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# Highlights from this issue

Ben Stenson, *Edition Editor*

There is so much fascinating content in this month's issue that it is difficult to know where to begin. I enjoyed reading it all.

## WHAT IS BPD?

I particularly liked this article by Ola Hjalmanson and colleagues and the accompanying editorial by Eduardo Bancalari. The two articles convey an important message that is easily overlooked when we benchmark ourselves on outcomes. Bronchopulmonary dysplasia (BPD) needs a definition for such purposes but it is more properly thought of as a continuum of abnormal lung growth and development that affects all preterm infants to some degree and not just those who meet the criteria to satisfy a binary definition. A group of preterm infants born before 28 weeks gestation had lung function measurements at term and were compared with healthy full term controls. Preterm infants with or without a diagnosis of BPD were markedly different from the term controls in functional residual capacity, mechanical properties and gas mixing efficiency. The infants with a diagnosis BPD were worst of all but the preterm infants without this diagnosis were much more like the preterms with BPD than like the term infants. Other groups have had similar findings and this helps to explain why so many preterm infants have later respiratory problems and why having a diagnosis of BPD performs so poorly as a predictor of later respiratory difficulty. *See pages F257 and F254*

## OUTCOMES OF EXTREMELY LOW BIRTHWEIGHT INFANTS WITH LOW CORD PH

In a population of 3979 extremely low birth weight infants born at National Institute of Child Health and Development (NICHD) Neonatal Research Network Hospitals, David Randolph and colleagues look at the influence of cord pH <7.0 or base excess <-12.0 mmol/L on the combined outcome of death or neurodevelopmental impairment. This degree of acidosis was observed in 6.3% of infants and death or neurodevelopmental impairment occurred in 66.2% of them. Although acidosis at birth increased the risk of adverse outcome, when it was included in models developed to predict the composite outcome of the whole group, the performance of the

models did not improve because such a small proportion of infants are acidotic that other factors are more important in predicting population outcome. In the accompanying editorial Lisa Barker and David Field discuss some of the issues in the development of predictive tools for risk adjustment between services and for prognostication in individual cases. *See pages F263 and F255*

## WHICH IS WORSE, THE DISEASE OR THE CURE?

Henriette Anje van Zanten and colleagues investigated episodes of apnoea, bradycardia and cyanosis in preterm infants <32 weeks' gestation who were on nasal CPAP. Supplemental oxygen was increased in 11% of episodes. Increases tended to be large. The median inspired oxygen concentration before the episodes was 23% and after the increase was 39%. Episodes of desaturation lasted 2 min but it took 14 min for the inspired oxygen concentration to be returned to the baseline, with SpO<sub>2</sub> remaining greater than or equal to 95% for 13 min. Brief episodes of desaturation were therefore being treated with lengthy episodes of hyperoxia. They discuss strategies for improving oxygen targeting, including the use of servo control systems. Trials of different oxygen saturation target ranges now show that small differences in SpO<sub>2</sub> patterns over time influence morbidity and mortality and this study shows how important it is for neonatal units to understand and improve their approach to oxygen targeting. *See page F269*

## PULSE OXIMETRY AT LOW OXYGEN SATURATIONS

Oximeters are commonly used to monitor preterm infants immediately after birth during transition. Centile charts of the patterns achieved by infants not considered to require intervention are used by some to determine whether supplemental oxygen should be given. Jennifer Dawson and colleagues evaluated the precision and accuracy of Nellcor and Masimo oximeters at low SpO<sub>2</sub>, comparing them to simultaneous co-oximetry data obtained from blood samples in hypoxic newborn lambs. SpO<sub>2</sub> readings from both instruments tended to overestimate SaO<sub>2</sub> at low values, with little to choose between instruments. The limits of agreement with co-oximetry were

particularly wide below 70%. Above this, there was no immediate improvement. The agreement appears to improve progressively as co-oximetry values approach 90%. SpO<sub>2</sub> values obtained from human infants during transition whilst the values remain low should be considered approximate estimates of the arterial oxygen saturation and are likely to be overestimates. *See page F278*

## PULSE OXIMETRY IN NEWBORNS WITH DELAYED CORD CLAMPING AND IMMEDIATE SKIN TO SKIN CONTACT

In this study by Marrit Smit and colleagues, infants born vaginally after uncomplicated birth had SpO<sub>2</sub> measured continuously whilst transitioning with intact cords. SpO<sub>2</sub> values in the first 3 min after birth were significantly higher than those in published centile charts where measurements were made after cord clamping. Heart rate values were lower and increased more slowly than in previous reports. If targeting interventions to centiles is a valid approach to supporting infants in transition then a great deal more information will be required about values in infants with intact cords. It will be exciting to see some comparative data from infants randomised to immediate versus delayed clamping. *See page F309*

## PULSE OXIMETRY SCREENING

Routine pre-discharge pulse-oximetry screening was evaluated in a single neonatal service over a 40-month period by Anju Singh and colleagues. A reading <95% in upper or lower limb or a difference between limbs >2% was considered abnormal. There were 25 859 infants screened and this resulted in 208 neonatal unit admissions. This was 12.6% of all neonatal unit admissions during this time period. A significant condition requiring further investigation was identified in 165 (79%) of the infants admitted as a result of screening so many of the admissions might ultimately have occurred later in the absence of screening. Non-cardiac illness predominated, with half of the cases due to pneumonia or sepsis. Echocardiography was performed in 61/208 of the infants. In May of this year The UK National Screening Committee announced plans for a pilot of this screening method. *See page F297*