

Study: Ways to maximize nutrition and growth for the smallest preemies

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The tiniest of premature infants—weighing just over two pounds at birth on average—start out receiving nutrition intravenously. Over the next several days or weeks, they are transitioned to enteral (or through the gut) feeds, often delivered through feeding tubes if the baby still cannot suck or swallow. During this transition, preemies are fed through a mixture of methods, but the total protein intake tends to drop, which interferes with growth. To help clinicians maximize nutrition and growth in these infants, researchers quantified the gains and losses of different nutrition delivery practices during the transition to enteral feeds. Their results were published in the *Journal of Pediatrics*.

"Growth and nutrition are essential for premature babies, since as they get bigger they generally require less intervention," says lead author Gustavo Falciaglia, MD, MSc, neonatologist at Ann & Robert H. Lurie Children's Hospital of Chicago and Assistant Professor of Neonatal-Perinatal Medicine at Northwestern University Feinberg School of Medicine. "Our study provides important information to help neonatologists assess the total nutritional effects of their combined orders as they gradually decrease intravenous nutrition and increase enteral feeds."

Currently, the electronic health record does not calculate the total nutrition babies receive from various nutritional delivery practices during the transition to full enteral feeds. Managing optimal nutrition during the transition is a complex process and the study suggests that an automated system is needed to help clinicians weigh the tradeoffs in

calorie and protein intake with different nutrition delivery practice decisions.

"Ultimately, we would like to develop an automated tool to provide immediate feedback on the calories and protein the baby is getting through multiple vehicles used to deliver nutrition during the transitional stages," says Dr. Falciglia. "This would substantially help clinicians optimize nutrition and growth in very low birth weight infants."

The study was a retrospective analysis of detailed nutritional and fluid data received by 115 very low birth weight infants over 4,643 days at Lurie Children's regional neonatal intensive care unit (NICU). The median gestational age was 28 weeks and median birth weight was 1,060 grams. Infants admitted within the first week of life and discharged after the first month of life were included. The study excluded [infants](#) with chromosomal abnormalities or congenital anomalies because of the uncertain influence these conditions may have had on metabolism and growth.

Changes in calories and protein intake were estimated during five transition phases from full intravenous nutrition to full enteral nutrition. In each phase, researchers determined the effects of nutrition delivery practices including intravenous [nutrition](#), intravenous lipids, central line, feeding fortification, fluid restriction and excess non-nutritive fluid intake. Based on their findings, the authors recommend specific approaches to maximize calorie and protein intake during various transition phases.

Provided by Ann & Robert H. Lurie Children's Hospital of Chicago

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