

Smoking and Your Digestive System

National Digestive Diseases Information Clearinghouse



National
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Cigarette smoking causes a variety of life-threatening diseases, including lung cancer, emphysema, and heart disease. An estimated 400,000 deaths each year are caused directly by cigarette smoking. Smoking is responsible for changes in all parts of the body, including the digestive system. This fact can have serious consequences because it is the digestive system that converts foods into the nutrients the body needs to live.

Current estimates indicate that about one-fourth of all adults smoke. And, while adult men seem to be smoking less, women and teenagers of both sexes seem to be smoking more. How does smoking affect the digestive system of all these people?

Harmful Effects of Smoking on the Digestive System

Smoking has been shown to have harmful effects on all parts of the digestive system, contributing to such common disorders as heartburn and peptic ulcers. It also increases the risk of Crohn's disease and possibly gallstones. Smoking seems to affect the liver, too, by changing the way it handles drugs and alcohol. In fact, there seems to be enough evidence to stop smoking solely on the basis of digestive distress.

Heartburn

Heartburn is common among Americans. More than 60 million Americans have heartburn at least once a month, and about 15 million have it daily.

Heartburn happens when acidic juices from the stomach splash into the esophagus. Normally, a muscular valve at the lower end of the esophagus, the lower esophageal sphincter (LES), keeps the acid solution in the stomach and out of the esophagus. Smoking decreases the strength of the esophageal valve, thereby allowing stomach juice to reflux, or flow backward into the esophagus.

Smoking also seems to promote the movement of bile salts from the intestine to the stomach, which makes the stomach juice more harmful. Finally, smoking may directly injure the esophagus, making it less able to resist further damage from refluxed material.

Peptic Ulcer

A peptic ulcer is an open sore in the lining of the stomach or duodenum, the first part of the small intestine. The exact cause of ulcers is not known. A *relationship* between smoking cigarettes and ulcers, especially duodenal ulcers, does exist. The 1989 Surgeon General's report stated that ulcers are more likely to occur, less likely to heal, and more likely to cause death in smokers than in nonsmokers.

Why is this so? Doctors are not really sure, but smoking does seem to be one of several factors that work together to promote the formation of ulcers.

For example, some research suggests that smoking might increase a person's risk of infection with the bacterium *Helicobacter pylori* (*H. pylori*). Most peptic ulcers are caused by this bacterium.

Stomach acid is also important in producing ulcers. Normally, most of this acid is buffered by the food we eat. Most of the unbuffered acid that enters the duodenum is quickly neutralized by sodium bicarbonate, a naturally occurring alkali produced by the pancreas. Some studies show that smoking reduces the bicarbonate produced by the pancreas, interfering with the neutralization of acid in the duodenum. Other studies suggest that chronic cigarette smoking may increase the amount of acid secreted by the stomach.

Whatever causes the link between smoking and ulcers, two points have been repeatedly demonstrated: People who smoke are more likely to develop an ulcer, especially a duodenal ulcer, and ulcers are less likely to heal quickly among smokers in response to otherwise effective treatment. This research tracing the relationship between smoking and ulcers strongly suggests that a person with an ulcer should stop smoking.

Liver Disease

The liver is an important organ that has many tasks. Among other things, the liver is responsible for processing drugs, alcohol, and other toxins to remove them from the body. There is evidence that smoking alters the ability of the liver to handle these substances. In some cases, this may influence the dose of medication necessary to treat an illness. Some research also suggests that smoking can aggravate the course of liver disease caused by excessive alcohol intake.

Crohn's Disease

Crohn's disease causes inflammation deep in the lining of the intestine. The disease, which causes pain and diarrhea, usually affects the small intestine, but it can occur anywhere in the digestive tract. Research shows that current and former smokers have a higher risk of developing Crohn's disease than nonsmokers do. Among people with the disease, smoking is associated with a higher rate of relapse, repeat surgery, and immunosuppressive treatment. In all areas, the risk for women, whether current or former smokers, is slightly higher than for men. Why smoking increases the risk of Crohn's disease is unknown, but some theories suggest that smoking might lower the intestine's defenses, decrease blood flow to the intestines, or cause immune system changes that result in inflammation.

Gallstones

Several studies suggest that smoking may increase the risk of developing gallstones and that the risk may be higher for women. However, research results on this topic are not consistent, and more study is needed.

Can the Damage to the Digestive System Be Reversed?

Some of the effects of smoking on the digestive system appear to be of short duration. For example, the effect of smoking on bicarbonate production by the pancreas does not appear to last. Within a half-hour after smoking, the production of bicarbonate returns to normal. The effects of smoking on how the liver handles drugs also disappear when a person stops smoking. However, people who no longer smoke still remain at risk for Crohn's disease. Clearly, this question needs more study.

For More Information

Information about smoking and health is available from

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