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A program to reduce feeding intolerance in ELBW infants receiving CPAP support

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Background

- Current neonatal practices increasingly favor non-invasive respiratory support (i.e. CPAP) for extremely low birth weight (ELBW) infants.
- The diagnosis of feeding intolerance often accompanies infants on CPAP, and decompression of the stomach is important in reducing the frequency of diagnosis.
- Current research also implies that checking and discarding gastric residuals in ELBW infants may increase the risk of developing necrotizing entercolitis (NEC).

Project Overview

- The 'Tummies & Tubes' (T&T) program is a quality improvement project designed to optimize orogastric (OG) tube placement, find alternatives to gastric residuals as a verification method, and to facilitate decompression between feeds in ELBW infants.
- The program analyzed methods used for OG placement, standardization of verification on x-rays, use of 6.5 Fr. OG tubes, avoidance of checking residuals, and included nursing education.

Implementation

- A "Feeding Team" was assembled to address the knowledge gap between current unit practices and evidence-based research concerning feeding intolerance and feeding tube misplacement.
- The overall goal of the team is the standardization of feeding tube verification and optimization of management of gastric residuals in 'Golden Week' infants (<1000g or <= 28 weeks).
- A short questionnaire was given to all unit nurses regarding personal practices with measurement, size, insertion location and placement verification of feeding tubes.
- Current EBP was reviewed and unit 'huddles' were conducted with a power-point presentation on the 'T&T' QI project.
- Nurses were provided with education of existing evidence on: feeding tube verification methods, OG vs. NG placement, larger vs. smaller bore tubes, differences in spontaneous perforation and NEC, gastric residuals in relation to NEC, and documentation of feeding intolerance.
- Changes to existing unit practices were made and implemented.

"New" Best Practice

- **Only OG tubes will be used in babies < 1000 g**
- **An OG tube must be placed prior to the first CXR/KUB in babies < 1000 g, and placement discussed with clinician**
- **All babies 500-1000 g on CPAP must have a 6.5 Fr. OG tube to allow for optimal air decompression of the stomach**
- **Avoidance of checking gastric residuals during initial trophic feedings**

Review of Literature

- Nasogastric (NG) tubes are associated with increased work of breathing, decreased oxygen saturations and decreased minute ventilation in preterm infants
- Traditional verification methods include auscultation of air into the stomach, though research shows this to be an unreliable and unsafe method due to sound transmission
- X-ray verification of feeding tube placement is the 'Gold Standard'
- Because the typical course of an ELBW infant includes multiple x-rays, these can be used as opportunities to check proper placement and a reference for future placement
- There is a strong relationship between the size of a feeding tube and the amount of decompression it offers and smaller tubes have increased resistance to which air must escape
- Increased gastric acidity in neonates has been shown to decrease bacterial colonization of the gut, as well as, decrease bacterial contamination of feeding tubes

Results

The 'Tummies & Tubes' QI project was implemented in 45 infants with birth weight <1000g or GA <= 28 weeks, over a three month period, and data obtained.

- ~ 60% of infants had an OG tube placed before the first x-ray on admission
- Of tubes placed, 100% were OG and 68% were 6.5 Fr. size
- 56% of infants had no residual checks during the first week of life
- The percentage of infants who needed KUBs in the first week of life dropped from 60% to 40%
- 9% developed NEC (remaining relatively unchanged in this population)

Conclusion

As compliance increases, we will validate alternative methods used to optimize OG placement and eventually discontinue the practice of checking residuals for OG placement verification.

Next Steps

- Standardize the practice of not checking gastric residuals during the first week of life (as opposed to only during trophic feedings) in infants <1000g or <= 28 weeks
  - This will be easier to put into practice and to monitor changes over time. Compliance rate is currently 56%.
- Incorporate a short checklist in current admission sheet for infants meeting criteria
  - Place 6.5 Fr. OG tube on admission
  - Verify OG tube placement on first x-ray

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