

# Pediatric Gastroesophageal Reflux Treatment and Referral Guidelines



Developed in a collaboration of pediatric gastroenterologists from the Departments of Pediatrics at Carolinas Health Care, Duke University, East Carolina University, University of North Carolina, and Wake Forest University and primary care physicians from across North Carolina

**This guideline, for use by primary care providers, explains the treatment and referral process for gastroesophageal reflux and gastroesophageal reflux disease in pediatric patients (ages 0 to 21).**

## GER, GERD, or “Happy Spitting”?

Appropriate distinction between gastroesophageal *reflux* and true gastroesophageal reflux *disease* is vital to initiating proper treatment.

**Gastroesophageal reflux (GER)** is the passage of gastric contents into the esophagus with or without regurgitation and vomiting. Most episodes of reflux in healthy individuals last less than 3 minutes, occur in the postprandial period, and cause few or no symptoms.

Sometimes infants (0 to 12 months) spit up but do not have symptomatic reflux. About 50% of healthy 3- to 4-month-old infants spit up at least once a day. This is known as “happy spitting.” Most infants with asymptomatic GER (“Happy Spitters,” Tier 1 on following page) grow normally and the condition often peaks at 4 months and resolves by 12 to 18 months of age. Current clinical guidelines say that the frequency of GER in breastfed and formula fed infants is about the same, although the duration of reflux episodes may be shorter in breastfed infants.

Symptomatic GER can result in some feeding difficulty or refusal, irritability, and back arching (See Tier 2 on following page).

In contrast, **gastroesophageal reflux disease (GERD)** is present when the reflux of gastric contents causes troublesome symptoms and/or complications (e.g., retarded weight gain, pneumonia, vomiting blood, or other related problems) (Tier 3).

## Treatment

Treatment follows a 3-tier approach, based on age, described in the chart on the following page.

## Red Flags\*

Red Flag	What to Do
Weight loss / failure to thrive	Admit to observe on conservative feeding regimen and to obtain CBC, electrolytes, urinalysis/urine culture, upper GI series, cranial ultrasound
Refusal to feed	Admit to observe on conservative feeding regimen and to obtain laboratory and imaging studies as indicated
GI bleeding	Consult Pediatric Gastroenterologist
Green or bilious vomitus	Obtain upper GI series and consult Pediatric Surgery
Forceful vomiting (projectile)	Upper GI series or, <i>for infants only</i> , pyloric ultrasound and consult Pediatric Surgery or Gastroenterology
Sudden onset of reflux after 4 months of life	Treat as Tier 3 patients according to protocol on next page and obtain upper GI series

\*Primary care providers are encouraged to consult a pediatric gastroenterologist urgently when patient presents with red flags (at least consult gastroenterologist by phone).

## Parental Education and Reassurance

Current evidence emphasizes the necessity and value of parental education in the management of GER. Anxious parents in particular may need guidance and reassurance, and parental education can reduce demands for unnecessary treatment of “happy spitters.” Our caregiver education resources include the Parent Take-Home Guide of the North American Society of Pediatric Gastroenterology, Hepatology and Nutrition, upon whose guideline this document is based.

	Tier 1: Happy Spitter	Tier 2: GER (Reflux)	Tier 3: GERD (Disease)
<b>Symptoms</b>	Spitting up without irritability, feeding and gaining weight well	Feeding difficulty, irritability, "symptomatic reflux" (back arching, spitting, feeding refusal)	Reflux with weight loss, retarded weight gain, aspiration pneumonia, vomiting blood, or extreme irritability
<b>Diagnosis</b>	1. Take detailed history 2. Conduct physical exam 3. Assess for red flags	1. Take detailed history 2. Conduct a physical exam 3. Assess for red flags	1. Take detailed history 2. Conduct a physical exam 3. Assess for red flags 4. Complete work-up including urinalysis, CBC, electrolytes, and, <i>for infants only</i> , pyloric ultrasound
<b>Treatment</b>	<p><b>Ages 0 to 12 months:</b></p> <ol style="list-style-type: none"> <li>Provide parental education on GI development, expected course of disease, and education about appropriate feeding.</li> <li>Modify feeding frequency and/or volume of feedings.</li> </ol>	<p><b>Ages 0 to 12 months:</b></p> <ol style="list-style-type: none"> <li>Try thickening the formula by adding 1 tsp to 1 tbsp rice cereal per ounce or using antiregurgitation (AR) formula.</li> <li>Begin a 2-week trial of extensively hydrolyzed formula or amino acid-based formula to exclude cow's milk allergy (change in formula).</li> <li>Consider treatment with H2RA or PPI (medication options listed under Tier 3).</li> </ol> <p><b>Ages 1 to 21 years:</b></p> <ol style="list-style-type: none"> <li>Lifestyle changes</li> <li>Avoidance of precipitating factors</li> <li>Consider treatment with H2RA or PPI (see Tier 3 for PPI dosages). Dosage for H2RAs: <ul style="list-style-type: none"> <li>Ranitidine (Zantac): 5 to 10 mg/kg/day divided twice daily (max 300 mg/day)</li> <li>Famotidine (Pepcid): 1 mg/kg/day divided twice daily (max 80 mg/day)</li> </ul> </li> </ol>	<p><b>Ages 0 to 12 months:</b></p> <p>The most appropriate pharmacologic therapy is H2RAs. <i>Be aware of significant side effects of PPIs in infants.</i></p> <p>H2RAs:</p> <ul style="list-style-type: none"> <li>Ranitidine (Zantac): 5 to 10 mg/kg/day divided twice daily</li> <li>Famotidine (Pepcid): <ul style="list-style-type: none"> <li>&lt; 3 months: 0.5 mg/kg once daily</li> <li>3 to 12 months: 0.5 mg/kg twice daily</li> </ul> </li> </ul> <p>PPIs (<i>Do not prescribe unless treatment with an H2 blocker has failed</i>):</p> <ul style="list-style-type: none"> <li>Lansoprazole (Prevacid)<sup>†</sup>: <ul style="list-style-type: none"> <li>&lt;10 weeks: 0.2 to 0.3 mg/kg/dose once daily</li> <li>≥10 weeks: 1 to 2 mg/kg/dose once daily</li> </ul> </li> <li>Omeprazole (Prilosec)<sup>†</sup>: 0.7 to 1.5 mg/kg/dose once daily</li> </ul> <p><sup>†</sup>Administer on empty stomach 30 minutes prior to feeding; do not mix with milk or formula</p> <p><b>Ages 1 to 21 years:</b></p> <p>Begin a PPI as follows:</p> <ul style="list-style-type: none"> <li>Lansoprazole (Prevacid)<sup>†</sup> <ul style="list-style-type: none"> <li>≤ 30 kg: 15 mg once daily</li> <li>&gt; 30 kg: 30 mg once daily</li> </ul> </li> <li>Omeprazole (Prilosec)<sup>†</sup> <ul style="list-style-type: none"> <li>5 kg to 10 kg: 5 mg once daily</li> <li>10 kg to &lt;20kg: 10 mg once daily</li> <li>≥ 20 kg: 20 mg once daily</li> </ul> </li> </ul> <p><sup>†</sup>Administer on empty stomach 30 minutes prior to feeding; do not mix with milk or formula</p>
<b>Maintenance</b>	Continue effective regimen throughout infancy.	Continue effective regimen throughout infancy.	Taper medicine to half of the original dose when child gaining weight satisfactorily and parents satisfied that child is definitely improved. Continue PPI for at least 3 months.
<b>Referral</b>	If treatment fails, do not make a referral. Try Tier 2 treatment first.	If treatment fails, do not make a referral until trying Tier 3 treatment first.	If the child is not improving over 1 to 2 weeks, contact Pediatric Gastroenterology for urgent consultation.  Include the child's growth chart, diet history, outcome of Tier 1 through 3 treatment, and laboratory results.

Abbreviations: H2RA, histamine-2 receptor antagonists; PPI, proton-pump inhibitor