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# Fantoms

Ben J Stenson, *Edition Editor*

## TRENDS IN THE USE OF NON-INVASIVE RESPIRATORY SUPPORT FOR TERM INFANTS

Brett Manley and colleagues report data from tertiary NICUs in the Australia and New Zealand Neonatal Network for the years 2010–2018. 14 656 inborn term (>37 weeks gestation) infants were admitted to 21 NICUs from 2010 to 2018. Non-invasive respiratory support use (largely CPAP) increased on average by 8.7% per year so that the use almost doubled over the period from 10.8 to 20.8 per thousand live births. Use increased in 19/21 units and decreased in none. Surfactant use increased, pneumothoraces increased. There was no change in need for ventilation or risk of mortality. In 2018, there was a more than fourfold range in non-invasive respiratory support rates per 1000 inborn livebirths in the 21 NICUs that were examined, from 9.7/1000 to 40.9/1000. These temporal changes and such variation in treatment usage cannot reflect differences in disease severity and are not driven by published evidence of benefit gathered in this patient group. The authors discuss possible drivers for their findings, including extrapolation of evidence from less mature infants, widespread use of devices that deliver PEEP during stabilisation and transfer to the neonatal unit, wide availability of non-invasive respiratory support equipment in NICUs, beliefs that starting non-invasive support may shorten the course of treatment and facilitate earlier discharge. With no reduction in mechanical ventilation and more pneumothoraces the data don't suggest an overall improvement. The technological imperative that drives clinical staff to provide treatments is not easily resisted when the treatment is perceived to be low risk. These interventions may not be as non-invasive to the babies and their families as leaving them alone would have been. With fourfold variation in their use, high quality prospective trials of respiratory support strategies and indications for surfactant treatment in late preterm and term infants with respiratory distress will be hugely valuable. It is vital that clinicians keep their equipoise and support inclusion of these infants in trials. *See page F572*

## SEX STEROID PROFILE IN VERY PRETERM INFANTS AFTER PLASMA TRANSFUSION FROM MALE ADULT DONORS

Anders Nilsson and colleagues wanted to know if plasma transfusions with male donor plasma to very preterm infants affect circulatory levels of sex steroids. They measured concentrations of sex steroids and sex hormone-binding globulin (SHBG) in donor plasma and infant plasma before and after a plasma transfusion in 19 preterm infants<29 weeks gestation who were transfused with plasma in the first week of life. It is reassuring that, although the sex hormone and SHBG levels in the plasma were markedly different from those in the recipients pre-transfusion, there was no significant difference in the infants after transfusion irrespective of the gender of the receiving infant. *See page 577*

## TIME TO POSITIVITY OF BLOOD CULTURES IN NEONATAL LATE-ONSET BACTERAEMIA

Sagori Mukhopadhyay and colleagues measured the time from specimen collection to when a clinician was notified of a positive result in relation to blood cultures taken to investigate suspected late onset sepsis. In their large dataset from 16 birth centres they identified 1082 positive cultures (10.8%) from a total 10 235 specimens collected from more than 3000 infants. Median time to positivity was 23.5 hours and 85% of positives were reported by 36 hours. If specimens that grew coagulase negative staphylococci were excluded, 93.5% were positive by 36 hours. The probability of culture detecting a bacterial pathogen after 36 hours was 1.8% and the probability of detecting a non-CoNS pathogen after 36 hours was 0.5%. Antibiotic pre-treatment slowed time to positivity. The data further support the cessation of empiric treatment at 36 hours. *See page F583*

## EFFECT OF ANTIBIOTICS IN THE FIRST WEEK OF LIFE ON FAECAL MICROBIOTA DEVELOPMENT

Also on the theme of early cessation of antibiotics, Emmy Van Daele and colleagues analysed the faecal microbiota from birth until 2.5 years of age in 56 term born infants, exposed to antibiotics in the first week of life and 126 control infants. There were deviations in the relative abundance of individual taxa until 1 year of age. These were apparent with a 7 day treatment course but not with a 2 day course and recovered faster in breast fed than non-breast-fed infants. *See page 603*

## COMPARISON OF NEONATAL MORBIDITY AND MORTALITY BETWEEN SINGLE-ROOM AND OPEN-BAY CARE

Sophie Jansen and colleagues report outcomes of neonates born<32 weeks gestation in the Leiden University Medical Centre before and after they moved from a open-bay care facility to a new single room unit. The study period ran from May 2015 to May 2019 and included 356 and 343 neonates who were admitted to the single room unit and open bay unit, respectively. There were no differences in mortality, retinopathy of prematurity, bronchopulmonary dysplasia, or intraventricular haemorrhage. The authors have previously reported that there was no difference in late onset sepsis or necrotising enterocolitis. They are also studying differences in developmental care-related factors such as skin-to-skin contact, breastfeeding rates and sedative use between the two unit types. *See page 611*

## BPD RISK CALCULATOR

Rachel Greenberg and colleagues used data from 9181 preterm infants with birth weight 501–1250 g and gestation 23 to 28+6 weeks who were cared for in centres of the United States Neonatal Research Network between 2011 and 2017 to develop an on-line risk calculator that uses readily available clinical information to estimate a Research Network infant's risk of death or of developing bronchopulmonary dysplasia, categorised into subgroups of severity https://neonatal.rti.org/index.cfm?fuseaction=BPDCalculator.start . Birth weight was most predictive on day 1. Mode of respiratory support was most predictive on days 3, 7, 14, and 28. The tool is freely available and easy to use. *See page 638*



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