ULCERS since the discovery of *H. PYLORI*

Long hospital stays and surgery are part of the past in treating ulcer disease

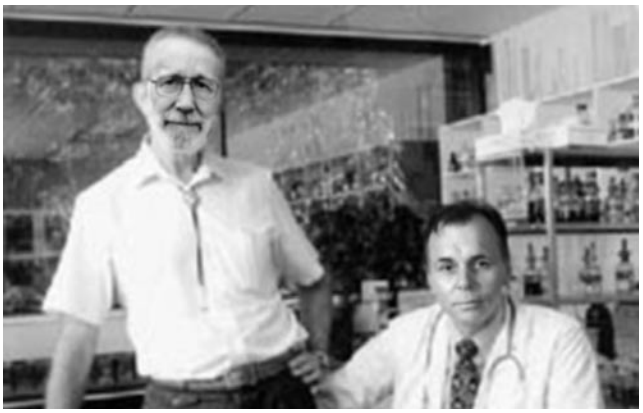
by **Dr. Eric Hurowitz**

Dr. Eric Hurowitze is a gastroenterologist on staff at Scarborough Hospital and Sunnybrook Hospital. He is also President of the North Scarborough Endoscopy Clinic, and Chief of Endoscopy at Scarborough Hospital — Grace Division.

WHEN MY FATHER was being treated for an ulcer some 50 years ago, his treatment consisted of prolonged bed rest in hospital. He was dutifully given copious doses of thick creamy antacid before, after and between meals. That was before his surgery. Half his stomach was removed through a long vertical incision to treat the pain he suffered because of his ulcers. The prevailing opinion was that his ulcers were caused by stress. Sound familiar?

Since I became a doctor in 1980, the textbook has literally been rewritten with regards to what causes ulcers, how they form and how they're treated. When I first graduated, the suggestion that ulcers were caused by bacteria would have brought roars of laughter from classmates and scorn from professors. The very idea that we could cure ulcers, rather than just temporarily treat them, didn't merit a second thought.

The discovery that a bacteria called *Helicobacter pylori* (*H. pylori*) plays a crucial role in ulcer formation and in the return of ulcers after healing, has given hope that, like scurvy or leprosy, peptic ulcers will



The stomach has unique defensive qualities that allow it to be bathed 24 hours per day in acid levels that no other tissue could tolerate for even a few seconds

transform from medical scourge to treatable and understood disease. Dr. Barry Marshall and Dr. J. Robin Warren, above, who discovered the role of *H. pylori*, were awarded the Nobel Prize in Medicine in 2005.

What's a peptic ulcer?

An ulcer is a sore on the inner lining of the stomach or intestine. A gastric ulcer is an ulcer found in the stomach and a duodenal ulcer is found in the beginning of the intestine. They're both commonly called peptic ulcers. They look much like a cold sore on the lip or mouth and can be as small as one millimetre or as large as several centimetres. They're typically circular but can also be irregular in outline. Some are rather superficial and others are so deep that they can penetrate through the entire thickness of the stomach or duodenum.

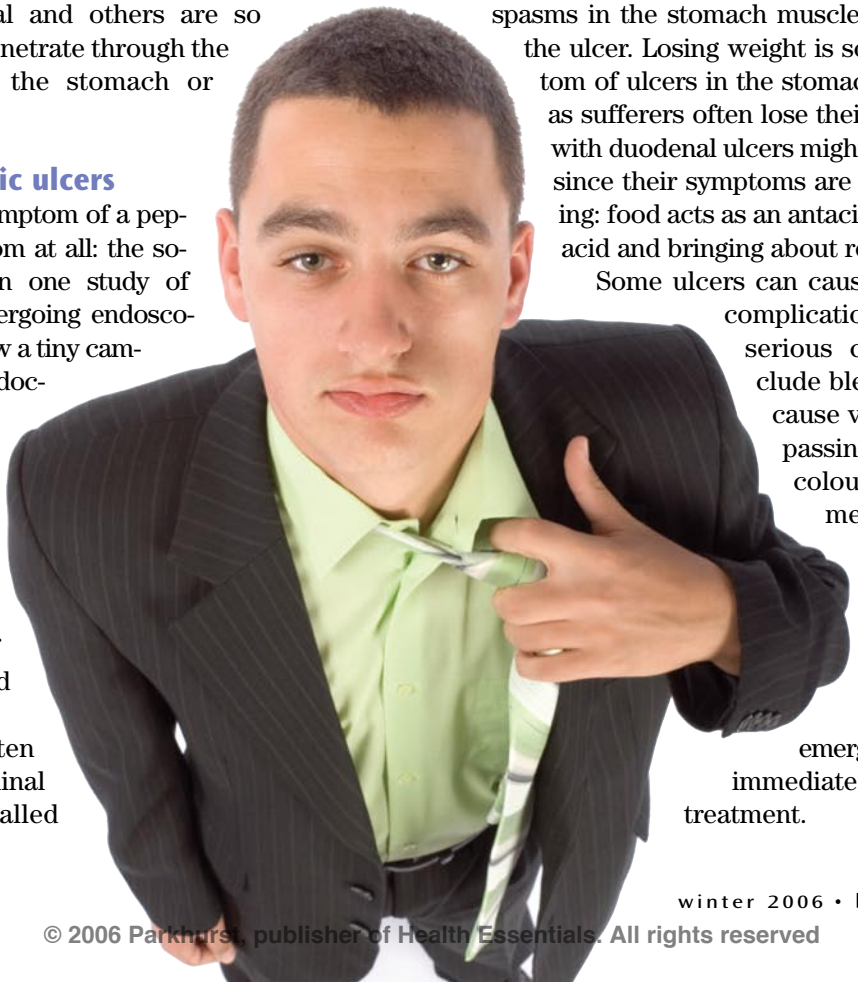
Symptoms of peptic ulcers

The most common symptom of a peptic ulcer is no symptom at all: the so-called silent ulcer. In one study of Chinese patients undergoing endoscopy (where you swallow a tiny camera on a tube so the doctor can look inside your stomach or duodenum) of their stomachs to screen for stomach cancer, ulcers were found in just over 10% of individuals and 70% of those with ulcers had no complaints at all.

Peptic ulcers often cause upper abdominal discomfort (also called dyspepsia) before meals, which is relieved by eating and then returns a few hours later. The explanation for these symptoms lies in acid secretion. Acid is produced in the stomach all the time but production steps up after a meal. The stomach has unique defensive qualities that allow it to be bathed 24 hours per day in acid levels that no other tissue could tolerate for even a few seconds. Heartburn, that sensation of acidy or hot fluid behind the breastbone, isn't an ulcer symptom. It usually reflects acid regurgitation found in gastroesophageal reflux disease.

However, some people with ulcers feel the effects of the acid on their ulcer. It may be that the acid irritates nerves in the bottom of the ulcer or that it causes spasms in the stomach muscle or intestine near the ulcer. Losing weight is sometimes a symptom of ulcers in the stomach (gastric ulcers) as sufferers often lose their appetite. People with duodenal ulcers might even gain weight since their symptoms are relieved after eating: food acts as an antacid, neutralizing the acid and bringing about relief.

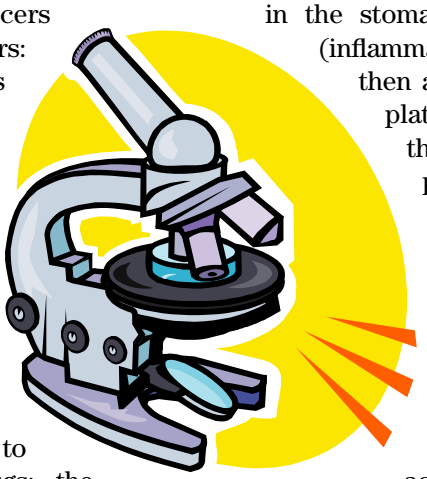
Some ulcers can cause life-threatening complications. Symptoms of serious complications include bleeding, which can cause vomiting of blood, passing black or maroon coloured bowel movements and severe abdominal pain when the ulcer actually ruptures through the stomach wall. These are acute medical emergencies and require immediate assessment and treatment.



What causes ulcers?

Though we talk about the demise of ulcers, peptic ulcers are still common. Over the course of a lifetime, about 10% of men and 5% of women will develop an ulcer. The good news is that rates of hospitalization for peptic ulcers have fallen significantly.

Ninety-five percent of peptic ulcers are associated with two major factors: the use of anti-arthritic medications called non-steroidal anti-inflammatories (NSAIDs), and the presence of the bacteria *H. pylori*.



NSAIDs

About 10% to 20% of people who use high doses of NSAIDs develop ulcer-like sores in the stomach. A small number of these will develop symptoms or complications of peptic ulcer disease. Some people are more likely to develop ulcers when taking these drugs: the elderly, those taking larger doses of the drug, those who have had ulcers before, and people taking aspirin at the same time. The chance of developing ulcer complications while taking NSAIDs can be reduced by also taking proton pump inhibitors (PPIs). Pantoprazole (Pantoloc®) and misoprostol (Cylotec®) are indicated for the prevention of ulcers in people taking NSAIDs. These are medications that prevent the stomach from producing acid and protect the lining of the stomach.

Ninety-five percent of peptic ulcers are associated with two major factors: the use of anti-arthritic medications called non-steroidal anti-inflammatories and the presence of the bacteria, *Helicobacter pylori*

H. pylori

H. pylori is found in the stomachs of 80–95% of people found to have duodenal ulcers and 65–95% of people with gastric (stomach) ulcers. Clearly, not everyone who has *H. pylori* develops an ulcer but an infected individual has an estimated 10% to 20% lifetime risk of developing peptic ulcer disease, which is three to four times higher than in non-infected individuals.

Why, exactly, the bacteria encourages ulcers to form isn't certain, but evidence suggests that carriers of the bacteria produce more acid. There are also some varieties of the bacteria that seem more aggressive in causing ulcers. There may also be something inadequate about the defenses of the stomach in those who develop ulcers in the presence of *H. pylori*.

Drs. Marshall and Warren, who discovered *H. pylori*, proved the importance of the bacteria and ulcers in a very practical way. First of all, they found the bacteria in the stomach lining of people with gastritis (inflammation of the stomach). They were then able to grow the bacteria on special plates of growth medium. They ingested the infected material themselves and promptly developed ulcer symptoms. When they examined each other with endoscopy, inflammation was evident and the bacteria were found living in their stomachs. The rest, as they say, is history.

Later research found that eliminating the bacteria with a combination of antibiotics and drugs that lowered acid production in the stomach changed the pattern of ulcer disease. Instead of re-developing new ulcers after the original one had healed, which had been a common pattern, ulcer sufferers in whom *H. pylori* was eliminated experienced lasting relief.

This was a profound and dramatic finding but it wasn't the end of the *H. pylori* story. The next chapter revealed that the bacteria also played a role in the development of certain cancers of the stomach. *H. pylori* is a well-established bacterial cause of gastric cancer, similar to the connection between human papilloma virus and cervical cancer. Treatment to eradicate *H. pylori* is recommended for infected patients with early gastric cancer resection and their first-degree relatives.

Testing for and treating *H. pylori*

Testing for *H. pylori* can be done in a few different ways. If a person with symptoms of an ulcer undergoes an endoscopy, a biopsy (sampling a tiny bit of the lining of the stomach) may reveal the infection. Family doctors can order a blood test that tells whether the person has been infected by *H. pylori* at some point in their life. Finally, a special breath test, called the urease breath test, is a very accurate, non-invasive way of telling whether the infection is currently present.

It requires drinking a urea solution, which breaks down if the bacteria is present and can then be measured in the breath when the person exhales.

Treating *H. pylori* ulcers requires a concerted effort. At least three different medications must be taken together: two different antibiotics (most commonly amoxicillin and clarithromycin) and one of the PPIs. This combination eliminates the bacteria in 80–90% of people after seven to 10 days. Very few people will get the bacteria again and even fewer will get another ulcer.

What's ahead

The days of spending weeks lying in bed waiting for ulcers to heal are behind us. Surgery that was once commonplace for ulcer disease is now reserved for the rare serious complication. And the discovery of *H. pylori* as a major cause of ulcer disease has greatly reduced the amount and duration of suffering caused by the disease. With the knowledge of how important the bacteria are in causing ulcers, researchers are now looking for a vaccine to prevent children from getting the infection in the first place.