

# APPROACH TO ATYPICAL & REFRACTORY GERD



By

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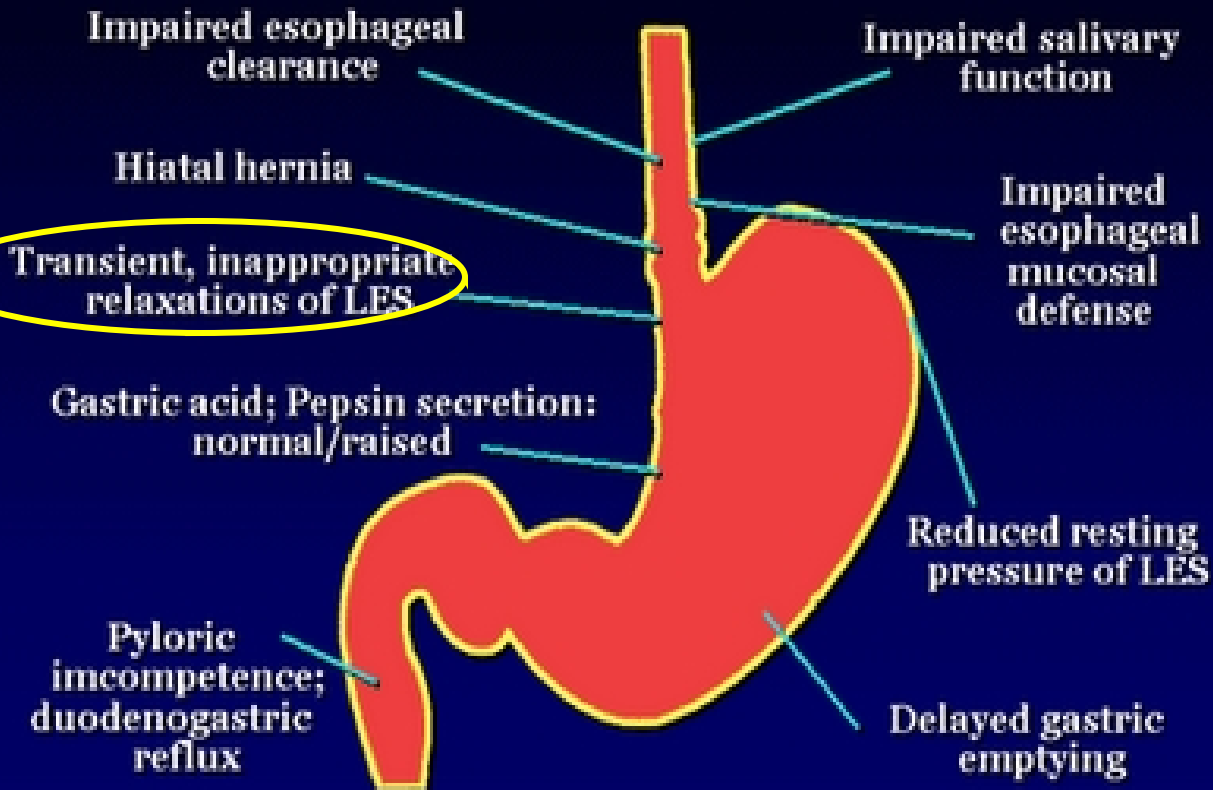
# Definition of GERD

- Condition that results from reflux of gastric juice into the esophagus or oropharynx causing symptoms, tissue injury or both.
- “A condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications” – Montreal definition

## EPIDEMIOLOGY

- Most costly GI disease. \$9.3 billion spent each year for evaluation and treatment of GERD.
- 20% of the U.S Population is affected by GERD
- Equally prevalent among men and women.
- Prevalence of heartburn is similar in all ethnic groups, but complicated GERD is more common in white males

# Pathophysiology of GERD



Defensive factors:

1. Anti-reflux barriers
2. Esophageal acid clearance
3. Tissue resistance

Aggressive factors:

1. Gastric acidity
2. Volume
3. Duodenal contents

# What is Atypical GERD



# GERD Symptoms

## Typical

- Heartburn
- Regurgitation

### **Alarm Symptoms:**

- Dysphagia
- Weight loss
- Bleeding

**Mandates work up**

## Atypical

- Non-cardiac chest pain
- Belching
- Globus
- Extraesophageal symptoms (laryngeal or pulmonary)

If typical symptoms are not present, don't treat empirically

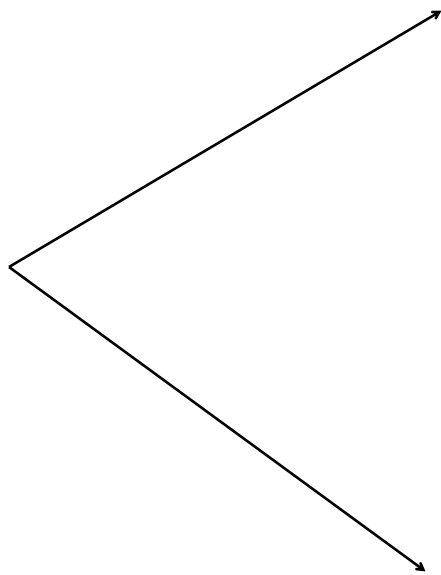
**GERD**

**Esophageal Syndromes**

Heartburn  
Regurgitation

**Extra-esophageal  
syndromes**

**ATYPICAL GERD**



# Extra-esophageal syndromes

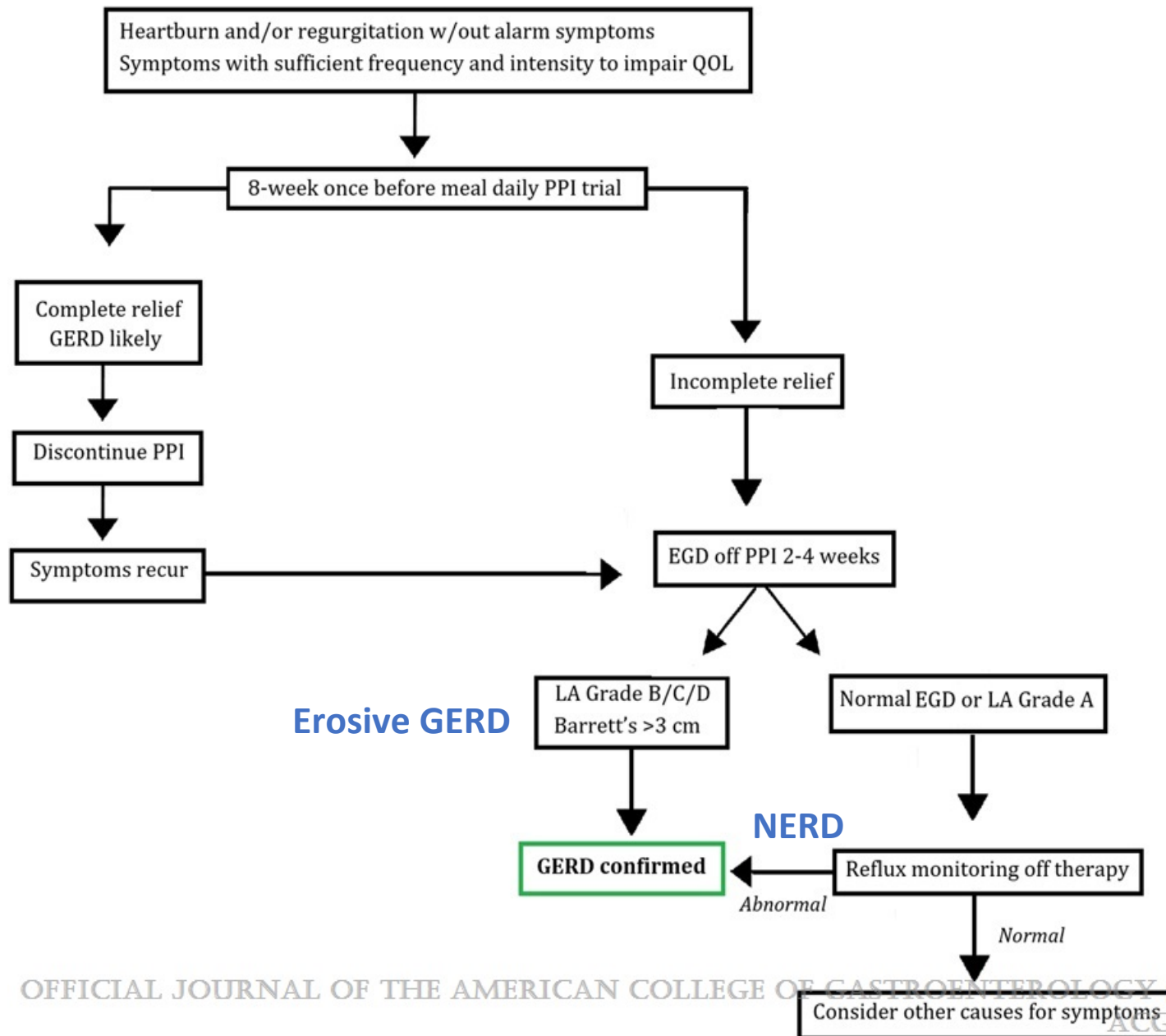
```
graph TD; A[Extra-esophageal syndromes] --> B[Established association]; A --> C[Proposed association];
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## Established association

- Reflux cough
- Reflux laryngitis
- Reflux asthma
- Reflux dental erosions

## Proposed association

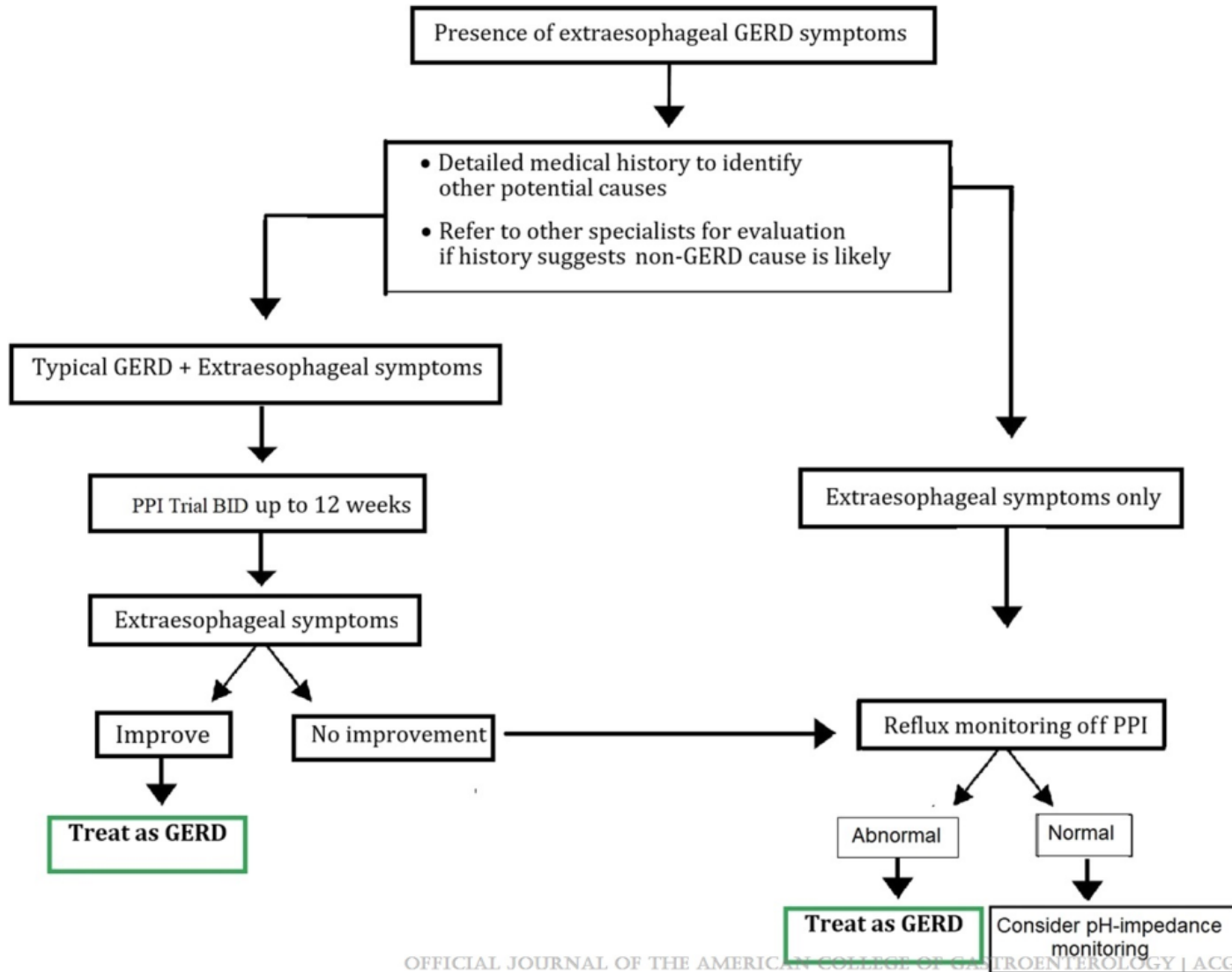
- Sinusitis
- Pulmonary fibrosis
- Pharyngitis
- Recurrent otitis media





- **Erosive GERD:** EGD off PPI shows grade B,C,D esophagitis or peptic stricture
- **Non-Erosive GERD (NERD):** EGD normal, pH monitoring off therapy shows abnormal acid exposure time





# PPI trial as a diagnostic test

- Practical and simple, but has a danger of continuing and giving for wrong disease
- Should be limited to typical symptoms, and the absence of warning signs
- Should be accompanied with life-style modifications

A Normal EGD and Reflux Monitor (off therapy) makes it highly unlikely that GERD is responsible for symptoms – **best way to make decisions on long term PPI use**

# Gold Standard For Diagnosis of GERD –Lyon Consensus

- **EGD:**

1. Grade B,C,D Esophagitis
2. Peptic Stricture
3. Long segment Barrett's Esophagus (>3cm)

- **Wireless pH Monitoring:**

Acid Exposure Time (AET) >6% for % total time pH<4 (AET<4% excludes GERD)

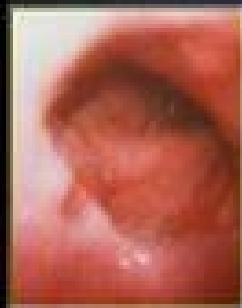
- **Multichannel intraluminal impedance pH-monitoring (MII-pH)**

1. Elevated number of reflux episodes (>80 on MII-pH monitoring; <40/day rules out GERD)
2. MNBI (mean nocturnal baseline impedance) <1500 ohms (>2500 ohms excludes GERD)

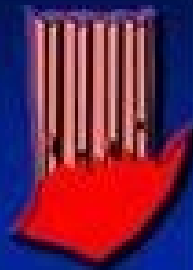
Symptom Association Probability (SAP) >95% and or Symptom Index >50% and AET <4%  
= Reflux hypersensitivity

# Los Angeles (LA) Grade Classification of Erosive Esophagitis

## LA Grade A



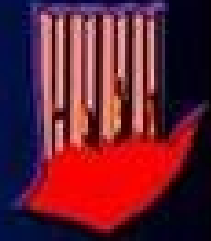
One or more mucosal breaks no longer than 5mm, not bridging the tops of mucosal folds



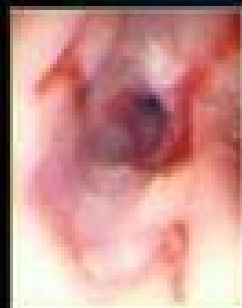
## LA Grade B



One or more mucosal breaks longer than 5mm, not bridging the tops of mucosal folds



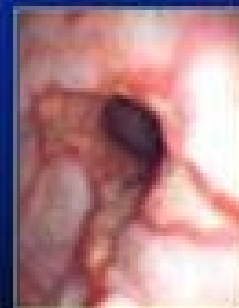
## LA Grade C



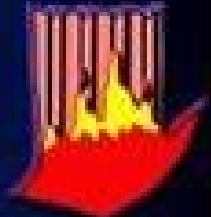
One or more mucosal breaks bridging the tops of mucosal folds involving <75% of the circumference



## LA Grade D



One or more mucosal breaks bridging the tops of mucosal folds involving >75% of the circumference



# Los Angeles Classification of Erosive Esophagitis

GRADE A



GRADE B



GRADE C

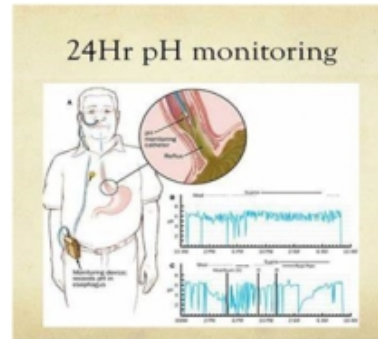


GRADE D

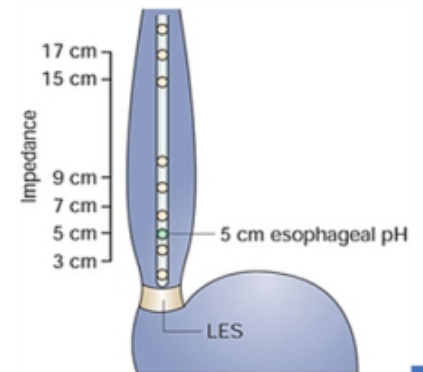




- Grade B,C,D esophagitis
- Peptic Stricture
- Long Segment Barrett's Esophagus



- Acid Exposure Time (AET) **>6%** for % total time pH<4
- AET<4% excludes GERD



- Elevated number of reflux episodes **(>80)** on MII-pH monitoring; <40/day rules out GERD
- MNBI (mean nocturnal baseline impedance) **<1500** ohms (>2500 ohms excludes GERD)

### Reflux Table - Day 1

	Total	HrtBrn	Meal	Upright	Supine	Belch	PrePra	PostPr
Duration of Period (d, hh: mm)	23:15	00:43	02:59	16:26	06:49	00:02	09:43	10:32
Number of Refluxes	106	7	15	97	9	1	14	78
Number of Long Refluxes >5 (min)	8	0	1	8	0	0	0	7
Duration of longest reflux (min)	20	1	6	20	1	0	4	20
Time pH <4 (min)	154	3	16	150	4	0	15	124
Fraction Time pH <4 (%)	11.0	6.0	8.9	15.2	1.0	10.0	2.5	19.5

### DeMeester Score-Day 1

Total score = 34.0 , DeMeester normals less than 14.72 (95th percentile)

### Reflux Table - Day 2

**Worst Day**

	Total	HrtBrn	Meal	Upright	Supine	PrePra	PostPr
Duration of Period (d, hh: mm)	16:39	00:25	00:50	10:55	05:43	09:24	06:25
Number of Refluxes	60	2	2	47	13	29	30
Number of Long Refluxes >5 (min)	14	0	0	9	5	9	6
Duration of longest reflux (min)	24	2	0	24	18	24	18
Time pH <4 (min)	206	3	0	146	59	122	83
Fraction Time pH <4 (%)	20.6	11.6	0.4	22.3	17.2	21.6	21.6

### DeMeester Score -Day 2

Total score = 69.1, DeMeester normals less than 14.72 (95<sup>th</sup> percentile)



**SAP Table - Total**

	Total	Meal	Upright	Supine	Drink	PrePra	Rx	Other	PostPr
HrtBrn	99.6	33.3	97.2	78.1	0.0	96.7	0.0	0.0	95.3
Regurg	100.0	0.0	100.0	8.9	0.0	100.0	0.0	0.0	99.9
ChestP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cough	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sneeze	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**SAP >95%**

**SI Table - Total**

	Total	Meal	Upright	Supine	Drink	PrePra	Rx	Other	PostPr
HrtBrn	38.9	0.0	40.0	33.3	n/a	30.0	n/a	n/a	57.1
Regurg	54.5	n/a	57.1	0.0	n/a	44.4	n/a	n/a	61.5
ChestP	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Cough	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Belch	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sneeze	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

**SI >50%**

Symptom Association Probability (SAP) >95% and or Symptom Index >50% and AET <4%  
= Reflux hypersensitivity

# **What is Refractory GERD?**

# Refractory GERD

- Refractory GERD is defined as the presence of persistent troublesome GERD symptoms **and** objective evidence of GERD **despite optimized PPI therapy**. Should be considered as failure of PPI therapy.
- About 40% patients with GERD will experience persistent symptoms despite PPI therapy. Large proportion do not demonstrate conclusive evidence of GERD
- Make sure PPIs are being taken correctly – 54% of population takes PPI incorrectly
- Distinction needs to be made between
  - a) Refractory reflux-like symptoms
  - b) Refractory GERD symptoms
  - c) **Refractory GERD**

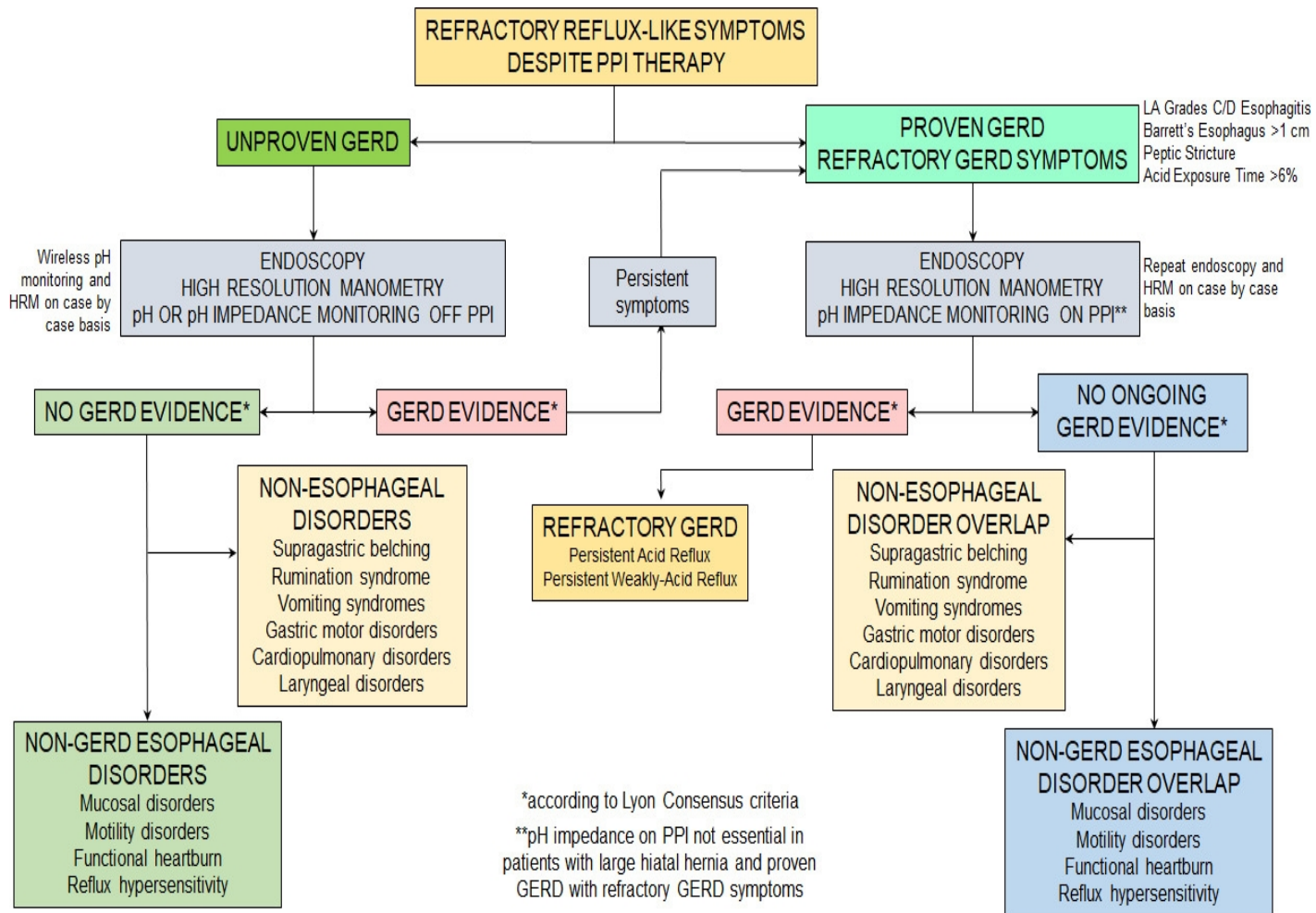


**Refractory reflux-like symptoms:** unproven GERD

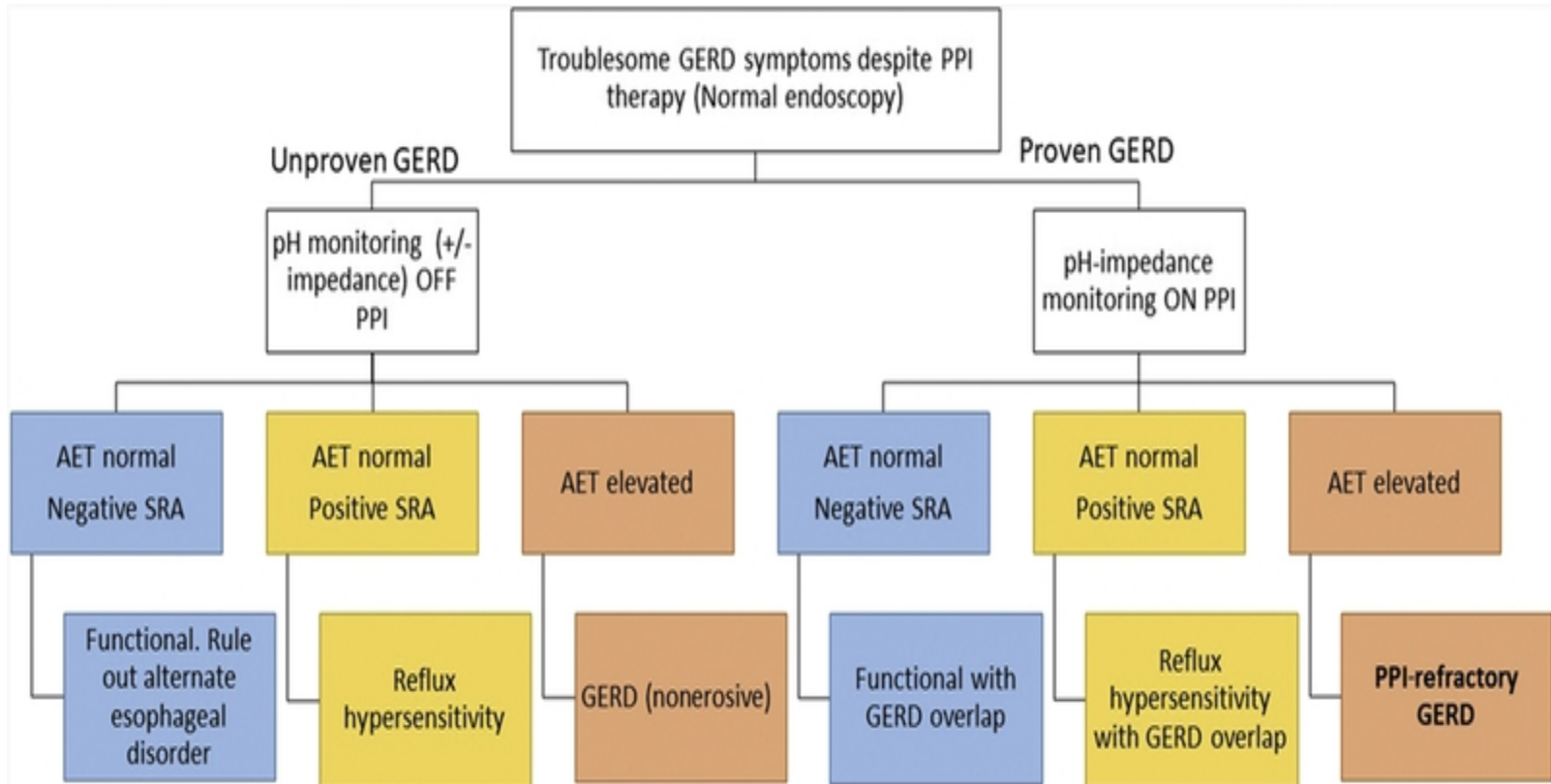
**Refractory GERD symptoms:** persistence of symptoms on therapy in patients with prior objective evidence of GERD.

**Refractory GERD:** persisting OBJECTIVE GERD evidence despite medical therapy

# Refractory Reflux-like Symptoms



# Refractory Reflux-like Symptoms



AET > 6% on PPI is consistent with PPI refractory GERD

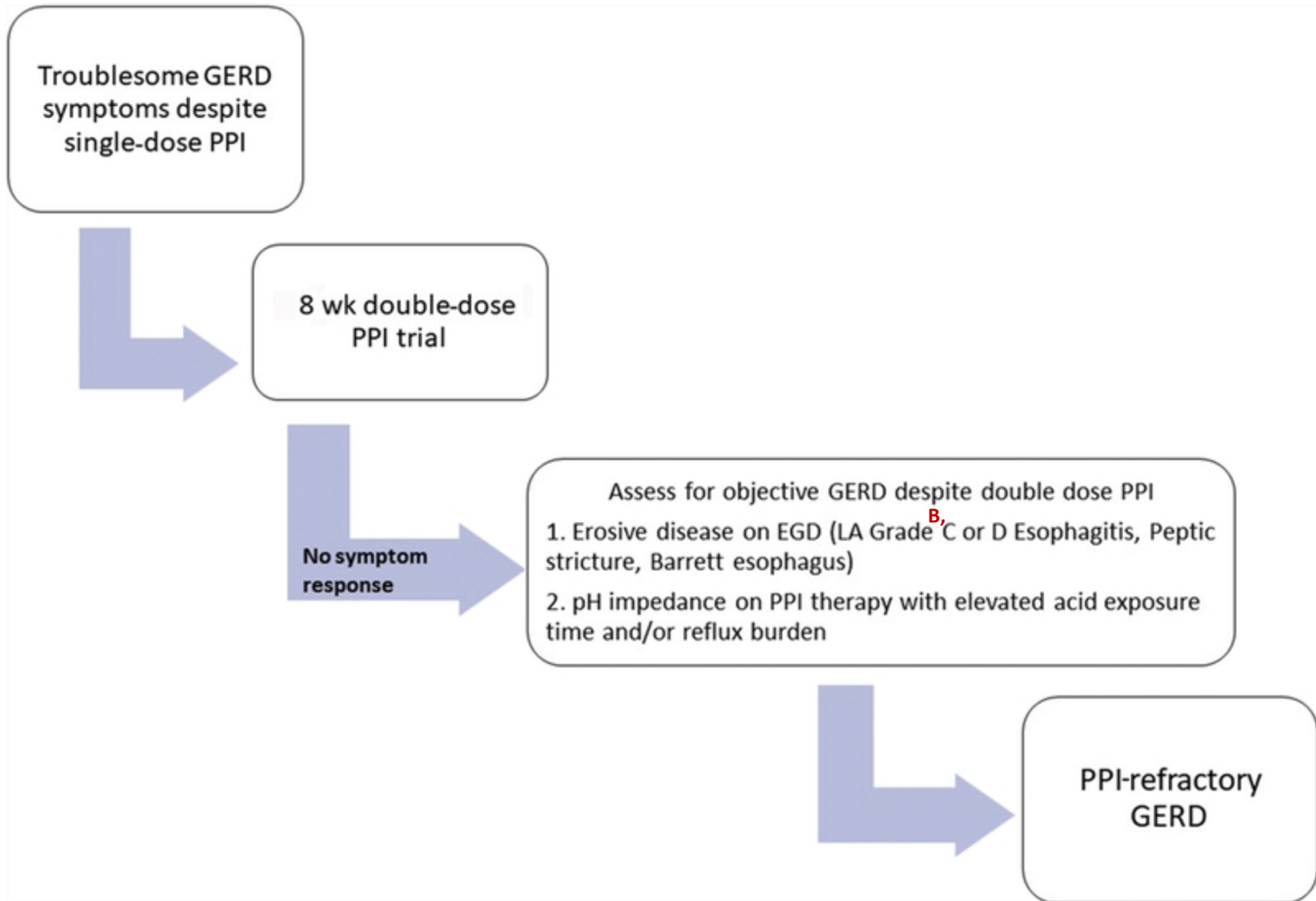


**Refractory reflux-like symptoms:** unproven GERD

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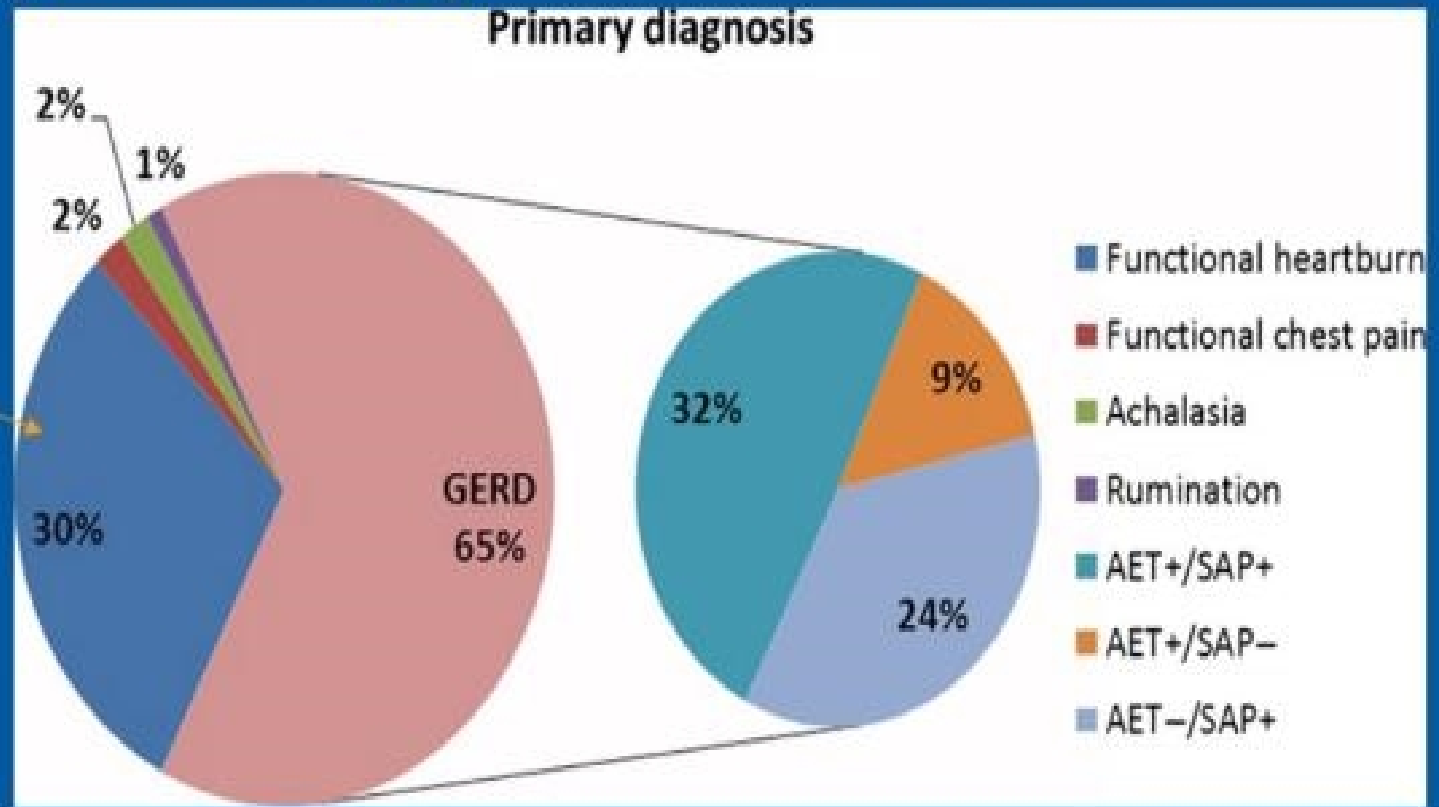
# Refractory GERD Symptoms





# Many Just Simply Do Not Have GERD

Functional HB



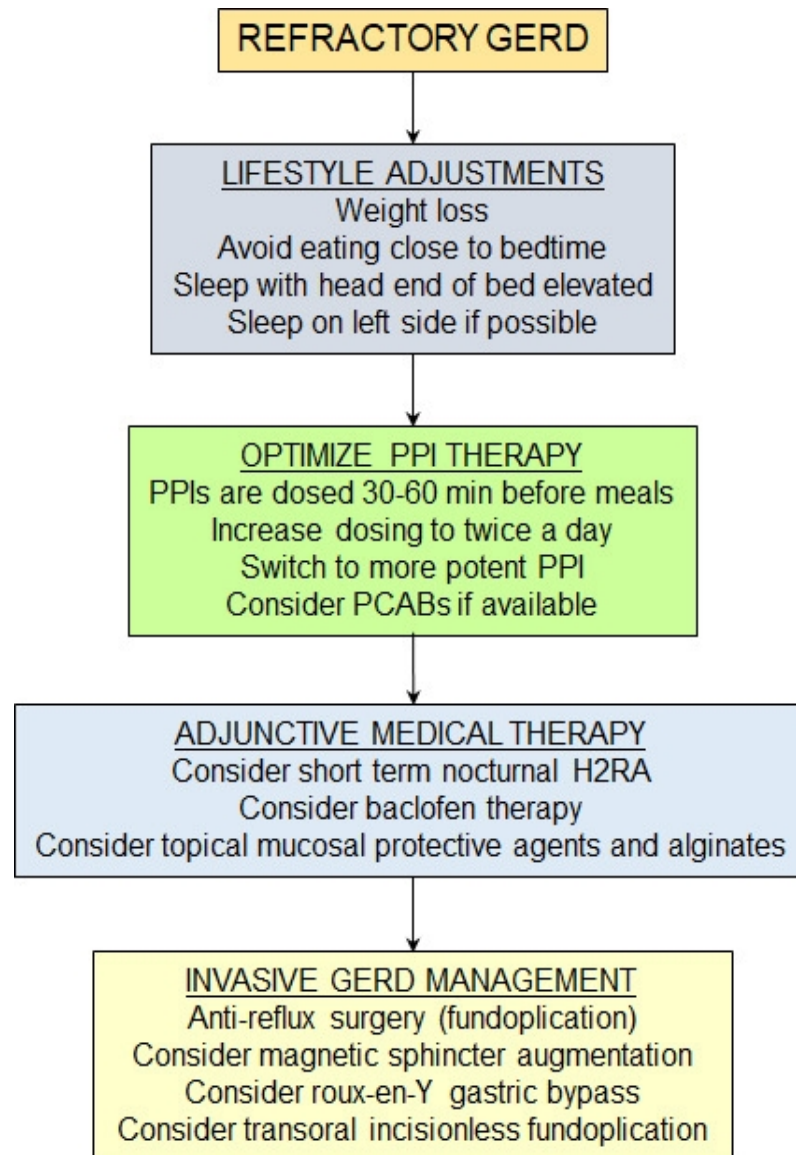
Herregods T et al  
Neurogastro Motil. 2015



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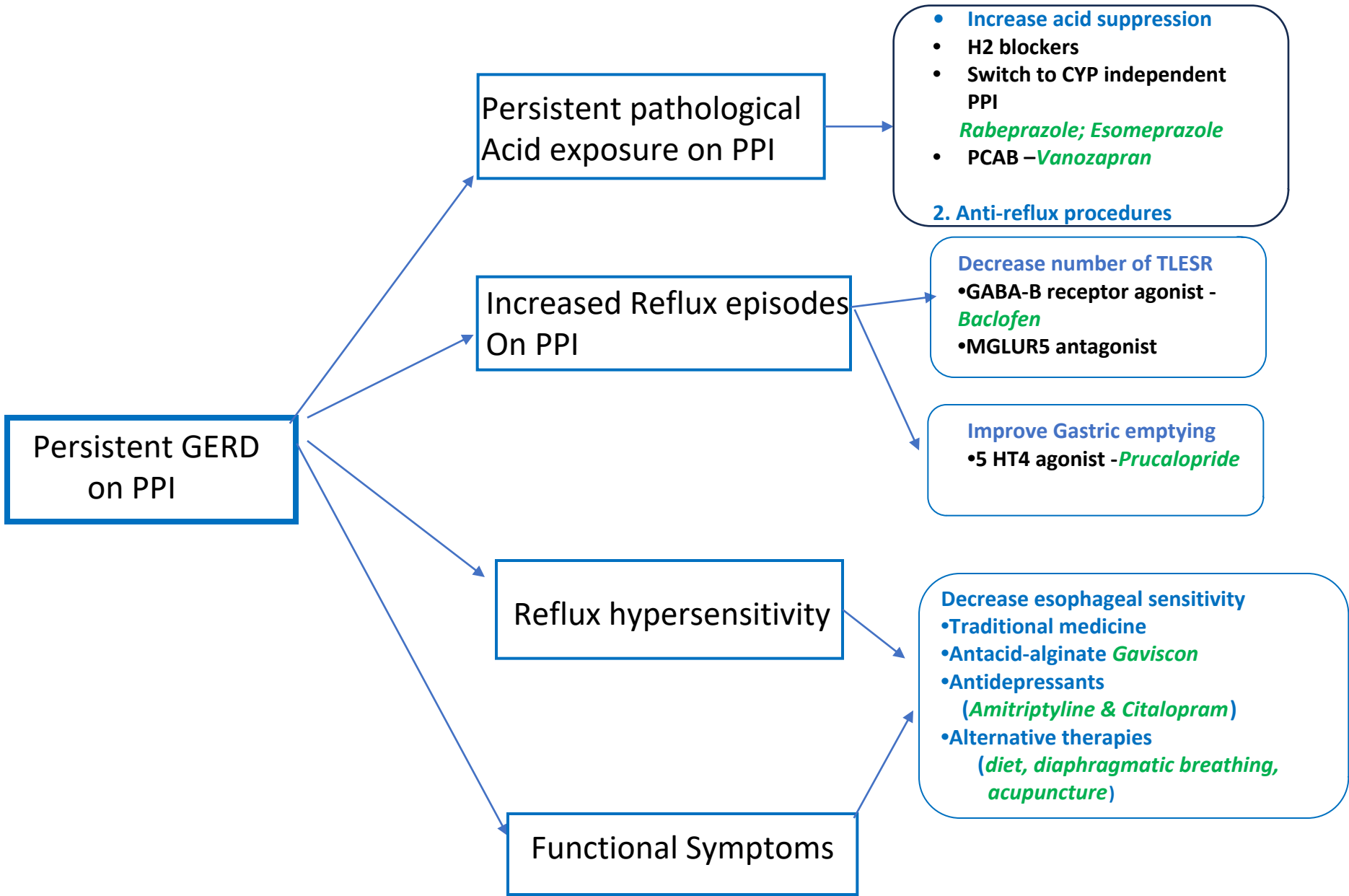


# Mechanism of PPI Refractory GERD

- Anti-Reflux Barrier: large HH, Obesity, increased TLESR
- Suboptimal acid-suppressive therapy
- Weakly acidic or weakly alkaline reflux
- Esophageal hypersensitivity
- Reduced Esophageal Clearance
- Delayed gastric emptying
- Metabolic and genetic factors may alter response to PPI

# Life-Style Modifications

- Adoption of behaviors that may reduce esophageal acid exposure
  - 1) **Weight loss**
  - 2) Smoking cessation
  - 3) Avoid bedtime snacks
  - 4) Avoid recumbency for 3 hours after meal
  - 5) Elevate the head of the bed on 4-6" blocks
  - 6) Sleeping in left lateral position
  - 7) Avoid tight fitting garments



## NOT FDA APPROVED

- GABA receptor agonist:

- a) Baclofen – limited by short half life, dizziness and sedation

- b) Arbaclofen placarbil

- c) Lesogaberan

- Metabotropic glutamate receptor antagonists

- AFQ-056 (Mavoglurant) – reduce TLESRs and increase LES tone

# Lesogaberan in refractory GERD

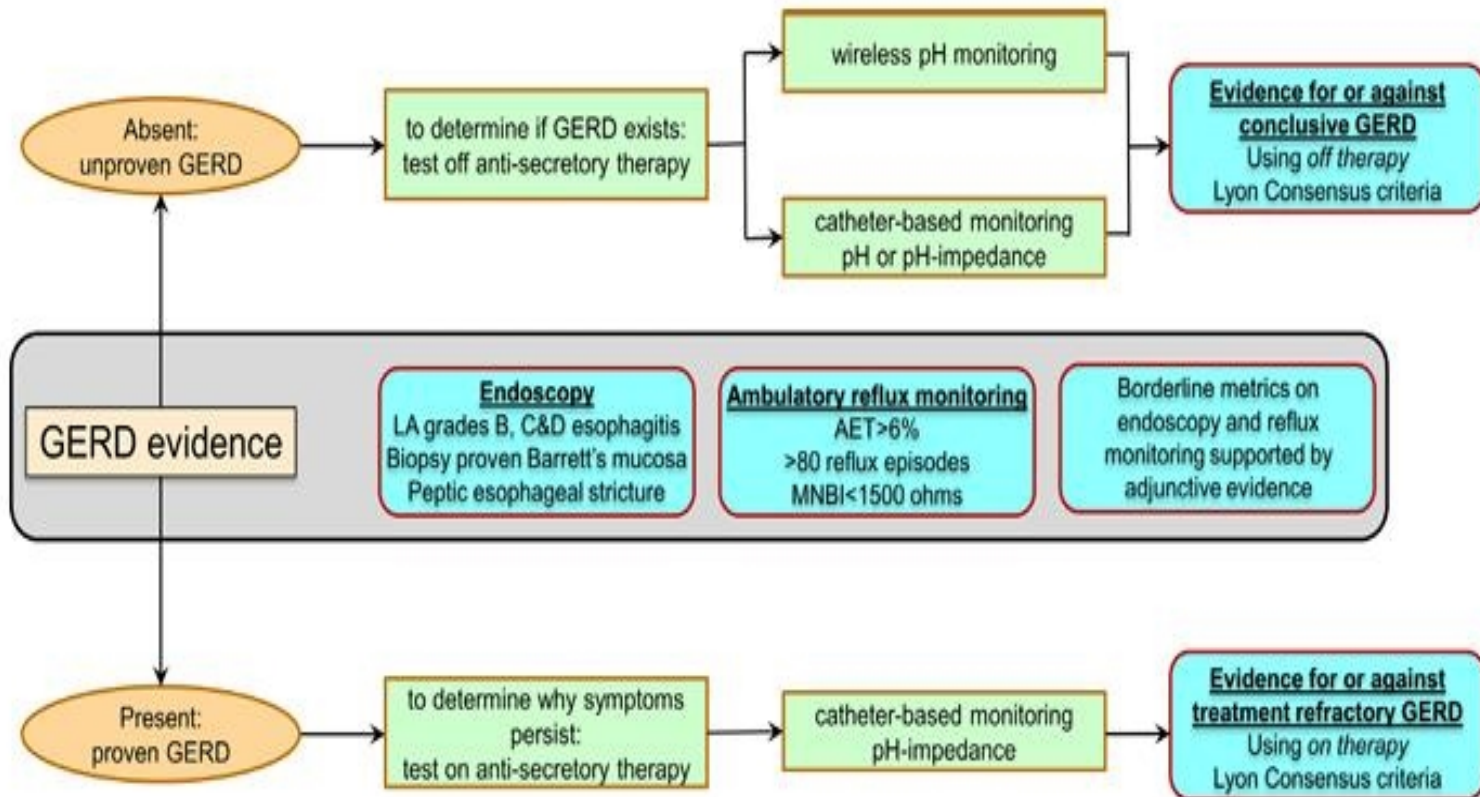
- Peripherally acting GABA b-receptor agonist
- In patients with reflux symptoms despite PPI
- ↓ number of TLESRs and reflux episodes (by 40%)
- ↑ LES pressure

Gastroenterology 2010; 139: 409-417



## Invasive Management of PPI Refractory GERD

1. Laparoscopic fundoplication
2. Magnetic Sphincter Augmentation
3. Roux-en-Y gastric bypass
4. Transoral incisionless Fundoplication
5. RF energy delivered to LES (Stretta)



	UNPROVEN GERD ENDOSCOPY, WIRELESS pH STUDY, 24 HOUR pH OR pH IMPEDANCE, HRM <i>off therapy</i>			PROVEN GERD ENDOSCOPY, 24 HOUR pH IMPEDANCE <i>on therapy</i>
	ENDOSCOPY	pH or pH-IMPEDANCE	HRM	ENDOSCOPY pH-IMPEDANCE
CONCLUSIVE EVIDENCE FOR PATHOLOGIC REFLUX	LA grades B, C&D esophagitis Biopsy proven Barrett's mucosa Peptic esophageal stricture	AET>6% on 24 hour studies AET>6% on $\geq 2$ days on wireless studies		LA grades B, C&D esophagitis Peptic esophageal stricture AET>4%, reflux episodes>80
BORDERLINE OR INCONCLUSIVE EVIDENCE	LA grade A esophagitis	AET 4-6% on 24 hour studies AET 4-6% on $\geq 2$ days on wireless studies Total reflux episodes 40-80/day		LA grade A esophagitis AET 1-4% Total reflux episodes 40-80/day MNBI 1500-2500 $\Omega$
ADJUNCTIVE OR SUPPORTIVE EVIDENCE*	Hiatus hernia Histopathologic scoring systems Electron microscopy of biopsies	Reflux-symptom association Total reflux episodes >80/day MNBI<1500 $\Omega$	Hypotensive EGJ Hiatus hernia IEM/absent contractility	Hiatus hernia MNBI <1500 $\Omega$ Reflux symptom association
EVIDENCE AGAINST PATHOLOGIC REFLUX		AET<4% each day of study** Total reflux episodes<40/day MNBI>2500 $\Omega$		AET<1% Total reflux episodes <40/day MNBI>2500 $\Omega$

# Take Home Points

- Make sure patient has GERD
- Look for alternative or worsening factors
  - a) BMI
  - b) Rumination
  - c) Gastroparesis
- Optimize medical and life-style therapy
- Refractory regurgitation responds to surgery



**ASK GOOGLE**



**NOT SURE IF I DID A GREAT JOB**

VIA 9GAG.COM

**OR NO ONE PAID  
ATTENTION**