



## Complete Summary

---

### GUIDELINE TITLE

American Gastroenterological Association medical position statement on the management of gastroesophageal reflux disease.

### BIBLIOGRAPHIC SOURCE(S)

Kahrilas PJ, Shaheen NJ, Vaezi MF, Hiltz SW, Black E, Modlin IM, Johnson SP, Allen J, Brill JV, American Gastroenterological Association. American Gastroenterological Association Medical Position Statement on the management of gastroesophageal reflux disease. *Gastroenterology* 2008 Oct;135(4):1383-91, 1391.e1-5. [13 references] [PubMed](#)

### GUIDELINE STATUS

This is the current release of the guideline.

According to the guideline developer, the Clinical Practice Committee meets three times a year to review all American Gastroenterological Association Institute (AGA Institute) guidelines. This review includes new literature searches of electronic databases followed by expert committee review of new evidence that has emerged since the original publication date.

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
CONTRAINDICATIONS  
QUALIFYING STATEMENTS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### DISEASE/CONDITION(S)

Gastroesophageal reflux disease (GERD)

**Note:** GERD is defined as a condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications.

## **GUIDELINE CATEGORY**

Diagnosis  
Management  
Treatment

## **CLINICAL SPECIALTY**

Family Practice  
Gastroenterology  
Internal Medicine  
Surgery

## **INTENDED USERS**

Advanced Practice Nurses  
Health Care Providers  
Nurses  
Physician Assistants  
Physicians

## **GUIDELINE OBJECTIVE(S)**

To provide diagnostic and management strategies for patients with gastroesophageal reflux disease (GERD)

## **TARGET POPULATION**

Adults with gastroesophageal reflux disease (GERD)

These guidelines are not intended for use of adults with Barrett's esophagus.

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Diagnosis and Initial Treatment**

1. Lifestyle modifications
  - Weight loss
  - Elevation of the head of the bed
  - Other lifestyle modifications
2. Antisecretory drugs
  - Proton pump inhibitors (PPIs)
  - Histamine receptor antagonists (H<sub>2</sub>RAs)
  - Metoclopramide (not recommended)
3. Diagnostic tests
  - Endoscopy with or without biopsy
  - Esophageal manometry
  - Ambulatory impedance pH, catheter pH, or wireless pH monitoring

- Using alarms symptoms as a screening tool for GERD (not recommended)
4. Differential diagnosis

### **Chronic (Long-term) Management**

1. Maintenance therapy with PPIs or H<sub>2</sub>RAs
2. Endoscopy with or without mucosal biopsy
3. Antireflux surgery
4. Bone density studies, calcium supplementation, *Helicobacter pylori* screening, or other routine precautions because of PPI use (not recommended)

### **MAJOR OUTCOMES CONSIDERED**

- Sensitivity, specificity, and diagnostic yield of diagnostic tests
- Efficacy of treatment (heartburn and other symptom relief)
- Rate of progression or regression of esophagitis
- Recurrence of erosive esophagitis
- Mortality
- Side effects of pharmacologic therapy
- Complications of antireflux surgery

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Hand-searches of Published Literature (Primary Sources)  
Hand-searches of Published Literature (Secondary Sources)  
Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

In the development of this medical position statement, 12 broad questions pertinent to diagnostic and management strategies for patients with gastroesophageal reflux disease (GERD) were developed by interaction among the authors of the technical review (see "Availability of Companion Documents" field), representatives from the American Gastroenterological Association (AGA) Institute Council, and the AGA Institute Clinical Practice and Quality Management Committee. The questions were designed to encapsulate the major management issues encountered in patients with GERD in current clinical practice. (Refer to the "AGA Institute Practice Recommendations Development Manual" [see "Availability of Companion Documents" field ])

For each question, a comprehensive literature search was conducted on MEDLINE and the Cochrane Library. Pertinent evidence was reviewed, and the quality of relevant data was evaluated. Studies involving adults and English-only papers published after 1990 were considered; letters, commentaries, narrative reviews, and case reports were excluded from the search. Meta-analyses, practice guidelines, randomized controlled trials, and systematic reviews were included. The connector word "and" was used to combine terms; the connector word "not" was used to exclude nonrelevant papers, and the connector word "or" was used to

eliminate duplicate papers. Bibliographies of retrieved articles were reviewed for additional relevant publications. The specifics of the search strategy used are provided below each question:

**1. What Is an Operational Definition of GERD? What Is the Distinction Between GERD and Episodic Heartburn?**

To identify relevant papers on an operational definition of GERD and those describing the distinction between GERD and episodic heartburn, the text words "definition" and "episodic heartburn" were combined with the MeSH search term "GERD." Relevant papers were selected by the authors from a yield of 114.

**2. What Is the Efficacy of Lifestyle Modifications for GERD? Which Elements Should Be Recommended and in Which Circumstances?**

To identify papers describing the efficacy of nonpharmacologic therapy for GERD, the following text words were searched: "GERD" or "reflux" or "LES" and either "weight loss," "obesity," "diet," "exercise," or nonpharmacologic therapy." Reports describing recommended elements for nonpharmacologic therapy and under which circumstances they are to be used were identified excluding the text words "bariatric surgery," "pediatric," and "functional gastrointestinal disorder." A total of 407 publications were retrieved.

**3. How Do Antisecretory Therapies Compare in Efficacy and Under What Circumstances Might One Be Preferable to Another? What Is an Acceptable Upper Limit of Empirical Therapy in Patients With Suspected Typical Esophageal GERD Syndromes Before Performing an Esophagogastroduodenoscopy?**

To identify relevant papers comparing the efficacy of antisecretory therapies, the text words "proton pump inhibitors" and "histamine (H<sub>2</sub>) receptor antagonists" were combined with the MeSH term "GERD." The text words "empiric therapy" and "EGD" were then combined with the text word "esophageal GERD syndrome," which resulted in a yield of 400. Relevant papers describing studies involving the comparison of 2 or more treatments were selected by authors.

**4. What Is the Role and Priority of Diagnostic Tests (Endoscopy, Esophageal Manometry, Ambulatory pH Monitoring, Combined Multichannel Intraluminal Impedance-pH Testing) in the Evaluation of Patients With Suspected Esophageal GERD Syndromes?**

To identify papers on the role and priority of diagnostic tests, the text words "diagnostic interventions," "endoscopy," "esophageal manometry," "ambulatory pH monitoring," "pH testing," and "diagnostic evaluation" were combined with the text words "esophageal GERD syndrome." The MeSH term "GERD" and text words "multichannel intraluminal impedance" were then combined with the preceding terms to yield 125 relevant papers.

5. **What Are the Unique Management Considerations in Patients With Suspected Reflux Chest Pain Syndrome?**

To identify papers describing unique management considerations in suspected reflux chest pain syndrome, the text words "non cardiac chest pain or non-cardiac chest pain" were searched alone and in combination with "GERD"; the text words "GERD chest pain" and "esophageal chest pain" was combined with the text word "management." The following text words were excluded: "pediatrics," "children," "infants," "pediatrics," "bariatric surgery," "constipation," "dyspepsia," "functional gastrointestinal disorder," and "duodenal ulcer." This resulted in 388 relevant articles.

6. **What Is the Best Initial Management for Patients With Suspected Extraesophageal Reflux Syndromes (Asthma, Laryngitis, Cough)? What Are the Unique Management Considerations With Each? What Is the Appropriate Dose and Course of Antisecretory Therapy in Each?**

Relevant papers were identified using the search terms "GERD" and "asthma," "cough," "laryngitis," and "dental erosion." The text words "proton pump inhibitors" and "histamine (H2) receptor antagonists" were combined with the results, and duplicate papers were eliminated. The text words "children," "infants," and "pediatrics" were excluded to yield 477 relevant papers.

7. **Does GERD Progress in Severity, Such That Symptomatic Patients Without Esophagitis Develop Esophagitis and Barrett's Metaplasia, or Are These Distinct Disease Manifestations That Do Not Exist Along a Continuum? If Patients Do Progress, at What Rate Does This Occur, and Does It Warrant Endoscopic Monitoring?**

To identify papers describing GERD disease progression, the text word "GERD progression" was searched; the text word "Barrett\*" was then combined with the MeSH term "GERD." The truncation symbol \* was used to allow for a search that includes all forms of the word "Barretts" (eg, "Barrett's," "Barrets," "Barretts," and so on). Relevant papers were selected by authors out of a yield of 620.

8. **What Maintenance Therapy Is Indicated for Patients With the Typical Esophageal Reflux Syndrome (With or Without Esophagitis)? When and How Should Antisecretory Therapy Be Decreased or Discontinued? What, If Any, Risks Are Associated With This?**

The text words "erosive esophagitis" and "nonerosive symptomatic GERD" were searched to identify papers on maintenance therapy for patients with typical esophageal reflux syndrome. The text terms "nonerosive esophagitis" were then combined with the text words "maintenance," "erosive maintenance," and "proton pump inhibitors" to result in a yield of 157 papers. Relevant papers were selected by authors.

9. **What Maintenance Therapy Is Indicated for Patients With Suspected Extraesophageal Reflux Syndromes (Asthma, Laryngitis, Cough)? When and How Should Antisecretory Therapy Be Decreased or Discontinued?**

To identify papers on maintenance therapy indicated for patients with extraesophageal reflux syndromes, the search terms "asthma," "cough," and "laryngitis" were combined with "maintenance therapy" and "GERD."

**10. What Are the Clinical Consequences of Chronic Potent Acid Inhibition? Do These Potential Side Effects Warrant Specific Testing (e.g., Bone Density Studies, Calcium Supplementation, *Helicobacter pylori* Screening, and so on)?**

The text word "proton pump inhibitors" were first combined with "side effects" and the MeSH term "GERD" was combined with the text words "histamine (H2) receptor antagonists" and "H pylori screening" to yield 67 articles.

**11. What Is the Role of Endoscopy in Long-term Management of Patients With GERD, and Under What Circumstances Should Mucosal Biopsy Specimens Be Obtained When Endoscopy Is Performed?**

The MeSH term "GERD" was combined with the text words "endoscopy," "biopsies," and "role of endoscopy"; the text word "dysphagia" was then combined with the text word "eosinophilic esophagitis." These searches resulted in a yield of 2766 papers. These were then limited to clinical trials. Relevant papers were selected by authors.

**12. What Are Indications for Antireflux Surgery, and What Is the Efficacy of This Therapy?**

To identify relevant papers on indications for and efficacy of surgical antireflux procedures, the text words "Nissen," "efficacy," and "laparoscopy" were combined with the MeSH term "GERD". This resulted in a yield of 572 articles; relevant papers were selected by authors.

**NUMBER OF SOURCE DOCUMENTS**

Not stated

**METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Expert Consensus  
Weighting According to a Rating Scheme (Scheme Given)

**RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

**Quality of Evidence**

**Good:** Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

**Fair:** Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the

individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

**Poor:** Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review with Evidence Tables

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

For each question, a comprehensive literature search was conducted, pertinent evidence reviewed, and the quality of relevant data evaluated. The resultant conclusions were based on the best available evidence or, in the absence of quality evidence, the expert opinion of the authors of the technical review and medical position statement. The strength of these conclusions was weighed using US Preventive Services Task Force (USPSTF) grades. (See "Rating Scheme for the Strength of Evidence" field.)

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

In July 2007, the American Gastroenterological Association (AGA) Institute began the implementation of a new process for developing clinical practice guidelines summarized in a policy statement entitled "AGA Institute Practice Recommendations Development Manual." (See "Availability of Companion Documents" field.) The guideline on management of patients with gastroesophageal reflux disease (GERD) was the first to be developed using this new process.

The twelve broad gastroesophageal reflux disease (GERD) management questions addressed by the technical review (TR) (see "Availability of Companion Documents" field) were developed by interaction among the authors, the American Gastroenterological Association (AGA) Institute Clinical Practice and Quality Management Committee, and representatives from the AGA Institute Council. Thereafter, primary responsibility for drafting answers to each question was assigned to the authors by the lead author.

The new AGA development process included the formation of a Medical Position Panel (MPP). The Medical Position Panel (MPP) was selected by members of the Clinical Practice and Quality Management Committee with input from AGA institute Council and TR authors and consisted of a community-based gastroenterologist, a payer, a general surgeon, a patient (or patient advocate), a primary care

physician, and a gastroenterologist with expertise in health services research. The intended purpose of having this wide stakeholder representation on the MPP was to add strength and credibility to the guideline development process.

The TR was subject to external peer review before the face-to-face meeting of the MPP. Hence, before the MPP meeting, members of the panel had both the draft TR and the critiques of four external peer reviewers to consider. Then, during the MPP meeting, held in Bethesda, Maryland, on April 2, 2008, the TR authors led an open discussion regarding both the specific practice recommendations pertinent to each management question in the TR and the reviewer commentary relevant to each. The MPP then charged the TR authors to make specific modifications to the TR in view of their own and peer reviewer feedback and tasked them to draft the medical position statement (MPS). These revised documents were again reviewed by the MPP and the AGA Institute Clinical Practice and Quality Management Committee. Final feedback was obtained, and continuing medical education (CME) questions were drafted.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

### **Strength of Recommendations\***

**Grade A:** The United States Preventive Services Task Force (USPSTF) strongly recommends that clinicians provide [the service] to eligible patients. *The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.*

**Grade B:** The USPSTF recommends that clinicians provide [this service] to eligible patients. *The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.*

**Grade C:** The USPSTF makes no recommendation for or against routine provision of [the service]. *The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.*

**Grade D:** The USPSTF recommends against routinely providing [the service] to asymptomatic patients. *The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.*

**Grade Insuff:** The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. *Evidence that the [service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.*

\***NOTE.** The USPSTF grades its recommendations according to one of 5 classifications (A, B, C, D, Insuff) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms). The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor).

## **COST ANALYSIS**

A published cost-effectiveness analysis has found empirical treatment with proton pump inhibitors (PPIs) to be superior to other clinical strategies for patients with

suspected reflux chest pain (based on objective findings from endoscopy or pH monitoring).

## METHOD OF GUIDELINE VALIDATION

External Peer Review  
Internal Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The documents were sent to members of the American Gastroenterological Association (AGA) Institute Governing Board for review and approval. The final technical review (TR), medical position statement (MPS), and continuing medical education (CME) questions were then sent to the AGA Institute Clinical Practice and Quality Management Committee for review and approval after Digestive Disease Week 2008.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Definitions for the recommendation grades (**A, B, C, D, Insuff**) and quality of evidence (**good, fair, poor**) are provided at the end of the "Major Recommendations" field.

#### Diagnosis and Initial Therapy

1. ***What Is an Operational Definition of Gastroesophageal Reflux Disease (GERD)? What Is the Distinction Between GERD and Episodic Heartburn?***

- There can be no criterion standard definition of GERD because the threshold distinction between physiologic reflux and reflux disease is ultimately arbitrary. Hence, these questions can only be answered by opinion (**USPSTF grade not applicable**). Fortuitously, a recent consensus in defining GERD (the Montreal consensus) emanated from a panel of world experts. The Montreal definition was adopted in the technical review as a suitable framework upon which to build management recommendations. The Montreal consensus defined GERD as "a condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications." Symptoms are "troublesome" if they adversely affect an individual's well-being.

2. ***What Is the Efficacy of Lifestyle Modifications for GERD? Which Elements Should Be Recommended and in Which Circumstances?***

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Weight loss should be advised for overweight or obese patients with esophageal GERD syndromes.

- Elevation of the head of the bed for selected patients who are troubled with heartburn or regurgitation when recumbent. Other lifestyle modifications including, but not limited to, avoiding late meals, avoiding specific foods, or avoiding specific activities should be tailored to the circumstances of the individual patient.

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against**

- Broadly advocating lifestyle changes for all (as opposed to selected) patients with GERD.

3. ***How Do Antisecretory Therapies Compare in Efficacy and Under What Circumstances Might One Be Preferable to Another? What Is an Acceptable Upper Limit of Empirical Therapy in Patients With Suspected Typical Esophageal GERD Syndromes Before Performing Esophagogastroduodenoscopy?***

**Grade A: strongly recommended based on good evidence that it improves important health outcomes:**

- Antisecretory drugs for the treatment of patients with esophageal GERD syndromes (healing esophagitis and symptomatic relief). In these uses, proton pump inhibitors (PPIs) are more effective than histamine<sub>2</sub> receptor antagonists (H<sub>2</sub>RAs), which are more effective than placebo.

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Twice-daily PPI therapy for patients with an esophageal syndrome with an inadequate symptom response to once-daily PPI therapy.
- A short course or as-needed use of antisecretory drugs in patients with a symptomatic esophageal syndrome without esophagitis when symptom control is the primary objective. For a short course of therapy, PPIs are more effective than H<sub>2</sub>RAs, which are more effective than placebo.

**Grade D: recommend against, fair evidence that it is ineffective or harms outweigh benefits:**

- Metoclopramide as monotherapy or adjunctive therapy in patients with esophageal or suspected extraesophageal GERD syndromes.

4. ***What Is the Role and Priority of Diagnostic Tests (Endoscopy With or Without Biopsy, Esophageal Manometry, Ambulatory pH Monitoring, Impedance-pH Monitoring) in the Evaluation of Patients With Suspected Esophageal GERD Syndromes?***

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Endoscopy with biopsy for patients with an esophageal GERD syndrome with troublesome dysphagia. Biopsies should target any areas of suspected metaplasia, dysplasia, or in the absence of visual abnormalities, normal mucosa (at least 5 samples to evaluate for eosinophilic esophagitis).
- Endoscopy to evaluate patients with a suspected esophageal GERD syndrome who have not responded to an empirical trial of twice-daily PPI therapy. Biopsies should target any area of suspected metaplasia, dysplasia, or malignancy.
- Manometry to evaluate patients with a suspected esophageal GERD syndrome who have not responded to an empirical trial of twice-daily PPI therapy and have normal findings on endoscopy. Manometry will serve to localize the lower esophageal sphincter for potential subsequent pH monitoring, to evaluate peristaltic function preoperatively, and to diagnose subtle presentations of the major motor disorders. Evolving information suggests that high-resolution manometry has superior sensitivity to conventional manometry in recognizing atypical cases of achalasia and distal esophageal spasm.
- Ambulatory impedance-pH, catheter pH, or wireless pH monitoring (PPI therapy withheld for 7 days) to evaluate patients with a suspected esophageal GERD syndrome who have not responded to an empirical trial of PPI therapy, have normal findings on endoscopy, and have no major abnormality on manometry. Wireless pH monitoring has superior sensitivity to catheter studies for detecting pathological esophageal acid exposure because of the extended period of recording (48 hours) and has also shown superior recording accuracy compared with some catheter designs.

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against:**

- Using alarm symptoms (other than troublesome dysphagia) as a screening tool to identify patients with GERD at risk for esophageal adenocarcinoma.
- Combined impedance-pH, catheter pH, or wireless pH monitoring studies to distinguish hypersensitivity syndromes from functional syndromes, the distinction being that in hypersensitivity syndromes symptoms are attributable to reflux events, whereas in functional syndromes they are not.
- Combined impedance-pH, catheter pH, or wireless pH esophageal monitoring studies performed while taking PPIs.

**5. *What Are the Unique Management Considerations in Patients With Suspected Reflux Chest Pain Syndrome?***

**Grade A: strongly recommended based on good evidence that it improves important health outcomes:**

- Twice-daily PPI therapy as an empirical trial for patients with suspected reflux chest pain syndrome after a cardiac etiology has been carefully considered.

6. ***What Is the Best Initial Management for Patients With Suspected Extraesophageal Reflux Syndromes (Asthma, Laryngitis, Cough)? What Are the Unique Management Considerations With Each? What Is the Appropriate Dose and Course of Antisecretory Therapy in Each?***

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Acute or maintenance therapy with once- or twice-daily PPIs (or H<sub>2</sub>RAs) for patients with a suspected extraesophageal GERD syndrome (laryngitis, asthma) with a concomitant esophageal GERD syndrome.

**Grade D: recommend against, fair evidence that it is ineffective or harms outweigh benefits:**

- Once- or twice-daily PPIs (or H<sub>2</sub>RAs) for acute treatment of patients with potential extraesophageal GERD syndromes (laryngitis, asthma) in the absence of a concomitant esophageal GERD syndrome.

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against:**

- Once- or twice-daily PPIs for patients with suspected reflux cough syndrome.

**Chronic Management**

7. ***Does GERD Progress in Severity, Such That Symptomatic Patients Without Esophagitis Develop Esophagitis and Barrett's Metaplasia, or Are These Distinct Disease Manifestations That Do Not Exist Along a Continuum? If Patients Do Progress, at What Rate Does This Occur, and Does It Warrant Endoscopic Monitoring?***

**Grade D: recommend against, fair evidence that it is ineffective or harms outweigh benefits:**

- Routine endoscopy in subjects with erosive or nonerosive reflux disease to assess for disease progression.

8. ***What Maintenance Therapy Is Indicated for Patients With the Typical Esophageal Reflux Syndrome (With or Without Esophagitis)? When and How Should Antisecretory Therapy Be Decreased or Discontinued? What, If Any, Risks Are Associated With This?***

**Grade A: strongly recommended based on good evidence that it improves important health outcomes:**

- Long-term use of PPIs for the treatment of patients with esophagitis once they have proven clinically effective. Long-term therapy should be titrated down to the lowest effective dose based on symptom control.

**Grade D: recommend against, fair evidence that it is ineffective or harms outweigh benefits:**

- Less than daily dosing of PPI therapy as maintenance therapy in patients with an esophageal syndrome who previously had erosive esophagitis.

9. ***What Maintenance Therapy Is Indicated for Patients With Suspected Extraesophageal Reflux Syndromes (Asthma, Laryngitis, Cough)? When and How Should Antisecretory Therapy Be Decreased or Discontinued?***

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Acute or maintenance therapy with once- or twice-daily PPIs (or H<sub>2</sub>RAs) for patients with a suspected extraesophageal GERD syndrome (laryngitis, asthma) with a concomitant esophageal GERD syndrome.

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against**

- Maintenance therapy with once- or twice-daily PPIs (or H<sub>2</sub>RAs) for patients with potential extraesophageal GERD syndromes (laryngitis, asthma) in the absence of a concomitant esophageal GERD syndrome.
- Once- or twice-daily PPIs for patients with suspected reflux cough syndrome.

10. ***What Are the Clinical Consequences of Chronic Potent Acid Inhibition? Do These Potential Side Effects Warrant Specific Testing (e.g., Bone Density Studies, Calcium Supplementation, Helicobacter pylori Screening, and so on)?***

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against**

- Advocating bone density studies, calcium supplementation, *Helicobacter pylori* screening, or any other routine precaution because of PPI use.

11. ***What Is the Role of Endoscopy in Long-term Management of Patients With GERD, and Under What Circumstances Should Mucosal Biopsy Specimens Be Obtained When Endoscopy Is Performed?***

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Endoscopy with biopsy for patients with an esophageal GERD syndrome with troublesome dysphagia. Biopsies should target any areas of suspected metaplasia, dysplasia, or in the absence of any

visual abnormalities, normal mucosa (at least 5 samples to evaluate for eosinophilic esophagitis).

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against:**

- Routine upper endoscopy in the setting of chronic GERD symptoms to diminish the risk of death from esophageal cancer.
- Endoscopic screening for Barrett's esophagus and dysplasia in adults 50 years or older with >5–10 years of heartburn to reduce mortality from esophageal adenocarcinoma.

**12. *What Are Indications for Antireflux Surgery, and What Is the Efficacy of This Therapy?***

**Grade A: strongly recommended based on good evidence that it improves important health outcomes:**

- When antireflux surgery and PPI therapy are judged to offer similar efficacy in a patient with an esophageal GERD syndrome, PPI therapy should be recommended as initial therapy because of superior safety.
- When a patient with an esophageal GERD syndrome is responsive to, but intolerant of, acid suppressive therapy, antireflux surgery should be recommended as an alternative.

**Grade B: recommended with fair evidence that it improves important outcomes:**

- Antireflux surgery for patients with an esophageal GERD syndrome with persistent troublesome symptoms, especially troublesome regurgitation, despite PPI therapy. The potential benefits of antireflux surgery should be weighed against the deleterious effect of new symptoms consequent from surgery, particularly dysphagia, flatulence, an inability to belch, and postsurgery bowel symptoms.

**Grade C: balance of benefits and harms is too close to justify a general recommendation:**

- Patients with an extraesophageal GERD syndrome with persistent troublesome symptoms despite PPI therapy should be considered for antireflux surgery. The potential benefits of antireflux surgery should be weighed against the deleterious effect of new symptoms consequent from surgery, particularly dysphagia, flatulence, an inability to belch, and postsurgery bowel symptoms.

**Grade D: recommend against, fair evidence that it is ineffective or harms outweigh benefits:**

- Antireflux surgery for patients with an esophageal syndrome with or without tissue damage who are symptomatically well controlled on medical therapy.

- Antireflux surgery as an antineoplastic measure in patients with Barrett's metaplasia.

**Grade Insuff: no recommendation, insufficient evidence to recommend for or against:**

- The use of currently commercially available endoluminal antireflux procedures in the management of patients with an esophageal syndrome.

**Definitions:**

**Strength of Recommendations**

**Grade A:** The United States Preventive Services Task Force (USPSTF) strongly recommends that clinicians provide [the service] to eligible patients. *The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.*

**Grade B:** The USPSTF recommends that clinicians provide [this service] to eligible patients. *The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.*

**Grade C:** The USPSTF makes no recommendation for or against routine provision of [the service]. *The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.*

**Grade D:** The USPSTF recommends against routinely providing [the service] to asymptomatic patients. *The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.*

**Grade Insuff:** The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. *Evidence that the [service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.*

**NOTE.** The USPSTF grades its recommendations according to one of 5 classifications (A, B, C, D, Insuff) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms). The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor).

**Quality of Evidence**

**Good:** Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

**Fair:** Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

**Poor:** Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

## **CLINICAL ALGORITHM(S)**

None provided

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of evidence supporting the recommendations is not specifically stated.

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

Appropriate diagnosis and management of gastroesophageal reflux disease

### **POTENTIAL HARMS**

#### **Potential Risks of Long-Term Protein Pump Inhibitor (PPI) Therapy**

##### *Potential Risks of Hypochlorhydria (Trophic, Absorptive)*

- Hypergastrinemia-induced carcinoid tumors
- Accelerated progression of atrophic gastritis/gastric cancer with concomitant *H pylori* gastritis
- Formation of gastric fundic gland polyps
- Vitamin B12 malabsorption
- Calcium malabsorption
- Iron malabsorption

##### *Potential Risks of Hypochlorhydria (Infectious)*

- Increased risk of *C difficile* colitis
- Increased risk of community-acquired pneumonia (presumably aspiration)
- Gastric colonization with bacteria that convert nitrates to carcinogenic *N*-nitroso compounds that then reflux

##### *Generic Pharmacologic Risks*

- Safety in pregnancy (omeprazole crosses placenta and is pregnancy safety category C; other PPIs are category B)
- Drug-drug interactions; PPIs metabolized by cytochrome P450 and may induce or inhibit drug metabolism (phenytoin warfarin, and so on)
- Anaphylaxis
- Acute interstitial nephritis

- Pancreatitis

### **Potential Complications from Antireflux Surgery**

- Death
- Life-threatening complications
- Reoperations
- Dysphagia severe enough to require dilation

## **CONTRAINDICATIONS**

### **CONTRAINDICATIONS**

Although the precise cutoff is uncertain, severe peristaltic dysfunction is a relative contraindication for antireflux surgery. Certainly, complete absence of peristalsis is an absolute contraindication.

## **QUALIFYING STATEMENTS**

### **QUALIFYING STATEMENTS**

None of the formulated practice recommendations were judged to be sufficiently unequivocal to be proposed as performance measures for gauging quality of care.

## **IMPLEMENTATION OF THE GUIDELINE**

### **DESCRIPTION OF IMPLEMENTATION STRATEGY**

An implementation strategy was not provided.

### **IMPLEMENTATION TOOLS**

Patient Resources  
Staff Training/Competency Material

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## **INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES**

### **IOM CARE NEED**

Getting Better  
Living with Illness

### **IOM DOMAIN**

Effectiveness  
Patient-centeredness

## IDENTIFYING INFORMATION AND AVAILABILITY

### **BIBLIOGRAPHIC SOURCE(S)**

Kahrilas PJ, Shaheen NJ, Vaezi MF, Hiltz SW, Black E, Modlin IM, Johnson SP, Allen J, Brill JV, American Gastroenterological Association. American Gastroenterological Association Medical Position Statement on the management of gastroesophageal reflux disease. *Gastroenterology* 2008 Oct;135(4):1383-91, 1391.e1-5. [13 references] [PubMed](#)

### **ADAPTATION**

Not applicable: The guideline was not adapted from another source.

### **DATE RELEASED**

2008 Oct

### **GUIDELINE DEVELOPER(S)**

American Gastroenterological Association Institute - Medical Specialty Society

### **SOURCE(S) OF FUNDING**

American Gastroenterological Association Institute

### **GUIDELINE COMMITTEE**

American Gastroenterological Association Institute Clinical Practice Committee

### **COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

*Authors:* Peter J. Kahrilas, Department of Medicine, Gastroenterology Division, Northwestern University Feinberg School of Medicine, Chicago, Illinois; Nicholas J. Shaheen, Department of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina; Michael F. Vaezi, Department of Gastroenterology and Hepatology, Vanderbilt University Medical Center, Nashville, Tennessee

### **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Peter J. Kahrilas is a consultant for AstraZeneca and TAP Pharmaceutical Products, Inc. Nicholas J. Shaheen is on the speaker's bureau for AstraZeneca and is a consultant for AstraZeneca and TAP Pharmaceutical Products, Inc and receives support (grant/ research) from AstraZeneca, TAP Pharmaceutical Products, Inc, Proctor&Gamble, CCS Medical and Barrx Medical. Michael F. Vaezi is on the speaker's bureau of AstraZeneca, a consultant for AstraZeneca, Santarus, and

Restech, and receives support (grant/research) from TAP Pharmaceutical Products, Inc, AstraZeneca, and Restech.

## **GUIDELINE STATUS**

This is the current release of the guideline.

According to the guideline developer, the Clinical Practice Committee meets three times a year to review all American Gastroenterological Association Institute (AGA Institute) guidelines. This review includes new literature searches of electronic databases followed by expert committee review of new evidence that has emerged since the original publication date.

## **GUIDELINE AVAILABILITY**

Electronic copies: Available from the [Gastroenterology journal Web site](#).

Print copies: Available from the American Gastroenterological Association Institute, 4930 Del Ray Avenue, Bethesda, MD 20814.

## **AVAILABILITY OF COMPANION DOCUMENTS**

The following are available:

- American Gastroenterological Association (AGA) Institute technical review on the management of gastroesophageal reflux disease. *Gastroenterology* 2008 Oct; 135(4): 1392-1413.e5. Available from the [Gastroenterology journal Web site](#).
- Technical review: exam 2: management of gastroesophageal reflux disease. Continuing medical education. *Gastroenterology* 2008 Oct; 135(4): 1380-2. Available from the [Gastroenterology journal Web site](#).
- AGA Institute Practice Recommendations Development Manual. Available from the [AGA Web site](#).

Print copies: Available from American Gastroenterological Association Institute, 4930 Del Ray Avenue, Bethesda, MD 20814.

## **PATIENT RESOURCES**

The following is available:

- Heartburn. Available from the [American Gastroenterological Association \(AGA\) Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the

authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

## **NGC STATUS**

This summary was completed by ECRI Institute on January 19, 2009.

## **COPYRIGHT STATEMENT**

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

## **DISCLAIMER**

### **NGC DISCLAIMER**

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at <http://www.guideline.gov/about/inclusion.aspx>.

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

© 1998-2009 National Guideline Clearinghouse

Date Modified: 3/30/2009

