

Reduction in Cholestasis with Introduction of Multidisciplinary Surgical Nutrition Guidelines

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LEARNING OBJECTIVES:

- List two strategies to reduce intestinal failure-associated liver disease.
- Describe one impact of a standardized approach to nutritional management in postsurgical infants.

BACKGROUND

- Neonates that undergo intestinal surgery are at increased risk of developing malnutrition, parenteral nutrition associated cholestasis (PNAC), and intestinal failure associated liver disease (IFALD).
- The incidence of cholestasis among surgical neonates is high and is associated with decreased survival, reduced probability of achieving enteral autonomy, and malnutrition.
- Potential strategies to mitigate the progression of IFALD include modifying the composition and timing of total parenteral nutrition (TPN), early enteral nutrition, and establishing early bowel continuity.
- Literature assessing these interventions in neonates is limited so the ideal postoperative nutrition management of surgical neonates remains unclear.

PURPOSE

- Our center is part of the California Perinatal Quality Care Collaborative (CPQCC) Growth Advancement in the NICU (GAIN): Surgical Patients Collaborative to improve nutritional outcomes in surgical infants.
- Due to the high prevalence of cholestasis among surgical neonates in our unit, our center implemented strategies to reduce IFALD in this vulnerable population.

METHODS

A multidisciplinary team of neonatologists, pediatric surgeons, pediatric gastroenterologists, NICU RNs, and RDs was established to optimize postoperative nutrition management of surgical neonates with the following:

- Developed new surgical feeding guideline and updated feeding intolerance algorithm.
- Established new goal of reconnecting infants after 5 weeks.
- Developed new TPN guideline with IFALD mitigation strategies.
- Established weekly surgical nutrition rounds.

Measure:

The maximum direct bilirubin level was tracked over time.

Setting:

Urban 96-bed level IV NICU.

Patients:

Neonates who underwent any GI surgery per the GAIN collaborative criteria were included. Patients who had separate anatomic or physiologic abnormalities that impact cholestasis, such as biliary atresia, were excluded.

Figure 1: Surgical feeding guideline

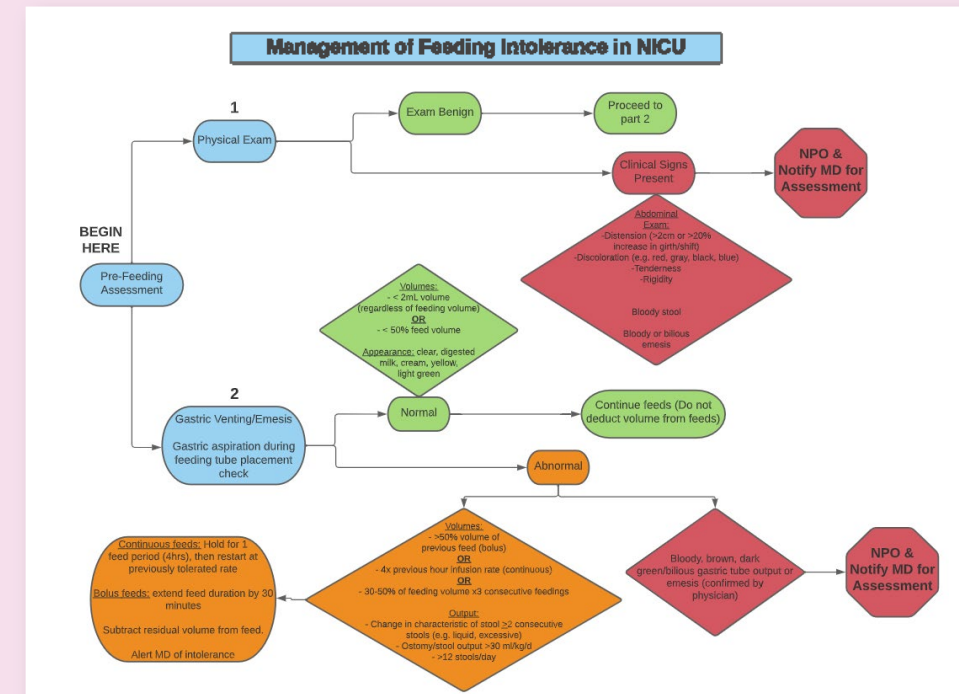


Figure 2: Feeding intolerance guideline

Figure 3: Parenteral nutrition guideline

RESULTS

INFANTS OF SIMILAR GESTATIONAL AGE AND BIRTHWEIGHT WERE INCLUDED

- Pre-intervention: 32
- Post-intervention: 23

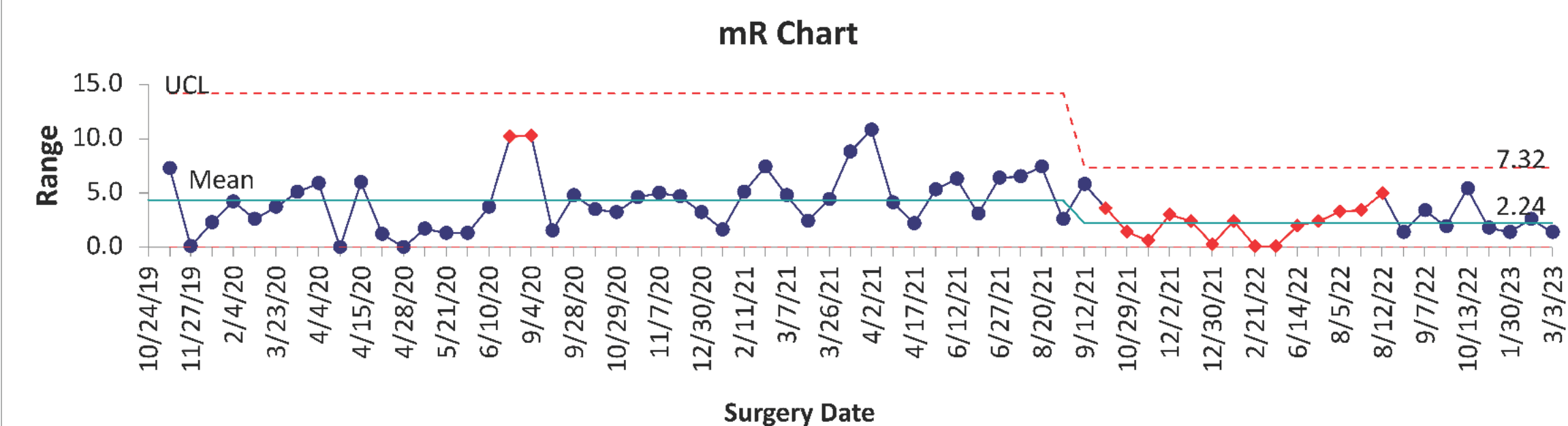
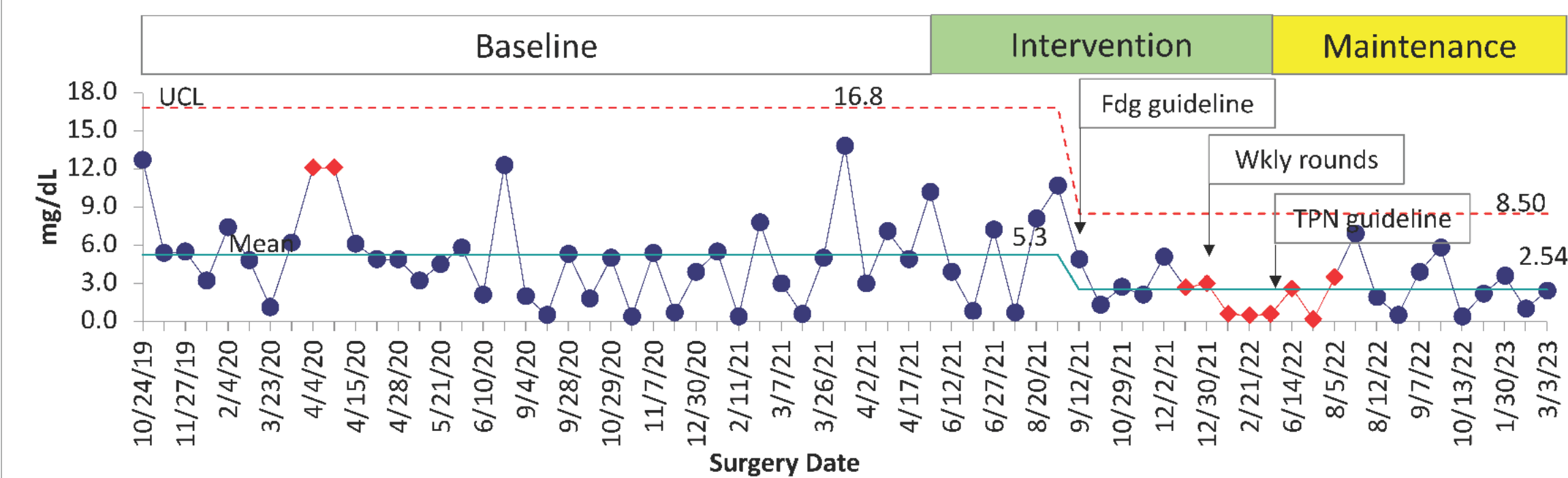
6 weeks

Average time to reconnection

-0.76

Average age for weight Z-score decline

Max D Bili in Each Infant Post-Surgery - X Chart



CONCLUSION

Implementation of a multidisciplinary approach to post-operative nutritional management of surgical neonates led to a significant reduction in severity of PNAC in our unit.

LIMITATIONS: The GAIN collaborative criteria excluded some infants with pathologies that require TPN support and cause delays in enteral feeding, such as gastroschisis with simple primary closure.

WHAT'S NEXT

- Earlier initiation of feeds.
- Consider the use of lipid emulsion containing mixture of soybean oil, medium-chain triglycerides, olive oil, and fish oil (SMOF) as primary lipid emulsion in surgical neonates.
- Mucous fistula refeeding for infants with proximal ostomies.

REFERENCES

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