



## Gastroesophageal Reflux in Children and Adolescents

NIH Publication No. 04-5418, December 2003

Gastroesophageal reflux (GER) occurs when stomach contents back up into the esophagus (the tube that connects the mouth to the stomach) during or after a meal. A ring of muscle at the bottom of the esophagus opens and closes to allow food to enter the stomach. This ring is called the lower esophageal sphincter (LES). Reflux can occur when the LES opens, allowing stomach contents and acid to come back up into the esophagus.

GER often begins in infancy, but only a small number of infants continue to have GER as older children. Evaluation by a physician is advised for anyone with persistent symptoms of GER.

### Symptoms

Almost all children and adults have a little bit of reflux, without being aware of it. When refluxed material rapidly returns to the stomach, it causes no damage to the esophagus. In some children, the stomach contents remain in the esophagus and cause damage to the esophagus lining. In other children, the stomach contents go up to the mouth (regurgitation) and are swallowed again. When the refluxed material passes into the back of the mouth or enters the airways, the child may become hoarse or have a raspy voice or a chronic cough. Other symptoms include recurrent pneumonia, wheezing, and difficult or painful swallowing.

### Diagnosis

The doctor or nurse can talk with you about your child's symptoms, examine your child, and recommend tests to determine if reflux is the cause of the symptoms. These tests check the esophagus, stomach, and small intestine to see if there are any problems. However, treatment is sometimes started without tests.

The most common tests used to diagnose GER are:

- Upper GI series x-ray: Barium (a chalky drink) is swallowed so x-rays will show the shape of the esophagus and stomach. This test can find a hiatal hernia, blockage, and other problems.
- Endoscopy: After a sedative medication is given so the patient will fall asleep, a small flexible tube with a very tiny camera is inserted through the mouth and down into the esophagus and stomach. The lining of the esophagus, stomach, and part of the small intestine is examined and biopsies (small pieces of the lining) can be painlessly obtained. The biopsies are later examined with a microscope for signs of inflammation and other problems.
- Esophageal pH probe: A thin light wire with an acid sensor at its tip is inserted through the nose into the lower part of the esophagus. The probe detects and records the amount of stomach acid coming back up into the esophagus, and can tell if acid is in the esophagus when the child has symptoms such as crying, arching the back, or coughing.

Speak with your child's health care provider if any of the following occur:

- Increased amounts of vomiting or persistent projectile (forceful) vomiting
- Vomiting of fluid that is green or yellow in color or looks like coffee grounds or blood
- Difficulty breathing after vomiting or spitting up
- Pain related to eating, or food refusal causing weight loss or poor weight gain
- Difficult or painful swallowing

## Treatment

The treatment of reflux depends on the child's symptoms and age. When a child or teenager is uncomfortable, has difficulty sleeping or eating, or fails to grow, the doctor or nurse may first suggest a trial of medication to decrease the amount of acid made in the stomach. One class of medications called H2-blockers includes cimetidine (Tagamet), ranitidine (Zantac), famotidine (Pepcid), and nizatidine (Axid). Another class is proton-pump inhibitors such as esomeprazole (Nexium), omeprazole (Prilosec), lansoprazole (Prevacid), rabeprazole (Aciphex), and pantoprazole (Protonix). [Note: The authors of this article do not specifically endorse the use of drugs for children that have not been tested in children ("off label" use). Such a determination can only be made under the recommendation of the treating health care provider.]

If the child continues to have symptoms despite the initial treatment, tests may be ordered to help find better treatments. It is rare for children to require surgery for GER. However, surgery may be the best option for children who have severe symptoms that do not respond to any treatment.

Your child's doctor or nurse can discuss the treatment options with you and help your child feel well again.

Additional suggestions are

- Have your child or teenager eat smaller meals more often.
- Avoid eating 2 to 3 hours before bed.
- Elevate the head of the bed 30 degrees.
- Avoid carbonated drinks, chocolate, caffeine, and foods that are high in fat or contain a lot of acid (citrus fruits) or spices.

## Points to Remember

- GER occurs when stomach contents back up into the esophagus.
- GER is common in infants but most children grow out of it.
- GER may cause vomiting, coughing, hoarseness, or painful swallowing.
- Treatment depends on the child's symptoms and age, and may include changes in eating habits and medications. Surgery may be an option.

## Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases, through its Division of Digestive Diseases and Nutrition, supports basic and clinical research into gastrointestinal diseases. Researchers are studying the risk factors for developing GER and what causes the LES to open, with the aim of improving future treatment for GER.

[This is a publication of The National Digestive Diseases Information Clearinghouse (NDDIC). The NDDIC is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The text of this article is not copyrighted.]

---

Opinions expressed are an author's own and not necessarily those of the International Foundation for Functional Gastrointestinal Disorders (IFFGD). IFFGD does not guarantee or endorse any product in this publication nor any claim made by an author and disclaims all liability relating thereto.

This article is in no way intended to replace the knowledge or diagnosis of your doctor. We advise seeing a physician whenever a health problem arises requiring an expert's care.

IFFGD is a nonprofit education and research organization. Our mission is to inform, assist, and support people affected by gastrointestinal disorders. For more information, or permission to reprint this article, write to IFFGD, PO Box 170864, Milwaukee, WI 53217-8076. Toll free: 888-964-2001. Visit our websites at: [www.iffgd.org](http://www.iffgd.org) or [www.aboutkidsgi.org](http://www.aboutkidsgi.org).