Discarding Residuals: Implementing a Feeding Algorithm in a Neonatal Intensive Care Unit

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Problem Statement

- Checking routine gastric residuals (RGRs) before all feeds was previously standard practice in the target Neonatal Intensive Care Unit (NICU)
- RGR monitoring is **not reliable** in detecting feeding intolerance (FI) or necrotizing enterocolitis (NEC)[2,3]
- RGR remains the **number one cause of enteral feeding interruption** in premature infants (<37weeks)[1,2]
- This practice **delays achievement of full enteral feeds**, and increases the risk of poor growth and neurodevelopmental injury[3]

Purpose Statement: to implement and evaluate an updated evidence-based feeding algorithm that removes the use of RGR as a key indicator of FI in preterm infants (<37weeks)

Goals

Short Term Goals:
- Educate 100% of staff on the role of gastric residuals in the assessment of FI in neonates
- Increase staff confidence in assessing for FI without the use of RGRs

Long Term Goals:
- 100% of nurses will stop performing RGR monitoring
- A reduction in the number of days to regain birthweight, the average length of stay, and the number of IV days

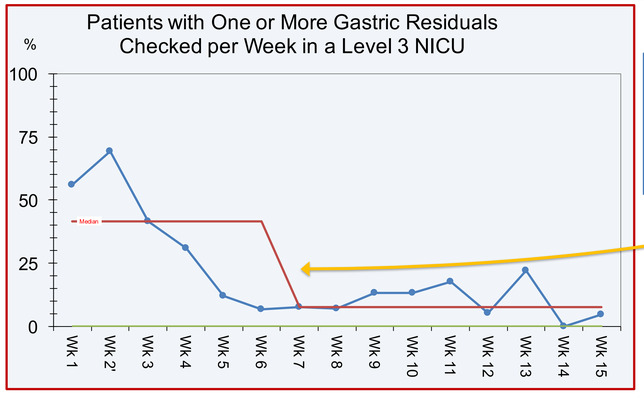
Methods

Setting & Population: 30-Bed Level III NICU, all preterm infants (<37 weeks) who required a feeding tube

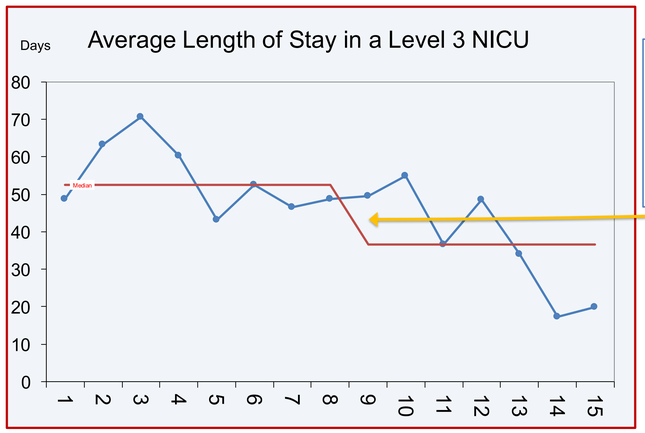
Data Collection: six weeks of baseline data and nine weeks of implementation data collected via:
- EPIC chart audits (weekly)
- Knowledge and attitudes survey (pre/post)
- Informal interviews with key stakeholders throughout

Implementation:
- In-service education sessions with visual aids during shift change
- Dissemination of laminated feeding algorithm cards at each nursing station
- A large bulletin with ”Fast Feeding Facts” placed in the team lounge at the halfway point
- Use of unit-based change champions from all shifts
- Use of the Protection Motivation Theoretical Framework

Results



Implementation was associated with **a decrease in patients with one or more gastric residuals** checked per week from an average of 42% to 8%

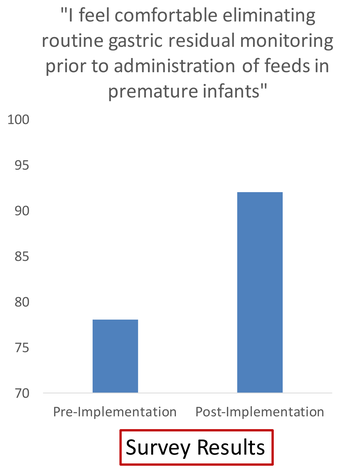


The average **length of stay for premature infants decreased** from a pre-implementation median of 52 days to a post-implementation median of 37 days

- **83%** of NICU nurses received in-service education on the updated feeding algorithm
- The average **number of days to regain birthweight dropped** from a baseline average of seven days to six days after implementation
- **Staff reported improved comfort** with alternative methods of assessing FI (i.e. abdominal girths, thorough physical exam)
- Nurses who reported that they “Always” check gastric residuals before feeds dropped from **28% to 0%** following implementation

Scan to see the updated feeding algorithm

SCAN ME



Survey Results

Discussion

- Overall, the use of RGR monitoring decreased significantly
- Staff were initially fearful of missing true cases of FI and NEC.
  - **Focused education with evidence were key to change**
  - **Support from the advanced provider team helped to reinforce education**
- Similar to existing research, this QI project showed that the removal of RGRs may lead to improved outcomes in preterm infants
- **Limitations** included
  - Access difficulties with onset of COVID-19
  - A hospital-wide malware attack
  - Changes to key stakeholders during implementation
  - Non-blinded, context specific, retrospective data

Conclusions

Implementation of an updated feeding guideline and enhanced education was associated with a decrease in unnecessary routine gastric residual monitoring and improved neonatal outcomes

Recommendations:
- Continue monthly data collection
- Use of a theoretical framework to aid implementation plans

Sustainability:
- Inclusion of updated education for on-boarding staff
- Simplicity of the intervention aids in sustainability
- Maintenance of change champions on the unit

Selected References

1. Abiramalatha, T., Thanigainathan, S., Ninan, B. (2019). Routine monitoring of gastric residual for prevention of necrotizing enterocolitis in preterm infants. *Cochrane Database of Systematic Reviews*, (7). doi: 10.1002/14651858.CD012937.pub2
2. Parker, L. A., Weaver, M., Torrazza, R. J., Shuster, J., Li, N., Krueger, C., & Neu, J. (2019). Effect of Gastric Residual Evaluation on Enteral Intake in Extremely Preterm Infants: A Randomized Clinical Trial. *JAMA Pediatrics*, *173*(6), 534–543. https://doi.org/10.1001/jamapediatrics.2019.0800
3. Torrazza, R. M., Parker, L. A., Li, Y., Talaga, E., Shuster, J., & Neu, J. (2015). The value of routine evaluation of gastric residuals in very low birth weight infants. *Journal of Perinatology, 35*(1), 57–60. https://doi-org.proxy-hs.researchport.umd.edu/10.1038/jp.2014.147

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