

# Standardization and simplification is key to helping NICU babies feed and grow

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A new standardized approach for feeding infants in the neonatal intensive care unit (NICU) helps babies attain full oral feeds sooner, improves their growth and sends them home sooner. The guidelines, developed by clinician-scientists at Nationwide Children's Hospital and published in the *Journal of Parenteral and Enteral Nutrition*, also reduces the cost of care for these babies by shortening their stays in the NICU by as much as two weeks.

Feeding is a complex process that involves the integration of functional connectivity between the brain, airway and foregut. For babies in the NICU, achieving full oral feeds—milk by mouth without tubes or limitations—is a critical step for growth and the journey to discharge. Because many infants have complicated feeding difficulties and changes in clinical caregivers throughout their hospital stay, Sudarshan R. Jadcherla, MD, director of the Neonatal and Infant Feeding Disorders Program and principal investigator in the Innovative Feeding Disorders Research Program at Nationwide Children's, hypothesized that a standardized approach to feeding could eliminate variability and simplify the transitions from enteral feeding to full oral feeding.

The team collected baseline data from 92 infants before initiating their quality improvement study with another 92 infants they enrolled in their SIMPLE (simplified, individualized, milestone-targeted, pragmatic, longitudinal and educational) program.

"Our SIMPLE feeding approach resulted in improved growth, eventually

leading to more time at home with parents," Dr. Jadcherla says. "The emphasis of our program was on implementation of guidelines that can still be tailored to the infant's and parent's individual needs."

This specific program involved analyzing critical aspects of institutional processes, building consensus, developing educational workshops, monitoring compliance and accountability and providing constant feed-forward information.

"Simply removing the variability from feeding practices, cutting wastage of resources and optimizing staff training with regards to feeding and nutrition has helped us attain feeding success," Dr. Jadcherla says. "It also has helped us give babies more time at home and reduce costs."

Babies on the SIMPLE feeding program spent significantly less time on trophic feeds, which stimulate the gut but do not provide sufficient nutrients for growth, and less time being tube-fed. They were also able to tolerate the introduction of oral feeds and exclusive oral feeding earlier than babies prior to the guideline implementation. The team credits this improved feeding trajectory with the greater daily weight gains achieved by babies on the SIMPLE plan, which in turn led to stays of about 15 days shorter duration.

"The standardization and development of pragmatic feeding guidelines has resulted in acceleration of feeding milestones. These infants also had fewer days on mechanical breathing machines," says Dr. Jadcherla, who also is a principal investigator in the Center for Perinatal Research in The Research Institute and a professor of pediatrics at The Ohio State University College of Medicine. "Importantly, the length of stay was reduced while balancing measures and co-morbidities such as necrotizing enterocolitis, chronic lung disease, mortality and readmission rates remained similar or trended downward."

There are no accepted benchmarks for feeding babies in an all-referral NICU, where admission requirements and sickness levels can be heterogeneous. Dr. Jadcherla founded the concept of the SIMPLE feeding program, developed the core group, trained feeding providers and led a multi-disciplinary team of NICU caregivers in this quality improvement endeavor. They gradually refined their approaches until all providers were educated and familiar with the guidelines and the recommendations reflected a wide range of clinical circumstances.

"We saw an opportunity to create a standardized approach to our feeding management strategies that would be monitored through multi-disciplinary feeding rounds," Dr. Jadcherla says.

The researchers hope the program's success at Nationwide Children's will be obtainable by other hospitals, as well.

"The guidelines were designed with an understanding of infant development, aerodigestive reflexes and individual clinical needs that will be adaptable to any NICU population," Dr. Jadcherla explains. "The SIMPLE feeding program also provides a forum for regular collaboration in regards to feeding management, which will help other institutions easily incorporate it into their care efforts."

Dr. Jadcherla and his collaborators at Nationwide Children's are now working to develop methods to optimize the diagnosis and management of gastroesophageal reflux disease, dysphagia and [feeding](#) intolerance in order to improve overall growth and development in premature infants while also lowering the economic burden of care.

Provided by Nationwide Children's Hospital

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