

Abstract Title:

Neurodevelopmental Outcomes of Extremely Preterm Infants Exposed to Graded Oxygen Saturations

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Title Neurodevelopmental Outcomes in Extremely Preterm Infants exposed to Graded Oxygen Saturation Targets Authors *Loren Fox Yaeger DO, Neonatal-Perinatal Medicine Fellow LAC+USC Medical Center, Smeeta Sardesai MD Associate Professor of Pediatrics, Rangasamy Ramanathan MD Professor of Pediatrics Division Chief Division of Neonatal-Perinatal Medicine, LAC+USC Medical Center

Purpose of study The use of unrestricted oxygen in the NICU has been linked to long-term morbidities such as retinopathy of prematurity (ROP) and bronchopulmonary dysplasia (BPD). A graded oxygen saturation target protocol was developed to limit the oxygen that extremely low birth weight infants were exposed to and combat these long-term morbidities. Few studies have evaluated the long-term neurodevelopmental outcomes in these infants at later follow-up between 1 to 3 years of age. The primary objective of this study is to evaluate the neurodevelopmental outcomes in extremely preterm infants exposed to graded oxygen saturation targets.

Methods Used This is a retrospective chart review. The infants included had a birthweight of <1,000g and were between 24+0/7-27+6/7 week gestation at birth and who subsequently followed-up in the high risk infant follow-up clinic between 12-18 months corrected age. Exclusion criteria includes death prior to discharge or prior to administration of developmental testing, birth weight >1,000g, congenital anomalies, and genetic disorders associated with developmental delay. Follow-up variables under consideration include scores on neurodevelopmental testing using the Bayley Scales of Infant and Toddler, third edition. Mild to moderate developmental delay was defined as a score of <85 in the cognitive and/or language

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domains and severe delay was defined as a score of <70 in the cognitive and/or language domains.

Summary of Results Neurodevelopmental testing was administered at 12-18 months corrected gestational age using the Bayley Scales of Infant and Toddler Developmental, third edition. The average gestational age of the infants in this cohort was 25.8 weeks with an average birth weight of 728.5 grams. 47% of the infants were male, 20% had grade III or higher intraventricular hemorrhage, with an average time on supplemental oxygen of 83.3 days. In regards to the developmental testing, the average scores were 86.9, 80.4, 83.6, and 95.4 in the cognitive, language, motor, and social-emotional domains, respectively.

Conclusions The preliminary data show that 66% of infants had a Bayley-III score in the cognitive and/or language domain of <85 and 20% of infants had a score of <70 in the cognitive and/or language domain. The extremely preterm infants in this cohort also appeared to have performed more poorly overall in the language domain when compared to the cognitive domain of the Bayley-III.