum, usually starting in their teens or early adulthood. Cancer usually develops in 1 or more of these polyps as early as age 20. By age 40, almost all people with FAP will have colon cancer if their colon hasn't been removed to prevent it. People with FAP also have an increased risk of cancers of the stomach, small intestines, and some other organs.

- In **attenuated FAP**, which is a subtype of this disorder, patients have fewer polyps (less than 100) and colorectal cancer tends to occur at a later age.
- **Gardner syndrome** is a type of FAP that also leads to benign (non-cancer) tumors of the skin, soft tissue, and bones.

**Lynch syndrome (hereditary non-polyposis colon cancer, or HNPCC):** Lynch syndrome accounts for about 2% to 4% of all colorectal cancers. In most cases, this disorder is caused by an inherited defect in either the *MLH1* or *MSH2* gene, but changes in other genes can also cause Lynch syndrome. These genes normally help repair DNA damage.

The cancers in this syndrome develop when people are relatively young. People with Lynch syndrome can have polyps, but they tend to only have a few, not hundreds as in FAP. The lifetime risk of colorectal cancer in people with this condition may be as high as 80%, but this depends on which gene is affected.

Women with this condition also have a very high risk of cancer of the endometrium (lining of the uterus). Other cancers linked to Lynch syndrome include cancer of the ovary, stomach, small intestine, pancreas, kidney, brain, ureters (tubes that carry urine from the kidneys to the bladder), and bile duct.

For more information on Lynch syndrome, see “Genetic testing, screening, and prevention for people with a strong family history of colorectal cancer.”

**Turcot syndrome:** This is a rare inherited condition in which people are at increased risk of adenomatous polyps and colorectal cancer, as well as brain tumors. There are actually 2 types of Turcot syndrome:

- One is caused by gene changes similar to those seen in FAP, in which cases the brain tumors are medulloblastomas.
- The other is caused by gene changes similar to those seen in Lynch syndrome, in which cases the brain tumors are glioblastomas.

**Peutz-Jeghers syndrome:** People with this rare inherited condition tend to have freckles around the mouth (and sometimes on their hands and feet) and a special type of polyps (called

*hamartomas*) in their digestive tracts. These people are at a greatly increased risk for colorectal cancer, as well as several other cancers, which usually appear at a younger than normal age. This syndrome is caused by mutations in the *STK1* gene.

**MUTYH-associated polyposis:** People with this syndrome develop colon polyps which will become cancer if the colon is not removed. These people also have an increased risk of cancers of the small intestine, skin, ovary, and bladder. This syndrome is caused by mutations in the *MUTYH* gene.

People with these inherited syndromes often get cancer at a younger age than usual. These syndromes are also linked to some other types of cancer. Identifying families with these syndromes is important because it lets doctors recommend specific steps such as screening and other preventive measures at an early age.

Information on risk assessment, and genetic counseling and testing for some of these syndromes can be found in “Genetic testing, screening, and prevention for people with a strong family history of colorectal cancer.”

## **Racial and ethnic background**

African Americans have the highest colorectal cancer incidence and mortality rates of all racial groups in the United States. The reasons for this are not yet understood.

Jews of Eastern European descent (Ashkenazi Jews) have one of the highest colorectal cancer risks of any ethnic group in the world. Several gene mutations leading to an increased risk of colorectal cancer have been found in this group. The most common of these gene changes, called the *I1307K APC mutation*, is present in about 6% of American Jews.

## **Type 2 diabetes**

People with type 2 (usually non-insulin dependent) diabetes have an increased risk of colorectal cancer. Both type 2 diabetes and colorectal cancer share some of the same risk factors (such as being overweight or obese). But even after taking these factors into account, people with type 2 diabetes still have an increased risk. They also tend to have a less favorable prognosis (outlook) after diagnosis.

## **Factors with less clear effects on colorectal cancer risk**

### **Night shift work**

Results of one study suggested working a night shift at least 3 nights a month for at least 15 years may increase the risk of colorectal cancer in women. The study authors suggested this

might be due to changes in levels of melatonin (a hormone that responds to changes in light) in the body. More research is needed to confirm or refute this finding.

## **Previous treatment for certain cancers**

Some studies have found that men who survive testicular cancer seem to have a higher rate of colorectal cancer and some other cancers. This might be due to the treatments they had.

Several studies have suggested that men who had radiation therapy to treat prostate cancer may have a higher risk of rectal cancer because the rectum receives some radiation during treatment. Most of these studies are based on men treated in the 1980s and 1990s, when radiation treatments were less precise than they are today. The effect of more modern radiation methods on rectal cancer risk is not clear.

## **Can colorectal cancer be prevented?**

There's no sure way to prevent colorectal cancer. But there are things you can do that might help lower your risk of getting it, such as being screened for it and changing the risk factors that you can control.

## **Colorectal cancer screening**

Screening is the process of looking for cancer or pre-cancer in people who have no symptoms of the disease. Regular colorectal cancer screening is one of the most powerful ways to prevent colorectal cancer.

From the time the first abnormal cells start to grow into polyps, it usually takes about 10 to 15 years for them to turn into colorectal cancer. With regular screening, most polyps can be found and removed before they become cancer. Screening can also find colorectal cancer early, when it is highly curable.

It's recommended that people who are not at increased risk of colorectal cancer start screening at age 50. There are many screening tests available. People at higher risk, such as those with a strong family history of colorectal cancer, might benefit from starting screening at a younger age. If you have a family history or other risk factors for colorectal cancer, such as inflammatory bowel disease, talk with your doctor about your risk and your screening options. (See our screening guidelines in "American Cancer Society recommendations for colorectal cancer early detection.") You might also benefit from genetic counseling to look at your family medical tree to see how likely it is that you have a family cancer syndrome.

## Body weight, physical activity, and diet

You might be able to lower your risk of colorectal cancer by managing some of the risk factors that you can control, like diet and physical activity.

**Weight:** Being overweight or obese increases the risk of colorectal cancer in both men and women, but the link seems to be stronger in men. Having more belly fat (that is, a larger waistline) has also been linked to colorectal cancer.

**Physical activity:** Increasing your level of activity can lower your risk of colorectal cancer and polyps. Regular moderate activity (doing things that make you breathe as hard as you would during a brisk walk) lowers the risk, but vigorous activity might have an even greater benefit.

**Diet:** Overall, diets that are high in vegetables, fruits, and whole grains (and low in red and processed meats) have been linked with lower colorectal cancer risk, although it's not exactly clear which factors are important. Many studies have found a link between red meats (beef, pork, and lamb) or processed meats (such as hot dogs, sausage, and lunch meats) and increased colorectal cancer risk.

In recent years, some large studies have suggested that fiber in the diet, especially from whole grains, may lower colorectal cancer risk. Research is still being done in this area.

**Alcohol:** Several studies have found a higher risk of colorectal cancer with increased alcohol use, especially among men.

At this time, the best advice about diet and activity to possibly reduce your risk of colorectal cancer is to:

- Avoid obesity and weight gain around the midsection.
- Increase the intensity and amount of your physical activity.
- Limit red and processed meats.
- Eat more vegetables and fruits.
- Get the recommended levels of calcium and vitamin D (see below).
- Avoid excess alcohol.

For more about diet and physical activity, see the *American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention*.

## Not smoking

Long-term smoking is linked to an increased risk of colorectal cancer, as well as many other cancers and health problems. If you smoke and would like help quitting, call the American Cancer Society at 1-800-227-2345.

## Vitamins, calcium, and magnesium

Some studies suggest that taking a daily multi-vitamin containing folic acid, or folate, may lower colorectal cancer risk, but not all studies have found this. In fact, some studies have hinted that folic acid might help existing tumors grow. More research is needed in this area.

Some studies have suggested that vitamin D, which you can get from being in the sun, in certain foods, or in a vitamin pill, can lower colorectal cancer risk. Because of concerns that excess sun exposure can cause skin cancer, most experts don't recommend this as a way to lower colorectal cancer risk at this time.

Other studies suggest that increasing calcium in your diet may lower colorectal cancer risk. Calcium is important for a number of health reasons aside from possible effects on cancer risk. But because of the possible increased risk of prostate cancer in men who take in a lot of calcium, the American Cancer Society doesn't recommend increasing calcium specifically to try to lower cancer risk.

Calcium and vitamin D might work together to reduce colorectal cancer risk, because vitamin D helps the body absorb calcium. Still, not all studies have found that supplements of these nutrients reduce risk.

A few studies have found a possible link between a diet that's high in magnesium and reduced colorectal cancer risk, especially among women. More research is needed to determine if this link exists.

## Non-steroidal anti-inflammatory drugs (NSAIDs)

Many studies have found that people who regularly take aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin<sup>®</sup>, Advil<sup>®</sup>) and naproxen (Aleve<sup>®</sup>), have a lower risk of colorectal cancer and polyps. Most of these studies looked at people who took these medicines for reasons such as to treat arthritis or prevent heart attacks. Other studies have provided strong evidence that aspirin can help prevent the growth of polyps in people who were treated for early stages of colorectal cancer or had polyps removed in the past.

But aspirin and other NSAIDs can cause serious or even life-threatening side effects such as bleeding from stomach irritation, which may outweigh the benefits of these medicines for the general public. For this reason, most experts don't recommend taking NSAIDs just to lower colorectal cancer risk if you are at average risk. But other possible benefits of aspirin, such as

lowering the chances of getting some types of heart disease, might outweigh the risks in certain groups of people, such as those at higher risk for heart disease.

The value of these drugs for people at increased colorectal cancer risk is being studied. Celecoxib (Celebrex<sup>®</sup>) has been approved by the US Food and Drug Administration (FDA) for reducing polyps in people with familial adenomatous polyposis (FAP). This drug may cause less bleeding in the stomach than other NSAIDs, but it may increase the risk of heart attacks and strokes.

Aspirin and other NSAIDs can have serious side effects, so check with your doctor before starting to take any of them on a regular basis.

## Menopausal hormone therapy for women

Taking estrogen and progesterone after menopause (sometimes called *menopausal hormone therapy* or *combined hormone replacement therapy*) may reduce a woman's risk of colorectal cancer, but cancers found in women taking these hormones after menopause may be at a more advanced stage.

Taking estrogen and progesterone after menopause also lowers the risk of osteoporosis (bone thinning). But it can also increase a woman's risk of heart disease, blood clots, and cancers of the breast and lung.

If you are considering using menopausal hormone therapy, be sure to discuss the pros and cons with your doctor.

## Genetic testing, screening, and prevention for people with a strong family history of colorectal cancer

If you have a family history of colorectal polyps or cancer, you have a higher risk of getting colorectal cancer yourself. This risk can be even higher in people with a **strong** family history of colorectal cancer. While cancer in close (first-degree) relatives such as parents, brothers, and sisters is most concerning, cancer in more distant relatives can also be important. Having 2 or more relatives with colorectal cancer is more concerning than having only one relative with it. It's also more concerning if your relatives were diagnosed with cancer at a younger age than usual.

If you have a family history of colorectal cancer, talk with your doctor. You might benefit from speaking with a genetic counselor or other health professional who is trained in genetic counseling. They can review your family history to see how likely it is that you have a family cancer syndrome. The counselor can also help you decide if genetic testing is right for you. If

you have testing and are found to have an abnormal gene, there might be steps you can take to help lower your risk of colorectal cancer, such as getting screened at an early age or even having surgery.

But before getting genetic testing, it's important to know ahead of time what the results may or may not tell you about your risk. Genetic testing is not perfect, and for some people the tests may not provide clear answers. This is why meeting with a genetic counselor or cancer genetics professional is important before deciding to be tested. To learn more about this, see *Genetic Testing: What You Need to Know*.

Genetic tests can help show if members of certain families have inherited a high risk of colorectal cancer due to inherited cancer syndromes such as Lynch syndrome (also known as hereditary non-polyposis colorectal cancer, or HNPCC) or familial adenomatous polyposis (FAP).

In families known to have one of these inherited syndromes, family members who decide not to get tested are still usually advised to start being screened for colorectal cancer at an early age, and to get screened more often. Family members who are tested and are found not to have the mutated gene may be able to be screened at the same age and frequency as people at average risk.

## Testing for Lynch syndrome (hereditary non-polyposis colorectal cancer, or HNPCC)

Lynch syndrome can greatly increase a person's risk for colorectal cancer. The lifetime risk of colorectal cancer in people with this condition can range from about 10% to about 80%, depending on which mutated gene is causing the syndrome.

People with Lynch syndrome are also at increased risk for some other cancers, such as cancers of the uterus (endometrium), ovaries, stomach, small bowel, pancreas, kidneys, brain, ureters (tubes that carry urine from the kidneys to the bladder), and bile duct.

### **Amsterdam criteria**

Doctors have found that many families with Lynch syndrome tend to have certain characteristics, which are known as the *Amsterdam criteria*:

- At least 3 relatives have colorectal cancer (or another cancer linked with Lynch syndrome).
- One is a first-degree relative (parent, sibling, or child) of the other 2 relatives.
- At least 2 successive generations are involved.
- At least 1 relative had their cancer when they were younger than age 50.

If all of these apply to your family, then you might want to seek genetic counseling. But even if your family history satisfies the Amsterdam criteria, it doesn't always mean you have Lynch syndrome. Only about half of families who meet the Amsterdam criteria have Lynch syndrome. The other half do not, and although their colorectal cancer rate is about twice as high as normal, it's not as high as that of people with Lynch syndrome. On the other hand, many families with Lynch syndrome do not meet the Amsterdam criteria.

## Revised Bethesda guidelines

A second set of criteria, called the *revised Bethesda guidelines*, can be used to determine whether a person with colorectal cancer should have his or her cancer tested for genetic changes that are seen with Lynch syndrome. (These changes are called *microsatellite instability* or *MSI*.) These criteria include at least one of the following:

- The person is younger than 50 years.
- The person has or had a second colorectal cancer or another cancer (endometrial, stomach, pancreas, small intestine, ovary, kidney, brain, ureters, or bile duct) linked to Lynch syndrome.
- The person is younger than 60 years, and the cancer has certain characteristics seen with Lynch syndrome when it's viewed under a microscope.
- The person has a first-degree relative (parent, sibling, or child) younger than 50 who was diagnosed with colorectal cancer or another cancer linked to Lynch syndrome (endometrial, stomach, pancreas, small intestine, ovary, kidney, brain, ureter, or bile duct).
- The person has 2 or more first- or second-degree relatives (aunts, uncles, nieces, nephews, or grandparents) who had colorectal cancer or another Lynch syndrome-related cancer at any age.

If a person with colorectal cancer has any of the Bethesda criteria, testing for MSI may be advised. If MSI is found, the doctor will recommend that the patient be tested for a Lynch syndrome-associated gene mutation.

It's important to know that most people who meet the Bethesda criteria do not have Lynch syndrome, and that you can have Lynch syndrome and not meet any of the criteria listed. Not all doctors use the Bethesda guidelines to decide who should have MSI testing. In fact, some experts recommend that all colorectal cancers be tested for MSI. Most doctors recommend genetic testing for Lynch syndrome for anyone whose cancer tests positive for MSI.

Even if you don't have cancer, your doctor may suspect that Lynch syndrome runs in your family based on cases of colorectal cancer and other cancers associated with this syndrome in your relatives. In that case, your doctor may recommend genetic counseling to evaluate your risk.

In families known to carry a Lynch syndrome gene mutation, doctors recommend that family members who have tested positive for the mutation and those who have not been tested should start colonoscopy screening during their early 20s to remove any polyps and find any cancers at the earliest possible stage. (See the section American Cancer Society recommendations for colorectal cancer early detection.) People known to carry one of the gene mutations may also be offered the option of removal of most of the colon.

## Testing for familial adenomatous polyposis (FAP)

FAP typically causes hundreds of polyps in the colon and rectum, which over time leads to colorectal cancer. Because FAP causes polyps and cancer earlier than the usual age to start colorectal cancer screening, sometimes FAP isn't diagnosed until the colon is examined in someone who has cancer. If changes in the gene that causes FAP are found in one person, doctors will recommend that his or her close relatives (brothers, sisters, and children) be tested. FAP may also be suspected if a person is found to have many polyps during a colonoscopy that was done because of problems like rectal bleeding or anemia.

Genetic counseling and testing is available for people who may have FAP based on their personal or family history. Their lifetime risk of developing colorectal cancer is near 100%, and in most cases it develops before the age of 40. People who test positive for the gene change linked to FAP should start being screened with colonoscopy in their teens. (See American Cancer Society recommendations for colorectal cancer early detection.) Most doctors recommend that people with FAP have their colon removed when they're in their 20s to prevent cancer from developing.

## Testing for other inherited cancer syndromes

Certain other inherited syndromes, such as *MUTYH*-associated polyposis and Peutz-Jeghers syndrome, can also greatly increase a person's risk of colorectal cancer. If you have certain criteria that suggest you might have one of the syndromes, your doctor might suggest genetic counseling and testing to look for the gene changes that cause them.

## Signs and symptoms of colorectal cancer

Early colorectal cancers may not cause any symptoms. This is why screening is recommended for most people, starting at age 50.

If colorectal cancer does cause symptoms, they may include:

- A change in bowel habits, such as diarrhea, constipation, or narrowing of the stool, that lasts for more than a few days
- A feeling that you need to have a bowel movement that doesn't go away when you do so

- Rectal bleeding
- Blood in the stool, which may make it look dark
- Cramping or abdominal (belly) pain
- Weakness and fatigue
- Unintended weight loss

Colorectal cancers can often bleed into the digestive tract. While sometimes you can see blood in the stool or it looks darker, often the stool looks normal. But over time, the blood loss can build up and can lead to low red blood cell counts (anemia). Sometimes the first sign of colorectal cancer is a blood test showing a low red blood cell count.

Most of these problems are more often caused by conditions other than colorectal cancer, such as infection, hemorrhoids, or irritable bowel syndrome. Still, if you have any of these problems, it's important to see a doctor right away so the cause can be found and treated, if needed.

## Colorectal cancer screening tests

Screening is the process of looking for cancer in people who have no symptoms of the disease. Several tests can be used to screen for colorectal cancers. These tests can be divided into:

- **Tests that can find both colorectal polyps and cancer:** These tests look at the structure of the colon itself to find any abnormal areas. This is done either with a scope put into the rectum or with special imaging (x-ray) tests. Polyps found during these tests can be removed before they become cancerous, so these tests may prevent colorectal cancer. Because of this, these tests are preferred if they are available and you are willing to have them.
- **Tests that mainly find cancer:** These tests check the stool (feces) for signs of cancer. These tests are less invasive and easier to have done, but they are less likely to detect polyps.

These tests as well as others also can be used when people have symptoms of colorectal cancer and other digestive diseases.

### Tests that can find both colorectal polyps and cancer

#### Flexible sigmoidoscopy

During this test, the doctor looks at part of the colon and rectum with a sigmoidoscope – a flexible, lighted tube about the thickness of a finger with a small video camera on the end. It's put in through the rectum and moved into the lower part of the colon. Images from the scope are seen on a display monitor.

Using the sigmoidoscope, your doctor can look at the inside of the rectum and part of the colon to detect (and possibly remove) any abnormality. The sigmoidoscope is only 60 centimeters (about 2 feet) long, so the doctor is able to see the entire rectum but less than half of the colon with this procedure.

**Before the test:** Be sure your doctor knows about any medicines you are taking. You might need to change how you take them before the test. Your colon and rectum must be empty and clean so your doctor can see the lining of the sigmoid colon and rectum. You will get specific instructions to follow to clean them out. You may be asked to follow a special diet (such as drinking only clear liquids) for a day before the test. You may also be asked to use enemas or to use strong laxatives to clean out your colon before the test. Be sure to tell your doctor about any medicines you are taking, as you might need to change how you take them before the test.

**During the test:** A sigmoidoscopy usually takes about 10 to 20 minutes. Most people don't need to be sedated for this test, but this might be an option you can discuss with your doctor. Sedation may make the test less uncomfortable, but you'll need some time to recover from it and you'll need someone with you to take you home after the test.

You'll probably be asked to lie on a table on your left side with your knees pulled up near your chest. Before the test, your doctor may put a gloved, lubricated finger into your rectum to examine it. For the test itself, the sigmoidoscope is first lubricated to make it easier to insert into the rectum. The scope may feel cold as it's put in. Air will be pumped into the colon through the sigmoidoscope so the doctor can see the walls of the colon better.

During the procedure, you might feel pressure and slight cramping in your lower belly. To ease discomfort and the urge to have a bowel movement, it helps to breathe deeply and slowly through your mouth. You'll feel better after the test once the air leaves your colon.

If a small polyp is found during the test, the doctor may remove it with a small instrument passed through the scope. The polyp will be sent to a lab to be looked at. If a pre-cancerous polyp (an adenoma) or colorectal cancer is found, you'll need to have a colonoscopy later to look for polyps or cancer in the rest of the colon.

**Possible complications and side effects:** This test may be uncomfortable because of the air put into the colon, but it should not be painful. Be sure to let your doctor know if you feel pain during the procedure. You might see a small amount of blood in your first bowel movement after the test. More serious bleeding and puncture of the colon are possible complications, but they are very uncommon.

## Colonoscopy

For this test, the doctor looks at the entire length of the colon and rectum with a colonoscope, a thin, flexible, lighted tube with a small video camera on the end. It's basically a longer version of a sigmoidoscope. It's put in through the anus and into the rectum and colon. Special instruments

can be passed through the colonoscope to biopsy (sample) or remove any suspicious-looking areas such as polyps, if needed.

Colonoscopy may be done in a hospital outpatient department, in a clinic, or in a doctor's office.

**Before the test:** Be sure your doctor knows about any medicines you are taking. You might need to change how you take them before the test. The colon and rectum must be empty and clean so your doctor can see their inner linings during the test. This can be done many ways, but the most common involves drinking large amounts of a liquid laxative the evening before and the morning of the procedure. This leads to spending a lot of time in the bathroom.

Your doctor will give you specific instructions. It's important to read these carefully a few days ahead of time, since you may need to follow a special diet for at least a day before the test and to shop for supplies and laxatives. If you're not sure about any of the instructions, call the doctor's office and go over them with the nurse.

You will probably also be told not to eat or drink anything after midnight the night before your test. If you normally take prescription medicines in the mornings, talk with your doctor or nurse about how to manage them for the day.

Because a sedative is used during the test, you'll need to arrange for someone you know to take you home from the test (not just a cab or Uber).

**During the test:** The test itself usually takes about 30 minutes, but it may take longer if a polyp is found and removed. Before it starts, you'll be given a sedating medicine (into a vein) to make you feel relaxed and sleepy during the procedure. For most people, this medicine makes them unaware of what's going on and unable to remember the procedure afterward. You'll wake up after the test is over, but might not be fully awake until later in the day.

During the test, you'll be asked to lie on your side with your knees pulled up. A drape will cover you. Your blood pressure, heart rate, and breathing rate will be monitored during and after the test.

Your doctor might insert a gloved finger into the rectum to examine it before putting in the colonoscope. The colonoscope is lubricated so it can be inserted easily into the rectum. Once in the rectum, the colonoscope is passed all the way to the beginning of the colon, called the cecum.

If you're awake, you may feel an urge to have a bowel movement when the colonoscope is inserted or pushed further up the colon. The doctor also puts air into the colon through the colonoscope to make it easier to see the lining of the colon and use the instruments to perform the test. To ease any discomfort, it may help to breathe deeply and slowly through your mouth.

The doctor will look at the inner walls of the colon as he or she slowly removes the colonoscope. If a small polyp is found, it may be removed. This is because some small polyps may become cancer over time. Removing the polyp is usually done by passing a wire loop through the

colonoscopy to cut the polyp from the wall of the colon with an electric current. The polyp is then sent to a lab to be checked to see if it has any areas that have changed into cancer.

If your doctor sees a larger polyp or tumor or anything else abnormal, a biopsy may be done. A small piece of tissue is taken out through the colonoscopy. The tissue is checked in the lab to see if it's cancer, a benign (non-cancerous) growth, or a result of inflammation.

**Possible side effects and complications:** The bowel preparation before the test is unpleasant. The test itself might be uncomfortable, but the sedative usually helps with this, and most people feel normal once the effects of the sedative wear off. Because air is pumped into the colon during the test, people sometimes feel bloated, have gas pains, or have cramping for a while after the test until the air passes out.

Some people may have low blood pressure or changes in heart rhythm due to the sedation during the test, but these are rarely serious.

If a polyp is removed or a biopsy is done during the colonoscopy, you might notice some blood in your stool for a day or 2 after the test. Serious bleeding is uncommon, but in rare cases, bleeding might need to be treated or can even be life-threatening.

Colonoscopy is a safe procedure, but in rare cases the colonoscopy can puncture the wall of the colon or rectum. This is called a *perforation*. Symptoms can include severe abdominal (belly) pain, nausea, and vomiting. This can be a major (or even life-threatening) complication, because it can lead to a serious abdominal (belly) infection. The hole may need to be repaired with surgery. Ask your doctor about the risk of this complication.

You can read more about colonoscopy and sigmoidoscopy in *Frequently Asked Questions About Colonoscopy and Sigmoidoscopy*.

## **Double-contrast barium enema (DCBE)**

This test is also called an *air-contrast barium enema* or a *barium enema with air contrast*. It may also be called a *lower GI series*. It's basically a type of x-ray test. Barium sulfate, which is a chalky liquid, and air are put into the colon and rectum to outline the inner lining. This can show abnormal areas on x-rays. If suspicious areas are seen on this test, a colonoscopy will be needed to explore them further.

**Before the test:** It's very important that the colon and rectum are empty and clean so they can be seen during the test. You'll be given specific instructions on how to prepare for the test. For example, you may be asked to clean your bowel the night before with laxatives and/or take enemas the morning of the exam. You'll probably be asked to follow a clear liquid diet for at least a day before the test. You may also be told to avoid eating or drinking dairy products the day before the test, and to not eat or drink anything after midnight on the night before the test.

**During the test:** The test takes about 30 to 45 minutes, and sedation isn't needed. You lie on a table on your side in an x-ray room. A small, flexible tube is put into your rectum, and barium sulfate is pumped in to partially fill and open up the colon and rectum. You are then turned on the x-ray table so the barium moves throughout the colon and rectum. Then air is pumped into the colon and rectum through the same tube to expand them. This might cause some cramping and discomfort, and you may feel the urge to have a bowel movement.

X-ray pictures of the lining of your colon and rectum are then taken to look for polyps or cancers. You may be asked to change positions to help move the barium and so that different views of the colon and rectum can be seen on the x-rays.

If polyps or other suspicious areas are seen on this test, you'll probably need a colonoscopy to remove them or to explore them fully.

**Possible side effects and complications:** You may have bloating or cramping after the test, and will probably feel the need to empty your bowels soon after the test is done. The barium can cause constipation for a few days, and your stool may look grey or white until all the barium is out. There's a very small risk that inflating the colon with air could injure or puncture it, but this risk is thought to be much less than with colonoscopy. Like other x-ray tests, this test also exposes you to a small amount of radiation.

## **CT colonography (virtual colonoscopy)**

This test is an advanced type of computed tomography (CT or CAT) scan of the colon and rectum. A CT scan uses x-rays to make detailed cross-sectional images of your body. Instead of taking one picture, like a regular x-ray, a CT scanner takes many pictures as it rotates around you while you lie on a table. A computer then combines these pictures into images of slices of the part of your body being studied.

For CT colonography, special computer programs create both 2-dimensional x-ray pictures and a 3-dimensional "fly-through" view of the inside of the colon and rectum, which lets the doctor look for polyps or cancer.

This test may be especially useful for some people who can't have or don't want to have more invasive tests such as colonoscopy. It can be done fairly quickly, and sedation isn't needed. But even though this test is not invasive like colonoscopy, the same type of bowel prep is needed. Also, a small, flexible tube is put in the rectum to fill the colon with air. Another possible drawback is that if polyps or other suspicious areas are seen on this test, a colonoscopy will still probably be needed to remove them or to explore them fully.

**Before the test:** It's important that the colon and rectum are emptied before this test to get the best images. You'll probably be told to follow a clear liquid diet for at least a day before the test. There are a number of ways to clean out the colon before the test. Often, the evening before the procedure, you drink large amounts of a liquid laxative solution. This often results in spending a

lot of time in the bathroom. The morning of the test, sometimes more laxatives or enemas may be needed to make sure the bowels are empty.

**During the test:** This test is done in a special room with a CT scanner. It takes about 10 minutes. You may be asked to drink a contrast solution before the test to help “tag” any stool left in the colon or rectum, which helps the doctor when looking at the test images. You’ll be asked to lie on a thin table that’s part of the CT scanner, and will have a small, flexible tube put into your rectum. Air is pumped through the tube into the colon and rectum to expand them to provide better images. The table then slides into the CT scanner, and you’ll be asked to hold your breath while the scan is done. You’ll likely have 2 scans: one while you’re lying on your back and one while you’re on your stomach. Each scan usually takes only about 10 to 15 seconds.

**Possible side effects and complications:** There are usually few side effects after this test. You may feel bloated or have cramps because of the air in the colon and rectum, but this should go away once the air passes from the body. There’s a very small risk that inflating the colon with air could injure or puncture it, but this risk is thought to be much less than with colonoscopy. Like other types of CT scans, this test also exposes you to a small amount of radiation.

## Tests that mainly find colorectal cancer

These tests look at the stool (feces) for signs of cancer. Most people find these tests easier to have than tests like colonoscopy, and these tests can often be done at home. But these tests aren’t as good at finding polyps as tests like colonoscopy. And if the result from one of these stool tests is positive (abnormal), you’ll probably still need a colonoscopy to see if you have cancer.

### **Guaiaic-based fecal occult blood test (gFOBT)**

One way to test for colorectal cancer is to look for occult (hidden) blood in stool. The idea behind this test is that blood vessels in larger colorectal polyps or cancers are often fragile and easily damaged by the passage of feces. The damaged vessels usually bleed into the feces, but only rarely is there enough bleeding for blood to be seen in the stool.

The guaiac-based fecal occult blood test (gFOBT) detects blood in the stool through a chemical reaction. This test can’t tell if the blood is from the colon or from other parts of the digestive tract (such as the stomach). If this test is positive, a colonoscopy will be needed to find the reason for the bleeding. Although blood in the stool can be from cancers or polyps, it can also have other causes, such as ulcers, hemorrhoids, diverticulosis (tiny pouches that form at weak spots in the colon wall), or inflammatory bowel disease (colitis).

Over time, this test has improved so that it’s now more likely to find colorectal cancer. The American Cancer Society recommends the more modern, “highly sensitive” versions of this test for screening.

This test is done with a kit that you can use in the privacy of your own home that allows you to check more than one stool sample. A *FOBT done during a digital rectal exam in the doctor's office (which only checks one stool sample)* is not sufficient for screening. Also, unlike some other tests (like colonoscopy), this test must be done every year.

People having this test will get a kit with instructions from their doctor's office or clinic. The kit will explain how to take stool samples at home (usually samples from 3 consecutive bowel movements are smeared onto small squares of paper). The kit is then returned to the doctor's office or medical lab (usually within 2 weeks) for testing.

**Before the test:** Some foods or drugs can affect the results, so you may be instructed to avoid the following before this test:

- Non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Advil), naproxen (Aleve), or aspirin (more than 1 adult aspirin per day), for 7 days before testing. (They can cause bleeding, which can lead to a false-positive result.) Acetaminophen (Tylenol) can be taken as needed. **Note:** People should try to avoid taking NSAIDs for minor aches. But if you take these medicines daily for heart problems or other conditions, don't stop them for this test without talking to your doctor first.
- Vitamin C in excess of 250 mg daily from either supplements or citrus fruits and juices for 3 days before testing. (This can affect the chemicals in the test and make the result negative, even if blood is present.)
- Red meats (beef, lamb, or liver) for 3 days before testing. (Components of blood in the meat may cause a positive test result.)

Some people who are given the test never do it or don't return it because they worry that something they ate may affect the test. For this reason, many doctors tell their patients it's not critical that they follow the diet restrictions. The most important thing is to get the test done.

**Collecting the samples:** Have all of your supplies ready and in one place. Supplies typically include a test kit, test cards, either a brush or wooden applicator, and a mailing envelope. The kit will give you detailed instructions on how to collect the stool samples. You can use the instructions below as a guide, but your kit instructions might be a little different. Always follow the instructions on your kit.

- You will need to collect a sample from your bowel movement. You can place a sheet of plastic wrap or paper loosely across the toilet bowl to catch the stool or you can use a dry container to collect the stool. Do not let the stool specimen mix with urine. After you get a sample, you can flush the rest of the stool down the toilet.
- Use a wooden applicator or a brush to collect a small amount of stool, and smear a thin film of it onto one of the slots in the test card or slide.

- Next, collect a sample from a different part of the same stool and smear a thin film of it onto the other slot in the test card or slide.
- Close the slots and put your name and the date on the test kit. Store the kit overnight in a paper envelope to allow it time to dry.
- Repeat the test on your next 2 bowel movements if instructed. Most tests require collecting more than one sample from different bowel movements. This helps make the results more accurate because many cancers don't bleed all of the time, and blood may not be found in all stool samples.
- Put the test kit in the mailing pouch and return it as soon as possible (but within 14 days of taking the first sample).

If this test finds blood, a colonoscopy will be needed to look for the source. It's not enough to simply repeat the gFOBT or follow up with other types of tests.

### **Fecal immunochemical test (FIT)**

The fecal immunochemical test (FIT) is also called an *immunochemical fecal occult blood test* (iFOBT). It tests for occult (hidden) blood in the stool in a different way than a guaiac-based FOBT. This test reacts to part of the human hemoglobin protein, which is found in red blood cells.

Early versions of this test were not as good at finding colorectal cancers. Highly sensitive versions, which the American Cancer Society recommends for screening, have been around for at least 10 years.

The FIT is done much like the gFOBT, but some people may find it easier because there are no drug or dietary restrictions (vitamins and foods do not affect the FIT) and collecting the sample may be easier. This test is also less likely to react to bleeding from other parts of digestive tract, such as the stomach.

Like the gFOBT, the FIT may not detect a tumor that's not bleeding, so multiple stool samples should be tested. And if the results are positive for hidden blood, a colonoscopy will be needed to investigate further. This test must be done every year.

**Collecting the samples:** Have all of your supplies ready and in one place. Supplies typically include a test kit, test cards, long brushes, waste bags, and a mailing envelope. The kit will give you detailed instructions on how to collect the samples. You can use the instructions below as a guide, but the instructions on your kit might be a little different. Always follow the instructions on your kit.

- Flush the toilet before your bowel movement. After you go, put used toilet paper in the waste bag from the kit, not in the toilet.

- Brush the surface of the stool with one of the brushes, then dip the brush in the toilet water. Dab the end of the brush onto one of the slots in the test card or slide.
- Close the slot and put your name and the date on the test kit.
- Repeat the test on your next bowel movement if instructed. Most tests require collecting more than one sample from different bowel movements. This makes the results more accurate because many cancers don't bleed all of the time, and blood may not be found in all stool samples.
- Put the test kit in the mailing envelope provided and return it as soon as possible (but within 14 days of taking the first sample).

## **Stool DNA test**

A stool DNA test looks for certain abnormal sections of DNA (genetic material) from cancer or polyp cells. Colorectal cancer cells often have DNA mutations (changes) in certain genes. Cells from colorectal cancers or polyps with these mutations often get into the stool, where tests may be able to detect them. Cologuard<sup>®</sup>, the test currently available, also tests for blood in the stool.

**Collecting the samples:** You'll get a kit in the mail to use to collect your stool samples. It will have a sample container, a bracket for holding the container in the toilet, a bottle of liquid preservative, a tube, labels, and a shipping box. The kit contains detailed instructions on how to collect the samples. You can use the instructions below as a guide.

- Put the bracket under the toilet seat and then put the toilet seat down.
- Take the lid off the sample container and place the container in the bracket (in the toilet).
- Sit on the toilet and try to have a bowel movement into the container. Try to keep urine from going in the container.
- When your bowel movement is complete, stand up and remove the container from the toilet (you can discard the bracket). Do not put toilet paper in the container.
- Remove the cap from the tube that was included in the kit and pull the probe (like a stick) from the tube.
- Scrape the stool in the container with the probe so that stool gets on the end.
- Put the probe back in the tube and screw the cap shut.
- Open the bottle of liquid preservative and pour all of the liquid over the stool in the container.
- Put the lid on the sample container and screw it down tight.

- Label the samples and return them according to the instructions in the kit. The samples should be returned within a day of collection.

## What are some of the pros and cons of these screening tests?

<b>Test</b>	<b>Pros</b>	<b>Cons</b>
Flexible sigmoidoscopy	Fairly quick and safe Usually doesn't require full bowel prep Sedation usually not used Does not require a specialist Done every 5 years	Looks at only about a third of the colon Can miss small polyps Can't remove all polyps May be some discomfort Very small risk of bleeding, infection, or bowel tear Colonoscopy will be needed if abnormal
Colonoscopy	Can usually look at the entire colon Can biopsy and remove polyps Done every 10 years Can help find some other diseases	Can miss small polyps Full bowel prep needed Costs more on a one-time basis than other forms of testing Sedation is usually needed You will need someone to drive you home You may miss a day of work Small risk of bleeding, bowel tears, or infection
Double-contrast barium enema (DCBE)	Can usually see the entire colon Relatively safe Done every 5 years No sedation needed	Can miss small polyps Full bowel prep needed Some false positive test results Can't remove polyps during testing Colonoscopy will be needed if abnormal
CT colonography (virtual colonoscopy)	Fairly quick and safe Can usually see the entire colon Done every 5 years No sedation needed	Can miss small polyps Full bowel prep needed Some false positive test results Can't remove polyps during testing Colonoscopy will be needed if abnormal Still fairly new – may be insurance issues
Guaiac-based fecal occult blood test (gFOBT)	No direct risk to the colon No bowel prep	Can miss many polyps and some cancers Can produce false-positive test results

	Sampling done at home Inexpensive	Pre-test diet changes are needed Needs to be done every year Colonoscopy will be needed if abnormal
Fecal immunochemical test (FIT)	No direct risk to the colon No bowel prep No pre-test diet changes Sampling done at home Fairly inexpensive	Can miss many polyps and some cancers Can produce false-positive test results Needs to be done every year Colonoscopy will be needed if abnormal
Stool DNA test	No direct risk to the colon No bowel prep No pre-test diet changes Sampling done at home	Can miss many polyps and some cancers Can produce false-positive test results Should be done every 3 years Colonoscopy will be needed if abnormal Still fairly new – may be insurance issues

## American Cancer Society recommendations for colorectal cancer early detection

### People at average risk

The American Cancer Society believes that preventing colorectal cancer (and not just finding it early) should be a major reason for getting tested. Having polyps found and removed keeps some people from getting colorectal cancer. Tests that have the best chance of finding both polyps and cancer are preferred if these tests are available to you and you are willing to have them.

Starting at age 50, men and women at *average risk* for developing colorectal cancer should use one of the screening tests below:

### Tests that find polyps and cancer

- Flexible sigmoidoscopy every 5 years\*
- Colonoscopy every 10 years
- Double-contrast barium enema every 5 years\*
- CT colonography (virtual colonoscopy) every 5 years\*

## Tests that mainly find cancer

- Guaiac-based fecal occult blood test (gFOBT) every year\*\*\*
- Fecal immunochemical test (FIT) every year\*\*\*
- Stool DNA test every 3 years\*

*\*Colonoscopy should be done if test results are positive.*

*\*\* Highly sensitive versions of these tests should be used with the take-home multiple sample method. A gFOBT or FIT done during a digital rectal exam in the doctor's office is not enough for screening.*

## Is a rectal exam enough to screen for colorectal cancer?

In a digital rectal examination (DRE), a health care provider examines your rectum with a lubricated, gloved finger. Although a DRE is often included as part of a routine physical exam, it's not recommended as a stand-alone test for colorectal cancer. This simple test, which is not usually painful, can find masses in the anal canal or lower rectum. But by itself, it's not a good test for detecting colorectal cancer because it only checks the lower rectum.

Doctors often find a small amount of stool in the rectum when doing a DRE. But testing this stool for blood with a gFOBT or FIT is not an acceptable way to screen for colorectal cancer. Research has shown that this type of stool exam will miss more than 90% of colon abnormalities, including most cancers.

## People at increased or high risk

If you are at an increased or high risk of colorectal cancer, you might need to start colorectal cancer screening before age 50 and/or be screened more often. The following conditions make your risk higher than average:

- A personal history of colorectal cancer or adenomatous polyps
- A personal history of inflammatory bowel disease (ulcerative colitis or Crohn's disease)
- A strong family history of colorectal cancer or polyps (see Colorectal cancer risk factors)
- A known family history of a hereditary colorectal cancer syndrome such as familial adenomatous polyposis (FAP) or Lynch syndrome (hereditary non-polyposis colon cancer or HNPCC)

The table below suggests screening guidelines for people with *increased or high risk* of colorectal cancer based on specific risk factors. Some people may have more than one risk factor. Refer to the table below and discuss these recommendations with your health care provider. Your provider can suggest the best screening option for you, as well as any changes in

the schedule based on your individual risk.

**American Cancer Society Guidelines on Screening and Surveillance for the Early Detection of Colorectal Adenomas and Cancer in People at Increased Risk or High Risk**

**INCREASED RISK – People who have a history of polyps on prior colonoscopy**

<b>Risk category</b>	<b>When to test</b>	<b>Recommended test(s)</b>	<b>Comment</b>
People with small rectal hyperplastic polyps	Same age as those at average risk	Colonoscopy, or other screening options at same intervals as for those at average risk	Those with hyperplastic polyposis syndrome are at increased risk for adenomatous polyps and cancer and should have more intensive follow-up.
People with 1 or 2 small (less than 1 cm) tubular adenomas with low-grade dysplasia	5 to 10 years after the polyps are removed	Colonoscopy	Time between tests should be based on other factors such as prior colonoscopy findings, family history, and patient and doctor preferences.
People with 3 to 10 adenomas, or a large (at least 1 cm) adenoma, or any adenomas with high-grade dysplasia or villous features	3 years after the polyps are removed	Colonoscopy	Adenomas must have been completely removed. If colonoscopy is normal or shows only 1 or 2 small tubular adenomas with low-grade dysplasia, future colonoscopies can be done every 5 years.
People with more than 10 adenomas on a single exam	Within 3 years after the polyps are removed	Colonoscopy	Doctor should consider possible genetic syndrome (such as FAP or Lynch syndrome).
People with sessile adenomas that are removed in pieces	2 to 6 months after adenoma removal	Colonoscopy	If entire adenoma has been removed, further testing should be based on doctor's judgment.

<b>INCREASED RISK – People who have had colorectal cancer</b>			
<b>Risk category</b>	<b>When to test</b>	<b>Recommended test(s)</b>	<b>Comment</b>
People diagnosed with colon or rectal cancer	At time of colorectal surgery, or can be 3 to 6 months later if person doesn't have cancer spread that can't be removed	Colonoscopy to look at the entire colon and remove all polyps	If the tumor presses on the colon/rectum and prevents colonoscopy, CT colonoscopy (with IV contrast) or DCBE may be done to look at the rest of the colon.
People who have had colon or rectal cancer removed by surgery	Within 1 year after cancer resection (or 1 year after colonoscopy to make sure the rest of the colon/rectum was clear)	Colonoscopy	If normal, repeat in 3 years. If normal then, repeat test every 5 years. Time between tests may be shorter if polyps are found or there's reason to suspect Lynch syndrome. After low anterior resection for rectal cancer, exams of the rectum may be done every 3 to 6 months for the first 2 to 3 years to look for signs of recurrence.
<b>INCREASED RISK – People with a family history</b>			
<b>Risk Category</b>	<b>Age to start testing</b>	<b>Recommended test(s)</b>	<b>Comment</b>
Colorectal cancer or adenomatous polyps in any first-degree relative before age 60, or in 2 or more first-degree relatives at any age (if not a hereditary syndrome).	Age 40, or 10 years before the youngest case in the immediate family, whichever is earlier	Colonoscopy	Every 5 years.
Colorectal cancer or adenomatous polyps in any first-degree	Age 40	Same options as for those at	Same intervals as for those at average risk.

relative aged 60 or older, or in at least 2 second-degree relatives at any age		average risk.	
--	--	---------------	--

<b>HIGH RISK</b>			
<b>Risk category</b>	<b>Age to start testing</b>	<b>Recommended test(s)</b>	<b>Comment</b>
Familial adenomatous polyposis (FAP) diagnosed by genetic testing, or suspected FAP without genetic testing	Age 10 to 12	Yearly flexible sigmoidoscopy to look for signs of FAP; counseling to consider genetic testing if it hasn't been done	If genetic test is positive, removal of colon (colectomy) should be considered.
Lynch syndrome (hereditary non-polyposis colon cancer or HNPCC), or at increased risk of Lynch syndrome based on family history without genetic testing	Age 20 to 25 years, or 10 years before the youngest case in the immediate family	Colonoscopy every 1 to 2 years; counseling to consider genetic testing if it hasn't been done	Genetic testing should be offered to first-degree relatives of people found to have Lynch syndrome mutations by genetic tests. It should also be offered if 1 of the first 3 of the modified Bethesda criteria is met.*
Inflammatory bowel disease: -Chronic ulcerative colitis -Crohn's disease	Cancer risk begins to be significant 8 years after the onset of pancolitis (involvement of entire large intestine), or 12-15 years after the onset of left-sided colitis	Colonoscopy every 1 to 2 years with biopsies for dysplasia	These people are best referred to a center with experience in the surveillance and management of inflammatory bowel disease.

\*The Bethesda criteria can be found in "Genetic testing, screening, and prevention for people with a strong family history of colorectal cancer."

# Colorectal cancer screening: Insurance coverage

The American Cancer Society believes that all people should have access to cancer screenings, without regard to health insurance coverage. Limitations on coverage should not keep someone from the benefits of early detection of cancer. The Society supports policies that give all people access to and coverage of early detection tests for cancer. Such policies should be age- and risk-appropriate and based on current scientific evidence as outlined in the American Cancer Society's early detection guidelines.

## Federal law

Coverage of colorectal cancer screening tests is required by the Affordable Care Act (ACA), but the ACA doesn't apply to health plans that were in place before it was passed (called "grandfathered plans"). You can find out your insurance plan's grandfathered status by contacting your health insurance company or your employer's human resources department. If your plan started on or after September 23, 2010, it must cover colonoscopies and other colorectal cancer screening tests. If a plan started before September 23, 2010, it may still have coverage requirements from state laws, which vary, and other federal laws.

## Private health insurance coverage for colorectal cancer screening

The Affordable Care Act requires health plans that started on or after September 23, 2010 to cover colorectal cancer screening tests.

Although many private insurance plans cover the costs for colonoscopy as a screening test, you still might be charged for some services. You may have to pay part of the costs of anesthesia, the bowel prep kit, pathology costs, and a facility fee (where the procedure is done). Review your health insurance plan for specific details, including if your doctor is on your insurance company's list of "in-network" providers. If the doctor is not in the plan's network, you may have to pay more out-of-pocket.

Colonoscopies that are done to evaluate specific problems, such as belly (abdominal) pain, intestinal bleeding, or low red blood cell counts (anemia), are usually classified as **diagnostic** – and **not screening** – procedures. If that's the case, you may have to pay any required deductible and co-pay. The same is true if colonoscopy is done after a positive stool test (such as the gFOBT or FIT) or an abnormal double-contrast barium enema or CT colonography. Some insurance plans also consider a colonoscopy diagnostic if something is found (like a polyp) during the procedure that needs to be removed or biopsied.

Before you get a screening colonoscopy, ask your insurance company how much (if anything) you should expect to pay for it. Find out if this amount could change based on what's found

during the test. This can help you avoid surprise costs. If you do have large bills afterward, you may be able to appeal the insurance company's decision.

## Medicare coverage for colorectal cancer screening

Medicare covers an initial preventive physical exam for all new Medicare beneficiaries. It must be done within one year of enrolling in Medicare. The "Welcome to Medicare" physical includes referrals for preventive services already covered under Medicare, including colon cancer screening tests.

If you've had Medicare Part B for longer than 12 months, a yearly "wellness" visit is covered without any cost. This visit is used to develop or update a personalized prevention plan to prevent disease and disability. Your provider should discuss a screening schedule (like a checklist) with you for preventive services you should have, including colon cancer screening.

### What colorectal cancer screening tests does Medicare cover?

**Fecal occult blood test (FOBT) or fecal immunochemical test (FIT)** every year for all Medicare beneficiaries 50 years and older.

**Stool DNA test (Cologuard)** every 3 years for Medicare beneficiaries 50 to 85 years old who do not have symptoms of colorectal cancer and who do not have an increased risk of colorectal cancer.

**Flexible sigmoidoscopy** every 4 years for those 50 years and older, but not within 10 years of a previous colonoscopy.

### Colonoscopy

- Every 2 years for those at high risk (regardless of age)
- Every 10 years for those who are at average risk
- 4 years after a flexible sigmoidoscopy for those who are at average risk

**Double-contrast barium enema** if a doctor determines that its screening value is equal to or better than flexible sigmoidoscopy or colonoscopy:

- Once every 2 years for those 50 years and older who are at high risk
- Once every 4 years for those 50 years and older who are at average risk

At this time, Medicare does not cover the cost of **virtual colonoscopy** (CT colonography).

If you have questions about your costs, including deductibles or co-pays, it's best to speak with your insurance company.

## What would a Medicare beneficiary expect to pay for a colorectal cancer screening test?

- **FOBT/FIT:** Covered at no cost\* for those age 50 years or older (no co-insurance or Part B deductible).
- **Stool DNA test (Cologuard):** Covered at no cost\* for those age 50 to 85 as long as they are not at increased risk of colorectal cancer and don't have symptoms of colorectal cancer (no co-insurance or Part B deductible).
- **Flexible sigmoidoscopy:** Covered at no cost\* for those age 50 or older (no co-insurance, co-payment, or Part B deductible) when the test is done for screening. If the test results in the biopsy or removal of a growth, it's no longer a "screening" test, and you will be charged co-insurance and/or a co-pay (although your deductible is waived).
- **Colonoscopy:** Covered at no cost\* at any age (no co-insurance, co-payment, or Part B deductible) when the test is done for screening. If the test results in the biopsy or removal of a growth it's no longer a "screening" test, and you will be charged co-insurance and/or a co-pay (although you still don't have to pay the deductible).
- **Double-contrast barium enema:** Beneficiary pays 20% of the Medicare approved amount for the doctor services. If the test is done in an outpatient hospital department or ambulatory surgical center, the beneficiary also pays the hospital co-payment.

If you're getting a screening colonoscopy, be sure to find out how much you might have to pay for it. This can help you avoid surprise costs. Patients may still have to pay for the bowel prep kit, anesthesia or sedation, pathology costs, and facility fee. Patients may get one or more bills for different parts of the procedure from different practices and hospital providers. Tests including colonoscopy are not classified by Medicare as screening procedures if they are done to evaluate specific problems, such as belly (abdominal) pain, intestinal bleeding, or low red blood cell counts (anemia). If you are getting a test for such a reason, you may have to pay the usual deductible and co-pay.

*\*This service is covered at no cost as long as the doctor accepts assignment (the amount Medicare pays as the full payment). Doctors that do not accept assignment are required to tell you up front.*

## Medicaid coverage for colorectal cancer screening

States are authorized to cover colorectal screening under their Medicaid programs. But unlike Medicare, there's no federal assurance that all state Medicaid programs must cover colorectal cancer screening in people without symptoms. Medicaid coverage for colorectal cancer screening varies by state. Some states cover fecal occult blood testing (FOBT), while others cover colorectal cancer screening if a doctor determines the test to be medically necessary. In some states, coverage varies according to which Medicaid managed care plan a person is enrolled in.

# Additional resources

## More information from your American Cancer Society

We have a lot more information that you might find helpful. Explore [www.cancer.org](http://www.cancer.org) or call our National Cancer Information Center toll-free number, 1-800-227-2345. We're here to help you any time, day or night.

## Other national organizations and websites\*

Along with the American Cancer Society, other sources of information and support include:

### **American College of Gastroenterology**

Website: [www.acg.gi.org](http://www.acg.gi.org)

### **American Gastroenterological Association**

Website: [www.gastro.org](http://www.gastro.org)

### **American Society of Colon and Rectal Surgeons**

Website: [www.fascrs.org](http://www.fascrs.org)

### **C3: Colorectal Cancer Coalition**

Toll-free number: 1-877-427-2111 (1-877-4CRC-111)

Website: [www.fightcolorectalcancer.org](http://www.fightcolorectalcancer.org)

### **Centers for Medicare & Medicaid Services**

Toll-free number: 1-800-633-4227 (1-800-MEDICARE)

Website: [www.cms.hhs.gov](http://www.cms.hhs.gov)

### **Colon Cancer Alliance**

Toll-free number: 1-877-422-2030

Website: [www.ccalliance.org](http://www.ccalliance.org)

### **National Colorectal Cancer Research Alliance**

Website: [www.eifoundation.org/programs/eifs-national-colorectal-cancer-research-alliance](http://www.eifoundation.org/programs/eifs-national-colorectal-cancer-research-alliance)

*\*Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at **1-800-227-2345** or visit [www.cancer.org](http://www.cancer.org).

# References: Colorectal cancer prevention and early detection

American Cancer Society. *Cancer Facts & Figures 2016*. Atlanta, Ga: American Cancer Society; 2016.

American Cancer Society. *Colorectal Cancer Facts & Figures 2014-2016*. Atlanta, Ga: American Cancer Society; 2014.

American Cancer Society. Detailed Guide: Colon and Rectum Cancer. 2016. Accessed at [www.cancer.org/Cancer/ColonandRectumCancer/DetailedGuide/index](http://www.cancer.org/Cancer/ColonandRectumCancer/DetailedGuide/index).

Aune D, Chan DS, Lau R, et al. Dietary fibre, whole grains, and risk of colorectal cancer: Systematic review and dose-response meta-analysis of prospective studies. *BMJ*. 2011;343:d6617.

Frazier AL, Colditz GA, Fuchs CS, Kuntz KM. Cost-effectiveness of screening for colorectal cancer in the general population. *JAMA*. 2000;284:1954-1961.

Hawk ET, Levin B. Colorectal cancer prevention. *J Clin Oncol*. 2005;23:378-388.

Hendriks YM, deJong AE, Morreau H, et al. Diagnostic approach and management of Lynch syndrome (hereditary nonpolyposis colorectal carcinoma): A guide for clinicians. *CA Cancer J Clin*. 2006;56:213-225.

Kelloff GJ, Schilsky RL, Alberts DS, et al. Colorectal adenomas: A prototype for the use of surrogate end points in the development of cancer prevention drugs. *Clin Cancer Res*. 2004;10:3908-3918.

Kushi LH, Doyle C, McCullough M, et al. American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: Reducing the risk of cancer with healthy food choices and physical activity. *CA Cancer J Clin*. 2012;62:30-67.

Levin B, Lieberman DA, McFarland, et al. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: A joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *CA Cancer J Clin*. 2008;58:130-160.

National Cancer Institute. Physician Data Query (PDQ). Colorectal Cancer Screening. 2015. Accessed at [www.cancer.gov/types/colorectal/hp/colorectal-screening-pdq](http://www.cancer.gov/types/colorectal/hp/colorectal-screening-pdq) on October 7, 2015.

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Colorectal. V.1.2015. Accessed at [www.nccn.org/professionals/physician\\_gls/pdf/genetics\\_colon.pdf](http://www.nccn.org/professionals/physician_gls/pdf/genetics_colon.pdf) on October 5, 2015.

Medicare.gov. Your Medicare Coverage: Colorectal Cancer Screening. Accessed at [www.medicare.gov/coverage/colorectal-cancer-screenings.html](http://www.medicare.gov/coverage/colorectal-cancer-screenings.html) on October 7, 2015.

Rex DK, Kaho CJ, Levin B, et al. Guidelines for colonoscopy surveillance after cancer resection: A consensus update by the American Cancer Society and US Multi-Society Task Force on Colorectal Cancer. *CA Cancer J Clin.* 2006;56:160-167.

Winawer, SJ, Zauber AG, Fletcher RH, et al. Guidelines for colonoscopy surveillance after polypectomy: A consensus update by the US Multi-Society Task Force on Colorectal Cancer and the American Cancer Society. *CA Cancer J Clin.* 2006;56:143-159.

**Last Medical Review: 10/15/2014**

**Last Revised: 2/1/2016**

**2014 Copyright American Cancer Society**

For additional assistance please contact your American Cancer Society  
1-800-227-2345 or [www.cancer.org](http://www.cancer.org)