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Early postnatal illness severity scores predict neurodevelopmental impairments at 10 years of age in children born extremely preterm

A neonatal illness severity score, the score for neonatal acute physiology-II (SNAP-II), predicts neurodevelopmental impairments at two years of age among children born extremely preterm. We sought to evaluate to what extent SNAP-II is predictive of cognitive and other neurodevelopmental impairments at 10 years of age. In a cohort of 874 children born before 28 weeks of gestation, we prospectively collected clinical, physiologic and laboratory data to calculate SNAP-II for each infant. When the children were 10 years old, examiners who were unaware of the child's medical history assessed neurodevelopmental outcomes. We used logistic regression to adjust for potential confounders. An undesirably high SNAP-II ($\geq$30) was associated with an increased risk of cognitive impairment, adverse neurological outcomes, behavioral abnormalities, social dysfunction and education-related adversities. In analyses that adjusted for potential confounders, Z-scores$\leq$-1 on 11 of 18 cognitive outcomes was associated with SNAP-II in the highest category and 6 of 18 were associated with SNAP-II in the intermediate category. Odds ratios and 95% confidence intervals ranged from 1.4 (1.01, 2.1) to 2.1 (1.4, 3.1). Similarly, 2 of the 8 social dysfunctions were associated with SNAP-II in the highest category, and 3 of 8 were associated with SNAP-II in the intermediate category. Odds ratios and 95% confidence intervals were slightly higher for these assessments, ranging from 1.6 (1.1, 2.4) to 2.3 (1.2, 4.6). Among very preterm newborns, physiologic derangements present in the first 12 postnatal hours were associated with dysfunctions in several neurodevelopmental domains at 10 years of age.

Biography

John Wells Logan is Board-certified in Pediatrics and Neonatal-Perinatal Medicine. He completed his Medical Training at the Medical University of South Carolina in 1995, and his Fellowship in Neonatal-Perinatal Medicine at Duke University Medical Center in 2007. Ongoing collaboration with the Extremely Low Gestational Age Newborn (ELGAN) Study Group has led to several contributions to the field. He is working as the Associate Medical Director of the Broncho-pulmonary Dysplasia Unit at Nationwide Children's Hospital and has over 15 peer-reviewed publications. He is interested in improving the long-term pulmonary and neurocognitive outcomes of infants with severe phenotype broncho-pulmonary dysplasia.

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