

## **PREDICTING SURVIVAL AFTER SEVERE NECROTISING ENTEROCOLITIS; A CASE-CONTROL STUDY USING NATIONAL SURVEILLANCE DATA**

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### **Aim of the Study**

To quantify risk factors for mortality after severe necrotising enterocolitis (NEC) using national surveillance data

### **Methods**

A case-control study was conducted using data collected over a one-year period from two UK national surveillance databases. Cases were all infants that died from NEC in the neonatal period, identified from the Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK (MBRRACE-UK) database in 2013. Controls were surviving infants with severe NEC (as defined by the need for surgical intervention) identified within a national population cohort study conducted between 2013 and 2014 (BAPS-CASS NEC study). Factors associated with mortality were assessed using univariable logistic regression to calculate unadjusted odds ratios (uORs) and a multivariable model was constructed to calculate adjusted odds ratios (aORs).

### **Main Results**

138 cases and 143 controls were identified. After univariable testing of a number of maternal and neonatal factors, gestational age (in weeks), (0.92,(0.87-0.98),  $p=0.006$ ), birthweight (in centigrams), (uOR 0.93,(0.90-0.97),  $p=0.001$ ) being small for gestational age (SGA), (uOR 2.15,(1.12-4.11),  $p=0.021$ ) and being from a multiple birth, (uOR 0.61,(0.33-1.13),  $p=0.12$ ), reached the threshold of significance for inclusion in the multivariable model. Birthweight was excluded due to its collinearity with gestational age ( $r=0.9$ ). After likelihood-ratio testing, the final multivariable model included gestational age and SGA only. For every week of gestational age increase, there was 11% decrease in the odds of NEC mortality (aOR=0.89,(0.84-0.9),  $p=0.001$ ) and being SGA was independently associated with almost three-fold increase in NEC mortality (aOR=2.89,(1.41-5.91),  $p=0.004$ ).

### **Conclusion**

SGA is an independent risk factor for mortality after severe NEC. These findings may help to identify infants at high-risk of death after NEC in whom a different nutritional strategy may be required. Placental insufficiency may be a crucial determinant of disease severity and/or the infant's ability to recover from severe NEC.