

Implementation of a Standardized Feeding Protocol in a Level III Neonatal Intensive Care Unit

Maryam Rahimo, MD; Evgenia Miliara, MD; Monika Piatek, MD; Athina Pappas, MD
Department of Neonatology, Ascension St. John Children's Hospital, Detroit, Michigan

Introduction: The nutritional management of preterm infants in the Neonatal Intensive Care Unit (NICU) can be challenging and can often lead to extrauterine growth restriction (EUGR). A new feeding protocol was recently established and implemented at Ascension St. John's NICU. Objectives: 1.) To determine the association of a standardized feeding protocol in the NICU and feeding intolerance, as well as growth outcomes and the number of days on parenteral nutrition; and 2.) To determine the association of a standardized feeding protocol and the development of necrotizing enterocolitis and central line associated infections.

Methods: This study was a historical cohort study done by retrospective chart review. The pre-feeding protocol period included infants <32 weeks gestation and <1500g who were in the NICU between 1/1/2018 to 12/31/2020. The post-feeding protocol period was from 1/1/2021 to 11/15/2023. Data were recorded on demographics; and measurements at birth, 34 weeks postmenstrual age, and at discharge. Nutritional milestones and clinical outcomes were collected. Statistical analysis was done using Student's t-test, the chi-squared test, the Mann-Whitney U test and repeated measures analysis of variance.

Results: A total of 243 infants were included: 158 pre-implementation and 85 post-implementation of protocol. The mean gestational age was 27.7 ± 2.3 weeks, 61.7% of infants were black and 53.5% were female; there were no significant differences by time period. Results show no statistically significant difference in growth outcomes, days when infants received nothing by mouth; necrotizing enterocolitis, or sepsis. There was a delay in fortification and reaching full feeds, longer parental nutrition and central line days, and higher number of central line associated infections in the post-implementation period. Rates of intraventricular hemorrhage, retinopathy of prematurity and pulmonary outcomes were improving.

Conclusions: The data suggest that implementation of a standardized feeding protocol can improve short term morbidities in high-risk neonates. Future studies are needed to optimize feeding protocols with the goal of improving growth, nutrition, and neurodevelopmental outcomes of this high-risk population.