Guidelines for the management of gastro-oesophageal reflux disease (GORD) in neonates

Definition:
Gastro-oesophageal reflux (GOR) is defined as the passage of gastric contents into the oesophagus. Incidence ranges from 3% - 88% in infants born at less than 34 weeks gestational ages in UK neonatal units, with median incidence of around 22% (Dhillon and Ewer 2004). When GOR is associated with clinical symptoms, it is called GOR disease (GORD). Around 20% of neonates with GOR receive medical intervention; treatment is considered in a large proportion of infants born extremely premature at some point of their stay in NICU.

Clinical features of GORD:
GOR is considered to be physiological in newborn infants, more so in preterm infants, because of their posture (supine/prone), feed consistency (fluids) and immaturity of the lower oesophageal sphincter (Poets and Brockmann 2011). Clinical symptoms are non-specific, and the condition is almost certainly over-diagnosed in preterm infants on the NICU. Common symptoms attributed to GORD are recurrent vomiting, irritability, weight loss and poor weight gain, feeding refusal, apnoea, bradycardia, desaturation, abnormal neck posturing, apparent life threatening event (ALTE) and chronic lung disease (CLD). Clinical evidence linking symptomatology with GORD is sparse and conflicting (Tipnis and Tipnis 2009).

Diagnosis:
History and clinical examination is most commonly used to diagnose uncomplicated GORD (Dhillon and Ewer 2004). Moreover, empirical therapeutic trials - such as appropriate positioning and a trial of ranitidine resulting in a clinical response - are diagnostic test in themselves (Birch and Newell 2009). Infants with recurrent vomiting and poor weight gain should have an upper GI contrast study to exclude anatomical abnormalities such as hiatus hernia, malrotation and pyloric stenosis. Oesophageal pH monitoring is not routinely recommended in neonates as 75% of GOR may be due to non-acid or weakly acidic reflux.

Management:
An “inverse pyramid” approach to treatment has been suggested for GORD in preterm infants in the NICU (Birch and Newell 2009). Most infants will require management included in the upper two steps of the pyramid.

![Figure 1: Suggested “inverted pyramid” approach to management of GORD (Birch and Newell 2009).](image)
1. The neonate should be placed in the prone or left lateral position as these have been shown to reduce symptoms of GORD. Unfortunately, as these positions increase the risk of SIDS they should only be utilised on the neonatal unit where cardio-respiratory monitoring is in place. Parents should be advised to place infants in the supine position when discharged home. Elevating the head of the bed does not improve GOR.

2. Altering frequency of feeds (frequent low volume feeds) or feed method (from bolus to continuous or vice versa) can be attempted to reduce reflux symptoms, although no evidence exists to support either of these interventions.

3. Feed thickeners such as Carobel reduce the frequency of vomiting and regurgitation and can be mixed with formula or given as a paste mixed with expressed breast milk. Although there is no exclusive neonatal data (Huang, Forbes, and Davies 2002), there is evidence of efficacy from older infant population (Craig et al. 2004)

4. Although Gaviscon use is widespread in neonatal units there is no evidence that it has any significant benefit. Moreover, it has a high sodium content (0.92mmol/dose). Accordingly, Carobel should be started preferentially over Gaviscon.

5. Ranitidine should be considered if the simple measures outlined above fail to control symptoms. Despite the lack of randomised control trials (RCT’s) in neonates to demonstrate the efficacy of ranitidine (Malcolm and Cotten 2012), following extensive adult studies, considered expert opinion is that ranitidine is probably safe in neonates (Birch and Newell 2009). Although cimetidine has been studied in children use was withdrawn due to significant side effects.

6. If there is no improvement following ranitidine, consider omeprazole. Small RCTs in pre-term and term infants show that omeprazole significantly reduces gastric acid pH (Malcolm and Cotten 2012).

7. Cow’s milk allergy should be considered as a cause of GOR symptoms in infants. A trial of cow’s milk- protein free hydrolysate formula such as Neocate or Pregestimil for 2 weeks can be tried.

8. Surgical management is rarely required for infants with GORD.

In summary, there is no consensus for the management of GOR from RCTs in neonates. The management approach should be stepwise and logical, and to try simple steps first before progressing to pharmacotherapy. Pro-kinetics such as metoclopramide and domperidone are not recommended for the treatment of GOR due to lack of evidence and concerns regarding adverse effects. Erythromycin has limited benefit and should not be routinely prescribed. If the GOR symptoms continue and are problematic, referral to a Paediatric Gastroenterologist should be considered. Surgery may be indicated in severe cases of GOR where medical management has failed. This should be a measured decision as the benefits of a fundoplication may not outweigh the risks involved.

References