



## Pharmacological management of gastro-oesophageal reflux disease (GORD) in children and young people in primary and secondary care

### **Introduction:**

Following the publication of the NICE guideline on gastro-oesophageal reflux disease in children and young people, it is considered desirable to produce a local treatment guideline to rationalise and optimise its management.

GORD is a common physiological event that can happen at all ages from infancy to old age, often asymptomatic and frequently after feeds/meals. **Only a small proportion** will need to be clinically managed, in particular for those presenting with symptoms e.g. discomfort or pain, or GORD-associated complications e.g. oesophagitis or pulmonary aspiration.

### **Key recommendations:**

1. For effortless regurgitation of feeds in well infants, advise and reassure parents or carers:
  - Is very common (it affects > 40% of infants)
  - Usually begins before the infant is 8 weeks old
  - May be frequent (5% of those affected have 6 or more episodes each day)
  - Usually becomes less frequent with time (it resolves in 90% of affected infants before they are 1 year old)
  - Does not usually need further investigation and treatment
2. In infants, children and young people with vomiting and regurgitation, look out for the '**red-flags**' in table 1, which may suggest disorders other than gastro-oesophageal reflux (GOR).
3. Do not offer acid suppressing drugs, e.g. proton pump inhibitors (PPIs) or H2 receptor antagonists (H2RAs), to treat overt regurgitation in infants and children occurring as an isolated symptom.
4. Do not offer metoclopramide, domperidone or erythromycin to treat GOR or GORD without seeking *further advice from the General Paediatric Team* and taking into account their potential to cause adverse events.
5. Recognise the following as possible complications of GOR in infants, children and young people:
  - Reflux oesophagitis
  - Recurrent aspiration pneumonia
  - Frequent otitis media (e.g. more than 3 episodes in 6 months)
  - Dental erosion in a child or young person with a neurodisability, in particular cerebral palsy
6. Be aware that some symptoms of a non-IgE-mediated cows' milk protein allergy can be similar to the symptoms of GORD, especially in infants with atopic symptoms, signs and/or a family history. If a non-IgE-mediated cows' milk protein allergy is suspected, see the NICE guideline on food allergy in children and young people and [the Pan Mersey prescribing guidelines for specialist infant formula feeds in lactose intolerance and cows' milk protein allergy](#).

**Table 1: ‘Red flag’ symptoms suggesting disorders other than GOR:**

Symptoms and Signs	Possible Diagnostic Implications	Suggested Actions
<b>Gastrointestinal</b>		
Frequent, forceful (projectile) vomiting	May suggest hypertrophic pyloric stenosis in infants up to 2 months old	Paediatric surgery referral
Bile-stained (green or yellow-green) vomit	May suggest intestinal obstruction	Paediatric surgery referral
Haematemesis (blood in vomit) with the exception of swallowed blood, for example, following a nose bleed or ingested blood from a cracked nipple in some breast-fed infants	May suggest an important and potentially serious bleed from the oesophagus, stomach or upper gut	General Paediatric Rapid Access Clinic referral
Onset of regurgitation and/or vomiting after 6 months old or persisting after 1 year old	Late onset suggests a cause other than reflux, for example a urinary tract infection (also see the Pan Mersey’s <a href="#">Antimicrobial Guide and Management of Common Infections</a> ) Persistence suggests an alternative diagnosis	Urine microbiology investigation  Consider General Paediatric Team referral
Blood in stool	May suggest a variety of conditions, including bacterial gastroenteritis, infant cows’ milk protein allergy (also see <a href="#">the NICE guideline on food allergy in children and young people</a> ) or an acute surgical condition	Stool microbiology investigation  General Paediatric Rapid Access referral
Abdominal tenderness or palpable mass	May suggest intestinal obstruction or another acute surgical condition	Paediatric surgery referral
Chronic diarrhoea	May suggest cows’ milk protein allergy ( also see <a href="#">the NICE guideline on food allergy in children and young people</a> and <a href="#">the Pan Mersey prescribing guidelines for specialist infant formula feeds in lactose intolerance and cows’ milk protein allergy.</a> )	General Paediatric Rapid Access Clinic referral
<b>Systemic</b>		
Appearing unwell, Fever	May suggest infection (also see the <a href="#">NICE guideline on fever in under 5s</a> and the Pan Mersey’s <a href="#">Antimicrobial Guide and Management of Common Infections</a> )	Clinical assessment and urine microbiology investigation Treat as appropriate
Dysuria	May suggest urinary tract infection see the Pan Mersey’s <a href="#">Antimicrobial Guide and Management of Common Infections</a> )	Clinical assessment and urine microbiology investigation Treat as appropriate
Bulging fontanelle	May suggest raised intracranial pressure, for example, due to meningitis (also see the Pan Mersey’s <a href="#">Antimicrobial Guide and Management of Common Infections</a> and the <a href="#">NICE guideline on bacterial meningitis and meningococcal septicaemia</a> )	Consider A&E referral if symptoms suggestive of meningitis
Rapidly increasing head circumference (more than 1cm per week) Persistent morning headache, and vomiting worse in the morning	May suggest raised intracranial pressure, for example, due to hydrocephalus or a brain tumour	General Paediatric Rapid Access Team referral
Altered responsiveness, for example, lethargy or irritability	May suggest an illness such as meningitis (also see the Pan Mersey’s <a href="#">Antimicrobial Guide and Management of Common Infections</a> and the <a href="#">NICE guideline on bacterial meningitis and meningococcal septicaemia</a> )	Seek immediate medical attention, i.e. A&E referral if symptoms suggestive of meningitis

### Initial Management of GOR and GORD:

1. When reassuring parents and carers about regurgitation, advise them that they should return for review if any of the following occur:
  - the regurgitation becomes persistently projectile
  - there is bile-stained (green or yellow-green) vomiting or haematemesis (blood in vomit)
  - there are new concerns, such as signs of marked distress, feeding difficulties or faltering growth
  - there is persistent, frequent regurgitation beyond the first year of life.
2. In breast-fed infants with frequent regurgitation associated with marked distress

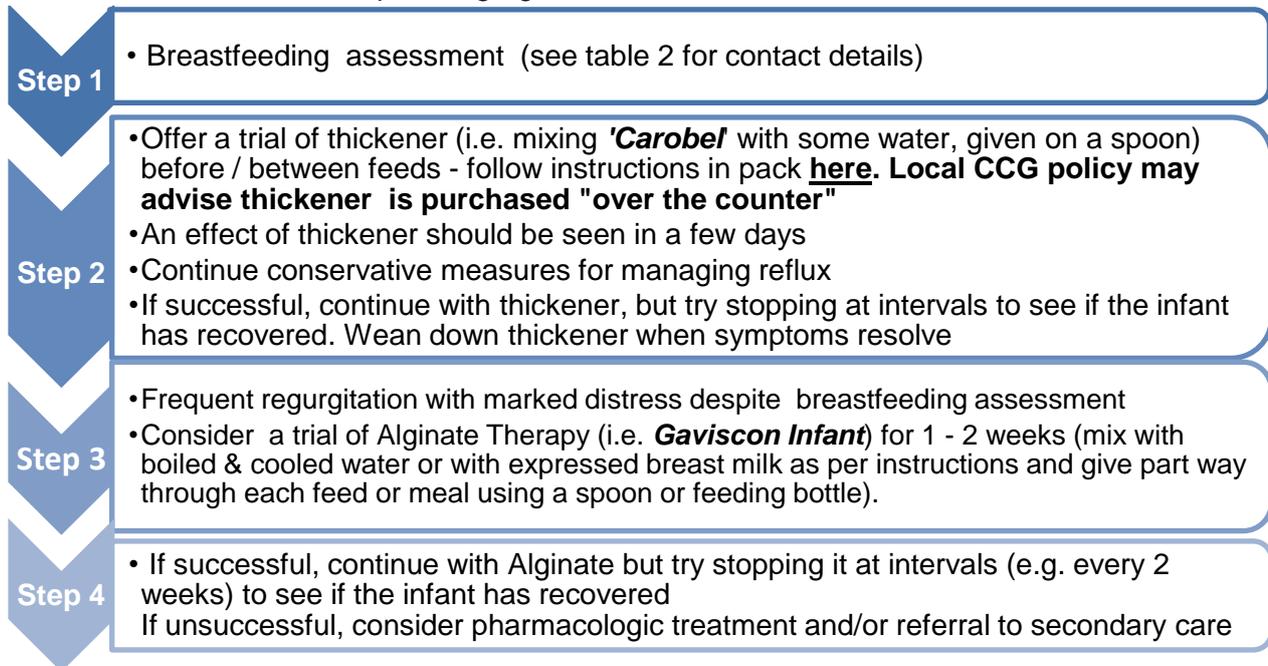
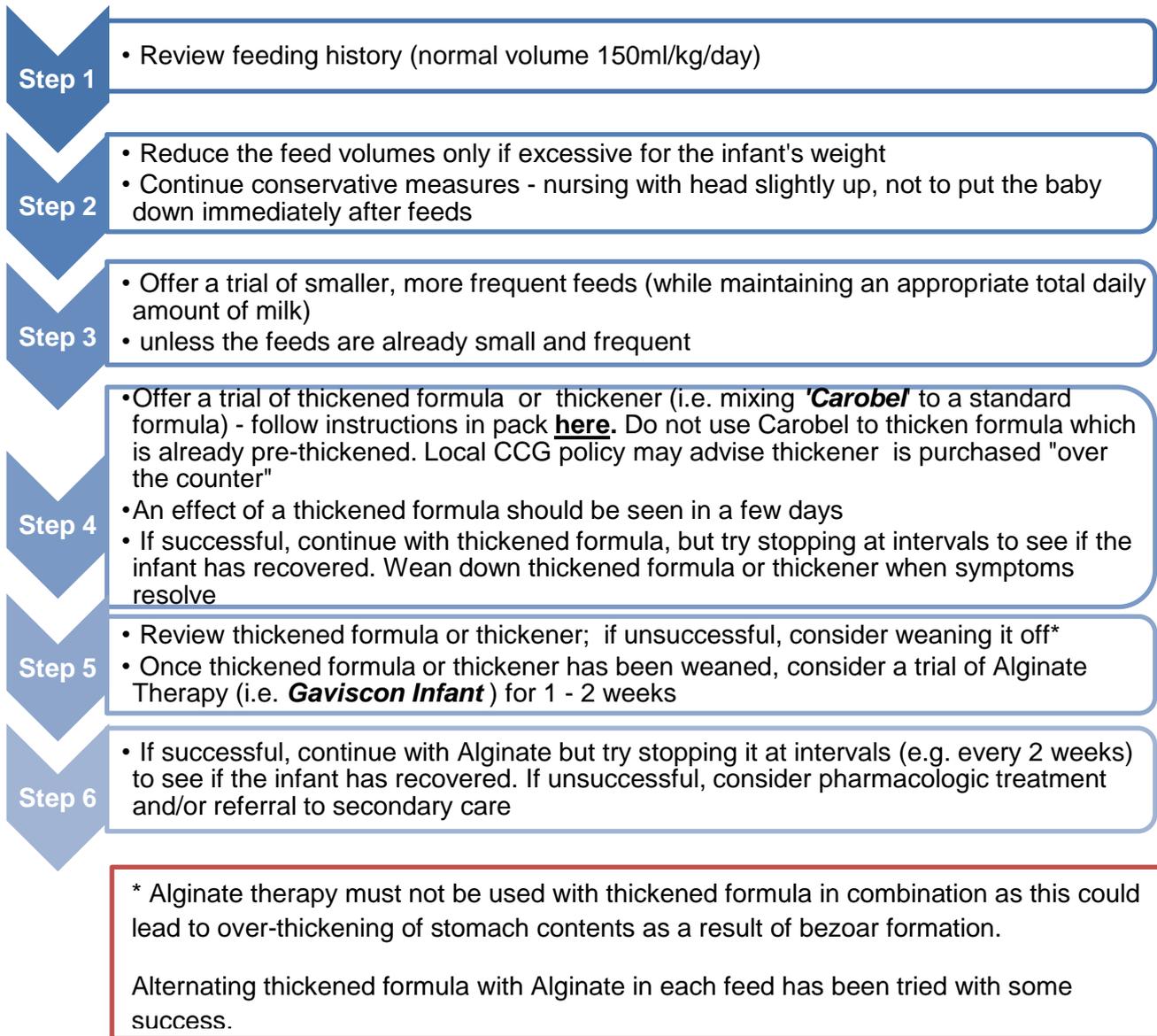


Table 2: Breastfeeding Assessment Contact Details

<p><b>Infant feeding helpline</b> – for infants up to 6 weeks old born at Liverpool Women’s Hospital</p> <p>- 0151 702 4293</p> <p><b><u>Peer Breastfeeding Support Team:</u></b></p> <p><b>Breast Start</b> (Sefton) – 0151 291 8024</p> <p><b>BAMBIS</b> (Liverpool) – 0151 233 6874</p> <p><b>Bosom Buddies</b> (Knowsley) – 0151 244 3269</p> <p><b>Bosom Buddies</b> (Warrington) – 01942 483056</p> <p><b>Breastfeeding Support Worker</b> (Halton) on 0300 0290029</p> <p><b>Families and Babies (FAB)</b> (West Lancashire) – 01254 772929</p> <p><b>Home Start Breastfeeding Peer Support</b> (Wirral) - 0151 647 8370 or 07780220481</p> <p><b><u>Other breastfeeding support:</u></b></p> <p>Local community midwife for infants up to 28 days old</p> <p>Local health visitors</p>
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### 3. Formula-fed infants with frequent regurgitation associated with marked distress



### 4. Pharmacological treatment of GORD

Do not offer acid-suppressing drugs, such as H2 receptor antagonists (H2RAs) or proton pump inhibitors (PPIs) to treat overt regurgitation in infants and children occurring as an **isolated** symptom

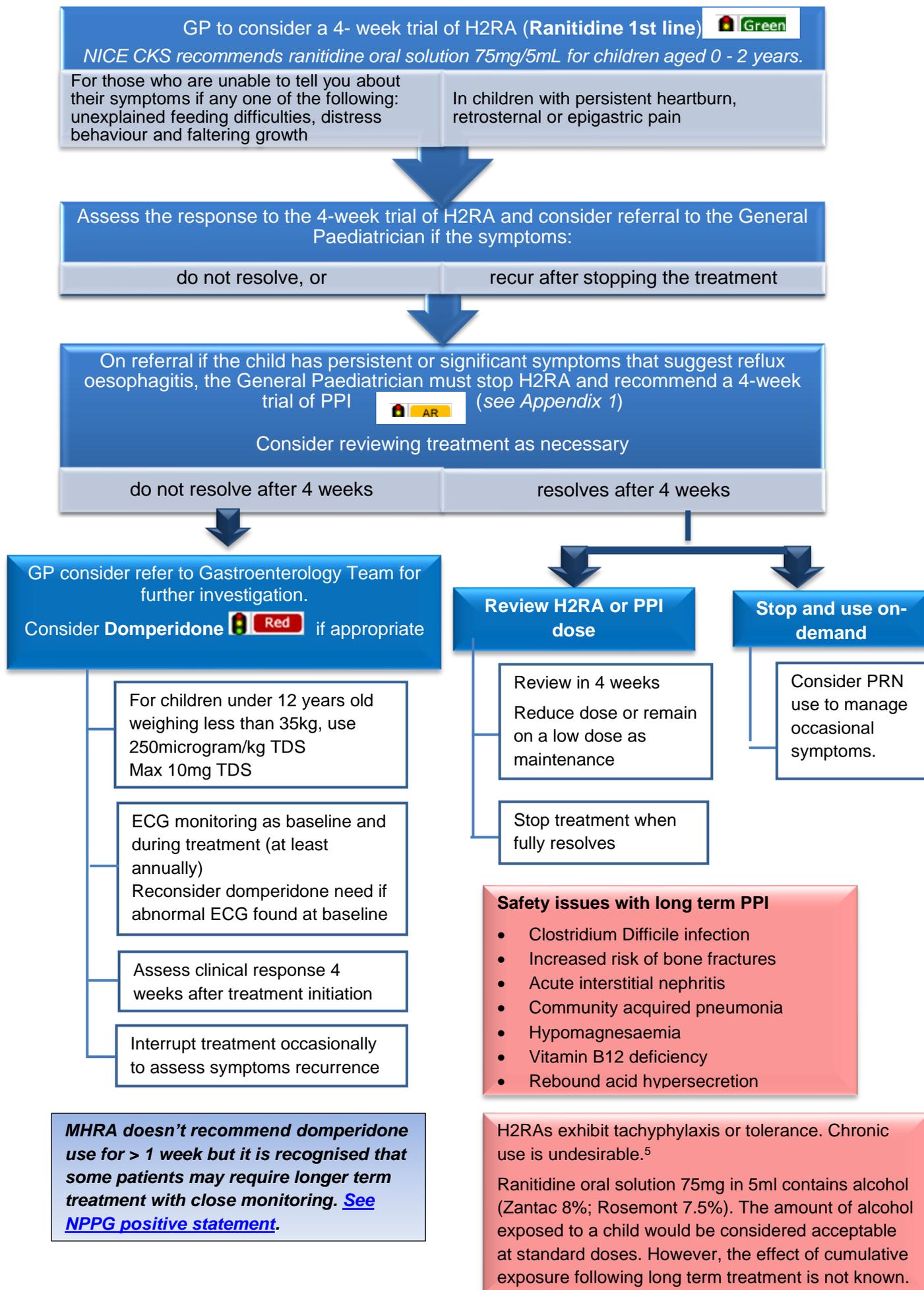
NICE does not endorse use of **metoclopramide**, **domperidone** or **erythromycin** to treat GOR or GORD without specialist advice.

All prokinetics are 

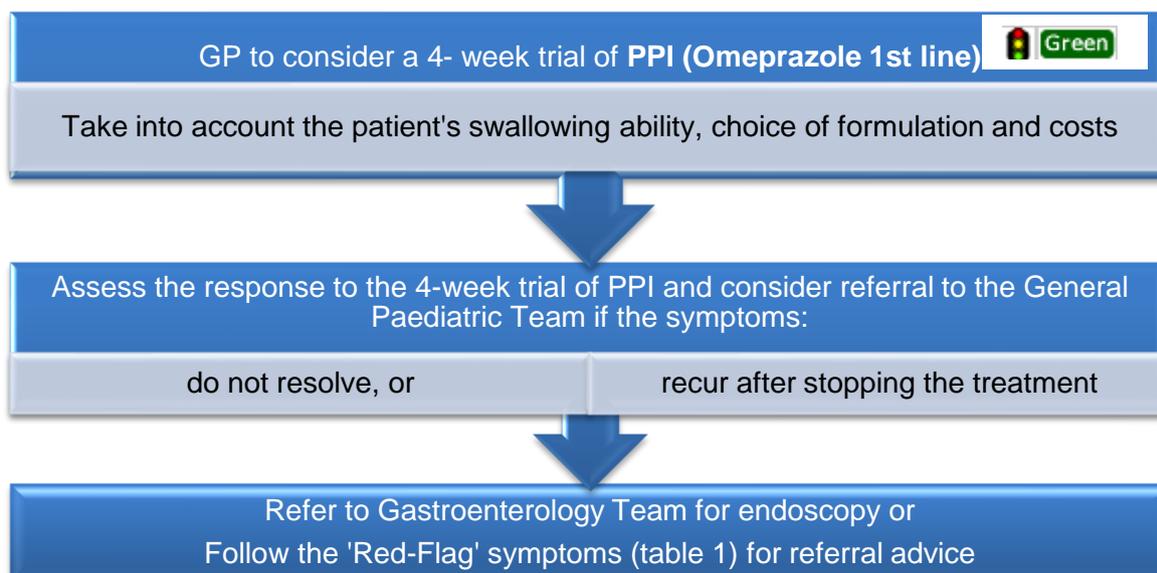
NB: ([MHRA/CHM advice](#) – metoclopramide: risk of neurological adverse effects; domperidone: risk of cardiac side-effects)

Short-term low-dose erythromycin (unlicensed) has been tried although the data are too limited and of insufficient quality to recommend it as an option. It is often associated with GI side effects.<sup>2</sup>

#### 4.1 For infants and children up to 12 years old



## 4.2 For young people and adolescents over 12 years old

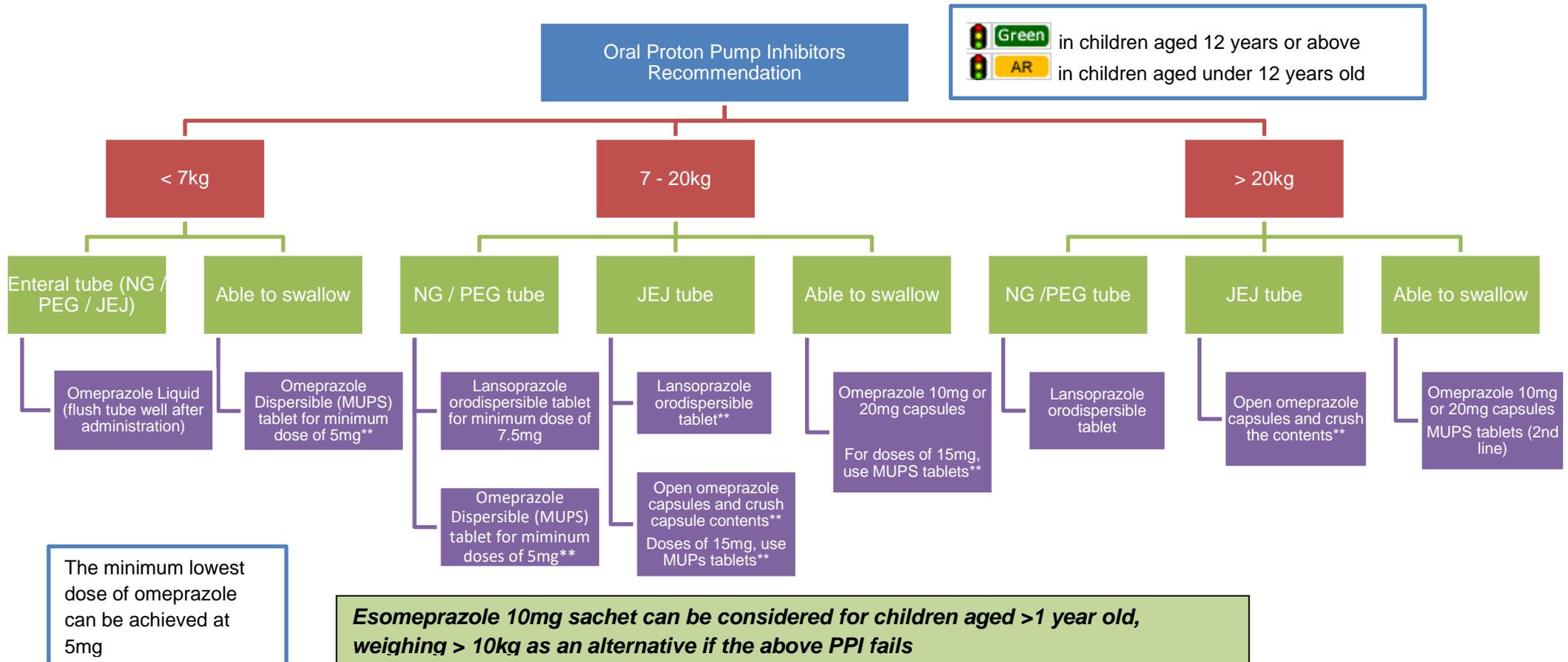


*NB: There is limited evidence to recommend using H2RA and PPI in combination. For patients with a particular problem with nocturnal symptoms that do not respond to PPI alone, adding ranitidine at bedtime in the short term can be considered. Prescribing intermittent 2-week courses of H2RA treatment may be a pragmatic approach for both primary and secondary care clinicians. Routine use is not recommended.<sup>8</sup>*

## References:

1. NICE guideline (NG1) – Gastro-oesophageal reflux disease: recognition, diagnosis and management in children and young people (Jan 2015)
2. [NICE Clinical Knowledge Summaries – GORD in children \(March 2015\)](#)
3. [Pan Mersey Prescribing guidelines for specialist infant formula feeds in lactose intolerance and cows' milk protein allergy](#) (Nov 2014)
4. NICE Evidence summary: unlicensed or off-label medicine. ESUOM13: Gastroparesis in adults: oral erythromycin 18 June 2013 (available at <http://www.nice.org.uk/advice/esuom13/chapter/Overview-for-healthcare-professionals> Accessed 5th Nov 2015)
5. MHRA Drug Safety Update 30<sup>th</sup> May 2014 – Domperidone: risks of cardiac side effects
6. [Pan Mersey Area Prescribing Committee Safety Statement: Safety of long term Proton Pump Inhibitors \(2016\)](#)
7. Paediatric Gastroesophageal Reflux Clinical Practice Guidelines: Joint Recommendations of the NASPGHAN and the ESPGHAN – [publish ahead of print \(2018\)](#)
8. [NICE Clinical Knowledge Summaries Dyspepsia – proven GORD \(age from 16 onwards\)](#) (Nov 2012)

## Appendix 1: Oral Proton Pump Inhibitors Recommendation (including methods of administration)



- Regular treatment review is required and formulation choice should be reconsidered at every review.
- The choice of PPI is suggested based on the practicality in drug dosing, administration and dosage recommendation on BNFC
- \* **Omeprazole liquid 10mg in 5ml** is an unlicensed Special. There is limited evidence of efficacy for omeprazole liquid as bioavailability is unknown. Its use is restricted for children < 7kg with enteral tubes where MUPS tablets are unsuitable. Avoid use in children over 7kg if possible. Theoretically, its efficacy is better when administered via JEJ tube, as the premature degradation in the acidic stomach has been avoided.
- Omeprazole liquid contains sodium. Check with the Special supplier to ascertain the exact sodium contents for the preparation.
- Omeprazole MUPS tablet can be halved; When disperse in water, the granules settle quickly and have a tendency to block fine bore tubes
- For patients with JEJ tube, the dispersed omeprazole granules (either from capsules or MUPS tablets) can be crushed.  
NB: Enteric coating (in the granules) is not required when it is administered directly to the jejunum
- Lansoprazole orodispersible tablet can be halved; dispersed solution is less likely to block feeding tube
- \*\* Refer to Appendix 2 for the manipulation of different dosage formulations

## Appendix 2: Manipulation of different dosage formulations

**If you require a proportion of the tablet e.g. 5mg omeprazole MUPS or 7.5mg lansoprazole orodispersible tablets, halve the tablet before dispersing it.**

### Dispersing Omeprazole MUPS tablets or Lansoprazole orodispersible tablets for **oral administration**

- Place the tablet in a medicine pot, add 10ml of water or a small amount of fruit juice
- Allow the tablet to disperse (usually within 5 minutes when agitated)
- Always stir the mixture just before drinking or drawing up using an oral syringe (the mixture will not be clear).
- Then administer the mixture straight away
- Ensure that the medicine pot (and oral syringe if this is used) is rinsed and that this rinsing water is administered also to ensure that the total dose is given.
- Do not use milk or fizzy water.
- Do not chew or crush the small granules in the dispersion

### Dispersing Omeprazole MUPS tablets or Lansoprazole orodispersible tablets for **NG and PEG tube administration**

- Stop the enteral feed
- Flush the enteral feeding tube with the recommended volume of water
- Place the tablet in the barrel of an appropriate size and type of syringe
- Draw water (10ml for lansoprazole; 20ml for omeprazole) into the syringe and allow the tablet to disperse, shaking as required
- Flush the medication dose down the feeding tube.
- Draw another 10 - 20ml of water into the syringe and also flush this via the feeding tube (this will rinse the syringe and ensure that the total dose is administered).
- Finally, flush with the recommended volume of water.
- Re-start the feed, unless a prolonged break is required.

NB: Omeprazole MUPS dispersion contains small granules that settle quickly and have a tendency to block fine-bore feeding tubes (less than 8Fr). Consider Lansoprazole orodispersible tablets as first line where possible.

### Dispersing Omeprazole MUPS tablets or capsules for **JEJ tube administration**

- Place the tablet or the capsule contents in a mortar, add 10 – 20ml of water
- Allow the contents to disperse (usually within 5 minutes when agitated)
- Crush the mixture using a pestle, ensuring that the small granules have completely disappeared
- Draw up the mixture using an appropriate syringe and then administer it straight away
- Ensure that the mortar and pestle is rinsed and that this rinsing water is administered via the same syringe to ensure that the total dose is given.

NB: If the tube becomes blocked, lock the tube using 8.4% sodium bicarbonate to dissolve any enteric coated granules lodged in the tube. This needs to be prescribed.