

Crohn's Disease

National Digestive Diseases Information Clearinghouse



National Institute of
Diabetes and Digestive
and Kidney Diseases

What is Crohn's disease?

Crohn's disease is a chronic, or long lasting, disease that causes inflammation—irritation or swelling—in the gastrointestinal (GI) tract. Most commonly, Crohn's affects the small intestine and the beginning of the large intestine. However, the disease can affect any part of the GI tract, from the mouth to the anus.

Crohn's disease is a chronic inflammatory disease of the GI tract, called inflammatory bowel disease (IBD). Ulcerative colitis and microscopic colitis are the other common IBDs. Read more in *Ulcerative Colitis* and *Microscopic Colitis: Collagenous Colitis and Lymphocytic Colitis* at www.digestive.niddk.nih.gov/ddiseases/topics/IBD.aspx.

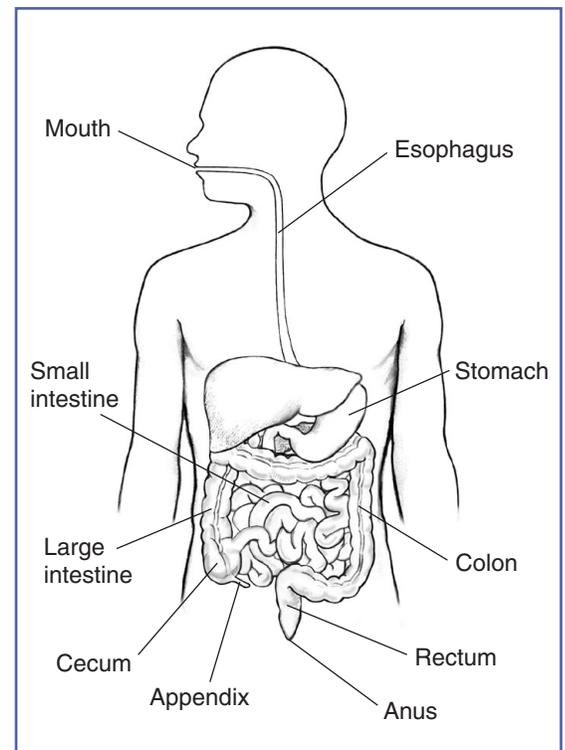
Crohn's disease most often begins gradually and can become worse over time. Most people have periods of remission—times when symptoms disappear—that can last for weeks or years.

Some people with Crohn's disease receive care from a gastroenterologist, a doctor who specializes in digestive diseases.

What is the gastrointestinal tract?

The GI tract is a series of hollow organs joined in a long, twisting tube from the mouth to the anus—a 1-inch-long opening through which stool leaves the body. The body digests food using the movement of muscles in the

GI tract, along with the release of hormones and enzymes. Organs that make up the GI tract are the mouth, esophagus, stomach, small intestine, large intestine—which includes the appendix, cecum, colon, and rectum—and anus. The last part of the GI tract—called the lower GI tract—consists of the large intestine and anus. The intestines are sometimes called the bowel.



The GI tract

What causes Crohn's disease?

The exact cause of Crohn's disease is unknown. Researchers believe the following factors may play a role in causing Crohn's disease:

- autoimmune reaction
- genes
- environment

Autoimmune reaction. Scientists believe one cause of Crohn's disease may be an autoimmune reaction—when a person's immune system attacks healthy cells in the body by mistake. Normally, the immune system protects the body from infection by identifying and destroying bacteria, viruses, and other potentially harmful foreign substances. Researchers believe bacteria or viruses can mistakenly trigger the immune system to attack the inner lining of the intestines. This immune system response causes the inflammation, leading to symptoms.

Genes. Crohn's disease sometimes runs in families. Research has shown that people who have a parent or sibling with Crohn's disease may be more likely to develop the disease. Researchers continue to study the link between genes and Crohn's disease.

Environment. Some studies suggest that certain things in the environment may increase the chance of a person getting Crohn's disease, although the overall chance is low. Nonsteroidal

anti-inflammatory drugs,¹ antibiotics,² and oral contraceptives² may slightly increase the chance of developing Crohn's disease. A high-fat diet may also slightly increase the chance of getting Crohn's disease.³

Some people incorrectly believe that eating certain foods, stress, or emotional distress can cause Crohn's disease. Emotional distress and eating certain foods do not cause Crohn's disease. Sometimes the stress of living with Crohn's disease can make symptoms worse. Also, some people may find that certain foods can trigger or worsen their symptoms.

Who is more likely to develop Crohn's disease?

Crohn's disease can occur in people of any age. However, it is more likely to develop in people

- between the ages of 20 and 29⁴
- who have a family member, most often a sibling or parent, with IBD
- who smoke cigarettes

¹Ananthakrishnan AN, Higuchi LM, Huang ES, et al. Aspirin, nonsteroidal anti-inflammatory drug use, and risk for Crohn's disease and ulcerative colitis: a cohort study. *Annals of Internal Medicine*. 2012;156(5):350–359.

²Ko Y, Butcher R, Leong RW. Epidemiological studies of migration and environmental risk factors in the inflammatory bowel diseases. *World Journal of Gastroenterology*. 2014;20(5):1238–1247.

³Hou JK, Abraham B, El-Serag H. Dietary intake and risk of developing inflammatory bowel disease: a systematic review of the literature. *American Journal of Gastroenterology*. 2011;106(4):563–573.

⁴Molodecky NA, Soon IS, Rabi DM, et al. Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review. *Gastroenterology*. 2012;142(1):46–54.

What are the signs and symptoms of Crohn's disease?

The most common signs and symptoms of Crohn's disease are

- diarrhea
- abdominal cramping and pain
- weight loss

Other general signs and symptoms include

- feeling tired
- nausea or loss of appetite
- fever
- anemia—a condition in which the body has fewer red blood cells than normal

Signs and symptoms of inflammation outside of the intestines include

- joint pain or soreness
- eye irritation
- skin changes that involve red, tender bumps under the skin

The symptoms a person experiences can vary depending on the severity of the inflammation and where it occurs.

How is Crohn's disease diagnosed?

A health care provider diagnoses Crohn's disease with the following:

- medical and family history
- physical exam
- lab tests
- upper GI series
- computerized tomography (CT) scan
- intestinal endoscopy

The health care provider may perform a series of medical tests to rule out other bowel diseases, such as irritable bowel syndrome, ulcerative colitis, or celiac disease, that cause symptoms similar to those of Crohn's disease. Read more about these conditions at www.digestive.niddk.nih.gov.

Medical and Family History

Taking a medical and family history can help a health care provider diagnose Crohn's disease and understand a patient's symptoms. He or she will ask the patient to describe his or her

- family history
- symptoms
- current and past medical conditions
- current medications

Physical Exam

A physical exam may help diagnose Crohn's disease. During a physical exam, the health care provider most often

- checks for abdominal distension, or swelling
- listens to sounds within the abdomen using a stethoscope
- taps on the abdomen to check for tenderness and pain and establish if the liver or spleen is abnormal or enlarged

Lab Tests

A health care provider may order lab tests, including blood and stool tests.

Blood tests. A blood test involves drawing blood at a health care provider's office or a lab. A lab technologist will analyze the blood sample. A health care provider may use blood tests to look for changes in

- red blood cells. When red blood cells are fewer or smaller than normal, a patient may have anemia.
- white blood cells. When the white blood cell count is higher than normal, a person may have inflammation or infection somewhere in his or her body.

Stool tests. A stool test is the analysis of a sample of stool. A health care provider will give the patient a container for catching and storing the stool at home. The patient returns the sample to the health care provider or to a lab. A lab technologist will analyze the stool sample. Health care providers commonly order stool tests to rule out other causes of GI diseases.

Upper Gastrointestinal Series

An upper GI series, also called a barium swallow, uses x-rays and fluoroscopy to help diagnose problems of the upper GI tract. Fluoroscopy is a form of x-ray that makes it possible to see the internal organs and their motion on a video monitor. An x-ray technician performs this test at a hospital or an outpatient center, and a radiologist—a doctor who specializes in medical imaging—interprets the images.

This test does not require anesthesia. A patient should not eat or drink before the procedure, as directed by the health care provider. Patients should ask their health care provider about how to prepare for an upper GI series.

During the procedure, the patient will stand or sit in front of an x-ray machine and drink barium, a chalky liquid. Barium coats the esophagus, stomach, and small intestine so the radiologist and a health care provider can see the shape of these organs more clearly on x-rays.

A patient may experience bloating and nausea for a short time after the test. For several days afterward, barium liquid in the GI tract causes white or light-colored stools. A health care provider will give the patient specific instructions about eating and drinking after the test.

Computerized Tomography Scan

Computerized tomography scans use a combination of x-rays and computer technology to create images. For a CT scan, a health care provider may give the patient a solution to drink and an injection of a special dye, called contrast medium. CT scans require the patient to lie on a table that slides into a tunnel-shaped device where the x-rays are taken. An x-ray technician performs the procedure in an outpatient center or a hospital, and a radiologist interprets the images. The patient does not need anesthesia. CT scans can diagnose both Crohn's disease and the complications seen with the disease.

Intestinal Endoscopy

Intestinal endoscopies are the most accurate methods for diagnosing Crohn's disease and ruling out other possible conditions, such as ulcerative colitis, diverticular disease, or cancer. Intestinal endoscopies include

- upper GI endoscopy and enteroscopy
- capsule endoscopy
- colonoscopy

Upper GI endoscopy and enteroscopy. An upper GI endoscopy is a procedure that uses an endoscope—a small, flexible tube with a light—to directly visualize the lining of the upper GI tract. A health care provider performs the procedure at a hospital or an outpatient center. A nurse or technician may give the patient a liquid anesthetic to gargle or will spray the anesthetic on the back of a patient's throat. The anesthetic numbs the throat and calms the gag reflex. The nurse or technician will then place an intravenous (IV) needle in the person's arm or hand to provide a sedative. The health care provider carefully feeds the endoscope down the patient's esophagus and into the stomach. A small camera on the endoscope sends a video image to a monitor, allowing close examination of the GI tract.

During an enteroscopy, the health care provider examines the small intestine with a special, longer endoscope. The health care provider carefully feeds the endoscope into the small intestine using one of the following procedures:

- push enteroscopy, which uses a long endoscope to examine the upper portion of the small intestine
- single- or double-balloon enteroscopy, which use small balloons to help move the endoscope into the small intestine
- spiral enteroscopy, which uses a tube attached to an endoscope that acts as a cork screw to move the instrument into the small intestine

The procedure most often takes between 15 and 60 minutes. The endoscope does not interfere with the patient's breathing, and many patients fall asleep during the procedure.

Capsule endoscopy. Although this procedure can examine the entire digestive tract, health care providers use it mostly to examine the small intestine. The patient swallows a capsule containing a tiny camera. As the capsule passes through the GI tract, the camera will record and transmit images to a small receiver device worn by the patient. When the recording is done, the health care provider downloads the images and reviews

them on a video monitor. The camera capsule leaves the patient's body during a bowel movement and is safely flushed down the toilet.

Colonoscopy. Colonoscopy is a test that uses a long, flexible, narrow tube with a light and tiny camera on one end, called a colonoscope or scope, to look inside a patient's rectum and entire colon. In most cases, light anesthesia and pain medication help patients relax for the test. The medical staff will monitor a patient's vital signs and try to make him or her as comfortable as possible. A nurse or technician will place an IV needle in a vein in the patient's arm or hand to give anesthesia.

For the test, the patient will lie on a table or stretcher while the gastroenterologist inserts a colonoscope into the patient's anus and slowly guides it through the rectum and into the colon. The scope inflates the large intestine with air to give the gastroenterologist a better view. The camera sends a video image of the intestinal lining to a monitor, allowing the gastroenterologist to examine the tissues lining the colon and rectum. The gastroenterologist may move the patient several times and adjust the scope for better viewing. Once the scope has reached the opening to the small intestine, the gastroenterologist slowly withdraws it and examines the lining of the colon and rectum again.

A colonoscopy can show inflamed and swollen tissue, ulcers, and abnormal growths such as polyps—extra pieces of tissue that grow on the inner lining of the intestine. If the gastroenterologist suspects Crohn’s disease, he or she will biopsy the patient’s colon and rectum. A biopsy is a procedure that involves taking small pieces of tissue for examination with a microscope.

A health care provider will give patients written bowel prep instructions to follow at home before the test. The health care provider will also give patients information about how to care for themselves following the procedure.

How is Crohn’s disease treated?

A health care provider treats Crohn’s disease with

- medications
- bowel rest
- surgery

Which treatment a person needs depends on the severity of the disease and symptoms. Each person experiences Crohn’s disease differently, so health care providers adjust treatments to improve the person’s symptoms and induce, or bring about, remission.

Medications

While no medication cures Crohn’s disease, many can reduce symptoms. The goals of medication therapy are

- inducing and maintaining remission
- improving the person’s quality of life

Many people with Crohn’s disease require medication therapy. Health care providers will prescribe medications depending on the person’s symptoms:

- aminosalicylates
- corticosteroids
- immunomodulators
- biologic therapies
- other medications

Aminosalicylates are medications that contain 5-aminosalicylic acid (5-ASA), which helps control inflammation. Health care providers use aminosalicylates to treat people newly diagnosed with Crohn’s disease who have mild symptoms. Aminosalicylates include

- balsalazide
- mesalamine
- olsalazine
- sulfasalazine—a combination of sulfapyridine and 5-ASA

Some of the common side effects of aminosalicylates include

- abdominal pain
- diarrhea
- headaches
- heartburn
- nausea and vomiting

Corticosteroids, also known as steroids, help reduce the activity of the immune system and decrease inflammation. Health care providers prescribe corticosteroids for people with moderate to severe symptoms. Corticosteroids include

- budesonide
- hydrocortisone
- methylprednisone
- prednisone

Side effects of corticosteroids include

- acne
- a higher chance of developing infections
- bone mass loss
- high blood glucose
- high blood pressure
- mood swings
- weight gain

In most cases, health care providers do not prescribe corticosteroids for long-term use.

Immunomodulators reduce immune system activity, resulting in less inflammation in the GI tract. These medications can take several weeks to 3 months to start working. Immunomodulators include

- 6-mercaptopurine, or 6-MP
- azathioprine
- cyclosporine
- methotrexate

Health care providers prescribe these medications to help people with Crohn's disease go into remission or to help people who do not respond to other treatments. People taking these medications may have the following side effects:

- a low white blood cell count, which can lead to a higher chance of infection
- fatigue, or feeling tired
- nausea and vomiting
- pancreatitis

Health care providers most often prescribe cyclosporine only to people with severe Crohn's disease because of the medication's serious side effects. People should talk with their health care provider about the risks and benefits of cyclosporine.

Biologic therapies are medications that target a protein made by the immune system. Neutralizing this protein decreases inflammation in the intestine. Biologic therapies work quickly to bring on remission, especially in people who do not respond to other medications. Biologic therapies include

- adalimumab
- certolizumab
- infliximab
- natalizumab
- vedolizumab

Health care providers most often give patients infliximab every 6 to 8 weeks at a hospital or an outpatient center. Side effects may include a toxic reaction to the medication and a higher chance of developing infections, particularly tuberculosis.

Other medications to treat symptoms or complications may include

- acetaminophen for mild pain. People with Crohn's disease should avoid using ibuprofen, naproxen, and aspirin since these medications can make symptoms worse.
- antibiotics to prevent or treat infections and fistulas.
- loperamide to help slow or stop severe diarrhea. In most cases, people only take this medication for short periods of time since it can increase the chance of developing megacolon.

Bowel Rest

Sometimes Crohn's disease symptoms are severe and a person may need to rest his or her bowel for a few days to several weeks. Bowel rest involves drinking only clear liquids or having no oral intake. To provide the patient with nutrition, a health care provider will deliver IV nutrition through a special catheter, or tube, inserted into a vein in the patient's arm. Some patients stay in the hospital, while other patients are able to receive the treatment at home. In most cases, the intestines are able to heal during bowel rest.

Surgery

Even with medication treatments, up to 20 percent of people will need surgery to treat their Crohn's disease.¹ Although surgery will not cure Crohn's disease, it can treat complications and improve symptoms. Health care providers most often recommend surgery to treat

- fistulas
- bleeding that is life threatening
- bowel obstructions
- side effects from medications when they threaten a person's health
- symptoms when medications do not improve a person's condition

A surgeon can perform different types of operations to treat Crohn's disease:

- small bowel resection
- subtotal colectomy
- proctocolectomy and ileostomy

Patients will receive general anesthesia. Most patients will stay in the hospital for 3 to 7 days after the surgery. Full recovery may take 4 to 6 weeks.

Small bowel resection. Small bowel resection is surgery to remove part of a patient's small intestine. When a patient with Crohn's disease has a blockage or severe disease in the small intestine, a surgeon may need to remove that section of intestine. The two types of small bowel resection are

- laparoscopic—when a surgeon makes several small, half-inch incisions in the patient's abdomen. The surgeon inserts a laparoscope—a thin tube with a tiny light and video camera on the end—through the small incisions. The camera sends a magnified image from inside the body to a video monitor, giving the surgeon a close-up view of the small intestine. While watching the monitor, the surgeon inserts tools through the small incisions and removes the diseased or blocked section of small intestine. The surgeon will reconnect the ends of the intestine.
- open surgery—when a surgeon makes one incision about 6 inches long in the patient's abdomen. The surgeon will locate the diseased or blocked section of small intestine and remove or repair that section. The surgeon will reconnect the ends of the intestine.

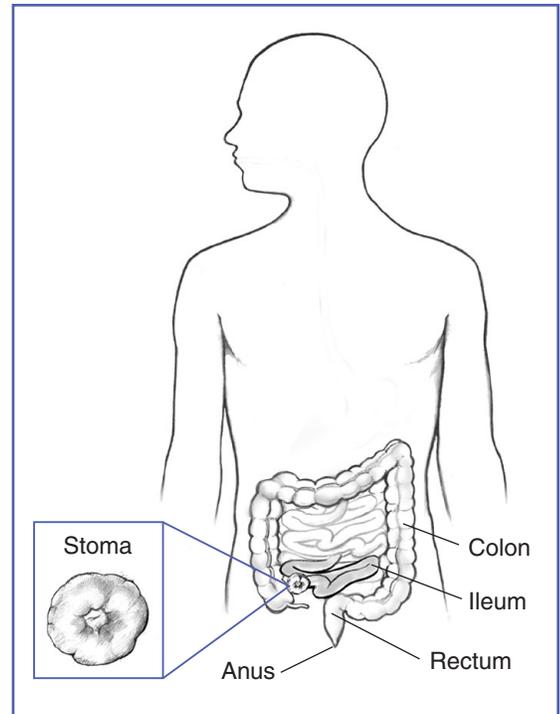
Subtotal colectomy. A subtotal colectomy, also called a large bowel resection, is surgery to remove part of a patient's large intestine. When a patient with Crohn's disease has a blockage, a fistula, or severe disease in the large intestine, a surgeon may need to remove that section of intestine. A surgeon can perform a subtotal colectomy by

- laparoscopic colectomy—when a surgeon makes several small, half-inch incisions in the abdomen. While watching the monitor, the surgeon removes the diseased or blocked section of the large intestine. The surgeon will reconnect the ends of the intestine.
- open surgery—when a surgeon makes one incision about 6 to 8 inches long in the abdomen. The surgeon will locate the diseased or blocked section of small intestine and remove that section. The surgeon will reconnect the ends of the intestine.

Proctocolectomy and ileostomy. A proctocolectomy is surgery to remove a patient's entire colon and rectum. An ileostomy is a stoma, or opening in the abdomen, that a surgeon creates from a part of the ileum—the last section of the small intestine. The surgeon brings the end of the ileum through an opening in the patient's abdomen and attaches it to the skin, creating an opening outside of the patient's body. The stoma is about three-fourths of an inch to a little less than 2 inches wide and is most often located in the lower part of the patient's abdomen, just below the beltline.

A removable external collection pouch, called an ostomy pouch or ostomy appliance, connects to the stoma and collects intestinal contents outside the patient's body. Intestinal contents pass through the stoma instead of passing through the anus. The stoma has no muscle, so it cannot control the flow of intestinal contents, and the flow occurs whenever peristalsis occurs. Peristalsis is the movement of the organ walls that propels food and liquid through the GI tract.

People who have this type of surgery will have the ileostomy for the rest of their lives.



Ileostomy

Eating, Diet, and Nutrition

Researchers have not found that eating, diet, and nutrition cause Crohn's disease symptoms. Good nutrition is important in the management of Crohn's disease, however. Dietary changes can help reduce symptoms. A health care provider may recommend that a person make dietary changes such as

- avoiding carbonated drinks
- avoiding popcorn, vegetable skins, nuts, and other high-fiber foods
- drinking more liquids
- eating smaller meals more often
- keeping a food diary to help identify troublesome foods

Health care providers may recommend nutritional supplements and vitamins for people who do not absorb enough nutrients.

To help ensure coordinated and safe care, people should discuss their use of complementary and alternative medical practices, including their use of dietary supplements and probiotics, with their health care provider. Read more at www.nccam.nih.gov/health/probiotics.

Depending on a person's symptoms or medications, a health care provider may recommend a specific diet, such as a

- high-calorie diet
- lactose-free diet
- low-fat diet
- low-fiber diet
- low-salt diet

People should speak with a health care provider about specific dietary recommendations and changes.

What are the complications of Crohn's disease?

Complications of Crohn's disease can include

- **bowel obstruction.** Crohn's disease can thicken the wall of the intestine. Over time, the thickened areas of the intestine can narrow, which can block the intestine. A partial or complete obstruction, also called a bowel blockage, can block the movement of food or stool through the intestines. A complete bowel obstruction is life threatening and requires immediate medical attention and often surgery.

- **fistulas**—abnormal passages, or tunnels, between two organs, or between an organ and the outside of the body. How a health care provider treats fistulas depends on their type and severity. For some people, fistulas heal with medication and diet changes, while other people will need to have surgery.
- **anal fissures**—small tears in the anus that may cause itching, pain, or bleeding. Most anal fissures heal with medical treatment, including ointments, warm baths, and dietary changes.
- **ulcers.** Inflammation anywhere along the GI tract can lead to ulcers or open sores in a person’s mouth, intestines, anus, and perineum—the area between the anus and the sex organs. In most cases, the treatment a health care provider prescribes for Crohn’s disease will also treat the ulcers.
- **malnutrition**—a condition that develops when the body does not get the right amount of vitamins, minerals, and nutrients it needs to maintain healthy tissues and organ function. Some people may need IV fluids or feeding tubes to replace lost nutrients and fluids.

- **inflammation in other areas of the body.** The immune system can trigger inflammation in the
 - joints
 - eyes
 - skin

Health care providers can treat inflammation by adjusting medications or prescribing new medications.

Crohn’s Disease and Colon Cancer

People with Crohn’s disease in the large intestine may be more likely to develop colon cancer. People who receive ongoing treatment and remain in remission may reduce their chances of developing colon cancer.

People with Crohn’s disease should talk with their health care provider about how often they should get screened for colon cancer. Screening can include colonoscopy with biopsies. Such screening does not reduce a person’s chances of developing colon cancer. Instead, screening can help diagnose cancer early and improve chances for recovery.

Points to Remember

- Crohn's disease is a chronic, or long lasting, disease that causes inflammation—irritation or swelling—in the gastrointestinal (GI) tract.
- The exact cause of Crohn's disease is unknown. Researchers believe that factors such as an autoimmune reaction, genes, and environment may play a role in causing Crohn's disease.
- Crohn's disease can occur in people of any age. However, it is more likely to develop in people
 - between the ages of 20 and 29
 - who have a family member, most often a sibling or parent, with inflammatory bowel disease (IBD)
 - who smoke cigarettes
- The most common signs and symptoms of Crohn's disease are diarrhea, abdominal cramping and pain, and weight loss.
- A health care provider diagnoses Crohn's disease with the following:
 - medical and family history
 - physical exam
 - lab tests
 - upper GI series
 - computerized tomography (CT) scan
 - intestinal endoscopy
- Which treatment a person needs depends on the severity of the disease and symptoms.
- Good nutrition is important in the management of Crohn's disease. A health care provider may recommend that a person make dietary changes.
- People with Crohn's disease should talk with their health care provider about how often they should get screened for colon cancer.

Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases' (NIDDK's) Division of Digestive Diseases and Nutrition conducts and supports basic and clinical research into many digestive disorders.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at www.nih.gov/health/clinicaltrials. For information about current studies, visit www.ClinicalTrials.gov.

You may also find additional information about this topic by visiting MedlinePlus at www.medlineplus.gov.

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit www.fda.gov. Consult your health care provider for more information.

For More Information

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The National Digestive Diseases Information Clearinghouse (NDDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1980, the Clearinghouse provides information about digestive diseases to people with digestive disorders and to their families, health care professionals, and the public. The NDDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about digestive diseases.

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