Future of Pediatrics

Beyond Reflux: A Practical Approach to Chronic Vomiting in Children

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Conflict of Interest

- Abbvie
- Sanofi-departmental grant

Chronic Vomiting is Common in Pediatric Practice

Frequent reason for
office visits and GI referrals

Broad differential
diagnosis

Many children are empirically treated
with **acid suppression**

Clinical picture
can clarify the etiology

Learning Objectives

By the end of this session, participants will be able to:

1.  **Recognize clinical patterns** that differentiate common causes of chronic vomiting.

2.  **Distinguish key features of** GERD, eosinophilic esophagitis (EoE), cyclic vomiting syndrome (CVS), and rumination syndrome.

3.  **Tailor diagnostic evaluation and therapy** to the most likely etiology.

4.  **Avoid inappropriate** proton pump inhibitor use.

Understanding Key Terms

Chronic | >2–4 weeks

Vomiting | Forceful expulsion involving retching

Regurgitation | Passive return of gastric contents

Clinical Pearl:

Clarifying what families mean by "vomiting" is critical.

The Pattern Recognition Framework

Key historical questions that guide the differential

When does vomiting occur?

Relationship to meals?

Triggers present?

Time of day?

WHAT DOES THE VOMIT LOOK LIKE?

MUCUS-PREDOMINANT EMESIS

Think beyond the GI tract

- Chronic cough
- Asthma
- Sinus drainage
- Respiratory infections

SMALL BITS OF FOOD / SPIT-UP

Think regurgitation or rumination

BILIOUS OR BLOODY EMESIS

Red flags requiring urgent evaluation

- Bilious emesis → obstruction until proven otherwise
- Bloody emesis → gastritis, esophagitis, mucosal injury, GI bleeding

The Pattern Recognition Framework

3. What Symptoms Accompany It?

ASSOCIATED SYMPTOMS

DYSPHAGIA

NAUSEA

RED FLAGS – URGENT EVALUATION NEEDED

GROWTH & NUTRITION

Growth faltering or poor weight gain

GI WARNING SIGNS

Bilious (green) emesis, bloody emesis, progressive abdominal distention, severe/worsening abdominal pain

NEUROLOGIC / SYSTEMIC

Neurologic abnormalities, developmental delay, early morning vomiting, severe/persistent headaches

CASE

A **2-month-old baby** is brought in for **irritability** and **difficulty feeding**.

- On **breast milk**
- Weight gain is **suboptimal**
- Hungry and wants to feed, but when mom tries to feed, he starts **coughing, crying** and **pulls away**.

What is the best initial treatment?

1. Ranitidine
2. PPI
3. Thickening feeds
4. Elimination of cow's milk

GERD

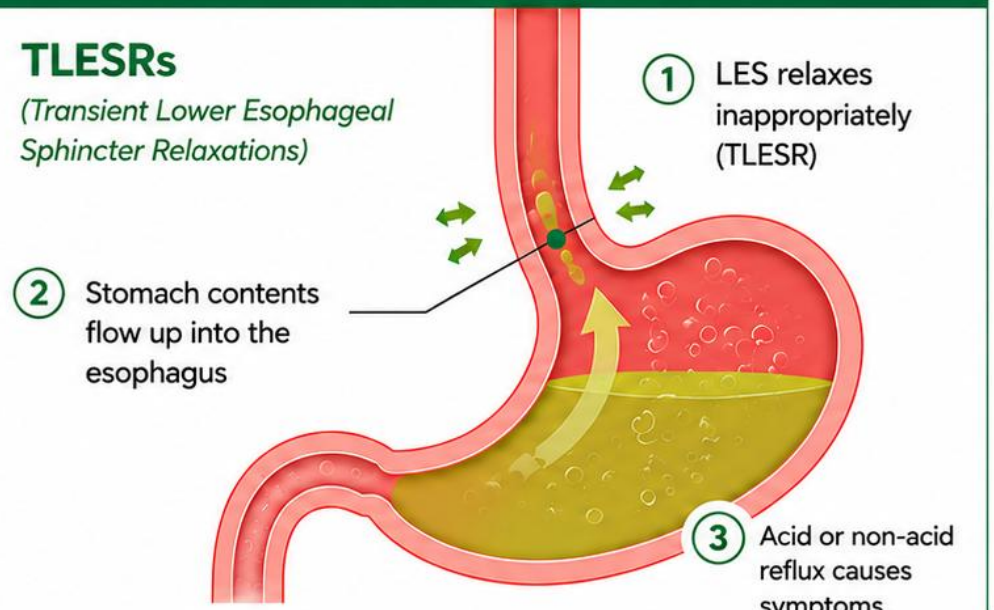
Recognizing classic features and the mechanism behind reflux

TYPICAL FEATURES

Heartburn	Burning or discomfort behind the breastbone
Regurgitation	Return of stomach contents into the mouth
Feeding difficulty, pain, cough	May include irritability, arching, cough, wheeze

THE MECHANISM

TLESRs
(Transient Lower Esophageal Sphincter Relaxations)



HIGH-RISK POPULATIONS

- Neuromuscular disease
- Obesity
- Cystic Fibrosis
- TEF repair / Achalasia
- Hiatal hernia

Pitfalls in Practice

Common Reasons GERD Is Overdiagnosed

1

Mistaking Cow's Milk Protein Allergy for GERD

Symptoms like irritability and poor response to acid suppression may reflect allergy, not reflux.

2

Missing Oropharyngeal Dysphagia

Coughing, choking, or wet respirations may signal swallowing dysfunction, not reflux.

3

Attributing BRUE to GERD Without Evidence

GERD is rarely the primary cause of BRUE; consider other potential causes.

4

Continuing Acid Suppression Without Reassessment

Prolonged therapy without clear benefit delays alternative diagnosis and may cause harm.

5

Assuming "Reflux" on Upper GI = GERD

Reflux seen on imaging is common, often nonspecific, and does not confirm pathologic GERD.

RADIOLOGICAL ASSESSMENT

Consider Structural Evaluation (Upper GI Series)

HIGH-YIELD CLINICAL CLUES

1. TRISOMY 21

- Higher risk for esophageal dysmotility
- Congenital GI anomalies
- Aspiration and feeding dysfunction

THINK:
Esophageal dysmotility, TEF, duodenal atresia, malrotation

2. DYSPHAGIA TO SOLIDS AND LIQUIDS

- Suggests abnormal motility or structural narrowing
- Not typical for GERD

THINK:
Achalasia, strictures, esophageal webs, rings, dysmotility

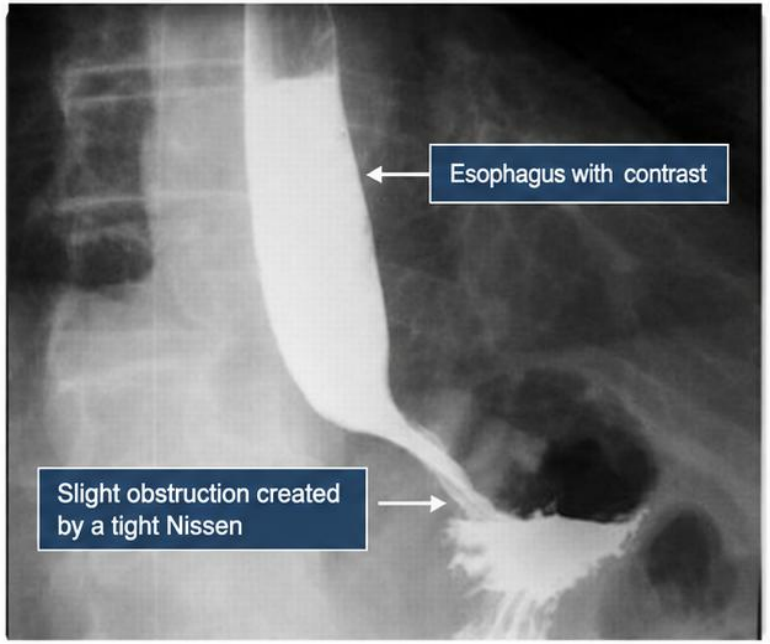
3. BILIOUS EMESIS

- Assume obstruction until proven otherwise

THINK:
Malrotation with volvulus, intestinal obstruction, annular pancreas

UPPER GI SERIES: EVALUATES ANATOMY

Tight Nissen delaying the passage of contrast

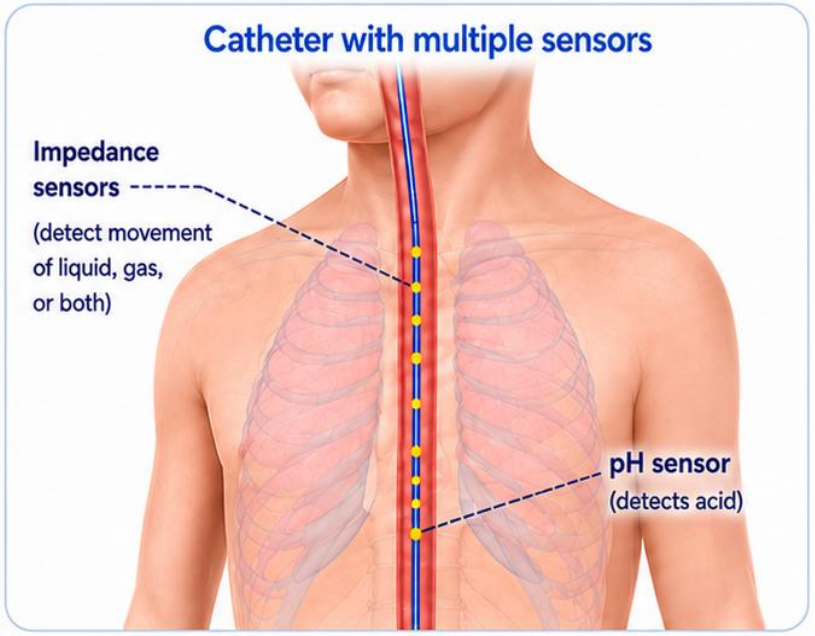


Upper GI helps identify structural abnormalities. It does not diagnose GERD.

EVALUATION OF GERD

pH-Multichannel Intraluminal Impedance (pH-MII)

- Used when GERD diagnosis is uncertain
- Not indicated for uncomplicated 'happy spitters'
- Detects acid and non-acid reflux
- Correlates symptoms with reflux events



Upper Endoscopy

Evaluate complications and other causes of reflux

e.g., Celiac disease, EoE, eosinophilic gastritis, H pylori gastritis

Treatment of GERD

Conservative Measures

Thickening, upright positioning

Cow's milk protein and soy elimination for infants

Restrict chocolate, caffeine, carbonated beverages

Meals 2 hrs prior to bedtime

Avoid secondhand smoke exposure

Medication

Acid suppressant for 2–4 weeks

Prokinetics

CASE

9 year old boy with **asthma, seasonal allergy, IgE mediated food allergy** is coming in with **vomiting 2–3 times a week for 6 months**

- **Difficulty swallowing** bread and meat

- **Takes an hour to eat** his meal

- **Drinks water frequently** with bites of his food

Eosinophilic Esophagitis (EoE): Definition

An immune-mediated, chronic disease of the esophagus

Chronic, immune-mediated disease

Eosinophil-predominant inflammation driven by immune dysregulation.

Symptoms of esophageal dysfunction

- Feeding refusal, dysphagia, food impaction
- Vomiting, abdominal pain
- Poor growth, heartburn-like symptoms

≥ 15 eosinophils per high-power field on esophageal biopsy

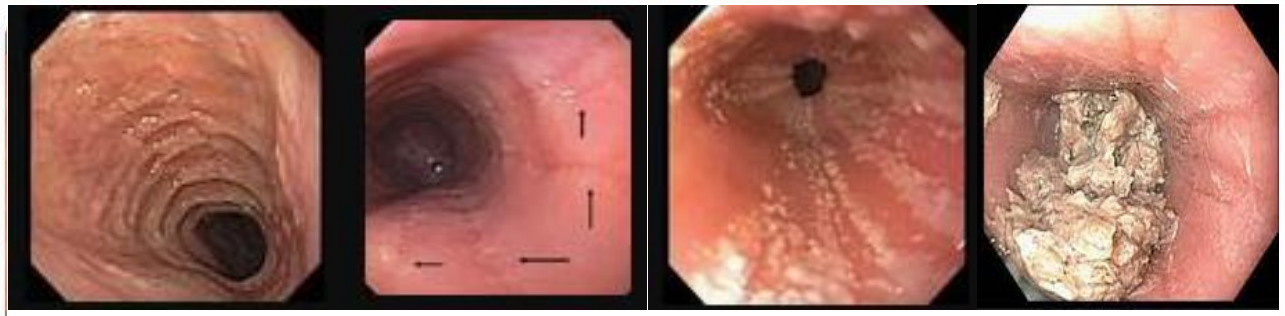
On a properly obtained specimen (off high-dose PPI or after PPIs excluded as cause).

High prevalence of atopy in patient and family

- Food allergy
- Asthma
- Allergic rhinitis
- Eczema

What EoE Looks Like

Edema & Rings | Furrows | Exudates | Stricture



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Eosinophilic Esophagitis (EoE): Symptoms

Symptoms vary by age and reflect esophageal dysfunction

Vary by Age

Infants & Toddlers
(0–2 years)

- **Feeding difficulty**
  Refusal, aversion, slow eating
- **Poor weight gain**
  Failure to thrive
- **Vomiting**
  Often non-bilious

Children
(3–12 years)

- **Feeding difficulty**
  Picky eating, trouble finishing meals
- **Abdominal pain**
  Often post-prandial
- **Vomiting**
  Recurrent, may be intermittent

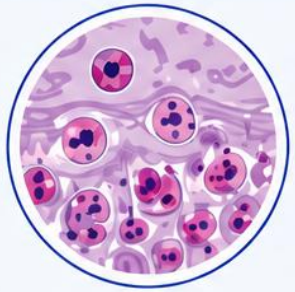
Adolescents & Adults
(≥13 years)

- **Dysphagia**
  Progressive, especially to solids
- **Food impaction**
  Acute episodes
- **Heartburn-like symptoms**
  Not responsive to PPI

EoE: Diagnosis and Management

DIAGNOSIS

- Upper endoscopy with biopsies showing **≥ 15 eosinophils/hpf**



≥ 15 eosinophils/hpf

TREATMENT OPTIONS

Elimination diets

- Empiric elimination (e.g., SFED or amino acid based formula)

Proton pump inhibitors

- High-dose PPI trial; therapeutic option for many patients

Topical swallowed steroids

- Budesonide oral suspension or fluticasone MDI (swallowed)

Dupilumab

- Biologic therapy for appropriate patients

CASE | Recurrent Episodic Vomiting in an 8-Year-Old Boy

Clinical Presentation

An 8-year-old boy presents with **recurrent vomiting episodes** over the past year.

He has visited the emergency department several times and has repeatedly been diagnosed with **"stomach flu."**

1 Predictable Episodic Pattern

- Vomiting occurs approximately **once monthly**
- Episodes last for **several hours**

2 Normal Interval Health

- **Excellent** growth
- Completely **well between episodes**

3 Migraine Association

- Mother has **migraine headaches**

Cyclic Vomiting Syndrome (CVS)

CVS is a disorder of gut brain interaction (DGBI) characterized by recurrent episodes of intense vomiting separated by symptom-free intervals.

Hallmark Features

Recurrent stereotypical episodes
Similar onset, duration, and symptoms in each episode.

Intense vomiting lasting hours to days
Vomiting is severe and incapacitating.

Completely well between episodes
Return to baseline health with no symptoms between episodes.

Associated Features

- Pallor
- Fatigue
- Abdominal pain
- Diarrhea
- Family history of Migraines

CVS: PRACTICAL PEARLS

EVALUATION

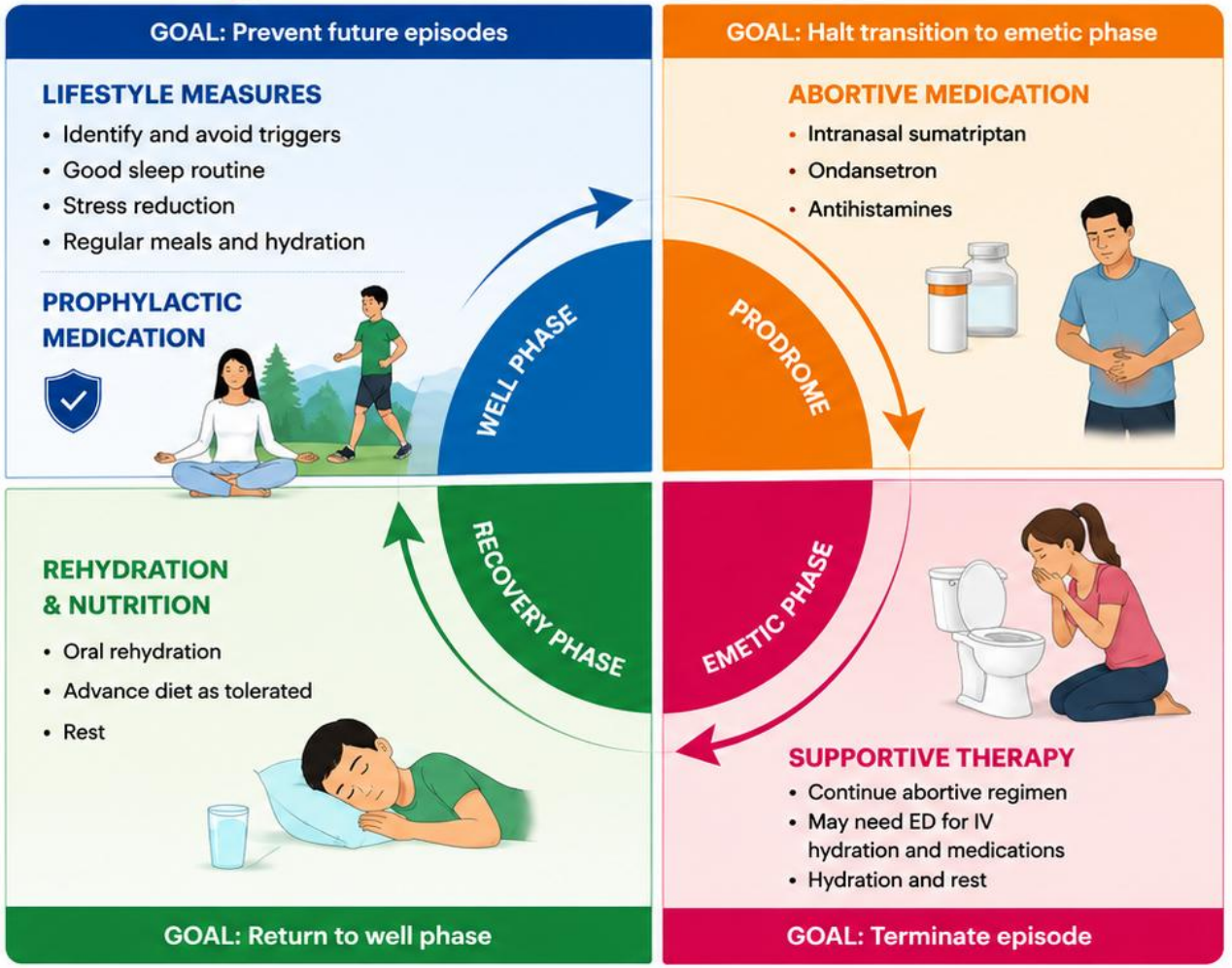
LABS

- Complete blood count, serum electrolytes and glucose, liver function testing, lipase and urinalysis

UPPER GI

- To rule out anatomic abnormalities (e.g., malrotation, obstruction)

MANAGEMENT



CASE

A **4-year-old chubby girl** presents with her grandmother for **vomiting for 6 months**. In the clinic, you see the child go up to the trash can and **spits up mucus with some bits of food.**

- “Vomiting” occurs **multiple times** a day
- **During or within minutes** of eating
- Child **starts eating soon after** the event
- **No nocturnal** symptoms
- **No improvement** with Zantac

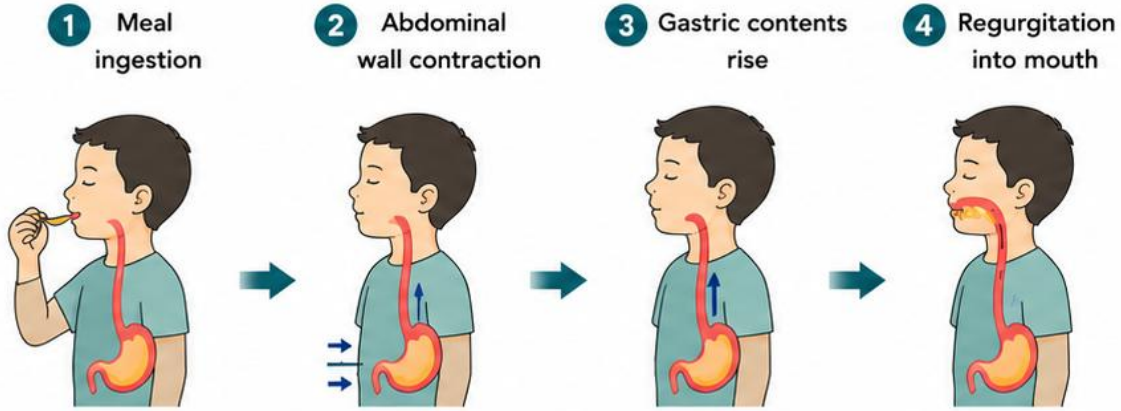
RUMINATION SYNDROME

A Frequently Missed Cause of "Vomiting"

Rumination syndrome is an acquired behavioral disorder characterized by effortless regurgitation of recently ingested food, which may be reswallowed or expelled.

WHAT IS HAPPENING?

A learned, involuntary increase in intra-abdominal pressure leads to regurgitation of gastric contents.



HALLMARK FEATURES

- Occurs during or within minutes of meals
- Effortless regurgitation
- No nausea or retching
- Food may be reswallowed or expelled
- Absent during sleep

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RUMINATION SYNDROME: MANAGEMENT

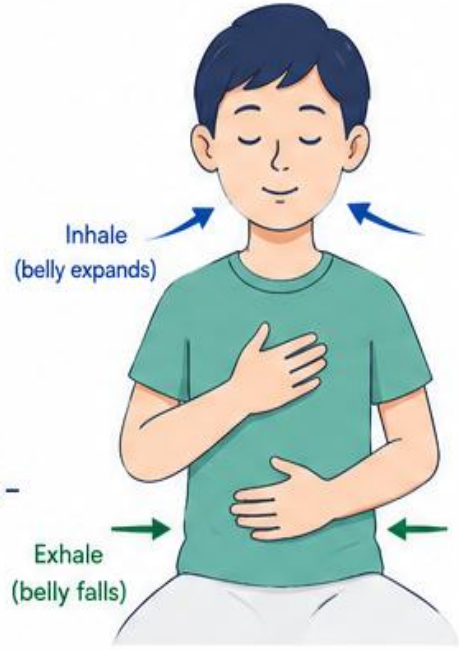
Treatment is behavioral and highly effective

1. FIRST-LINE THERAPY: DIAPHRAGMATIC BREATHING

- **Core treatment**
- Performed during and after meals
- Increases intra-abdominal pressure control
- Interrupts the rumination cycle
- Practice until automatic (several times/day)

HOW TO DO IT

1. Sit upright and relax shoulders
2. Breathe in slowly through nose – belly expands
3. Breathe out slowly through pursed lips – belly falls



2. ADDITIONAL MANAGEMENT STRATEGIES

Behavioral Therapy

- Cognitive Behavioral Therapy (CBT)
- Habit-reversal techniques
- Hypnotherapy (selected patients)

Nutritional Support

- Monitor growth and nutritional intake
- Reassure families
- Avoid unnecessary food restrictions

Adjunctive Therapy

Baclofen

May reduce transient LES relaxations in selected patients.

Case

12 yr old boy comes in with **nausea** and **upper abdominal pain** after eating.

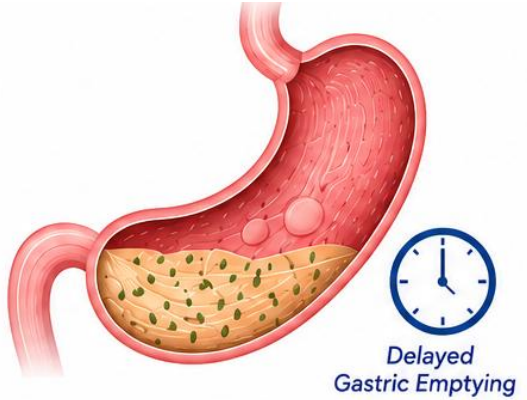
The symptoms started after an acute gastroenteritis 3 weeks ago.

The vomiting is not as intense but still happens once a week.

- No improvement with Ondansetron or Famotidine

- Feels full after eating a small amount of food

GASTROPARESIS



TYPICAL FEATURES

- Early satiety
- Post-prandial fullness
- Nausea and vomiting

MANAGEMENT

- Small frequent meals
- Lower fat/fiber intake
- Hydration and nutritional support
- Prokinetic therapy

COMMON ASSOCIATIONS

- Post-viral illness
- Diabetes
- Connective tissue disorders
- Neurologic disease
- Postsurgical vagal injury

RESOURCES

Trusted education and support for families and providers

GiKids – GERD & Reflux

- Parent-friendly educational materials
- Practical feeding and reflux guidance
- NASPGHAN-supported resource

Visit Website

gikids.org

CVSA – Hope Starts Here

- Family education and support tools
- Diagnostic and management information
- Patient advocacy resources

Visit Website

cvsaonline.org

EoE Video Series (YouTube)

- Educational video playlist for families
- Explains diagnosis and treatment options
- Practical counseling resource for clinic visits

Watch Playlist

bit.ly/EoEplaylist

Eosinophilic Esophagitis (EoE)

Educational Video Series for Families

— Fellows in the Department of Gastroenterology —

Dr Nathan Bryan

Dr Diana Jo

Common Causes of Chronic Vomiting

High-Yield Clinical Pattern Comparison

Feature	GERD Gastroesophageal Reflux Disease	EoE Eosinophilic Esophagitis	CVS Cyclic Vomiting Syndrome	Rumination
Timing	After meals	Variable	Episodic	Minutes after meals
Dysphagia	Sometimes	Common	Rare	Rare
Well Between Episodes	No	No	Yes	Usually
Nausea	Common	Variable	Severe	Minimal
Sleep Interruption	Possible	Possible	Possible	Absent
Response to PPI	Often improves	Variable	Poor	Poor