Monthly Clinical Pearl: Please Don't Check Gastric Residuals!

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When we discussed writing this clinical pearl with a number of clinicians working in the neonatal intensive care unit (NICU), from residents to neonatal attendings, the response was emotional from laughter to frustration.

> ***"Despite lack of evidence for this practice, gastric residuals have been considered a sign of feeding intolerance and potential early stages of necrotizing enterocolitis (NEC). "***

Checking gastric residuals has traditionally been an integral component of enteral nutrition of preterm infants in many NICUs over many decades. Despite lack of evidence for this practice, gastric residuals have been considered a sign of feeding intolerance and potential early stages of necrotizing enterocolitis (NEC). Consequently, it has often resulted in interruption of feeding advancement and contributed to the delayed achievement of full enteral feedings and ultimately extrauterine growth restriction especially in the smallest preterm infants. Presence of gastric residuals may be a manifestation of physiological delayed gut maturation and motility in preterm infants and do not necessarily indicate NEC unless associated with other clinical signs such as abdominal distension and tenderness, hematest positive or bloody stools, bilious aspirates (Mihatsch). Feeding intolerance has been defined as a constellation of clinical findings including gastric residuals, abdominal distension, with or without emesis and apnea/bradycardia spells (Moore)

Mihatsch had previously reported that there was no significant negative correlation between the mean gastric residual volume or the presence of gastric green residual and feeding volume on day 14. These should not slow down the advancement of feeding volumes in the absence of other clinical signs and symptoms. Although not statistically significant, Torrazza and coauthors reported infants without gastric residual assessment reached full feeds six days earlier.

Riskin and coworkers demonstrated avoiding routine gastric residual volume evaluation before each gavage feeding was associated with earlier achievement of full enteral feeding in preterm infants born ≤34 weeks of gestation without increasing the risk for NEC.

In a randomized controlled study, Singh et al. demonstrated that avoiding routine assessment of gastric residual volume before feeding advancement did not shorten the time to reach full feeds in preterm infants with birth weight between 1500 and 2000 g. However, it did not increase the risk of NEC. It is likely that implementation of feeding protocols decreased the frequency of feeding interruptions due to gastric residuals and hence did not affect feeding advancement and the time to reaching full feeding volume.

Abdominal girth measurements in addition to clinical signs such as lethargy, temperature instability or abnormal laboratory and radiological studies might be a better indicator of feeding intolerance and/or early NEC. Kauer et al. has reported that monitoring abdominal girth instead of measuring gastric residuals as a measure of feed intolerance may result in earlier achievement of full feeds and lesser feed interruption days.

In a randomized controlled study, Thomas et al. also demonstrated that measurement of abdominal girth without gastric residual assessment facilitated faster achievement of full feedings without increasing the risk of NEC. Another recent study by Parker et al. found that omission of measurement of gastric residuals was associated with increased weekly enteral intake without an increase in the risk for NEC or intestinal perforation.

Our concluding message is that the volume or color of the gastric residual is not an indicator of feeding intolerance or abdominal pathology in the preterm infant unless it is associated with other concerning clinical and laboratory signs. Measurement of abdominal girth might be a better tool in monitoring feeding tolerance than checking gastric residue volume or color.

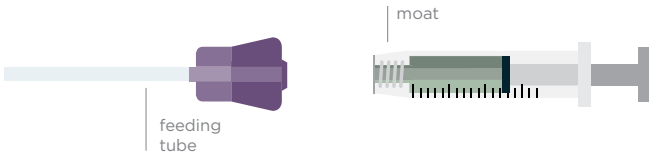
> ***"Measurement of abdominal girth might be a better tool in monitoring feeding tolerance than checking gastric residue volume or color."***

Finally, systematic reviews have addressed factors associated with the pathogenesis. Implementation of clinical practice guidelines and feeding regimens (Jasani, Patole), antenatal steroids, utilization of human milk and potentially probiotics (Patel)

SAFETY IN THE NICU

New tubes, new problems?

A new tubing design meant to eliminate tubing misconnections has introduced new challenges for the NICU population. Pediatric providers must deliver medication in small volumes to tiny patients with high levels of accuracy. The new tubing design, known as ENFit®, could present dosing accuracy and workflow challenges.



DOSING ACCURACY

- The moat, or area around the syringe barrel, is difficult to clear. Medication can hide there, inadvertently increasing the delivered dose when the syringe and feeding tube are connected; patients may receive extra medication.

INFECTION RISK

- The moat design can increase risk for infection if residual breast milk or formula remains in the moat and transfers to the feeding tube.

WORKFLOW ISSUES

- Increased nursing workflow is seen with additional steps for clearing syringe moats, cleaning tube hubs, and using multiple connectors.

Improved standards are important to protect patients from the dangers of tubing misconnections. But we must avoid mitigating existing risks by creating new ones.

Individual hospitals should consider all factors impacting their NICU patients before adopting a new tubing design.

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NCfIH National Coalition for Infant Health

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A collaborative of professional, clinical, community health, and family support organizations focused on the health and safety of premature infants.

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are probably the best preventive measures against NEC in the preterm infant (Patel).

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The authors have identified no conflicts of interest.

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