

Studies in children and adolescents suggest these medications to be safe and effective.

## MEDICATIONS

Antacids based on magnesium hydroxide and calcium carbonate such as TUMs, Maalox, or Mylanta are usually given for acute symptom relief.

Histamine-2 receptor antagonists (H<sub>2</sub>RAs) include Pepcid, Zantac, Tagamet and Axid are given twice a day and seem to work well even when given with food. Combinations of H<sub>2</sub>RAs and antacids are available over the counter and may provide both immediate and longer term relief.

Proton pump inhibitors (PPIs), such as Prevacid, Prilosec, Protonix, Aciphex or Nexium should be taken 20-30 minutes before the first meal of the day.

While the side effects are uncommon, occasionally headache, abdominal pain, nausea, diarrhea or constipation may occur.

## SURGERY

Surgical treatment of severe GERD is an option in selected cases. Laparoscopic fundoplication is the preferred current technique. However, nearly two-thirds of children managed with fundoplication have recurrence of symptoms requiring reinstitution of medical treatment.

## WHEN TO CONSULT THE PEDIATRIC GASTROENTEROLOGIST

- If treatment with medication fails
- If persistent hoarseness, cough, or other signs of airway problems are present
- If diagnosis is not clear and differentiation from other conditions is needed
- When GERD persists and there is a strong family history of esophageal disorders

## PROGNOSIS

A study on 54 otherwise normal children and adolescents showed that very few patients were able to step-down from PPIs to H<sub>2</sub>RAs even after years of treatment. In fact, one-third of children started on H<sub>2</sub>RAs needed treatment with PPIs. In another long term study evaluating safety of PPIs in children, some required continuous PPIs for up to 11 years, suggesting GERD can cause significant morbidity in this population. Two recent retrospective studies have shown that childhood GERD is a risk factor for GERD in adolescence and adulthood.

Many adults with GERD recall symptoms of heartburn and dysphagia during childhood. Cross-sectional and retrospective epidemiologic data also suggest that adenocarcinoma of the esophagus can be a long-term sequela of GERD. Thus, available evidence suggests that GERD presenting in childhood or adolescence does not always go away and can lead to chronic problems. GERD should be effectively treated to improve quality of life and to possibly prevent future complications.

## References

1. Nelson SP, Chen EH, Syniar GM, Christoffel KK, for the Pediatric Practice Research Group. Prevalence of symptoms of gastroesophageal reflux during childhood: A pediatric practice-based survey. *Arch Pediatr Adolesc Med* 2000; 54:150-4.
2. El-Serag HB, Gilger M, Carter J, Genta RM, Rabeneck L. Childhood GERD is a risk factor for GERD in adolescents and young adults. *Am J Gastroenterol* 2004;100:806-812.
3. Tolia V, Essenmacher L, Ager J. Gastroesophageal Reflux Disease (GERD) Impairs the Quality of Pediatric Patients. *J Pediatr Gastroenterol Nutr* 2005, vol 41;4, A31
4. Onimoe G I, Toila, V Thomas, R. Clinical Presentation and Long Term Outcome of Gastroesophageal Reflux Disease in Children and Adolescents. *J Pediatr Gastroenterol Nutr* 2005, vol 41;4, A34



[www.KidsAcidReflux.org](http://www.KidsAcidReflux.org)  
[www.TeensAcidReflux.org](http://www.TeensAcidReflux.org)  
[www.CDHNF.org](http://www.CDHNF.org)  
[www.NASPGHAN.org](http://www.NASPGHAN.org)

CDHNF National Office:  
P.O. Box 6, Flourtown  
PA 19031

Phone: 215-233-0808

Educational support for The CDHNF  
Pediatric GERD Education Campaign  
was provided by Major Sponsor  
**TAP Pharmaceutical Products Inc.**

**CDHNF**  
CHILDREN'S DIGESTIVE  
HEALTH & NUTRITION  
FOUNDATION

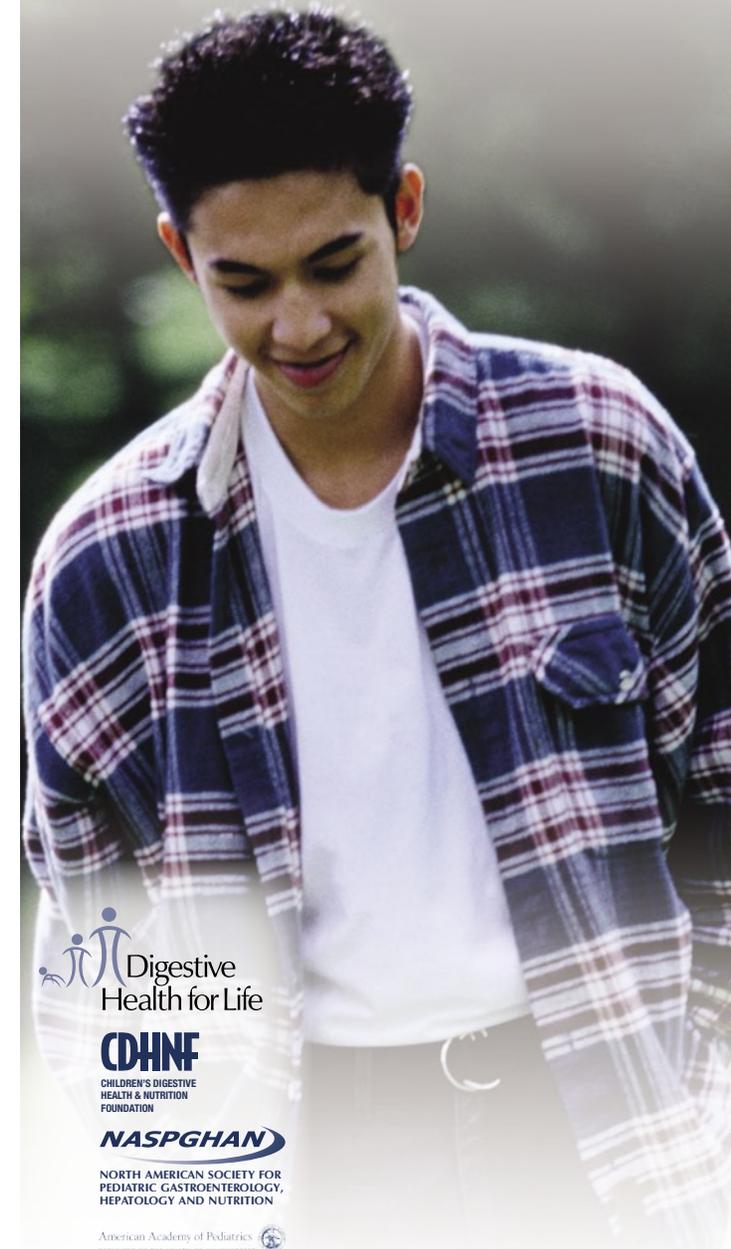
**NASPGHAN**

NORTH AMERICAN SOCIETY FOR  
PEDIATRIC GASTROENTEROLOGY,  
HEPATOLOGY AND NUTRITION

American Academy of Pediatrics  
DEDICATED TO THE HEALTH OF ALL CHILDREN™

# CHALLENGES IN PEDIATRIC REFLUX ADVICE TO THE PRACTITIONER

## GERD in Children and Adolescents



## Scope of the problem

The prevalence of gastroesophageal reflux disease (GERD) in all ages appears to have increased over the last 50 years. The reasons for this increase and its related complications are poorly understood. Available data in the pediatric and adolescent population are sparse and more work is needed to document the extent of the problem and its natural history. Although it is difficult to project the severity of GERD by symptoms alone, it should be noted that experiencing heartburn at least twice weekly is considered sufficient to impair quality of life in adults. Recent studies have shown that childhood GERD may be a risk for GERD in adolescence and adulthood.

## Symptoms

Common symptoms of GERD experienced by adolescents are shown in Table 1. Some patients may present with symptoms related to other systems such as the teeth, ear, nose, and airway (See Table 2). Chronic hoarseness or sore throat might be present without obvious esophageal or gastrointestinal complaints. Contrary to infants and young children, most adolescents with GERD do not have predisposing risk factors such as developmental delay, anatomic abnormalities, or asthma. In adults, obesity seems to be a significant risk factor for GERD and many pediatric gastroenterologists believe that this may be the case for adolescents as well.

TABLE 1 SYMPTOMS OF GERD

- |                   |                         |
|-------------------|-------------------------|
| • Abdominal pain  | • Difficulty swallowing |
| • Heartburn       | • Chest pain            |
| • Regurgitation   | • Hematemesis           |
| • Vomiting        | • Bad breath            |
| • Throat clearing |                         |

TABLE 2 SUPRA-ESOPHAGEAL SYMPTOMS OF GERD

- Exacerbation of asthma
- Recurrent pneumonia
- Sore throat
- Persistently hoarse voice
- Dental erosions
- Possible chronic/recurrent sinuses
- Possible chronic/recurrent ear infections

## Diagnosis of GERD

A careful history and thorough physical examination may be sufficient to suspect the diagnosis of GERD, but other

conditions such as peptic ulcer disease, eosinophilic esophagitis or *Helicobacter pylori* infection can all present with similar symptoms. Investigations used to confirm the diagnosis of GERD include:

- **Upper endoscopy with biopsies** — Helpful for assessing the severity of the inflammation and to exclude other conditions in the esophagus, stomach and duodenum.
- **pH monitoring** — Identification of acid reflux episodes over several hours can shed important information on the timing of the reflux and the adequacy of acid clearance. A thin wire is inserted through the nostril and the information is captured digitally in a portable recorder. Newer techniques include a sensor which is attached to the esophageal mucosa during the performance of an endoscopy and transmits the data wirelessly (The BRAVO system), and measurement of impedance in the esophagus. This allows identification of acid and non-acid reflux episodes but is not routinely available.
- **Radiologic tests** are useful for identifying structural abnormalities but not for diagnosing reflux.

## Management of GERD

Treatment is directed at suppressing acid exposure to the esophagus in order to allow healing and possibly to alter the natural history of GERD by preventing long-term complications of GERD such as strictures, Barrett's esophagus and esophageal cancer.

### LIFE-STYLE MODIFICATIONS

Life style modifications include avoidance of foods and dietary items known to exacerbate reflux. Some of these incriminating foods include tomatoes, citrus products, fried/fatty/spicy foods, carbonated beverages, chocolates and even dairy products. Obesity and late night snacks can aggravate GER symptoms. Avoidance of the supine position on a full stomach and minimizing increased intra-abdominal pressure such as occurs during certain activities and sports may be worthwhile.

### PHARMACOTHERAPY

The goal of therapy is effective control of stomach acid. A meta analysis in adults has shown that proton pump inhibitors are superior to antacids and histamine-2 receptor antagonists in maintaining intragastric pH >4 and promoting mucosal healing.

