Understanding gastroesophageal

Craig L. Kiefer & Kimberly A. Martens

CE

2.5 ANCC/AACN CONTACT HOURS

Rx

1.0 ANCC PHARM. CONTACT HOUR

reflux disease

An 18-month-old child has a history of chronic irritability, poor feeding, and occasional vomiting and isn't gaining weight adequately.

A 34-year-old woman reports a chronic cough of 4 months' duration, although she doesn't smoke or have asthma and isn't exposed to environmental toxins.

A 58-year-old man arrives in the emergency department with acute chest pain. He says he's had similar symptoms before, usually within a few hours of eating a large meal.

Chronic gastric reflux can cause problems at any age. Find out how to recognize this disorder and help a patient manage it.

BY NANCY RAYHORN, RN, CGRN, BSN; NATALIA ARGEL, RN, BSN; and KIMBERLY DEMCHAK, CPNP, MSN

ALL THESE PATIENTS, although experiencing different symptoms, may be suffering from gastroesophageal reflux disease (GERD). Normally, some gastric contents move from the stomach into the esophagus. But in GERD, the process becomes pathologic, producing symptoms that reflect tissue injury in the esophagus and sometimes the respiratory tract as well. Besides being a burden to the patient, symptoms associated with GERD can exact a high cost from society due to lost workdays and decreased productivity.

In this article, we'll discuss what's behind GERD and how you can help patients who are experiencing potentially debilitating signs and symptoms.

Alimentary, my dear Watson

Gastric secretions are highly acidic. If they escape the stomach, they can cause inflammation and damage esophageal tissue. The esophagus has three defenses that normally protect it against injury from gastric secretions:

1. *a high-pressure zone in the lower esophageal sphincter (LES).* During swallowing, the LES opens to let food enter the stomach. The LES may relax at other times when the person isn't eating.

Although a chronic cough is atypical, it's the only

2. *luminal clearance* of ingested food and material that refluxes from the stomach into the esophagus. This motion is facilitated by peristalsis, gravity, salivary secretions, and esophageal secretions.

3. *structure and function of the esophagus,* which is designed to guard against tissue damage when reflux occurs. For example, esophageal peristalsis normally pushes food down the esophagus into the stomach. The narrowness of the esophagus discourages food from moving in the opposite direction.

Failure of any of these mechanisms can contribute to GERD.

Assessing reflux in infants

Gastroesophageal reflux is common in infants, but most tend to outgrow it and don't suffer any serious consequences of their reflux symptoms. Spitting up isn't a problem unless it becomes forceful (vomiting), occurs frequently, or is accompanied by irritability or other alarm symptoms. In an infant, alarm symptoms consistent with GERD include respiratory distress, apnea, irritability, dysphagia, or failure to thrive. Esophagitis associated with reflux may cause hematemesis in patients of all ages.

Reflux is also prevalent in infants with a history of laryngomalacia (prolapse of supraglottic structures during inspiration) or tracheomalacia (narrowing of the trachea). Laryngomalacia is the most common cause of noninfectious stridor in infancy. Tracheomalacia causes wheezing. Infants with these conditions should be checked for reflux and treated if indicated.

Reflux with aspiration, although uncommon in the general population, is more frequently seen in patients with neurologic impairment. Neurologically impaired infants can't protect their airways from fluid that enters the upper esophagus and posterior oropharynx. As a result, they may have chronic respiratory problems, including recurrent pneumonia.

Reflux may also cause infant irritability and certain life-threatening events, including apnea, change in color, change in muscle tone, or choking and gagging. A relationship between GERD and sudden infant death syndrome may exist but hasn't been proven.

A child who isn't gaining weight and has a history of vomiting should be evaluated for reflux. If her caloric intake is appropriate, she should be tested for metabolic or anatomic disorders to rule out other causes of the symptoms.

How GERD affects an older child

A child with GERD may report symptoms similar to those experienced by adults, including abdominal or epigastric pain that may occur during the night and awaken the child, cough, regurgitation, vomiting or nausea, and odynophagia (pain when swallowing).

Persistent GERD is linked to developmental problems: About one-third of children with severe psychomotor disability have significant reflux. Neurologic disorders and GERD can have overlapping symptoms, such as irritability associated with arching, neck extension, and abnormal spastic movements, complicating diagnosis and treatment.

Asthma may be associated with GERD in both children and adults, although the relationship isn't well understood. Reflux exacerbates asthma symptoms for various reasons. For example, acid in the esophagus may trigger a vagal response, and aspiration of gastric acid contents may cause bronchoconstriction.

Heartburn and other grown-up symptoms

In adults, GERD is typically caused by transient relaxation of the LES. Symptoms associated with GERD in adults include heartburn, chest pain, dysphagia, dyspepsia, and a disturbing sensation of a lump in the throat ("globus sensation"). Unusual symptoms include wheezing, hoarseness, chronic cough, earache, and sore throat. Although a chronic cough is atypical, it's the only presenting symptom in some patients.

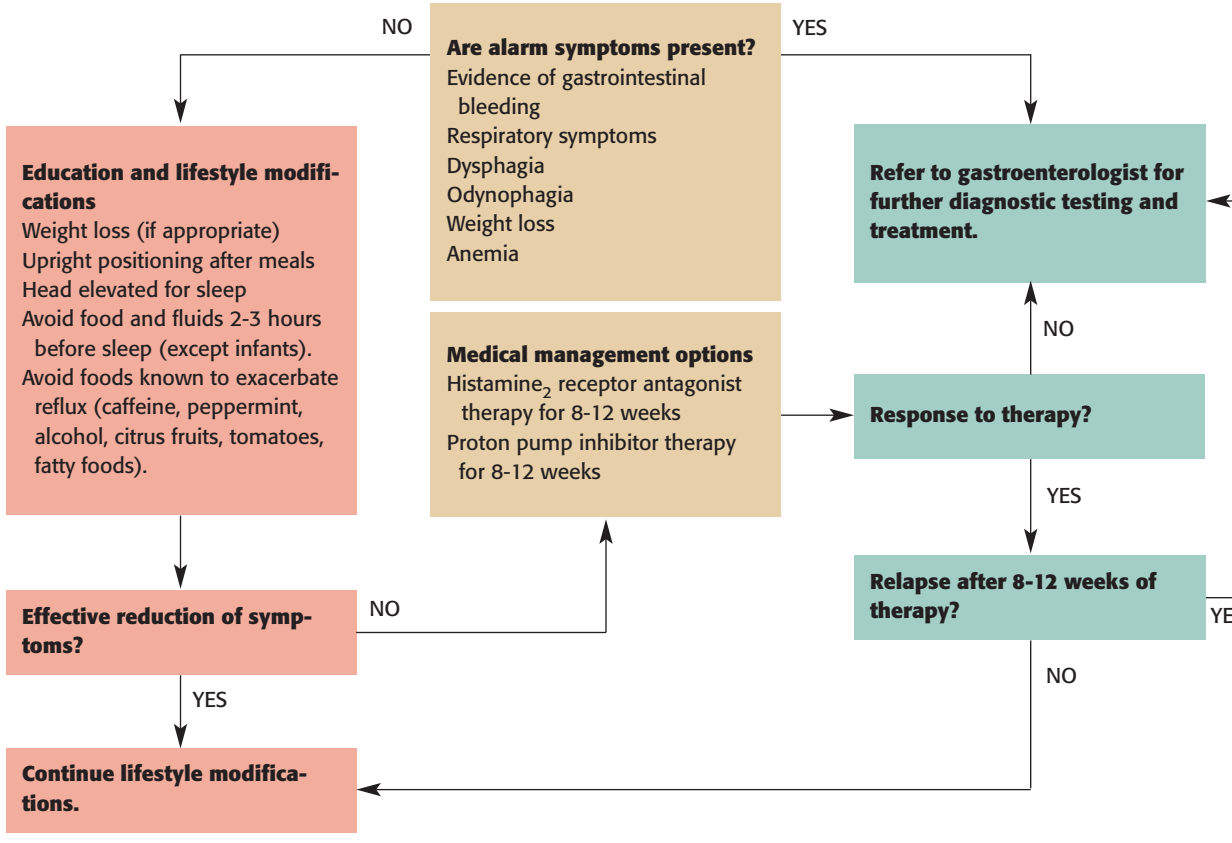
Risk factors for GERD include diseases that decrease muscle tone or cause neuromuscular dysfunction (such as scleroderma and diabetes), obesity, hiatal hernia, pregnancy, smoking, alcohol intake, and certain types of food (more on this later). Recent studies have shown an increased prevalence of GERD in patients with chronic obstructive pulmonary disease.

Complications of GERD include esophageal strictures and development of Barrett's esophagus, a premalignant condition. Esophageal perforation and hemorrhage are rare but potentially fatal complications. Symptoms associated with complications of GERD include weight loss, gastrointestinal (GI) blood loss (hematemesis or stool that's positive for occult blood), anemia, and dysphagia.

Many common prescription and over-the-counter (OTC) medications can increase reflux symptoms. For example, nonsteroidal

presenting symptom in some patients.

Treating gastroesophageal reflux



anti-inflammatory drugs irritate the gastric or esophageal mucosa; estrogen, progesterone, calcium channel blockers, beta-blockers, barbiturates, and diazepam lower pressure in the LES.

Testing for trouble

Despite the number of testing procedures available, no test for GERD is definitive, and diagnosis usually rests on clinical history. The primary care provider may place a patient with typical signs and symptoms, such as heartburn and acid regurgitation, on acid suppression therapy for 2 weeks and then evaluate his response to therapy. If he has atypical symptoms or is at risk for complications of GERD, however, the primary care provider may refer him to a gastroenterologist for further evaluation and treatment.

Let's look at some of the tests available to assess a patient's condition.

- **Barium upper GI radiography** is widely used as an initial diagnostic tool for patients with reflux symptoms. However, although this contrast study can show esophageal strictures and other anatomic abnormalities, it can't show the severity of reflux or esophagitis.
- **Esophagogastroduodenoscopy with biopsies** is highly sensitive and specific for diagnosing esophagitis. The endoscopist can examine the esophagus, evaluating the esophageal mucosa for breaks and gauging the severity of esophagitis, if present. Histologic examination of the biopsy specimens can determine the presence and extent of inflammation of the esophageal tissue. Biopsies also can confirm Barrett's esophagus.
- **Esophageal pH monitoring** is performed by placing a probe with a pH electrode at its tip transnasally to a level 2 inches (5 cm) above the lower esophageal sphincter in adults. (Placement in children depends on the child's length or height.) Monitoring pH can help the practitioner determine if the patient has abnormal acid reflux and if reflux episodes and symp-

Teach your patient to avoid foods such as peppermint,

toms are related. Monitoring pH can also help him assess the adequacy of therapy.

• **Gastroesophageal scintigraphy** is used infrequently to demonstrate reflux, aspiration, or both. The patient eats a meal that's been labeled with a radioisotope, then undergoes a postprandial imaging procedure. Repeatedly finding the radioisotope in the esophagus suggests gastroesophageal reflux; finding the radioisotope in the lungs indicates aspiration.

• **Bronchoscopy with bronchoalveolar lavage and examination of lavage fluid for lipid-laden alveolar macrophages.** If the practitioner suspects recurrent aspiration from reflux, he may refer the patient to a pulmonologist for this test. Although some lipid-laden alveolar macrophages may be present in a healthy person's bronchial aspirates, large numbers of these macrophages indicate silent aspiration.

Silent aspiration is more common in neurologically compromised patients who can't protect their airway and in patients with a history of recurrent pneumonia.

Treating GERD

Treatment for GERD is often initiated with "step up" therapy, meaning that the patient first tries conservative measures and adds more treatments to the regimen if his symptoms don't respond adequately (see *Treating Gastroesophageal Reflux*).

However, for a patient with severe symptoms or erosive esophagitis, the practitioner may recommend "step down" therapy, in which therapy begins more aggressively; for example, with a proton pump inhibitor. When the patient's symptoms respond, he can step down to histamine$_2$ receptor antagonists to maintain remission.

In patients of all ages, OTC antacids may relieve symptoms temporarily. Patients are usually discouraged from prolonged use of antacids because histamine$_2$ receptor antagonists, such as cimetidine, ranitidine, famotidine, and nizatidine, are safer. (However, elderly patients shouldn't use cimetidine.) Histamine$_2$ receptor antagonists, which are available OTC in tablet form and by prescription in tablet and liquid forms, reduce acid secretion and damage to the esophageal mucosa.

Proton pump inhibitors, such as omeprazole (recently approved for OTC sale), lansoprazole, pantoprazole, esomeprazole, and rabeprazole, decrease gastric acid by blocking the final step in acid production. These drugs suppress acid more completely than other drugs and control both meal-stimulated and basal acid production.

These drugs are now being used in children, although only omeprazole and lansoprazole are approved by the Food and Drug Administration for pediatric use. Children requiring aggressive or prolonged therapy for GERD may need to be referred to a pediatric gastroenterologist for further evaluation and treatment.

What to teach the patient

All patients should begin treatment with appropriate lifestyle modifications—the simplest, cheapest, and safest approach to therapy. Teach your patient to avoid substances known to exacerbate reflux symptoms, including tobacco smoke, alcohol, certain medications, and certain foods (such as high-fat foods, peppermint, caffeine, tomato products, and citrus fruit products). Advise him to eat smaller, more frequent meals; big meals exacerbate reflux. If he's obese, advise him to lose weight by modifying his diet and exercising more, as directed by his practitioner.

Also teach the patient to avoid eating or drinking for 2 to 3 hours before bedtime to reduce nighttime symptoms. (Infants may continue to consume formula or breast milk before going to sleep.) Children and adults should sleep with the head of the bed elevated 4 to 8 inches (10 to 20 cm) to minimize reflux. (Suggest placing a wedge under the mattress or bricks under the headboard to elevate the head of the bed.)

Inform the patient that upright positioning can help him reduce reflux symptoms and instruct him to remain upright after a meal. Infants should be held upright or positioned with the head elevated after feeding. Prone positioning for sleep, although shown to reduce reflux, isn't recommended for infants because of the risk of sudden infant death syndrome.

Teach the patient how to take his medications correctly. For example, he should take a proton pump inhibitor 30 to 60 minutes before a meal and not at the same time as histamine$_2$ receptor antagonists.

Surgery: When medical therapy fails

Surgical treatment of GERD is indicated for patients in whom medical therapy has failed and for those with recurrent reflux-induced aspiration pneumonia who need lifelong medical therapy to prevent relapses. The surgical procedure typically involves wrapping the fundus of the stomach around the lower esophagus (fundoplication), resulting in either a complete, 360-degree wrap or an incomplete

caffeine, tomato products, and citrus fruit.

wrap. Various surgical approaches can be used, including a laparoscopic approach.

Patients who've undergone antireflux surgery are less likely to need regular treatment with medications. However, patients with Barrett's esophagus should still be monitored regularly for esophageal cancer.

The natural course of GERD in infants and children is poorly understood, so children are rarely treated surgically unless they have severe reflux or are experiencing debilitating or potentially life-threatening complications.

Happy endings

Because GERD can strike patients of any age, often with mild or nonspecific symptoms, you're in a position to identify problems during routine patient assessments. Stay alert for signs of trouble, refer patients for more evaluation if indicated, and be ready to answer their questions about diagnosis and treatment. N

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SELECTED WEB SITE

Pediatric/Adolescent Gastroesophageal Reflux Association: **http://www.reflux.org**
Last accessed on September 1, 2003.

CE Test

Understanding gastroesophageal reflux disease

Instructions:

- Read the article beginning on page 36.
- Take the test, recording your answers in the test answers section (Section B) of the CE enrollment form. Each question has only one correct answer.
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Understanding gastroesophageal reflux disease

GENERAL PURPOSE To provide professional nurses with an understanding of gastroesophageal reflux disease (GERD). **LEARNING OBJECTIVES** After reading the preceding article and taking this test, you should be able to: **1.** Outline the clinical manifestations of GERD. **2.** Identify the medical and nursing management of patients with GERD.

1. Which symptom would you expect to find in a patient with GERD?
a. chest pain
b. diarrhea
c. elevated temperature
d. pruritus

2. Which statement is correct about GERD in infants?
a. GERD is uncommon in infants.
b. Alarm symptoms include dysphagia.
c. Pancreatitis is a frequent comorbid condition.
d. Weight gain is unaffected.

3. Persistent GERD in children has been linked with
a. sudden infant death syndrome.
b. spitting up after receiving formula.
c. nasal stuffiness.
d. severe psychomotor disability.

4. The following symptoms are atypical in adults with GERD, *except*
a. hoarseness.
b. earache.
c. vomiting.
d. wheezing.

5. Which medication worsens reflux symptoms by irritating the gastric mucosa?
a. estrogen
b. ibuprofen
c. dopamine
d. diazepam

6. Which initial diagnostic study is used most often in patients with reflux symptoms?
a. esophagogastroduodenoscopy with biopsies
b. esophageal pH monitoring
c. barium upper GI radiography
d. gastroesophageal scintigraphy

7. Which statement is correct about dietary guidelines for treating GERD?
a. The patient can take peppermint to soothe the stomach.
b. The patient should avoid eating tomatoes.
c. Citrus fruits have no effect on reflux symptoms.
d. French fries may be consumed in small quantities.

8. Which is an alarm symptom for GERD in infants?
a. chronic burping
b. weight gain
c. respiratory distress
d. abdominal bloating

9. Which lifestyle modification would you teach your patient with GERD?
a. Limit regular coffee to one cup per day.
b. Stop smoking cigarettes.
c. Eat three meals a day with no snacks in between.
d. Lie supine without pillows when in bed.

10. Reflux symptoms can be reduced by
a. not eating or drinking at least 1 hour before bedtime.
b. increasing alcohol intake.
c. not reclining after meals.
d. taking a peppermint.

11. Which statement is correct about Barrett's esophagus?
a. All patients with GERD will eventually develop it.
b. Respiratory symptoms are exacerbated in patients who have it.
c. It's primarily treated by having the patient follow a specific diet.
d. Patients who have it are at risk for developing esophageal cancer.

12. Surgical treatment of GERD is indicated when the patient
a. frequently develops reflux-induced aspiration pneumonia.
b. can't tolerate proton pump inhibitors.
c. has developed Barrett's esophagus.
d. is obese and hasn't lost enough weight.

13. Teach the parents of an infant with GERD to
a. avoid giving the infant formula or breast milk before bedtime.
b. place the infant prone for sleep.
c. allow the infant to be supine after eating.
d. keep the infant upright after a feeding.

14. Which *isn't* a complication of GERD?
a. esophageal perforation
b. esophageal strictures
c. community-acquired pneumonia
d. esophageal hemorrhage

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