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# Paediatric gastroesophageal reflux clinical practice guidelines

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## INFORMATION ABOUT CURRENT GUIDELINES

Gastroesophageal reflux (GOR) symptoms in infants are a common reason for consulting medical professionals, with a reported prevalence of 4.3% at 6 months which decreases to 2% by 18 months of age.<sup>1</sup>

In May 2009, the North American Society for Paediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) and the European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) jointly published clinical practice guidelines on the diagnosis and management of GOR in children.<sup>2</sup> The aim was to develop 'an international consensus on the diagnosis and management of GOR and GOR disease (GORD) in the paediatric population'.<sup>2</sup> A recent clinical report from the American Academy of Pediatrics has re-endorsed these guidelines.<sup>3</sup> Consensus statements have been developed by an international panel of nine paediatric gastroenterologists and two epidemiologists based on the Delphi principle and included analysis of >600 articles.<sup>2</sup> The guidelines are aimed at paediatricians and paediatric subspecialists for use in daily practice.

## PREVIOUS GUIDELINES

In 1997, consensus-based guidelines on several aspects of GOR and GORD were developed by the ESPGHAN Working Group on GOR.<sup>4</sup> In 2001, NASPGHAN published its first clinical practice guidelines on paediatric GOR and GORD, and this document served as the basic structure for the recent guidelines<sup>5</sup> (see box 1).

## CONTROVERSIAL AND KEY ISSUES THAT THE GUIDELINES ADDRESS

### Definition of GOR and GORD

The guidelines have emphasised the difference between the terms GOR and GORD, which are to be strictly used as defined. GOR is the effortless passage of gastric contents into the oesophagus with or

without regurgitation and vomiting, and is a *normal physiological process*. GORD occurs when the reflux of gastric contents causes troublesome symptoms and/or complications.

### Diagnosis

In infants and young children, GORD symptoms are often non-specific. In older children and adolescents with typical symptoms, history and physical examination may be sufficient to diagnose GORD. Common presenting symptoms are summarised in table 1.

- ▶ GOR does not warrant any specialist diagnostic tests.
- ▶ In difficult cases of GORD, further investigations, including oesophageal pH monitoring, may be useful to document the presence of pathological reflux (ie, where symptoms are troublesome, or complications such as stricture, or recurrent aspiration pneumonias have occurred), pH monitoring can also be used to establish a causal relationship between reflux and reported symptoms, to evaluate treatment strategy and to exclude other conditions.
- ▶ Combined multiple intraluminal impedance and pH monitoring is superior to pH monitoring alone, particularly in very young babies whose stomach contents may not be acidic. However, oesophageal monitoring alone is cheaper, more readily available and easier to interpret and, hence, less time consuming. It is useful for evaluating the efficacy of antisecretory therapy and, in older children, where the stomach is much less likely to be non-acidic.
- ▶ Upper gastrointestinal endoscopy with biopsy is a useful investigation for the diagnosis of oesophagitis due to GORD. However, the absence of histological changes does not rule out GORD. It may also be used to exclude other causes of oesophagitis, such as eosinophilic oesophagitis, and is indicated in patients who do not respond to pharmacological therapy, or in patients who need assessment of response to treatment.



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**Box 1 Resources**

- ▶ NSPGHAN/ESPGHAN (2009) guidelines  
<http://www.naspghan.org/user-assets/Documents/pdf/PositionPapers/FINAL%20-%20JPGN%20GERD%20guideline.pdf>
- ▶ American Academy of Pediatrics Clinical Report 2013  
<http://pediatrics.aappublications.org/content/131/5/e1684.long>
- ▶ National Institute of Health and Care Excellence (NICE) Clinical Knowledge Summaries on Gastroesophageal reflux disease in children (Last revised in December 2009)  
<http://cks.nice.org.uk/gord-in-children#!topicsummary>

- ▶ Barium contrast radiography is not useful for the diagnosis of GORD but is useful to confirm or rule out anatomical abnormalities of the upper gastrointestinal tract, such as gut malrotation or volvulus which may mimic the signs and symptoms of GORD.

**Management**

- ▶ Conservative management with optimisation of positioning, feeding and nutrition is often sufficient to manage healthy, thriving infants with symptoms which are likely to be due to physiological GOR.
- ▶ Parental education, guidance and support are always required.
- ▶ Feed thickeners are recognised as a reasonable management strategy in otherwise healthy infants.
- ▶ As cow's milk protein allergy may mimic the symptoms of GORD, formula-fed infants with recurrent vomiting may benefit from a 2 to 4 weeks trial of an extensively

**Table 1** Symptoms and signs that may be associated with Gastroesophageal reflux disease<sup>2</sup>

Symptoms	Signs
▶ Recurrent regurgitation with/ without vomiting	▶ Oesophagitis
▶ Weight loss or poor weight gain	▶ Oesophageal stricture
▶ Irritability in infants	▶ Barrett oesophagus
▶ Heartburn or chest pain	▶ Laryngeal/pharyngeal inflammation
▶ Haematemesis	▶ Recurrent pneumonia
▶ Dysphagia, odynophagia	▶ Anaemia
▶ Wheezing	▶ Dental erosion
▶ Stridor	▶ Food refusal
▶ Cough	▶ Dystonic neck posturing (Sandifer's syndrome)
▶ Hoarseness	▶ Apnoea spells
	▶ Apparent life threatening episodes

hydrolysed or amino acid-based formula. Some breast-fed infants with particularly troublesome symptoms may benefit from a maternal diet excluding dairy and egg. Cessation of breastfeeding should not be recommended.

- ▶ Acid suppression therapy is the 'mainstay of treatment' for GORD. Proton pump inhibitors (PPI) are superior to Histamine-2 receptor antagonists (H2RA) in healing erosive oesophagitis and relief of GORD symptoms. The guidelines caution against the overuse of PPIs and H2RAs. Hypochlorhydria associated with H2RAs or PPIs may increase rates of community-acquired pneumonia, gastroenteritis and candidiasis in children, and necrotising enterocolitis in preterm infants. Vitamin B12 deficiency from prolonged use of PPIs<sup>6</sup> and PPI-induced acute interstitial nephritis has also been documented.<sup>2</sup>
- ▶ In an older child or adolescent with typical symptoms suggestive of GORD, an empirical trial of PPIs is justified for up to four weeks. However, improvement of heartburn following treatment does not confirm diagnosis of GORD because symptoms may improve spontaneously.
- ▶ Empirical treatment is not recommended in infants and young children where symptoms are less specific.
- ▶ Prokinetic agents should be reserved for selected cases as potential side effects may outweigh the potential benefits.
- ▶ Antacids, alginates and sucralfate have a role for occasional use in symptomatic heartburn; chronic use of these agents is not recommended due to the risk of side effects from long-term use.<sup>2</sup>
- ▶ Antireflux surgery should be reserved for children with intractable symptoms and failure to gain weight despite optimising medications. Surgery may also be considered in children who are at risk of significant or 'life-threatening' complications of GORD, such as recurrent aspiration pneumonias, and apparent life-threatening events. The types of antireflux surgery include Nissen's fundoplication, total oesphogastric dissociation and endoluminal gastroplication.
- ▶ Paediatricians need to be aware of the warning signs that indicate further investigation may be required in patients presenting with vomiting and regurgitation (see box 2).

**WHAT DO I NEED TO KNOW?****What should I stop doing?**

- ▶ Avoid the empirical trialling of acid suppression therapy as a diagnostic test for GORD in infants and young children.
- ▶ Do not routinely treat paediatric patients with GORD with prokinetic medications.
- ▶ Do not diagnose GORD based on barium contrast studies.
- ▶ Restrict use of antacids, alginates and sucralfate.

**What should I start doing?**

- ▶ Manage GOR conservatively with parental education and optimisation of position, feeding and nutrition, particularly during infancy.

**Box 2 Warning signals requiring investigation in infants with regurgitation or vomiting<sup>2</sup>**

- ▶ Bilious vomiting suggestive of malrotation or volvulus
- ▶ Consistently forceful non-bilious vomiting suggestive of pyloric stenosis or raised intracranial pressure
- ▶ Gastrointestinal bleeding
- ▶ Haematemesis
- ▶ Faltering growth
- ▶ Persistent diarrhoea
- ▶ Fever
- ▶ Lethargy
- ▶ Hepatosplenomegaly
- ▶ Bulging anterior fontanelle
- ▶ Macrocephaly
- ▶ Seizures
- ▶ Abdominal tenderness or distension
- ▶ Unexplained pallor
- ▶ Cyclical vomiting syndrome
- ▶ Acidosis in a child with persistent vomiting may suggest a metabolic disorder

- ▶ Consider the use of oesophageal impedance and pH monitoring in combination in young infants as opposed to pH monitoring alone as a useful diagnostic investigation.

**What can I continue to do as before?**

- ▶ Provide education, guidance and reassurance to parents of otherwise healthy, thriving infants with physiological GOR.
- ▶ Rule out other non-GORD causes that may mimic the symptoms of GORD.
- ▶ Regard warning signs (see **box 2**), particularly weight loss and faltering growth as a 'red flag' in infants and children with suspected GORD.

**What should I do differently?**

- ▶ In formula-fed infants with persistent non-bilious vomiting, consider a 2–4-week trial of extensively hydrolysed, or amino-acid-based formula along with feed thickeners as first-line treatment strategy prior to initiation of pharmacotherapy as cow's milk protein allergy may mimic the signs and symptoms of GORD.

**UNRESOLVED CONTROVERSIES**

- ▶ The use of cow's milk protein-free formula to empirically treat infants with GOR and eczema and the need for allergy testing.
- ▶ Monitoring of Vitamin B12 levels in children who remain on PPIs for more than 2 years.<sup>6</sup>
- ▶ Use of 48 h capsule-based pH monitoring system (Bravo™ pH Monitoring System) which detects and quantifies the severity of GOR disease. Studies from the USA have shown that it is safe, accurate and

**Box 3 Group of children who are at higher risk for developing severe chronic Gastroesophageal reflux disease<sup>2</sup>**

Infants and children with:

- ▶ History of neurological impairment (fluctuation of symptoms are likely in this group)
- ▶ Oesophageal and anatomical disorders for example, trachea-oesophageal fistulas, hiatus hernias
- ▶ Chronic respiratory disorders including lung transplantation
- ▶ History of prematurity
- ▶ Obesity
- ▶ Certain genetic disorders for example, Down's syndrome, Cornelia de Lange syndrome (most children in the latter group will need fundoplication).

better tolerated than the conventional pH study in children over 4 years of age and is preferred by young adolescents.<sup>7,8</sup>

**Box 3** highlights paediatric populations that are at higher risk for GORD. More research is needed to predict which children from the high-risk groups are most likely to benefit from antireflux surgery when medical therapy fails. There is a need for guidance on how to counsel parents about realistic outcomes of treatment with antireflux therapies. It is expected that the National Institute of Health and Care Excellence (NICE) guidance on 'GOR in children and young people' which is due for publication in January 2015 may address some of these controversies.

**Clinical bottom line**

- ▶ Gastroesophageal reflux (GOR) is a normal physiological phenomenon. It is common and manifests as effortless vomiting with no discomfort. It does not affect growth and development.
- ▶ Conservative management (positioning with head end raised at 30°, thickening of feeds and avoiding acidic foods), parental education and reassurance should suffice in most cases of GOR.
- ▶ GOR disease (GORD) exists when GOR results in troublesome symptoms including poor weight gain. It needs to be distinguished from vomiting due to non-GORD disorders such as pyloric stenosis, metabolic causes, infections, and so on.
- ▶ Significant weight loss or faltering of growth in any age group is a red flag and should prompt further evaluation.
- ▶ PPIs are the most effective pharmacological therapy currently available for children with GORD.
- ▶ Antireflux surgery may be beneficial in severe chronic relapsing or life-threatening GORD.

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