



# Digestive Health

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# Take control of your digestive health

Your digestive system fuels your life. It works every moment of every day converting what you ingest into energy so your heart can beat, your brain can think, your muscles can move, and you can live a productive, healthy, happy life.

Most of us take our digestive health for granted but when something goes wrong, we suffer. We feel pain. We are tired and scared. Our lives are interrupted. And sometimes, our lives are even threatened.

Digestive disorders do not discriminate. They can affect people of all ages at any time. 20 million Canadians suffer from digestive disorders every year and thousands die unnecessarily.

Lack of information, misconceptions, self-reproach, stigma, embarrassment and fear keep many Canadians from seeking the help they need. This needs to change. It is not necessary for people to suffer when up to 42 percent of digestive disease is preventable and there are safe, effective treatments available.

The Canadian Digestive Health Foundation and Rexall are joining forces to help you take control of your digestive health with confidence and optimism. This guide is just one example of how we are working together to help Canadians understand, protect and enhance their digestive health.

Please visit [www.CDHF.ca](http://www.CDHF.ca), speak to your doctor or visit a Rexall pharmacist and read on to start feeling better – today.

A handwritten signature in black ink that reads 'Richard Fedorak'. The signature is fluid and cursive, with a long horizontal stroke at the end.

Dr. Richard Fedorak  
President, Canadian Digestive Health Foundation

[www.CDHF.ca](http://www.CDHF.ca)

UNDERSTAND. TAKE CONTROL. LIVE BETTER.



## How to use this guide

Up to 42 percent of digestive disease is preventable – including many ulcers and cancers of the digestive system – but lack of information, embarrassment and fear still prevent many Canadians from undergoing the tests that can identify problems at an early, reversible stage. Even when a digestive disorder can't be prevented, timely treatment can usually control it and preserve your quality of life. On the flip side, delaying diagnosis and treatment may cause today's "bothersome" digestive ailment to progress to tomorrow's serious disease.

This guide is intended to be a "first step" in the journey toward improved digestive health. In addition to facts about digestion and digestive disease, general information about lifestyle measures to enhance digestive health, and alarm symptoms suggestive of serious problems, the guide contains concise, practical information about 15 common digestive conditions. The information is organized into brief sections that allow you to access the information you need quickly and easily.

- If you have troublesome digestive symptoms, you can look through the Overview and Symptoms sections to see if your experience suggests any of the 15 featured disorders.
- The Diagnostic Tests sections will familiarize you with the procedures used to identify certain digestive disorders.
- If you already have a diagnosis, the Managing Your Symptoms and Treatment Options sections give you a handy synopsis of proven management and treatment strategies.
- If you are interested in prevention, the Protect Yourself sections and boxes tell you how to reduce your risk.

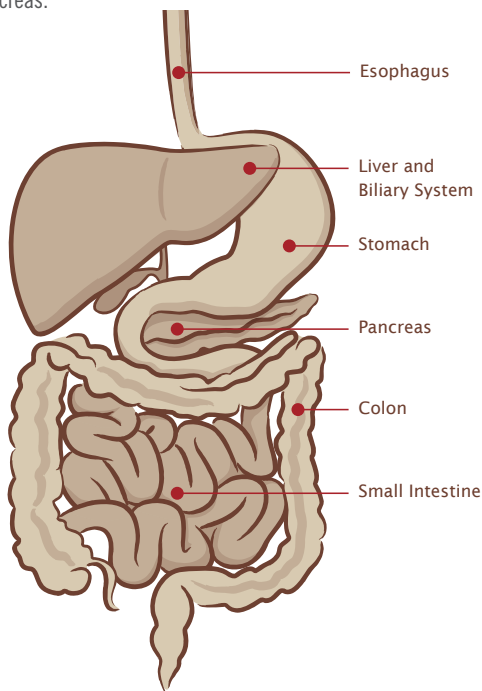
After reading the guide, take the steps you need to improve your digestive health.

### Note:

The guide has been reviewed by a panel of medical experts from the Canadian Digestive Health Foundation. However, it is not a substitute for medical advice from a qualified health professional.

# Getting to know your digestive system

Your digestive system is made up of the digestive tract – a long unbroken “tube” that extends from your mouth to your anus – and other abdominal organs that play a role in digestion such as the liver and pancreas.



The digestive system is complex and full of surprises. Did you know that:<sup>1</sup>

- Food travels about 30 feet through your body.
- Because food is propelled through your digestive tract by muscles, rather than gravity, you can digest food upside down.
- The stomach's volume can increase from about 1/5 cup (when empty) to more than 8 cups after a large meal.
- The small intestine has the approximate surface area of a tennis court.
- The average digestive tract contains 2 to 3 pounds of bacteria (both “good” and “bad” ones).
- A man weighing 150 pounds will eat about 100,000 pounds of food during his lifetime in order to sustain his weight.

When working well, the system breaks down the food we eat into nutrients the body can absorb. In humans, proteins are broken down into amino acids, starches into simple sugars, and fats into fatty acids and other small molecules. The bloodstream distributes these nutrients to the rest of the body, and waste products are passed out as feces. Depending on what you've eaten, it can take anywhere from several hours to several days to fully digest food.

## How things can go wrong

Every section of the digestive tract is prone to specific disorders – some of them a mere nuisance, others highly disruptive, and still others potentially fatal. In some cases, getting tested and diagnosed early can reduce or eliminate the need for treatment. Even if long-term treatment is required, today's treatment options and management strategies make it possible to control the symptoms of most digestive disorders – and in some cases, to prevent their progression.

The diagram below illustrates some of the factors that may contribute to digestive problems or aggravate digestive conditions that already exist. While you can't change your genes, the way you lead your life can help you manage digestive illness; your diet, for one thing. For optimal digestion, the World Gastroenterology Organization recommends eating small and frequent meals, choosing fibre-rich foods, consuming fish 3 to 5 times a week, opting for leaner meats, and lowering your intake of fried, fatty foods.<sup>2</sup>



Smoking can harm all parts of the digestive system, contributing to such common disorders as heartburn and ulcers. Smoking also increases the risk of Crohn's disease and (especially in women) appears to raise the risk of gallstones.<sup>3</sup> Consuming alcohol, meanwhile, worsens heartburn and diarrhea.<sup>4</sup>

It was once thought that stress could actually cause certain digestive disorders, such as peptic ulcers. We now know that stress doesn't cause ulcers to develop, though it can certainly worsen an existing ulcer. Increased stress can also trigger a flare in Crohn's disease, colitis, and irritable bowel syndrome (IBS).<sup>4</sup>

Certain medications may cause either transient or persistent digestive symptoms. In some cases, the symptoms can be counteracted with other drugs. Missing doses can also increase symptoms or complications of digestive disorders, so it's important to take your drugs as prescribed.<sup>4</sup>

Most people in good digestive health have a healthy weight and don't regularly experience symptoms like heartburn, gas, constipation, diarrhea, nausea or stomach pain. If you're experiencing such problems on a regular basis, learn more about what may lie behind your symptoms. If you have blood in your stool, unexplained loss of weight or appetite, or a sudden change in your bowel habits, see your doctor as soon as possible.

# You are not alone

Digestive disorders touch the lives of more than 20 million Canadians every year. Because few people speak openly about their digestive symptoms, however, the magnitude of the problem is not fully appreciated. The devastating impact of diseases such as cancer and heart disease is well known to many Canadians. What fewer people may realize is that digestive diseases have at least as great an impact on our society and its individuals.

Some digestive disorders, such as colon cancer and inflammatory bowel disease (IBD), can shorten life. On the whole, however, digestive disorders tend to have a greater impact on the quality of life than on its duration. Most digestive diseases strike people during their most productive and energetic years, severely disrupting employment, leisure activities, finances, personal relationships, and family life.

Perhaps you recognize yourself or a loved one in some of these statistics:

- About 5 million Canadians experience heartburn and/or acid reflux at least once a week.
- Irritable bowel syndrome (IBS), which also affects about 5 million Canadians, has a “severe impact” on more than 45 percent of them.
- With more than 205,000 affected people, Canada has one of the highest rates of inflammatory bowel disease (IBD) in the world.
- The number of Canadians with ulcers has increased by 50 percent since 1996.
- First-nations people are 1.5 to 2 times more likely to develop digestive disorders.
- The lag between first symptoms and diagnosis of celiac disease – intolerance to gluten – averages one year and may be as long as 12 years.
- More than 21 percent of patients with severe diarrhea experience medical complications.
- People with digestive illnesses miss an average of 13.4 days of work per year, adding up to 18 million days per year throughout the country.
- Digestive diseases account for an annual loss of \$18 billion in healthcare costs and lost productivity.
- Digestive diseases account for 10 percent of all hospitalizations.
- Almost 30,000 Canadians die of digestive disease every year.





Much of this suffering reflected in these figures could be avoided if Canadians used currently available diagnostic tests and treatments to their full extent. The lingering stigma surrounding digestive disease, however, leaves many people feeling needlessly isolated and prevents them from seeking appropriate medical attention.<sup>5</sup> We need to break down these walls so that Canadians like you can step on the path toward better digestive health and quality of life. You can start by reaching out to the Canadian Digestive Health Foundation ([www.CDHF.ca](http://www.CDHF.ca)), which empowers people to take proactive steps to manage and improve their digestive health.

## A weighty factor

The effects of obesity on heart health and diabetes risk have been widely publicized. As it turns out, obesity can also increase the risk of several digestive diseases. Research has uncovered the following links:

- Overweight/obese individuals have an increased risk for developing stomach cancer.
- Excess fat in the abdominal area may be the most important contributor to the development of gastro-esophageal reflux disease (GERD) and some of its complications (e.g., Barrett's esophagus).<sup>6</sup>
- A high body mass index (BMI) increases the risk of colorectal adenomas.<sup>6</sup>
- Obesity may increase the risk of stomach ulcers.
- Obesity increases the risk of non-alcoholic fatty liver disease.<sup>7</sup>

Fortunately, weight loss can reduce the symptoms of some gastrointestinal diseases and prevent others from progressing.



## ! Alarm symptoms

Digestive symptoms may stem from a temporary illness such as a flu, a reaction to certain medications, or a more chronic underlying condition (see table below). The following symptoms signal a problem that requires prompt medical attention:

- Diarrhea that lasts more than five days
- Unintended weight loss
- Persistent vomiting
- Black tarry stools
- Bright red blood in your stool or bloody diarrhea
- Unexplained fatigue
- Pain in the stomach area that improves or worsens when you eat
- Persistent fever
- Pain when having a bowel movement
- Localized abdominal pain
- Abdominal pain that is persistent and severe or that wakes you from sleep
- Difficulty swallowing, chest pain, feeling there is an obstruction in your throat
- Persistent heartburn that is not relieved with over-the-counter antacids

If you have these alarm symptoms, your family doctor may refer you to a gastroenterologist – a doctor who specializes in the diagnosis and treatment of diseases affecting the digestive system.

Symptom	Possible digestive disorder
Anemia	IBD, celiac disease, colon or other digestive cancer
Bloating/gas	IBS
Chest pain	GERD
Constipation	IBS, diverticular disease, colon cancer
Decreased appetite	Peptic ulcer, stomach or pancreatic cancer
Diarrhea	IBD, IBS, celiac disease, lactose intolerance
Difficulty swallowing	Complicated GERD, esophageal cancer or infection
Heartburn	GERD
Mucus in/with stool	Bowel infection, IBD, colon cancer
Nausea/vomiting	Food poisoning, ulcer disease, intestinal blockage, stomach cancer, pancreatic cancer
Rectal bleeding	Hemorrhoids, IBD, colon cancer
Stomach pains/cramps	IBD, IBS, ulcer, gallstones, pancreatitis, cancer, appendicitis, diverticular disease

IBD = inflammatory bowel disease; IBS = irritable bowel syndrome;  
GERD = gastro-esophageal reflux disease

# Constipation

## Overview

Constipation refers to difficult or infrequent bowel movements. While not everyone has a bowel movement every day, most healthy people empty their bowels between 3 times a day to 3 times a week.<sup>8</sup> Whatever your regular pattern is, that's your own "normal." You may be constipated if you have bowel movements much less frequently than is typical for you.

## Causes

Constipation can result from insufficient fibre or fluid intake, lack of physical activity, not emptying your bowels when you have the urge, regular use of laxatives, certain medications, an enlarged rectum, or impaired rectal function. Constipation is also more common in pregnant women.

## Symptoms

When stools move slowly through the digestive system, they lose more water, which causes them to become hard, dry, and difficult to pass.

## Managing Your Symptoms

Before resorting to laxatives, you can try the following measures:

- **Increase your fibre intake:** Fibre provides roughage that helps the large intestine carry away waste products. Foods high in fibre include whole grains, bran, and fresh vegetables and fruits [see page 34 for more information on fibre].
- **Increase your fluid intake:** Aim for 8-10 glasses of liquid per day (not including liquids with caffeine, alcohol, or high sugar content).
- **Increase your activity level:** Regular exercise – even walking – can stimulate bowel activity; aim for 40 minutes of aerobic activity (activity that exerts the heart and lungs), 3 to 5 times per week.
- **Listen to your body:** Promptly responding to your body's urges can normalize your bowel reflexes.

## Treatment Options

Bulking agents such as psyllium, methylcellulose or Metamucil help the stool "bulk up" and hold water, which stimulates bowel contractions. Other options include stool softeners and – only if necessary and not on a regular basis – stimulant laxatives (at the lowest effective dose). If these do not work, an osmotic laxative (which draws fluid into the bowel) may help.

Enemas are not usually necessary to relieve constipation. If you've been using laxatives and/or enemas for a long time, gradually cutting them out may give your bowel function a chance to return to normal.<sup>8</sup>



**Alarm Symptoms:** Talk to your family doctor if constipation is new and unusual for you, lasts for three or more weeks despite your best efforts to manage it, or is accompanied by pain, blood or weight loss.

# Diarrhea

## Overview

Diarrhea – or frequent, loose, watery stools – comes in two forms:

- **Acute diarrhea** is caused by infections, food intolerance, or reactions to medicine. People who visit foreign countries may contract traveller's diarrhea from food or water contaminated with bacteria, viruses, or parasites
- **Chronic diarrhea** is usually related to other digestive disorders such as irritable bowel syndrome (IBS) or inflammatory bowel disease (IBD), celiac disease, or lactose intolerance.

## Symptoms

Diarrhea is often accompanied by cramping, abdominal pain, bloating, nausea, or an urgent need to use the bathroom. Symptoms of thirst, infrequent urination, dark-colored urine, dry skin, fatigue, or light-headedness may signal dehydration.

## Diagnosis

Your doctor may ask you about your eating habits, recent use of medications, and recent travel experiences. In addition:

- **Stool cultures** can be sent to a laboratory to check for bacteria or other signs of infection.
- **Blood tests** help rule out certain diseases.
- If a food intolerance or allergy is suspected, your doctor may ask you to cut out **certain foods** in an effort to find the culprit foods.
- If the cause of your diarrhea is uncertain and it doesn't resolve itself, your doctor may send you for **imaging tests** to view your digestive tract.

## Managing Your Symptoms

Treatment of diarrhea involves replacing lost fluid and electrolytes. As water does not contain electrolytes, include broth, soups, fruit juices, soft fruits, and vegetables in your rehydration regimen. Effective over-the-counter rehydration products are available for children.

A bulking agent such as psyllium (useful for both diarrhea and constipation) can help slow down your bowel movements. You may also wish to limit or avoid foods that can aggravate diarrhea, such as caffeine, dairy products, and greasy, very sweet, or fibre-dense foods.

**Looking for clues:** If the diarrhea occurs intermittently, keep a diary of the foods you eat and your body's reactions to it. This may help identify a food intolerance or disorder (e.g., celiac disease) that would explain your diarrhea – and make the dietary changes needed to relieve it.

## Treatment Options

If the culprit behind your diarrhea is a bacterial or parasitic infection, your doctor will likely prescribe antibiotics. Some viral infections also respond to certain medications. Anti-diarrheal products may be helpful, though they're unlikely to solve the problem if your diarrhea is caused by an infection.



**Alarm Symptoms:** See your doctor if your acute diarrhea is accompanied by fever, bloody stools and/or severe pain in the abdomen or rectum, if it lasts for more than two days, or if you suffer from dehydration. A child can die from dehydration within a few days, so please contact your doctor immediately if your child has diarrhea for more than a day.

# Hemorrhoids

## Overview

Hemorrhoids, or swollen veins in your rectum or anus, come in three types:

- **Internal hemorrhoids** involve the veins inside your rectum; they usually don't hurt, but they may bleed painlessly.
- **External hemorrhoids** involve the veins outside the anus; they can be itchy or painful and may sometimes crack and bleed.
- **Prolapsed hemorrhoids** stretch down until they may bulge outside your anus.

Hemorrhoids are caused by increased pressure in the veins of your anus or rectum. Straining to have a bowel movement, heavy lifting, obesity, and genetic vulnerability can all contribute to the development of hemorrhoids. Present in about half the population by age 50 and common in pregnant women, hemorrhoids are not usually dangerous.

## Symptoms

The most common symptom of internal hemorrhoids is bright red blood visible on the stool, on toilet paper, or in the toilet bowl. Symptoms of external hemorrhoids may include painful swelling or a hard lump around the anus resulting from a blood clot. Excessive straining, rubbing, or cleaning around the anus can perpetuate a vicious cycle of irritation, bleeding and/or itching.

## Diagnosis

A doctor can detect hemorrhoids by examining the anus and rectum, including a digital rectal exam (with a gloved lubricated finger) to feel for abnormalities. Special lighted tubes (anoscope or proctoscope) allow for closer examination of the rectal area.

## Managing Your Symptoms

The following measures can help relieve the symptoms of hemorrhoids:<sup>9,10</sup>

- Take warm baths lasting about 10 minutes, ideally several times a day (“sitz baths”).
- Clean your anus after each bowel movement by patting gently with moist toilet paper or moistened pads such as baby wipes.
- Use ice packs to relieve swelling.
- Minimize constipation by eating fibre-rich foods, exercising, and drinking a lot of fluids.

You can use over-the-counter anti-inflammatory medications to help relieve the pain, but don't use anti-hemorrhoidal medication without consulting your doctor. Avoid laxatives other than bulk-forming types.

## Treatment Options

Several procedures can be used to destroy the hemorrhoid:<sup>10</sup>

- **Rubber band ligation:** a small rubber band is placed around the base of the hemorrhoid, causing it to wither away in a few days.
- **Sclerotherapy:** a chemical solution is injected to shrink the hemorrhoid.
- **Infrared coagulation:** A special device is used to burn hemorrhoidal tissue.
- **Surgical removal:** this may be required for prolapsed or very large hemorrhoids.

**Protect yourself:** The best way to prevent hemorrhoids is to keep stools soft so they pass easily, without straining, and to empty bowels as soon as possible after the urge occurs.<sup>10</sup> Exercise and increased dietary fibre can help reduce constipation and straining.

# Diverticular Disease

## Overview

Diverticular disease is a medical term that includes three conditions: diverticulosis, diverticular bleeding, and diverticulitis (diverticular infection).

- **Diverticulosis** is the presence of diverticula (plural of diverticulum) – saclike protrusions (pouches) of the wall of the colon, usually on the left side
- **Diverticular bleeding** occurs when a blood vessel next to the pouches bursts
- **Diverticulitis** occurs when the pouches become infected and inflamed.

Affecting about 130,000 Canadians and more common with advancing age, diverticular disease may stem from a lack of fibre in the diet, resulting in hard stools and increased pressure on the bowel walls – which may lead to the formation of diverticular pouches. The condition can lead to intestinal blockages and openings in the bowel wall.

## Symptoms

Most people with diverticulosis have no symptoms and never develop complications. Those who do have symptoms may experience discomfort in the lower abdomen (mostly on the left side) and a change in bowel habits (constipation or diarrhea). Diverticulitis may cause severe abdominal pain, fever, nausea, constipation or diarrhea. Less common symptoms include vomiting and frequent/painful urination.

Diverticular bleeding may come out through the rectum and appear in the stool or toilet.

## Diagnosis

Diverticular disease is diagnosed based on symptoms, examination, and tests such as (please consult the Glossary on page 38 for definitions):

- Barium enema
- Sigmoidoscopy
- Colonoscopy
- CT scan

## Managing Your Symptoms

While it won't make existing diverticula go away, increasing dietary fibre may reduce the formation of new diverticula. Along with fluids and exercise, fibre may also prevent the pouches from becoming infected or inflamed. There is no evidence that avoiding foods with kernels or small seeds (e.g., popcorn, strawberries, tomatoes) has any value.

## Treatment Options

Mild episodes of diverticulitis usually respond to antibiotics and many episodes do not recur. While not generally necessary, surgery is sometimes warranted in patients with severe attacks or frequent complications. In some cases, a temporary connection between the bowel and skin (colostomy) may be performed, then reversed at a later time when the bowel is put back in place.

**Protect yourself:** A high-fibre diet is the best way to prevent diverticular disease. Increase your fibre intake by including more fruits, vegetables and whole grains in your diet. [See page 34 for more information on fibre.]

# Pancreatitis

## Overview

An inflammation of the pancreas (an organ that produces enzymes that aid digestion and insulin to control blood sugar), pancreatitis affects more than 1,000,000 Canadians and comes in two forms:

- **Acute pancreatitis:** this form occurs suddenly and, if untreated, may lead to heart, lung and kidney failure and even death. After successful treatment, the pancreas usually recovers completely.
- **Chronic (long-term) pancreatitis:** This form inflicts continuous damage to the pancreas, which can cause chronic pain and lead to a permanent decrease in pancreatic function.

### Risk factors for pancreatitis<sup>11</sup>

- Alcohol abuse (the most common factor in chronic pancreatitis)
- Smoking
- Obesity (a well-known risk factor for acute pancreatitis)
- Gallstones (digestive fluids that solidify and form stones in the gallbladder)
- Certain medicines
- High levels of triglycerides (a type of fat), parathyroid hormone, or calcium
- Pancreatic cancer
- Cystic fibrosis
- Some viral infections
- Abdominal surgery or injury
- A family history of pancreatitis

## Symptoms

Both acute and chronic pancreatitis cause pain, usually in the upper abdomen. The pain may come on after heavy eating or alcohol use, typically spreads to the middle of the back, and is often accompanied by nausea and vomiting. Severe attacks may include fever, sweating, rapid heartbeat, light-headedness and fainting. The pain tends to worsen when lying flat and improve when bending forward.

## Diagnosis

Pancreatitis is diagnosed through medical history and symptoms. During an attack, blood tests may show high levels of amylase or lipase (digestive enzymes produced by the pancreas) and abnormalities in blood glucose, calcium or fat levels. X-rays, ultrasound or CT scans lend support to the diagnosis.

## Therapy and Symptom Management

Patients with acute pancreatitis are usually admitted to hospital where they receive intravenous fluids which allows the pancreas to rest. Drugs may be administered to relieve the pain and a tube may be inserted through the nose into the stomach to remove fluids and help with nausea and vomiting. If the pancreatitis is caused by a gallstone, the stone can be identified and removed with a procedure called endoscopic retrograde cholangiopancreatography (ERCP). Within a few days of treatment for acute pancreatitis, most patients feel better and can resume drinking fluids and eating low-fat solid foods.

If you have chronic pancreatitis, you may need to take frequent pain medications. Because the pancreas is permanently damaged, you may need to supplement your diet with synthetic pancreatic enzymes that help you digest food. Severe cases may require insulin injections to control blood sugar or even surgery. Smoking and alcohol consumption are strongly discouraged if you've been diagnosed with pancreatitis, even if the disease is mild or in its early stages.

# Celiac Disease

## Overview

Celiac disease is an intestinal disorder caused by intolerance of gluten (present in wheat, rye, barley, oats, and triticale). In people with celiac disease, gluten damages the absorptive surface of the small intestine, which impairs the body's ability to absorb nutrients. Affecting about 1 in 133 Canadians, the disease runs in families and can be "activated" by injury, infection, childbirth, surgery or severe stress.

## Symptoms

Symptoms of celiac disease, which vary from person to person and over time, may include:

- Diarrhea (caused by excess fluid remaining in the small intestine)
- Oily or frothy stools (caused by unabsorbed fat remaining in the stool)
- Inability to gain weight
- Bloating
- Abdominal pain
- Lactose intolerance (problems with dairy products)
- Dermatitis herpetiformis (an itchy, blistering skin problem).

An **infant** with celiac disease may have abdominal pain, diarrhea, and fail to grow and gain weight. A **young child** may experience abdominal pain, nausea, lack of appetite, anemia, mouth sores, and/or allergic dermatitis, along with irritability or emotional withdrawal. Affected **teenagers** may reach puberty late and have growth delays. Some **adults** who develop celiac disease may have a general feeling of poor health, fatigue, irritability and depression, rather than specific intestinal symptoms. Complications of celiac disease may include osteoporosis, infertility and anemia.

## Diagnosis

Celiac disease is difficult to diagnose based on symptoms alone, because its symptoms overlap with those of other, more common disorders. If your symptoms disappear when you remove gluten from your diet for two weeks and reappear when you reintroduce it, it's very likely you have celiac disease. Dermatitis herpetiformis is a sure sign of the disease.

A recently available blood test can diagnose celiac disease with 95% accuracy. A diagnosis can also be established (or ruled out) by obtaining and analyzing a tissue sample (biopsy) from the small intestine.

## Managing Your Symptoms

While there is no known cure for celiac disease, following a gluten-free diet can effectively control your symptoms and help you lead a normal life. Reintroducing gluten into your diet will cause symptoms to return. If you've been diagnosed with celiac disease, it's important to explain your problem and dietary needs to family members and friends and ask for their support. Finding gluten-free foods and recipes is now becoming easier.



## Principles of gluten-free eating<sup>12</sup>

<b>Safe choices</b>	<ul style="list-style-type: none"><li>• Fresh meat, fish, fruit and vegetables.</li><li>• Eggs and cheese.</li><li>• Rice, corn, soy and potato products.</li><li>• Flours made from rice, corn, soy and potato.</li></ul>
<b>Foods to avoid (unless gluten-free)</b>	<ul style="list-style-type: none"><li>• Flours milled from wheat, rye, barley, commercial oats &amp; triticale.</li><li>• Bread, rolls and croutons.</li><li>• Cakes, pies, cookies and muffins.</li><li>• Noodles of any type.</li><li>• Crackers or cracker crumbs.</li><li>• Soups, sauces, gravies which may have been thickened with these flours.</li><li>• Bread crumbs and batters used for coating.</li></ul>
<b>Hidden gluten sources (to avoid)</b>	<ul style="list-style-type: none"><li>• Hydrolyzed vegetable or plant protein, malt or malt flavouring, modified wheat or unidentified food starch, bouillon cubes, sliced or processed meats, Worcestershire sauce, baking powder, salad dressings, soup or gravy bases, seasonings, soy sauce.</li><li>• Some medications contain gluten. Your Rexall pharmacist can suggest options that are gluten-free for prescription and over the counter medication.</li></ul>
<b>Tips to avoid contamination with gluten</b>	<ul style="list-style-type: none"><li>• Always use a clean surface, utensil, pan or pot.</li><li>• Keep gluten-containing food away from the meal you are preparing.</li><li>• Have a butter dish and cutting board dedicated to gluten-free foods.</li><li>• If possible, have your own toaster.</li><li>• Wash the counter space before preparing gluten-free foods on it.</li><li>• Use (and have family members use) clean utensils when taking food out of jars.</li><li>• Ideally, have a separate set of utensils with porous surfaces (e.g., wooden spoons) for your gluten-free baking.</li><li>• When making sandwiches, prepare the gluten-free ones first if possible.</li></ul>

## Treatment Options

Removing gluten from your diet is the mainstay of celiac disease treatment. When you do experience symptoms such as abdominal pain, spasms, and diarrhea, over-the-counter products may help relieve your discomfort.

**Know your labels:** The term “gluten-free” indicates that a product does not contain any wheat (including spelt and kamut), oats, barley, rye, triticale or any ingredients derived from those grains. However, declarations of gluten content on food labels are not required in Canada at this time. Health Canada is proposing to amend the Food and Drug regulations to enhance labelling of gluten sources.

# Colon Cancer

## Overview

Colon cancer is a disease in which cancerous cells (tumours) are present in the wall of the large intestine (colon). The first step in this transformation occurs with the formation of a collection of abnormal cells call a polyp, though not all polyps develop into colon cancer.

Caused by a mix of genetic and environmental factors, colon cancer can affect people of all ages, but is most common after the age of 50. Every year, an expected 22,000 Canadians will be diagnosed with colon cancer and 8,900 will die of the disease, making colon cancer the third-most prevalent cancer and second-most common cause of cancer deaths in this country. Fortunately, regular colonoscopies can detect almost 100% of colon cancers (though fewer than 20 percent of eligible Canadians are getting screened appropriately) and early colon cancer is more than 90% curable.

## Symptoms

Many people with colon cancer experience no symptoms in the early stages of the disease. Symptoms, which vary depending on the cancer's size and location, may include:

- Constipation: This may happen if the tumour is located in the rectum or far end of the colon.
- Diarrhea for more than a couple of weeks.
- Narrow stools: This may signal an obstacle that is squeezing the waste.
- Bloody stools (the most common colon cancer symptom): The blood may be bright red if the tumour is near the end of the colon or anus, but is more commonly hidden inside the stools.
- Unexplained weight loss and/or loss of appetite.
- Sense of fullness in the rectal area: A tumour toward the end of the colon or in the rectum may produce a sensation of "having to go".
- Nausea and vomiting: A large tumour in the right side of the colon may prevent the digestive contents from moving forward and cause backup of food, which can lead to nausea and vomiting.
- Gas and bloating: This may indicate that a tumour is obstructing the passage of stool, which traps air and leads to a bloated feeling and gas when the blockage is resolved.
- Fatigue: Tumours tend to bleed, which results in a loss of iron – possibly leading to iron-deficiency anemia and accompanying feelings of extreme fatigue.

## Screening and diagnosis

With the ability to prevent up to 95% of cases, colon cancer screening is an essential aspect of digestive healthcare. Common screening tests include:

- **Digital rectal examination:** Examination for lumps inside the rectum using a glove and lubricant.
- **Fecal occult blood test (FOBT):** Examination of three consecutive stool samples for traces of blood not visible to the naked eye. You will be asked to collect samples from three separate bowel movements and mail them to a laboratory, where the samples are analyzed for blood. If you have a positive result – which doesn't necessarily signal cancer – you will be referred for a colonoscopy.

FOBT is about 30-to-50% effective in detecting curable colon cancers and 40-to-80% accurate in detecting all colon cancers – including the larger, more advanced and less treatable cancers that are more likely to bleed.

- **Barium enema:** A diagnostic procedure that involves placing a short tube into the rectum, injecting a barium solution, and taking X-rays to view the lining of the lower digestive tract. It is advisable to combine this test (which is less accurate than colonoscopy) with flexible sigmoidoscopy.
- **Sigmoidoscopy:** Use of a lighted, flexible instrument called a sigmoidoscope to examine the rectum and sigmoid colon.
- **Colonoscopy:** Generally carried out under sedation, this procedure uses a lighted, flexible tube called an endoscope to examine the entire colon (including the rectum). The tube is inserted into the anus and rectum and advanced through the colon. A newer, less invasive and somewhat less accurate test called a virtual colonoscopy uses a CT scan (an X-ray procedure) to capture images of the colon.

The procedure usually takes 20 to 30 minutes, but can occasionally last up to an hour. You will probably be asked to avoid solid food for 24 to 48 hours before the examination and take a laxative to purge the bowel of any stool. The most sensitive of all colon cancer tests, colonoscopy also enables removal of polyps through a technique called snare polypectomy.

If a diagnostic test identifies growths that may be cancerous, a sample of suspicious tissue can be extracted (biopsied) for laboratory analysis. If cancer is detected, a pathologist will study the surgical specimen(s) to determine the stage (0 to IV). The higher the number, the more advanced the cancer.

## Colon Cancer Risk Check

- Are you 50 years of age or older?
- Do you have a family history of colon cancer?
- Do you have Crohn's disease or ulcerative colitis?
- Have you had a prior diagnosis of polyps or early-stage colon cancer?
- Do you have a diagnosis or family history of hereditary syndromes linked to colon cancer?

If you answered yes to any of these questions, you have a higher-than-average risk of developing colon cancer. Talk to your doctor about screening. With more than 90 per cent of colon cancer cases occurring in individuals over 50, age is the main risk factor for most people. The Canadian Digestive Health Foundation recommends that all people over 50 get screened.

## Treatment Options

Most patients with colon cancer have “resection surgery” – removal of the diseased segment and rejoining of the bowel segments on either side of it. When the tumour is small and localized, results are generally excellent. Larger cancers are typically treated with surgery followed by chemotherapy or biological therapy (drugs that enter the bloodstream and destroy or control cancer), sometimes in combination with radiation.

# Other Digestive Cancers

## Overview

In addition to colon cancer, digestive cancers include stomach, esophageal, small-intestinal, pancreatic, liver, biliary, gall bladder, and anal cancers.<sup>13</sup> This section will focus on esophageal, stomach, and pancreatic cancer. As these cancers can be very serious, it's important to take steps to prevent them or catch them early.

- Cancers of the gastrointestinal tract account for roughly 15% of cancers diagnosed in men and women.<sup>13</sup>
- Next to lung cancer, digestive cancers kill more Canadians than any other cancer type – about 15,000 individuals per year.
- In 2008, almost 1,600 Canadians died from stomach cancer, 1,350 from esophageal cancer, and over 3,000 from pancreatic cancer.
- In 2009, an estimated 32,000 Canadians were diagnosed with a digestive cancer, representing one in 5 new cancer cases.

Type of cancer	Risk factors
<b>Esophageal</b>	<ul style="list-style-type: none"><li>• Smoking and excessive drinking (for squamous type)</li><li>• Heartburn and inhalants (for adenocarcinoma type)</li></ul>
<b>Stomach</b>	<ul style="list-style-type: none"><li>• Consumption of smoked and highly processed foods</li><li>• Tainted or contaminated food</li><li>• Smoking and alcohol use</li><li>• Previous stomach surgery for benign disorders</li><li>• People aged 50-59 are at highest risk</li></ul>
<b>Pancreatic</b>	<ul style="list-style-type: none"><li>• Smoking (thought to contribute to 20-30% of cases)</li><li>• Obesity and a high-fat diet</li><li>• Diabetes (which may also be caused by pancreatic cancer)</li><li>• Occurs most frequently in people aged 60-80</li><li>• Certain ethnic groups are more vulnerable</li></ul>

## Symptoms

General symptoms of digestive cancer include indigestion, abdominal pain, diarrhea or constipation, nausea, vomiting, loss of appetite, weight loss, and fatigue. Depending on the specific digestive cancer, certain symptoms are more likely to occur:

- **Esophageal:** Trouble swallowing, “sticking” of solid food, pain behind the breastbone.
- **Stomach:** Trouble swallowing, heartburn, gastrointestinal bleeding (in 40% of cases), tarry-looking stools.
- **Pancreatic:** Jaundice, pale greasy stools that may float in the toilet.

Of course, many of these symptoms are found in a wide variety of disorders and don't necessarily indicate cancer.

## Diagnosis

Early diagnosis of digestive cancers is critical for successful treatment. In addition to physical examination, diagnostic procedures to identify cancer in the digestive tract may include:

- **Fecal occult blood test (FOBT):** Examination of three consecutive stool samples for traces of blood not visible to the naked eye.
- **Esophagoscopy:** An outpatient procedure that involves passing a flexible camera-tipped tube through the mouth to view the esophageal lining.
- **Laparoscopy:** A minimally invasive surgical procedure in which an instrument called a laparoscope is inserted through a small abdominal incision (cut) in order to view structures.
- **Abdominal ultrasound:** An imaging technique that uses soundwaves to produce a picture of the desired organ(s) and locate possible abnormalities.
- **Barium X-ray/upper GI series:** Following ingestion of a white liquid (barium) to coat the esophagus, stomach, and small intestine, X-rays are taken to view the upper digestive tract.
- **Sigmoidoscopy:** Use of a lighted, flexible instrument called a sigmoidoscope to examine the rectum and sigmoid colon.
- **CT or MRI scan:** Sophisticated imaging methods that reveals soft-tissue and other structures that can't be seen with normal X-rays.
- **Blood tests** for iron-deficiency anemia or to evaluate liver function (which can be affected by pancreatic cancer).
- **Biopsy:** Removal of tissue or fluids from the body and examination of the extracted material to establish a diagnosis (such as cancer).

## Treatment Options

Cancer therapies are highly individualized and depend on the nature of the tumour, the stage of the cancer, and other patient characteristics. Treatment for digestive cancers may include chemotherapy, radiotherapy, endoscopic therapy, and surgery. When surgery is possible, it generally offers the best chance for a cure.

- For esophageal cancer, surgery usually involves removal of the lower part of the esophagus and upper part of the stomach. About 25 to 40 percent of esophageal cancer cases are suitable for surgery.
- For stomach cancer, surgery removes all or most of the stomach along with the surrounding lymph nodes. Over 50 percent of early-stage cases are curable.
- While pancreatic tumours are often inoperable, some small, localized tumours can be completely removed.

Radiation and chemotherapy may be combined with surgery to slow the spread of the cancer and/or prevent recurrence.

**Protect yourself:** To reduce your risk of developing digestive cancer, stop smoking, eat a low-fat diet rich in fruits and vegetables, and limit your use of alcohol. If you have Barrett's esophagus, a cell analysis has a 75% detection rate for cancerous changes, so it's best if you undergo endoscopic surveillance at least every two years.

# Gastro-Esophageal Reflux Disease (GERD) and Dyspepsia

## Overview

Dyspepsia (Latin for “bad digestion”) is an umbrella term covering a range of digestive symptoms originating in the upper digestive tract. These symptoms can often be traced to gastro-esophageal reflux disease (GERD) – a condition in which the lower esophageal sphincter does not close properly, allowing stomach contents to flow back to the esophagus – and leading, in a minority of cases, to ulcers. About 5 million Canadians have heartburn and/or acid reflux at least once a week, and more than half of all pregnant women experience it at least occasionally. The pain from GERD can be so bad that it feels like a heart attack.

## Symptoms

Symptoms of people living with GERD/dyspepsia may include:

- Heartburn
- Acid regurgitation
- Excess burping/belching
- Abdominal bloating and/or gas
- Nausea and/or vomiting (including bringing up blood)
- A feeling of abnormal or slow digestion
- Early satiety (fullness)
- Problems swallowing
- Hoarseness, cough, asthma, lung infection
- Black, tarry stools

## Diagnosis

While GERD is usually diagnosed on the basis of symptoms, a variety of tests can help determine the cause of dyspepsia.

- **Blood test:** Useful for detecting previous exposure to the bacterium responsible for ulcers (*H. pylori*).
- **Urea breath test (UBT):** A test that requires the patient to drink a chemical that is broken apart by *H. pylori*, with by-products released in the patient’s breath. A positive result indicates that *H. pylori* is actually present at the time of testing.
- **Barium X-ray/upper GI series:** Ingestion of a white liquid (barium) to coat the esophagus, stomach, and small intestine, followed by an X-ray to view the upper digestive tract.
- **Gastroscopy/upper endoscopy:** Use of a lighted flexible tube to examine the esophagus, stomach and duodenum.
- **Esophageal motility study (EMS):** Insertion of a tube through the nose into the esophagus to assess the strength and pattern of esophageal contractions and the pressure/relaxation of the lower esophageal sphincter. EMS may help uncover esophageal motility problems in people with swallowing difficulties but no identified obstruction.

- **24-Hour pH study:** Many GERD patients have no visible injury, but a high acid content in the esophagus. The 24-hour pH test measures the acidity in the esophagus over 24 hours, allowing you to establish whether acid actually accounts for your symptoms. The test can also determine whether medications have been effective in suppressing acid.

## Managing Your Symptoms

Start by maintaining a healthy weight (or losing weight if you need to), as excess weight puts pressure on the lower esophageal sphincter and contributes to reflux. Smoking increases acid production, so there's yet another reason to quit. It may be useful to look for possible links between your symptoms and the foods or drinks you ingest. Foods that seem to precipitate or worsen reflux include alcohol, peppermint, greasy or spicy foods, tomatoes, fatty foods, citrus foods, caffeine products (including coffee and chocolate), and sugared drinks. Discontinuing drugs that may worsen injury to the stomach, such as non-steroidal anti-inflammatory drugs (NSAIDs) sometimes helps.

### Quick tips to manage reflux

- Eat small, frequent meals
- Avoid lying down after meals
- Eat 3 to 4 hours before going to bed
- Raise the head of the bed or elevate the upper body with a foam wedge
- Lie on the left rather than right side

## Treatment Options

Depending on the cause, severity and pattern of your symptoms, different medications may offer relief.

- **Antacids:** Drugs that rapidly neutralize stomach acid. Available without a prescription, they are best suited for intermittent symptoms that require quick relief. Such symptoms may arise in patients taking other medications for GERD.
- **H2-receptor antagonists (H2-RAs):** Drugs that block the stomach receptors that stimulate acid production. They are more effective than antacids and safe for long-term use. They are appropriate for milder GERD symptoms.
- **Proton pump inhibitors (PPIs):** Prescription drugs that decrease acid production in the stomach. These safe medications provide the most effective stomach acid suppression currently available. They are appropriate for more severe GERD symptoms.
- **Prokinetics:** Drugs that cause contractions of the digestive tract muscles, thereby speeding up movement of substances through the gut.
- **Fundoplication surgery:** is an option for people with severe GERD symptoms or complications (e.g., cough, asthma, pulmonary infections) despite having tried double doses of PPIs. The procedure involves wrapping the top of the stomach around the lower esophagus, which strengthens the sphincter between the esophagus and stomach and makes it harder for stomach contents to flow back up.

# Barrett's Esophagus

## Overview

In people who have had gastro-esophageal reflux disease (GERD) for a long time, the chronic acid reflux into the esophagus can cause changes in the esophageal lining (mucosa) – a condition called Barrett's esophagus. About 800,000 Canadians have the condition. It is more common in men and older people and may increase the risk of developing esophageal cancer.

## Symptoms

While Barrett's esophagus itself does not have any symptoms, the underlying GERD may cause heartburn, regurgitation, belching or chest pain. Ask your doctor about Barrett's esophagus if you have long-standing or frequent (three or more times per week) heartburn or if you've been diagnosed with GERD.

## Diagnosis

Barrett's esophagus is diagnosed by esophagoscopy and biopsy (please see the Glossary on page 38 for definitions).

## Living with the Disease

Reducing stomach acid and controlling GERD symptoms may help minimize ongoing damage. However, no intervention has been shown to return the lining of the esophagus to its normal state.

If you have Barrett's esophagus, you'll likely be advised to undergo esophagoscopy about every two years to screen for cancer and get early treatment if cancer is detected. Depending on the findings of your latest esophagoscopy, your doctor may recommend more or less frequent repeat procedures.

## Treatment Options

Several classes of medication can reduce stomach acid and help control the GERD underlying Barrett's esophagus.

- **Antacids:** Drugs that rapidly neutralize stomach acid. Available without a prescription, they are best suited for intermittent symptoms that require quick relief. Such symptoms may arise in patients taking other medications for GERD.
- **H2-receptor antagonists (H2-RAs):** Drugs that block the stomach receptors that stimulate acid production. They are more effective than antacids and safe for long-term use. They are appropriate for milder GERD symptoms.
- **Proton pump inhibitors (PPIs):** Prescription drugs that decrease acid production in the stomach. These safe medications provide the most effective stomach acid suppression currently available. They are appropriate for more severe GERD symptoms.
- **Prokinetics:** Drugs that cause contractions of the digestive tract muscles, thereby speeding up movement of substances through the gut.

Your doctor may also recommend lifestyle changes, such as quitting smoking, exercising, losing weight, and avoiding foods that make your heartburn worse. When necessary, surgery can help keep stomach acid out of the esophagus. Surgery is also used to remove abnormal (precancerous) cells detected by endoscopy.

Experimental techniques to eliminate Barrett's mucosa include photodynamic therapy (PDT), thermal ablation, and endoscopic mucosal resection. However, these technologies are not widely available and their long-term effects are unknown.



# Lactose Intolerance

## Overview

Lactose intolerance is the inability to properly metabolize lactose, a sugar present in milk products, because of a lack of the enzyme lactase (which helps digest lactose). Affecting more than 7 million Canadians, lactose intolerance reflects two distinct processes:

- **Primary lactase deficiency:** a gradual, age-related drop in lactase activity such that lactose-containing products become more and more difficult to digest
- **Secondary lactase deficiency:** a temporary fall in lactase levels caused by damage to the gastrointestinal tract (for example, from celiac disease, surgery or infections).

**Question:** Is lactose intolerance the same as milk allergy?

**Answer:** No. True milk allergy is a possibly life-threatening reaction of the immune system to milk proteins, while lactose intolerance is considered a sensitivity (unpleasant reaction to a food). Unlike a food allergy, a sensitivity does not mount an immune system response.

## Symptoms

Occurring anywhere from 15 minutes to several hours following lactose digestion, symptoms of lactose intolerance may include abdominal discomfort, bloating, gas, cramps, diarrhea, nausea, and headache.

## Diagnosis

The simplest – and probably most reliable – way of diagnosing lactose intolerance is to stop consuming milk products for two weeks, then reintroduce these products into your diet. If your symptoms return, you probably have lactose intolerance. If your response to lactose elimination is unclear, blood tests, a hydrogen breath test and (for young children) a stool acidity test can help establish a diagnosis.

## Managing Your Symptoms

If you are lactose intolerant, the most effective management strategy is to avoid dairy products. You can also purchase lactase-enzyme products (which help your body digest lactose) in many pharmacies, and lactose-reduced milk products are available at most grocery stores. If you have secondary lactase deficiency (for instance, caused by celiac disease), you may need to eliminate lactose-containing products temporarily until the small intestine heals. If you're avoiding milk products and following an otherwise normal diet, you'll need to ensure you're getting enough calcium (up to 1,300 mg/day) and vitamin D (200 to 600 IU, depending on your age), either from foods or supplements.

You may be able to increase your tolerance to lactose by gradually introducing small quantities of milk products until symptoms appear – or by combining milk products with other foods.

### Points to consider at the grocery store...

- Heated and higher-fat milk (which takes longer to digest) may be easier to tolerate.
- Yogurt brands containing “live” or “active” cultures (probiotics) may be easier to tolerate.
- Aged, natural cheeses such as cheddar and mozzarella contain very little lactose.
- Fresh cheeses such as creamed cottage cheese and ricotta contain varying amounts of lactose.
- Milk substitutes (such as rice or soya milk) are generally well tolerated.

# Peptic Ulcer and *H. pylori* Infection

## Overview

A peptic ulcer is a sore in the lining of the stomach (gastric ulcer) or in the upper part of the small intestine (duodenal ulcer). For many years doctors believed that stress or acidic foods caused ulcers; we now know that most ulcers are caused by a bacterium called *Helicobacter pylori* (*H. pylori*). Among first-nations people, about 75% are infected with the bacterium. All told, about 8 to 10 million Canadians are infected, of whom 10 to 15 percent will develop ulcers. In addition to ulcers, *H. pylori* can lead to stomach atrophy and some types of cancers.

Acid can also contribute to ulcers by burning the lining of the digestive tract, and physical or emotional stress can aggravate existing ulcers. Smoking increases the risk of developing ulcers, which can also be induced by long-term use of non-steroidal anti-inflammatory drugs (NSAIDs).

## Symptoms

Symptoms of a peptic ulcer may include:

- Burning pain in the upper abdomen (which may wake you up at night)
- Vomiting
- Quick satiety (fullness)
- Feeling better when eating or drinking, then worse 1 or 2 hours later (duodenal ulcer)
- Indigestion
- Nausea
- Bloating
- Weight loss
- Feeling worse when eating or drinking (gastric ulcer).

### Warning signs that indicate your ulcer requires prompt medical attention

- You vomit food eaten hours or days before
- You have bloody, black or tarry stools
- You have unexplained weight loss
- Your pain reaches to your back
- You feel cold, clammy, unusually weak or dizzy
- You have ongoing nausea or repeated vomiting
- You have sudden, severe pain
- Your pain doesn't go away when you take your medicine

## Diagnosis

There are several ways to test for *H. pylori*:

- **Blood test:** can identify antibodies to *H. pylori*, which signal previous exposure to the bacterium but doesn't reveal if it is still present in the body.
- **Urea breath test (UBT):** A test that requires the patient to drink a chemical that is broken apart by *H. pylori*, with by-products released in the patient's breath. A positive result indicates that *H. pylori* is actually present at the time of testing.
- **Barium X-ray/upper GI series:** Ingestion of a white liquid (barium) to coat the esophagus, stomach, and small intestine, followed by an X-ray to view the upper digestive tract.

## Managing Your Symptoms

While dietary changes do not heal ulcers, limiting or avoiding gastric irritants (see box) may be helpful. If you have a medication-induced ulcer, it is important to avoid Aspirin, Plavix and non-steroidal anti-inflammatory drugs (NSAIDs) if possible. If you need to take these medications, you can counteract some of their ulcer-promoting effects by also taking a proton pump inhibitor (PPI).

**Does the food I eat affect my ulcer?** In some (but not all) people, certain foods and drinks may worsen ulcer pain. Possible culprits include regular and decaffeinated coffee, tea, sugary drinks, chocolate, meat extracts, alcohol, black pepper, chili powder, mustard seed, and nutmeg. You may want to avoid these foods if they bother you and to eat small, frequent meals when you're having pain.

## Treatment Options

While acid-suppressing drugs can heal ulcers, they will return if *H. pylori* is still present. Thus, the best treatment is to get rid of the infection. In up to 90 percent of cases, *H. pylori* can be eradicated with a combination of antibiotics and PPIs taken in a specific sequence. It takes 2 to 3 weeks for the bacterium to clear your system. Tests can confirm that it is no longer present. Most ulcers heal within 8 weeks. Your doctor may recommend that you take acid-lowering medication for this duration – or longer if your symptoms return after you stop taking medication. Acid-suppressing medications used for peptic ulcers include:

- **Antacids:** Drugs that rapidly neutralize stomach acid. Available without a prescription, they are best suited for intermittent symptoms that require quick relief.
- **H2-receptor antagonists (H2-RAs):** Drugs that block the stomach receptors that stimulate acid production. They are more effective than antacids and safe for long-term use.
- **Proton pump inhibitors (PPIs):** Prescription drugs that decrease acid production in the stomach. These safe medications provide the most effective stomach acid suppression (and treatment of ulcer disease) currently available.

The advent of effective drugs has reduced the need for ulcer surgery, though it may still be required for complicated ulcers or those that don't respond to drugs.



# Inflammatory Bowel Disease

## (Crohn's Disease and Ulcerative Colitis)

### Overview

Inflammatory bowel disease (IBD) is an umbrella term for at least two disorders that cause inflammation (redness and swelling) and ulceration (sores) of the small and large intestines: Crohn's Disease (CD) usually causes ulcers along the length of the small and large intestines; the rectum may be spared or inflamed. Ulcerative colitis (UC) usually causes ulcers in the lower part of the large intestine, often starting at the rectum. Inflammation from IBD is persistent and usually recurs.

With more than 205,000 affected individuals, Canada has one of the highest rates of IBD in the world. The disease typically develops between age 10 and 30 – a highly productive period of life – with a second “wave” of new-onset IBD occurring between age 50 and 60. IBD has a hereditary component, and it is thought that infection or immune system problems may trigger the disorder in vulnerable people.

### Differences between Crohn's Disease and Ulcerative Colitis<sup>14</sup>

Feature	Crohn's Disease	Ulcerative Colitis
<b>Location of inflammation</b>	Anywhere along the digestive tract, from mouth to anus	Typically, the large intestine (colon)
<b>Pattern of inflammation</b>	May occur in patches (e.g., diseased section of colon between two healthy sections)	Continuous throughout the inflamed areas
<b>Appearance</b>	<ul style="list-style-type: none"><li>• Colon wall may be thickened and have a “cobblestone” appearance</li><li>• Granulomas (lumps of inflamed cells) may be present</li><li>• Deep ulceration may extend to all layers of the intestinal wall</li></ul>	<ul style="list-style-type: none"><li>• Thinner colon wall with no patches of healthy tissue in the diseased section</li><li>• Granulomas are not found</li><li>• Mucous lining of the large intestine is ulcerated</li></ul>
<b>Location of pain</b>	Commonly in the lower right abdomen	Commonly in the lower left abdomen
<b>Bleeding</b>	Uncommon	Common during bowel movements
<b>Smoking</b>	May worsen the course of the disease	May have a protective effect in some people (though it is obviously not recommended due to its significant other health risks)

### Symptoms

IBD symptoms may include:

- Abdominal cramps and pain
- Aching, sore joints, skin and mouth sores
- Rectal bleeding, weight loss and fever
- Diarrhea
- Red, inflamed eyes
- Poor growth in children.

The joint, skin and eye symptoms affect almost half of IBD patients and may be more debilitating than bowel symptoms.

## Diagnosis

IBD is diagnosed on the basis of symptoms, physical examination, laboratory tests, and imaging procedures:

- **Stool tests:** Used to detect blood loss or infection.
- **Blood tests:** Used to identify anemia (which could result from blood loss) or increased white blood cells, which suggests an inflammatory process.
- **Endoscopy:** A broad term used to describe an examination of the inside of a hollow organ using a lighted, flexible instrument called an endoscope. In this case, the rectum and large bowel are the focus of the examination.
- **X-ray examinations** may be required in some cases.

## Managing Your Symptoms

Many patients find that rest and stress-reduction strategies help keep their IBD symptoms in check. Anti-diarrheal drugs and pain killers may also help, though it's important to avoid taking an excess of these drugs, which could lead to complications.

## Treatment Options

There is no cure for IBD, but several medications can help achieve the goal of treatment, which is to get rid of the inflammation:<sup>15</sup>

- **Aminosalicylates (e.g., sulfasalazine, mesalamine):** Available as pills, suppositories or enemas, these drugs work by reducing inflammation in the intestinal wall. They are effective for mild-to-moderate UC and for CD affecting the colon.
- **Steroids (e.g., prednisone):** These drugs (usually taken orally) reduce inflammation and can be helpful for both UC and CD. While they are generally well-tolerated in the short term, their side effects make them unsuitable for long-term use. A steroid preparation called budesonide, specifically designed to release the drug into the intestines while minimizing its entry into the bloodstream, is available for the treatment of Crohn's disease.
- **Immunosuppressants (e.g., 6-Mercaptopurine, azathioprine):** these drugs decrease the activity of the immune system, which has the effect of reducing intestinal inflammation. Given orally as pills, immunosuppressants can help bring both UC and CD under control and keep the disease process in remission.
- **Methotrexate:** This drug also works to decrease the activity of the immune system. Given orally or by injection, it is used to achieve and maintain remission of CD.
- **Infliximab:** Useful for moderate-to-severe CD, this "biologic" drug works by blocking a component of the immune system known as TNF (tumour necrosis factor). Given intravenously, the drug has been shown to bring CD inflammation into remission.
- **Antibiotics (e.g., metronidazole):** Useful in some cases of CD, certain antibiotics help kill germs in the intestines.

At some point, people with IBD (especially ulcerative colitis) may need surgery. Surgery usually involves removal of part or all of the colon. When the entire colon is removed, the patient may require an ileostomy (bag outside the body to collect waste) and sometimes a second operation to form a new rectum (called a pouch procedure).

# Irritable Bowel Syndrome

## Overview

Irritable bowel syndrome (IBS) is a common chronic gastrointestinal disorder that involves problems with motility (how the bowel moves contents through the intestines) and sensitivity (how the brain interprets bowel sensations), leading to pain and irregular bowel patterns. Canada has one of the highest rates of IBS in the world, with about 5 million affected individuals. Far more common in women than in men, IBS is a frequent cause of work or school absenteeism and significantly erodes quality of life.

## Dispelling Misconceptions about IBS

Myth	Fact
<b>IBS is caused by specific foods</b>	Foods don't cause IBS, but certain foods (such as alcohol, chocolate, caffeine, and fatty foods), can make you feel worse
<b>IBS is caused by stress</b>	While stress is a recognized factor in IBS, it doesn't necessarily cause the disease
<b>IBS is an inflammatory disease</b>	IBS does not reflect an inflammatory process and is distinct from Crohn's disease or ulcerative colitis
<b>Symptoms of IBS are confined to the large intestine</b>	IBS can also cause fatigue, loss of appetite, nausea and (uncommonly) vomiting; it has been linked to fibromyalgia, anxiety disorders, and depression
<b>IBS pain is relatively mild</b>	While some people experience IBS pain as a mere annoyance, others find it intolerable. The pain may lessen with a bowel movement, but may also be continuous
<b>IBS gets worse over time</b>	IBS doesn't get worse, though it can wax and wane over time. It doesn't cause cancer or require surgery and it won't shorten your life

## Symptoms

IBS symptoms are often chronic and intermittent and may last for months or years.

Specific symptoms, which vary from person to person, may include:

- Gas, bloating, cramps
- Abdominal pain related to bowel movements
- Irregular bowel patterns
- Constipation
- Diarrhea (especially after eating or first thing in the morning)
- Alternating constipation and diarrhea
- Strong urges to empty bowels
- Mucus around or within the stools
- Heartburn, nausea.

## Diagnosis

IBS is a “functional diagnosis,” meaning it is diagnosed based on your symptoms and doesn’t involve any detectable abnormalities in your anatomy or physiology. Still, your doctor may order tests to rule out other conditions.

- **Blood tests:** Used to detect conditions that could affect the gastrointestinal tract, such as abnormal thyroid function, anemia, or celiac disease.
- **Stool cultures:** Used to rule out infection and detect occult (hidden) blood, which could signal other digestive problems.
- **Imaging tests:** A broad term to describe procedures (e.g., barium X-ray, sigmoidoscopy, colonoscopy) that allow the doctor to view the inside of your digestive tract to rule out abnormalities such as ulcers, colon polyps, or inflammatory bowel disease (IBD); not all patients need these tests.

## Managing Your Symptoms

The best way to handle IBS is to eat a healthy diet, avoid foods that seem to make you feel worse, and find ways to handle your stress. You can take comfort in knowing that IBS is a very common problem and may respond to the following simple strategies:

- **Add fibre** to your diet – gradually, to minimize bloating and gas [see page 34 for more information on fibre].
- **Use a food diary** to identify possible dietary or emotional triggers of IBS symptoms; if you think a food makes you feel worse, stop eating it, though there’s no need to cut out a food unless it has caused you problems more than once.
- **Avoid junk foods**, excessive caffeine and “pop” beverages.
- **Act on your urges** to have a bowel movement.
- **Exercise** (at least 20 minutes, 3 times a week) to reduce stress and promote colonic movement.
- **Get enough rest**, as insufficient sleep can exaggerate IBS symptoms.
- **Heating pads** and **hot baths** may soothe symptoms.
- **Minimize stress and tension** which play a large role in IBS; yoga and meditation can help promote relaxation.

## Treatment Options

Along with the strategies listed above, your doctor may prescribe prescription or over-the-counter products to help relieve specific symptoms:

- **Pain killers** can relieve the abdominal pain of IBS.
- **Antispasmodic medications** can help reduce cramping and spasms.
- **Anti-diarrheal medications** can be helpful if diarrhea symptoms predominate.
- **Laxatives** can relieve constipation.
- **Certain antidepressants** can alter pain perception in the brain and thus help with IBS pain
- **Tranquilizers or sedatives** (for short periods of time) can help manage the anxiety you may feel from IBS.

## Long-term Outlook

Most people with IBS continue to experience symptoms, though as many as one-third may become symptom-free over time. Active self-management can significantly reduce symptoms and improve quality of life. Even if symptoms persist, the condition does not lead to other digestive disorders or threaten life.

# Liver Disease

## Overview

The largest internal organ in the body, the liver stores and metabolizes nutrients, manufactures proteins, and detoxifies blood. While the liver has good self-repair mechanisms, it can become diseased from infection, poor dietary habits, or alcohol abuse, among other factors. Liver diseases include hepatitis, cirrhosis, non-alcoholic fatty liver disease, liver tumours, and liver abscess. This section will focus on viral hepatitis, cirrhosis, and non-alcoholic fatty liver disease.

Viral hepatitis (caused by a virus) comes in several forms, of which the most common are:<sup>16</sup>

- **Hepatitis A:** Transmitted through sex, feces or contaminated food or water, hepatitis A causes liver inflammation but is rarely serious. Symptoms appear within 2 to 6 weeks of infection.
- **Hepatitis B:** Transmitted sexually or through infected blood, as well as from mother to newborn, hepatitis B may cause permanent liver damage (e.g., cirrhosis, liver cancer) if untreated.
- **Hepatitis C:** Spread by direct blood-to-blood contact, hepatitis C doesn't necessarily produce any symptoms. About 20 percent of people clear the virus within 6 months, while the infection becomes chronic in the remaining 80 percent. Chronic hepatitis C may remain mild or cause permanent damage.

Hepatitis B and C can be contracted from transfused blood and by using non-sterilized equipment that pierces through the skin. Improved screening of donated blood has greatly reduced the risk of catching hepatitis B or C from blood transfusions.

**Cirrhosis** is a disease that progressively and irreversibly destroys and scars liver tissue. Twice as common in men as in women and 30 times more common among heavy drinkers, it is a major cause of death in Canadian men aged 25 to 64.<sup>16</sup> Causes of cirrhosis include:

- Chronic infection with hepatitis C or B virus
- Long-term excessive alcohol consumption
- Inherited disorders of iron and copper metabolism
- Severe reactions to certain medications
- Infections from bacteria and parasites usually found in the tropics
- Repeated episodes of heart failure with liver congestion and bile-duct obstruction.

**Non-alcoholic fatty liver disease (NAFLD)** is a buildup of fat in the liver, which may (but doesn't necessarily) cause inflammation and growth of tissue that could lead to cirrhosis, liver scarring, or liver cancer.<sup>17</sup> It is unrelated to alcohol consumption (hence its name) and tends to appear in overweight individuals who have diabetes, high cholesterol, and high triglyceride levels.

## Symptoms

In the acute phase of most types of hepatitis, symptoms resemble those of a flu (nausea, vomiting, diarrhea, loss of appetite) and may also include jaundice (yellowing of the skin and whites of the eyes) and itchy skin.

Signs and symptoms of cirrhosis include abdominal pain, fatigue, intestinal bleeding, itching, jaundice, nausea and vomiting, spider-like vessels under the skin, swelling in the abdomen and legs, weakness, weight loss, and loss of interest in sex.





**Alarm symptoms: If you have cirrhosis, seek emergency help if you experience mental confusion, rectal bleeding, or vomiting blood.**

In its benign form, NAFLD may have no symptoms at all. The disease is often discovered with routine blood tests. If the condition has progressed, symptoms may resemble those of cirrhosis.

## Diagnosis

Hepatitis is diagnosed through blood tests and a complete personal history. You may be asked whether you have:

- Used intravenous drugs
- Recently ingested a meal of shellfish from polluted waters
- Travelled to countries where hepatitis infections are common
- Had a blood transfusion or been in contact with fresh blood
- Partaken in potentially risky sexual practices
- Taken certain medications in the past few months

Cirrhosis is also diagnosed through blood tests and medical history, with confirmation (in some cases) from a liver biopsy.

Several different tests may be needed to identify NAFLD, including blood tests, ultrasound, CT scan, MRI and/or liver biopsy. Your doctor may ask questions to rule out conditions such as hepatitis B or C (which also damage the liver) before making a diagnosis of NAFLD.

## Managing Your Symptoms

There is no specific treatment for acute hepatitis. It is important to maintain an adequate intake of calories (along with plenty of fluids), and you may feel better if you limit physical activity. Alcohol should be limited or avoided to help the liver recover. If you are unable to eat or drink, you may be hospitalized.

The progression of liver cirrhosis can be greatly reduced by abstinence from alcohol. Limiting medications that can worsen liver disease (e.g., acetaminophen) is also advised.

## Treatment Options

If you have hepatitis B or C, your doctor may monitor you periodically to watch for continuing signs of liver inflammation. Some people with chronic hepatitis B or C may benefit from medications that can slow the replication of the virus.

Focused mainly on symptoms and complications, treatments for liver cirrhosis may include salt restriction to combat fluid retention, diuretic medications, laxatives, a low-protein diet, and vitamin supplementation. Some cases may require a liver transplant.

Because NAFLD is linked to other health problems such as obesity, diabetes, and high cholesterol levels, getting these conditions under control can help manage the condition.

**Protect yourself:** In Canada, hepatitis B vaccination is now recommended for the entire population. If you are travelling to countries where hepatitis is common, check with your doctor or travel medicine clinic to see if you are a candidate for hepatitis A or B immunization. There is no immunization against hepatitis C.<sup>16</sup>

# The Fibre Factor

Fibre – the components of plant foods that your body can't digest or absorb – plays an important role in digestive and general health. Consider these proven benefits:

- **Weight maintenance:** high-fibre eaters tend to be slimmer.<sup>18</sup>
- **Better digestion:** a fibre-rich diet counteracts bloating and constipation.
- **A healthier digestive tract:** insoluble fibre may help with irritable bowel syndrome (IBS) and hemorrhoids.<sup>19</sup>
- **A healthier heart:** fibre lowers blood pressure and LDL blood cholesterol (the bad type) ; consuming just 10 g more fibre per day may lower the risk of heart disease.<sup>20</sup>
- **A further bonus:** high-fibre cereals are often fortified with vitamins and minerals, which can help round out your daily nutritional requirements.

Fibre comes in two forms – insoluble (a.k.a. “roughage”) and soluble – with separate functions, so it's important to consume some of each. While good fibre supplements are available, your diet can provide you with all the fibre you need. A word of caution: soluble fibre produces excess gas, which may cause pain and bloating, especially in people with constipation or irritable bowel syndrome (IBS).

Type	Features	Function	Some food sources
<b>Insoluble</b>	Is not broken down or absorbed	Improves bowel motility and reduces constipation; may help with hemorrhoids	Whole wheat, flax seed, celery, green beans, potato skins
<b>Soluble</b>	Dissolves and ferments within the colon	Keeps the colon healthy; may benefit the cardiac and immune systems	Peas, beans, lentils, oats, fruits, broccoli

Aim for a total daily fibre intake of about 38 grams if you're a man and 25 grams if you're a woman.\* To limit unwanted gas and bloating, boost your fibre intake over a few weeks.

Try these tips to ease yourself into a fibre-rich diet:

- Try a new breakfast cereal that provides at least 4 grams of fibre per serving.
- Try a whole-grain version of a common staple such as bread, tortillas or pasta.
- Throw some legumes (such as black beans or lentils) into soups, stews or casseroles.
- Stir a tablespoon of ground flaxseed into a smoothie.

Keep experimenting until you find high-fibre products and recipes you enjoy.

\* Packaged foods list fibre content on food labels. Vancouver Coastal Health has an excellent chart summarizing the fibre content of common foods (<http://vch.eduhealth.ca/PDFs/BB/BB.235.F443.pdf>).

# The Power of Probiotics

Probiotics are live micro-organisms that confer a health benefit when administered in adequate amounts.<sup>21</sup> In plain language, probiotics are “good bacteria.”

The experts agree: there's enough scientific evidence to show that probiotics can improve a variety of digestive ailments. And you don't need to be sick to benefit from probiotics: new research suggests these “friendly” bacteria may help prevent certain infections and support general wellness.

Human intestines contain about 100,000 billion bacteria and 60 percent of the body's immune cells – a true “ecosystem.” The multitude of bacteria includes probiotics that help digest food, maintain good health, and counteract certain digestive ailments. As stress, travel and antibiotic use can upset the balance of probiotics in your digestive system, there are good reasons to supplement your “natural” supply of probiotics with probiotics you take in by mouth (much like medications).

Probiotics work mainly by stimulating the intestinal immune system and by displacing the harmful bacteria that might otherwise cause disease. Specific digestive benefits of probiotics may include:<sup>21,22</sup>

- Reducing the severity and duration of acute diarrhea (including traveller's diarrhea and diarrhea caused by antibiotics)
- Treating constipation
- Preventing ulcerative colitis from relapsing
- Improving the symptoms of irritable bowel syndrome (IBS)
- Counteracting lactose intolerance
- Helping to eradicate the infection responsible for ulcers (when paired up with antibiotics)
- Possibly reducing the risk of colon and bladder cancer
- In children, improving symptoms of moderate-to-severe eczema.<sup>23</sup>

Probiotics are available as bacterial cultures added to foods (often dairy products) or as dried-cell supplements. Food products often refer to probiotics as “live” or “active” cultures. Watch for probiotic-fortified energy bars, cereals and cheeses in the next few years.

Different species of probiotics confer different health benefits, so it's best to select a type that addresses your specific concerns.\* Ask your doctor which probiotics have been tested for the condition you wish to improve. And remember, you'll reap the greatest benefits from probiotics if you consume them regularly.

## Prebiotics, too?

Prebiotics (sometimes called fermentable fibre) are nondigestible nutrients used as an energy source by the probiotics in your intestines. In other words, prebiotics support probiotics. Some research suggests that prebiotics can improve bowel function and colitis.<sup>24</sup> Good sources of prebiotics include bananas, berries, flax, onion, garlic, artichokes, leeks, legumes, and whole grains.

\* The World Health Organization's 2008 guidelines (available online at [www.worldgastroenterology.org/probiotics-prebiotics.html](http://www.worldgastroenterology.org/probiotics-prebiotics.html)) list the probiotic strains recommended for specific gastrointestinal conditions (see Table 8).

# Test Yourself: The CDHF Digestive Health Quiz

The following quiz was developed by the Canadian Digestive Health Foundation for people aged 18 to 75 years. If you would like to get a general rating of your digestive health status, please complete the quiz by circling the one numeric value for each question that is most appropriate for you. Once you have finished the quiz, add up all the numbers and check your rating.

**How often do you experience symptoms such as heartburn, abdominal pain, diarrhea, nausea and/or constipation, stomach heaviness or abdominal discomfort?**

**0** Every day      **3** 3 or more times/week      **6** 1 - 2 times/week      **10** Never

**How much do these symptoms impact your work, school, social interactions and quality of life?**

**0** Significantly      **3** Moderately      **6** Somewhat      **10** No impact

**How often do you eat 5 - 10 servings of fruits and vegetables?**

**0** Never      **3** 1 - 2 times/week      **6** 3 or more times/week      **10** Every day

**How often do you eat whole-grain cereals or breads?**

**0** Never      **3** 1 - 2 times/week      **6** 3 or more times/week      **10** Every day

**How many glasses (8 oz or 250 ml) of water do you consume each day?**

**Note: This does not include juices or caffeinated drinks.**

**0** 0      **3** 1 - 3      **6** 4 - 7      **10** 8 or more

**How many glasses of sugared or caffeinated drinks do you consume each day?**

**0** 8 or more      **3** 4 - 7      **6** 1 - 3      **10** 0

**How many days per week do you take part in 40 or more minutes of aerobic exercise?**

**0** 0      **3** 1 - 2      **6** 6 or more      **10** 3 - 5

**How close are you to your ideal weight?**

**0** More or less than 40 lbs (18 kg)      **3** More or less than 25 lbs (11 kg)      **6** Slightly over or underweight      **10** Ideal or very close to ideal

**How often are you advised to take prescription medication to control digestive symptoms?**

**0** Every day      **3** 3 or more times/week      **6** 1 - 2 times / week      **10** Never

**How often do you take non-prescription remedies to control digestive symptoms?**

**0** Every day      **3** 3 or more times/week      **6** 1 - 2 times / week      **10** Never

## Above 75 Stay the Path

Your digestive health is likely very good. Maintaining a healthy diet and lifestyle habits is important. Eating a diet rich in fruits and vegetables, taking part in regular exercise, maintaining a healthy weight, and consuming healthy amounts of fibre will help ensure you continue to maximize your good digestive health.

## 41 - 75 Time for Improvement

It may be time to make some changes to help improve your digestive health. Ensuring that you maintain a healthy diet, exercise regularly and take note when your bowel habits change -- are all important. If you experience occasional minor digestive symptoms, speak to your Rexall pharmacist. If you experience any of the Alarm Symptoms outlined on page 10, please seek professional medical advice.

## 21 - 40 Be aware. Take care.

Your digestive health symptoms and habits are a cause for concern. Please see your Rexall pharmacist to learn how to relieve temporary digestive symptoms and if you experience prolonged symptoms or a sudden onset of alarm symptoms as outlined on page 10, please seek professional medical advice from your physician.

## Below 20 Time to take action

Your digestive health, and therefore your overall health, may be at risk. It is important to recognize ongoing symptoms of digestive distress and seek attention when warranted. Your score indicates that you will likely benefit from speaking to a gastroenterologist. Please seek professional advice from your physician to learn more about your digestive health.

**Please note:** The CDHF Digestive Health Quiz is a very quick scan of your general digestive health. It is not a substitute for medical care or advice from a health care provider. It is important that you always consult with your physician when you have concerns about your health or when you experience significant changes in bowel habits, prolonged heartburn, diarrhea, constipation. Your physician may recommend treatment based on your history and individual circumstances.

# Glossary

Some common terms referring to the digestive system, digestive disorders and diseases, diagnostic procedures, and medications are listed below.

**Abdominal ultrasound:** An imaging technique that uses soundwaves to produce a picture of the desired organ(s) and locate possible abnormalities.

**Absorption:** The movement and uptake of substances into cells or across tissues.

**Alarm symptoms:** Symptoms that may indicate a serious underlying condition and require prompt medical attention.

**Anemia:** Low red blood cell count, leading to an impaired capacity to carry oxygen. In adults, common causes of anemia include blood loss, poor intake of iron, and poor absorption.

**Barium enema:** A diagnostic procedure that involves placing a short tube into the rectum, injecting a barium solution, and taking X-rays to view the lining of the lower digestive tract.

**Barium X-ray/upper GI series:** Ingestion of a white liquid (barium) to coat the esophagus, stomach, and small intestine, followed by an X-ray to view the upper digestive tract.

**Biopsy:** Removal of tissue or fluids from the body and examination of the extracted material to establish a diagnosis (such as cancer).

**Carcinoma:** A type of cancer originating in the cells lining an organ or in a glandular organ.

**Colon (a.k.a. large intestine or large bowel):** The portion of the digestive “tube” connected to the small intestine at one end and the rectum at the other end.

**Colonoscopy:** A procedure that uses a lighted, flexible tube called an endoscope to examine the entire colon (including the rectum), generally carried out under sedation. A newer, less invasive and somewhat less accurate test called a virtual colonoscopy uses a CT scan (an X-ray procedure) to capture images of the colon.

**CT scan:** A sophisticated imaging method that reveals soft-tissue and other structures that can't be seen with normal X-rays.

**Duodenum:** The uppermost part of the small intestine into which the stomach empties; the duodenum is a common site for ulcer formation.

**E. coli (Escherichia coli):** A bacterium that normally lives in the human colon; most E. coli strains are harmless, though a few (notably O157:H7) can cause serious disease or even death.

**Endoscopy:** A broad term used to describe an examination of the inside of a hollow organ using a lighted, flexible instrument called an endoscope.

**Enzymes:** Proteins that speed up chemical reactions.

**ERCP (Endoscopic Retrograde Cholangiopancreatography):** A technique that combines endoscopy and injection of dyes to diagnose and treat certain problems affecting the liver, bile ducts, pancreas or abdomen.

**Erosions:** Shallow destruction of the surface of a tissue.

**Esophagoscopy:** An outpatient procedure that involves passing a flexible camera-tipped tube through the mouth to view the esophageal lining.

**Fecal occult blood test (FOBT):** Examination of three consecutive stool samples for traces of blood not visible to the naked eye.

**Functional dyspepsia:** Dyspepsia for which no cause can be found and generally presumed to stem from abnormal function rather than structural problems.

**Gallstones:** Pebble-sized stones within the gallbladder (the sac that stores bile – a product of the liver that helps digest fat). Gallstones can cause abdominal pain and may trigger inflammation and infection of the gallbladder and pancreas.

**Gastroenterologist:** A medical doctor specializing in the diagnosis and treatment of diseases affecting the entire digestive system.

**Gastrointestinal (GI) tract:** The continuous digestive “tube” that begins at the mouth, continues through the esophagus, stomach, small intestine, colon, and rectum, and ends at the anus.

**Gastroscopy (upper endoscopy):** A procedure in which a camera-tipped tube is passed through the mouth to view the upper gastrointestinal tract (esophagus, stomach and duodenum).

***H. pylori* (Helicobacter pylori):** Stomach bacterium found in the mucous lining of the stomach; *H. pylori* infection can lead to gastritis (stomach inflammation) or to peptic ulcers.

**Heartburn:** A burning feeling rising up behind the breastbone (sternum) towards the neck, generally caused by gastro-esophageal reflux disease (see page 24 ).

**Inflammation:** Irritation of a body part leading to swelling, redness and tenderness. Inflammations within the digestive system include esophagitis, hepatitis and pancreatitis.

**Laparoscopy:** A minimally invasive surgical procedure in which an instrument called a laparoscope is inserted through a small abdominal incision (cut) in order to view structures.

**Lower esophageal sphincter:** A ring-like band of muscular fibres located at the junction of the esophagus and the stomach.

**Mucosa:** The moist inner lining of some organs and body cavities (e.g., esophagus, stomach).

**Non-steroidal anti-inflammatory drugs (NSAIDs):** A group of drugs used to treat inflammation and associated pain. About 15% of chronic NSAID users develop a stomach or upper intestinal ulcer, which puts them at risk of serious complications such as bleeding or perforation.

**Regurgitation:** Fluid or food in the mouth that has come back up from the stomach.

**Sigmoidoscopy:** Use of a lighted, flexible instrument called a sigmoidoscope to examine the rectum and sigmoid colon.

**Sphincter:** See lower esophageal sphincter.

**Ulcer:** An open sore on a body surface caused by tissue erosion (loss of surface tissue).

**Virtual colonoscopy:** An experimental procedure for viewing the colon using a CT scanner and air or water introduced into the rectum. The procedure shows promise as a tool for screening the average-risk population for colon cancer.

## Notes

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