

**Adverse Neurodevelopment in Preterm Infants with Postnatal Sepsis or Necrotizing Enterocolitis is Mediated by White Matter Abnormality on Magnetic Resonance Imaging at Term.**

Shah\_D@kids.wustl.edu

Divyen K Shah, Lex W Doyle, Peter J Anderson, Marilyn Bear, Andrew J Daley, Rod W Hunt and Terrie E Inder

**Objectives:** Preterm infants are prone to postnatal sepsis and necrotizing enterocolitis (NEC), both of which are associated with an increased risk of adverse neurodevelopmental outcome. We hypothesized that the impact of postnatal sepsis/NEC on outcome was mediated by white matter abnormality (WMA), which could be demonstrated with MR imaging.

**Study Design:** A prospective cohort of 192 unselected preterm infants (gestational age <30 weeks), who were evaluated for sepsis and NEC, underwent MR imaging at term equivalent age and neurodevelopmental outcome at 2-years corrected age using the Bayley Scales of Infant Development (BSID-II).

**Results:** Sixty-eight preterm (35%) infants had 100 episodes of confirmed sepsis and nine (5%) infants had confirmed NEC. Coagulase negative staphylococci accounted for 73% (73/100) of the episodes of confirmed sepsis. Infants with sepsis/NEC had significantly more WMA on MR images at term compared with infants in the no-sepsis/NEC group. They also had poorer psychomotor development which persisted after adjusting for potential confounders, but which became non-significant after adjusting for WMA.

Conclusions: Preterm infants with sepsis/NEC are at greater risk of motor impairment at 2-years which appears to be mediated by WMA. These findings assist in defining a neuroprotective target in preterm infants with sepsis/NEC.