

Reducing variations in feeding practices and fortifying breast milk helps micro-preemies grow

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Michelande Ridoré, MS, Children's NICU quality-improvement program lead who presented the group's preliminary findings. Credit: Children's National Health System

Standardizing feeding practices, including the timing for fortifying breast milk and formula with essential elements like zinc and protein, improves growth trends for the tiniest preterm infants, according to Children's research presented during the Institute for Healthcare Improvement (IHI) 2018 Scientific Symposium. The symposium is held in conjunction with the IHI National Forum on Quality Improvement in Health Care.

About 1 in 10 [infants](#) are born before 37 weeks gestation according to the Centers for Disease Control and Prevention. The [quality-improvement](#) project at Children's National Health System targeted very low birth [weight](#) infants, who weigh less than 3.3 pounds (1,500 grams) at birth. These fragile infants are born well before their internal organs, lungs, brain or their digestive systems have fully developed and are at high risk for ongoing nutritional challenges, health conditions like necrotizing enterocolitis (NEC) and overall poor development.

The [research team](#) measured progress by tracking the micro-preemies' mean delta weight Z-score for weight gain, which measures nutritional status.

"In this cohort, mean delta weight Z-scores improved by 43 percent, rising from -1.8 to the goal of -1.0, when we employed an array of interventions. We saw the greatest improvement, 64 percent, among [preterm infants](#) who had been born between 26 to 28 weeks gestation," says Michelande Ridoré, MS, Children's NICU quality-improvement program lead who will present the group's preliminary findings. "It's very encouraging to see improved growth trends just six months after introducing these targeted interventions and to maintain these improvements for 16 months."



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Within Children's neonatal intensive care unit (NICU), micro-preemies live in an environment that mimics the womb, with dimmed lighting and warmed incubators covered by blankets to muffle extraneous noise. The multidisciplinary team relied on a number of interventions to improve micro-preemies' long-term nutritional outcomes, including:

- Reducing variations in how individual NICU [health care](#) providers approach feeding practices
- Fortifying [breast milk](#) (and formula when breast milk was not available), which helps these extra lean newborns add muscle and

strengthen bones

- Early initiation of nutrition that passes through the intestine (enteral feeds)
- Re-educating all members of the infants' care teams about the importance of standardized feeding and
- Providing a decision aid about feeding intolerance.

Dietitians were included in the daily rounds, during which the multidisciplinary team discusses each infant's care plan at their room, and used traffic light colors to describe how micro-preemies were progressing with their nutritional goals. It's common for these newborns to lose weight in the first few days of life.

- Infants in the "green" zone had regained their birth weight by day 14 of life and possible interventions included adjusting how many calories and protein they consumed daily to reflect their new weight.
- Infants in the "yellow" zone between day 15 to 18 of life remained lighter than what they weighed at birth and were trending toward lower delta Z-scores. In addition to assessing the infant's risk factors, the team could increase calories consumed per day and add fortification, among other possible interventions.
- Infants in the "red" zone remained below their birth weight after day 19 of life and recorded depressed delta Z-scores. These infants saw the most intensive interventions, which could include conversations with the neonatologist and R.N. to discuss strategies to reverse the infant's failure to grow.

Future research will explore how the nutritional interventions impact newborns with NEC, a condition characterized by death of tissue in the intestine. These infants face significant challenges gaining length and weight.

Provided by Children's National Medical Center

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