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PREDICTING MORTALITY OR INTESTINAL FAILURE IN INFANTS WITH SURGICAL NECROTIZING ENTEROCOLITIS

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Despite advances in neonatal care, necrotizing enterocolitis (NEC) remains a leading contributor to neonatal morbidity and mortality, accounting for 10% of deaths in the neonatal intensive care unit. Among extremely preterm infants who have NEC and undergo surgical intervention, the mortality rate is as high as 50%. Patients with NEC who require surgical intervention and survive are at risk for significant morbidities, which include the development of short bowel syndrome and intestinal failure (IF). Despite the high risk of adverse outcomes for infants with surgical NEC, there are no validated risk prediction models for use in the preoperative period to inform discussions with families or guide risk adjustment comparisons within and between centers. The ideal prediction model should be simple to use and include a small set of inputs that are easily accessible preoperatively, while being appropriately validated and calibrated. The objective of this study was to compare existing outcome prediction models and create a novel model to predict death or intestinal failure in infants with surgical NEC. The initial study was a retrospective, observational cohort study conducted in a 2-campus health system in Atlanta, Georgia. Logistic regression was used to model the probability of death or IF, as a composite outcome. A novel preoperative hybrid prediction model was also derived and validated against a patient cohort from a separate campus. Our results demonstrate that we are able to preoperatively predict death or IF among infants with surgical NEC, possible using existing prediction tools and, to a greater extent, using a newly proposed 4-variable hybrid model. This model has also undergone a multi-center validation in the United States which confirms the results of our initial study

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