

MODERN EDUCATIONAL SYSTEM AND INNOVATIVE TEACHING SOLUTIONS
GASTROESOPHAGEAL REFLUX DISEASE: MODERN DIAGNOSTIC
AND TREATMENT STRATEGIES

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Abstract

Background: Gastroesophageal reflux disease (GERD) is one of the most common conditions encountered in outpatient practice worldwide, arising from pathologic retrograde flow of gastric contents into the esophagus, and ranges in presentation from typical heartburn and regurgitation to extraesophageal manifestations and, in chronic uncontrolled disease, Barrett's esophagus and esophageal adenocarcinoma.

Methods: This narrative review synthesizes current evidence on the diagnosis and management of GERD, drawing on the 2022 American College of Gastroenterology (ACG) clinical guideline, the 2022 American Gastroenterological Association (AGA) clinical practice update, and the Lyon Consensus criteria for objective diagnosis of pathologic reflux.

Results: For patients with typical symptoms and no alarm features, an 8-week empiric trial of once-daily proton pump inhibitor (PPI) therapy remains the recommended initial approach, while endoscopy is reserved for those with alarm symptoms, risk factors for Barrett's esophagus, or an inadequate response to empiric therapy. When endoscopy is unrevealing and diagnostic uncertainty remains, ambulatory pH-impedance monitoring performed off antisecretory therapy, interpreted using Lyon Consensus metrics, provides objective confirmation or exclusion of pathologic reflux. Management is stepwise: lifestyle modification and PPI optimization form the foundation of therapy, while esophageal manometry and consideration of surgical or endoscopic antireflux procedures — laparoscopic fundoplication, magnetic sphincter augmentation, or transoral incisionless fundoplication — are reserved for patients with objective evidence of GERD that remains refractory to optimized medical therapy.

Conclusion: Modern GERD care depends on correctly distinguishing between refractory symptoms and true refractory GERD before escalating therapy, and on

reserving invasive testing and procedures for patients in whom pathologic reflux has been objectively confirmed rather than assumed; this stepwise, evidence-based approach is both effective and readily adaptable to resource-limited settings such as Uzbekistan, where empiric PPI therapy and basic endoscopy remain the most widely available diagnostic and therapeutic tools.

Keywords

Gastroesophageal reflux disease, GERD, proton pump inhibitor, Lyon Consensus, pH-impedance monitoring, Barrett's esophagus, fundoplication, magnetic sphincter augmentation, refractory GERD.

Methods

This work was prepared as a narrative literature review. A literature search was conducted in September 2026 using PubMed and the publication databases of the American College of Gastroenterology (ACG) and the American Gastroenterological Association (AGA), with the search terms "gastroesophageal reflux disease," "GERD diagnosis," "Lyon consensus," "proton pump inhibitor," "refractory GERD," and "antireflux surgery," combined with filters for publication in English between 2006 and 2026. Priority was given to the 2022 ACG clinical guideline for the diagnosis and management of GERD, the 2022 AGA clinical practice update, the Lyon Consensus criteria, and comparative studies of medical, endoscopic, and surgical therapy; narrative summaries from established clinical reference sources were included for foundational background. Case reports and articles without accessible full text were excluded. A total of twelve sources meeting these criteria were selected and synthesized for this review.

Introduction

Gastroesophageal reflux disease is defined by the Montreal consensus as a condition that develops when the reflux of gastric contents causes troublesome symptoms or complications, and it remains among the most frequent reasons for gastroenterology referral and one of the most common indications for chronic medication use in adults worldwide. Its clinical presentation is notably heterogeneous: some patients experience classic heartburn and regurgitation, others present with extraesophageal manifestations such as chronic cough or laryngitis without any typical symptoms, and a further group has minimal or no symptoms despite objectively significant esophageal acid exposure.

This heterogeneity, combined with the imperfect sensitivity and specificity of symptom-based diagnosis and empiric treatment response, has driven a shift in modern practice toward objective, criteria-based diagnosis — most notably through the Lyon Consensus — particularly before committing a patient to long-term therapy or an invasive procedure. At the same time, a substantial proportion of patients labelled as having "refractory GERD" on the basis of persistent symptoms despite PPI therapy in fact have functional heartburn, reflux hypersensitivity, or another non-reflux disorder altogether, underscoring the importance of distinguishing refractory symptoms from true refractory GERD before escalating investigation or treatment.

The aim of this review is to summarize the modern diagnostic pathway for GERD, outline the stepwise approach to medical, endoscopic, and surgical treatment, and highlight the practical distinction between refractory symptoms and true refractory GERD, with attention to their relevance to gastroenterology and internal medicine practice in Uzbekistan.

Understanding and correctly applying modern GERD diagnostic and treatment strategies is relevant across several areas of clinical practice, including:

- Gastroenterology (endoscopic evaluation, reflux monitoring, procedural referral)
- Internal medicine and primary care (initial symptom evaluation, empiric PPI trial, recognition of alarm features)
- Pulmonology and otolaryngology (evaluation of suspected extraesophageal reflux manifestations)
- General and foregut surgery (patient selection for antireflux procedures)
- Oncology and screening programs (Barrett's esophagus surveillance in chronic GERD)

The Clinical Spectrum of GERD

GERD is best understood not as a single fixed entity but as a spectrum of mucosal and symptomatic consequences of chronic pathologic reflux. At one end, non-erosive reflux disease produces typical symptoms without visible mucosal injury on endoscopy; with more prolonged or severe reflux, erosive esophagitis develops, graded by the Los Angeles classification from mild (grade A) to severe (grade D) mucosal breaks. In a subset of patients, chronic reflux leads to Barrett's esophagus, in which the normal squamous esophageal lining is replaced by intestinal-type columnar epithelium, a recognized precursor lesion for esophageal adenocarcinoma. Critically, extraesophageal manifestations — chronic cough, laryngitis, asthma exacerbation, dental erosion, and non-cardiac chest pain — can occur at any point along this spectrum, with or without accompanying typical symptoms, and are frequently misattributed to primary pulmonary, otolaryngologic, or cardiac disease before GERD is considered. This spectrum is illustrated in Figure 1.

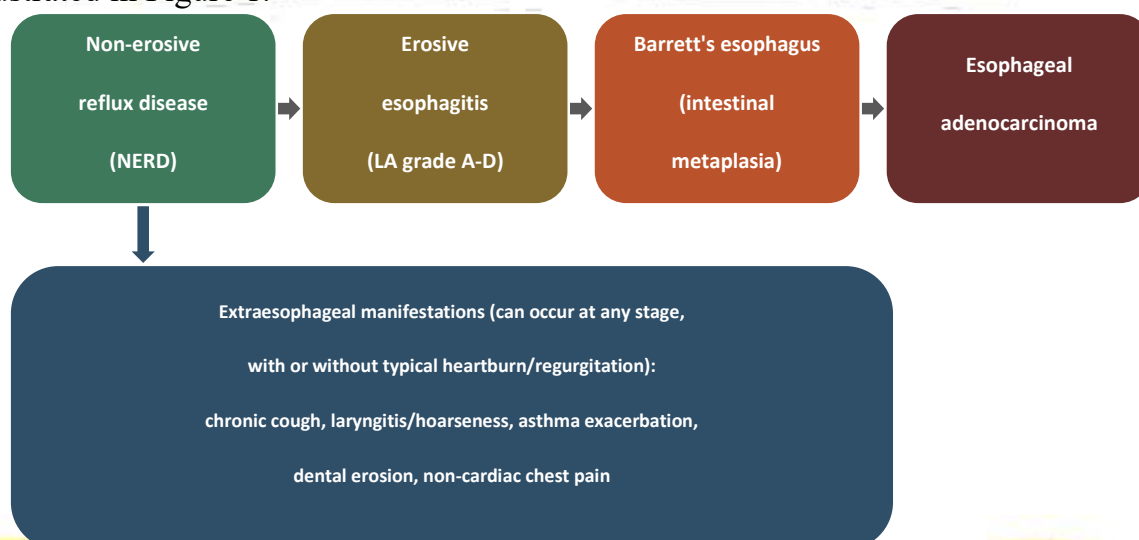


Figure 1. GERD spans a spectrum from non-erosive disease through erosive esophagitis and Barrett's esophagus to esophageal adenocarcinoma, with extraesophageal manifestations capable of occurring at any stage, independent of typical symptoms.

Modern Diagnostic Strategy

For patients presenting with classic heartburn and regurgitation and no alarm features — dysphagia, weight loss, gastrointestinal bleeding, anemia, or persistent vomiting — current guidelines recommend an 8-week empiric trial of once-daily PPI therapy taken 30 to 60 minutes before a meal, without the need for upfront endoscopy or reflux testing. Upper endoscopy, ideally performed off PPI therapy, is reserved for patients with alarm symptoms, multiple risk factors for Barrett's esophagus, or symptoms that persist or relapse despite an adequate empiric trial.

When endoscopy is normal or shows no erosive disease and diagnostic uncertainty remains, ambulatory reflux monitoring — wireless pH capsule or catheter-based pH-impedance testing — is used to objectively quantify esophageal acid exposure. The Lyon Consensus, now the reference standard for interpreting this testing, defines an acid exposure time greater than 6% as conclusive evidence of pathologic reflux and less than 4% as evidence against it, with intermediate values requiring integration of additional metrics such as the number of reflux episodes and mean nocturnal baseline impedance. Testing is generally performed off antisecretory therapy in patients without prior objective evidence of GERD, whereas testing on therapy may be considered in patients with already-established disease, such as prior Barrett's esophagus or severe esophagitis, when the question is whether reflux is adequately controlled. For patients with extraesophageal symptoms alone, current recommendations favour reflux testing before initiating empiric PPI therapy, since the diagnostic and therapeutic response characteristics differ from typical GERD.

Stepwise Management

Treatment follows a stepwise structure that begins with lifestyle modification and pharmacotherapy and escalates only when justified by objective findings. Weight loss in patients who are overweight, elevation of the head of the bed, avoidance of late meals and individual trigger foods, and reduction of smoking and alcohol use are recommended for all patients, though their effect size alone is modest and adherence is often incomplete. PPIs remain superior to H₂-receptor antagonists for healing erosive esophagitis and are recommended as first-line pharmacotherapy; among available agents, potency varies, with pantoprazole generally considered least potent and rabeprazole and esomeprazole most potent, an important consideration when switching therapy in a patient with an incomplete response.

When symptoms persist despite an adequate PPI trial, optimization — including confirming correct dosing and timing, switching to a more potent agent, or adding a bedtime H₂-receptor antagonist for nocturnal breakthrough symptoms — is the recommended first step, and should precede any invasive testing or procedure. Only after optimized medical therapy has failed and objective evidence of ongoing pathologic reflux

has been demonstrated should esophageal manometry (to exclude a motility disorder and assess candidacy for surgery) and consideration of an antireflux procedure follow. Laparoscopic fundoplication remains the standard surgical option, particularly for patients with severe reflux esophagitis, large hiatal hernias, or persistent, troublesome regurgitation; magnetic sphincter augmentation and transoral incisionless fundoplication offer less invasive alternatives in appropriately selected patients, with regurgitation-predominant symptoms generally predicting the best procedural outcomes. The available treatment tiers, their typical indications, and key caveats are summarized in Table 1.

Table 1. Stepwise Treatment Options for Gastroesophageal Reflux Disease

Treatment Tier	Options	Typical Indication	Key Caveat
Lifestyle measures	• Weight loss if overweight • Elevate head of bed • Avoid late meals, trigger foods • Smoking/alcohol reduction	All patients, alongside pharmacotherapy	Modest effect alone; adherence often limited
Empiric PPI trial	Once-daily PPI, 30 min before a meal, for 8 weeks	Typical symptoms (heartburn/regurgitation), no alarm features	Take before breakfast, not at bedtime
Optimized PPI therapy	Switch to a more potent PPI; adjust timing/dose; add bedtime H2RA if needed	Incomplete response to initial PPI trial	First step for any refractory symptoms, before further testing
Diagnostic work-up	Upper endoscopy; ambulatory pH-impedance monitoring; esophageal manometry	Alarm symptoms, Barrett's risk, or persistence despite optimized PPI	Reflux monitoring performed off PPI if GERD unproven
Endoscopic/surg	• Laparoscopic	Objective GERD	Reserved

Treatment Tier	Options	Typical Indication	Key Caveat
Empiric therapy	fundoplication • Magnetic sphincter augmentation (MSA) • Transoral incisionless fundoplication (TIF)	with severe esophagitis, large hiatal hernia, or persistent regurgitation	for confirmed, objective GERD; best outcomes when regurgitation predominates

This overall diagnostic and therapeutic sequence — from empiric therapy through objective testing to escalation and, ultimately, reassessment for possible step-down — is summarized as a recurring clinical cycle in Figure 2.

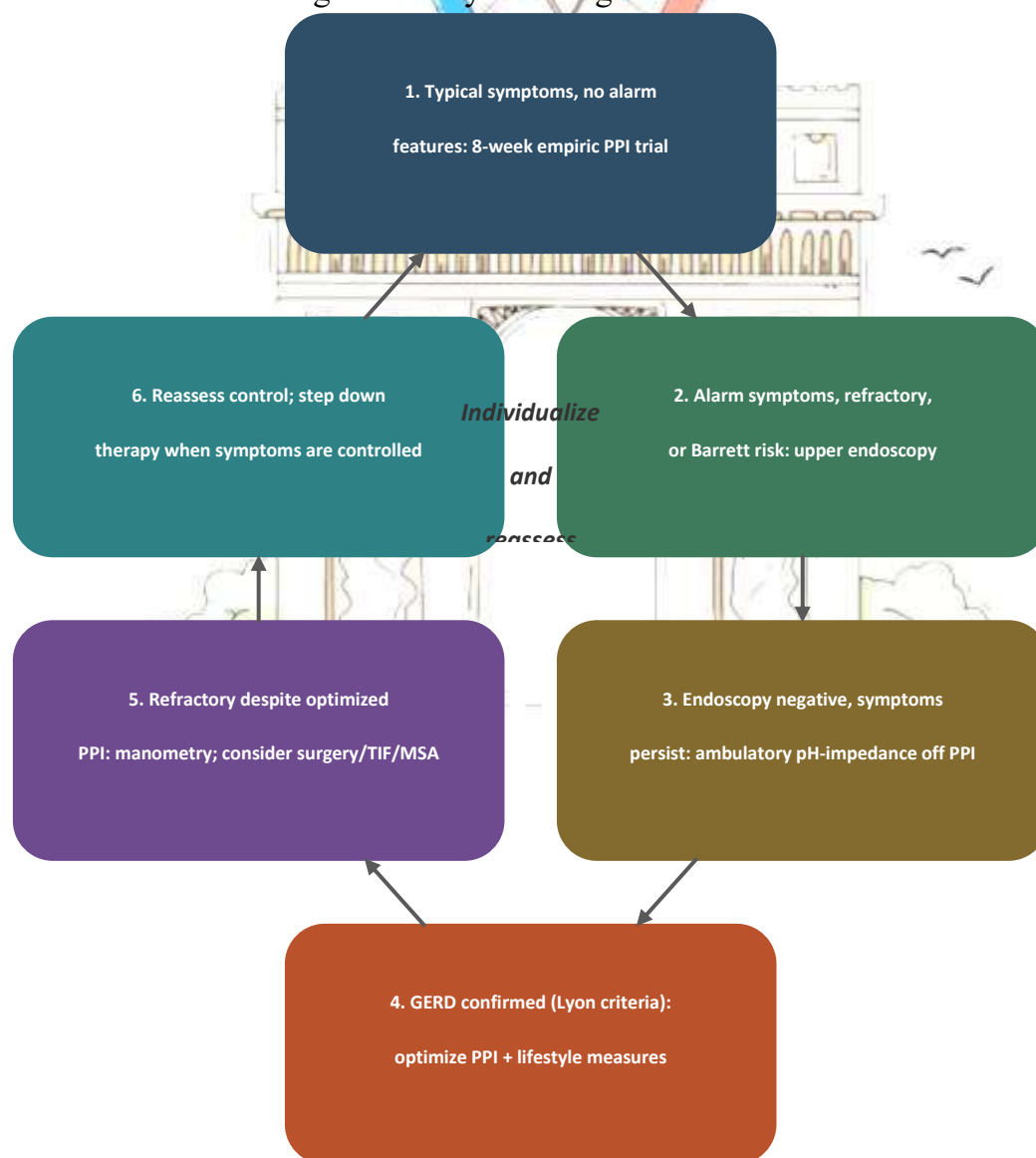


Figure 2. The recurring GERD diagnostic-treatment cycle: empiric therapy or endoscopy based on presenting features, objective reflux testing when needed,

confirmation using Lyon Consensus criteria, stepwise escalation for refractory disease, and periodic reassessment for step-down.

In healthcare systems with constrained access to ambulatory pH-impedance monitoring or antireflux surgery — a relevant consideration for gastroenterology practice in Uzbekistan — the practical priority is to apply the empiric PPI trial and basic upper endoscopy rigorously and to avoid indefinite, unexamined continuation of PPI therapy in patients whose symptoms do not respond, since correctly identifying non-reflux causes of persistent symptoms is often achievable with these widely available tools alone.

Conclusion

Gastroesophageal reflux disease spans a wide clinical and pathological spectrum, from non-erosive disease to esophageal adenocarcinoma, and its modern diagnosis increasingly depends on objective, criteria-based confirmation rather than symptom response alone, particularly before committing a patient to long-term medication, invasive testing, or surgery.

For clinical practice, this translates into two actionable priorities: reserving endoscopy and reflux monitoring for patients with alarm features, Barrett's risk, or an inadequate response to a properly conducted empiric PPI trial, and clearly distinguishing refractory symptoms from true refractory GERD before escalating to manometry or antireflux procedures. Continued application of these principles, adapted to local resource constraints, holds substantial potential to improve diagnostic accuracy and treatment outcomes for patients with gastroesophageal reflux disease, including within the healthcare system of Uzbekistan.

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