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Highlights from this issue

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NASAL HIGH FREQUENCY OSCILLATORY VENTILATION

Daniele De Luca and Valentina Dell'Orto review the physiological rationale and preliminary evidence for this additional approach to non-invasive ventilation. If it is effective, nasal high frequency oscillatory ventilation (NHFOV) should combine the theoretical advantages of high-frequency ventilation and of nasal CPAP. Reported neonatal experience is largely short term and describes 111 patient experiences, with a generally positive experience in terms of safety and some evidence of improved carbon dioxide elimination. So far there is little evidence to clarify what role it has and little information to assist in the planning of ventilation settings. Presently 4 trials have been registered. There is clearly a need for more clinical research and a cautious approach to exploring this technique. *See page 565*

QUALITY IMPROVEMENT

Jonathan Davis and colleagues implemented a sepsis reduction care bundle in their neonatal unit in Bristol between 2006 and 2007. Bloodstream sepsis due to coagulase negative staphylococcus species almost halved from 26.7 % during the years prior to the introduction (2002–2007) to 14.1% in the years following (2008–2011). Cognitive disability fell from 18.8 to 6.1% in the same time period ($p=0.04$). The reduction in sepsis was sustained over several years. After adjustment for other determinants of outcome the relative risk for cognitive disability remained 0.3 but the confidence intervals were not statistically significant. The necessary sample size for this outcome may be beyond the reach of an individual service. The observation is biologically plausible and the international evidence that coordinated quality improvement bundles deliver reduced sepsis is now so convincing that no neonatal unit should be failing to address this issue or embracing quality improvement more widely in their day to day care. Roger Soll and William Edwards highlight the shift in perspective from a belief that infection was inevitable to it being considered largely preventable as an important

step in the journey that may apply to other adverse outcomes. The challenge is to reach standards in all units that are comparable to those achieved in the best performing units and this requires everyone to recognise that their job is not only to look after individual patients but to be a part of the system for improvement. Developments in national data collection and follow up mean that the UK increasingly has the infrastructure to be at the forefront in measuring the wider effects of quality improvement strategies. *See pages 562 and 486*

CHORIOAMNIONITIS AND FUNISITIS IN LATE PRETERM INFANTS AND SHORT TERM OUTCOMES

In 477 preterm infants born between 32 to 36 weeks gestation with placental histology results, Tate Gisslen and colleagues found no appreciable association between chorioamnionitis and funisitis and short term adverse outcomes. Chorioamnionitis was identified in 24% and funisitis in 6.9% so there was no shortage of cases and the histology was well characterised. The study does not exclude important effects on later health. *See page 513*

DOUBLE PUMPING

Mary Fewtrell and colleagues investigated factors that predicted successful milk production in mothers of preterm infants born before 34 weeks gestation within a controlled trial of different breast pumps. Before and after adjustment the strongest factor was double rather than single pumping and this almost doubled the milk volumes produced. The article also highlights other factors associated with successful milk production. *See page 502*

MILK KINSHIP

In some parts of the world the sharing of human milk through a wet nurse is considered to create kinship ties between the family of the donor and recipient that result in marriage prohibitions. These concerns about milk kinship have inhibited access to donor expressed breast milk for preterm infants. This article by Thomas Williams and colleagues describes collaborative work done to use the high standards of donor traceability required

by modern milk banks to circumvent these concerns and widen access. *See page 484*

TISSUE DOPPLER IMAGING

In this study by Phani Yajamanyam and colleagues tissue Doppler imaging (TDI) derived assessments of myocardial function suggested that preterm infants with CLD, when compared with those without CLD, have evidence of relative biventricular dysfunction that is not detectable using more conventional echocardiographic measures. Whether this has prognostic or therapeutic significance remains to be determined. *See page 527*

BIRTHWEIGHT OR GESTATION AS PREDICTORS OF MORTALITY AND NEURODEVELOPMENTAL IMPAIRMENT

In this large study, which analyses data from the National Institute of Child Health and Human Development (NICHD) Neonatal Research Network, Ariel Sala and colleagues examine whether birth weight or gestation are stronger predictors of the composite risk of mortality or neurodevelopmental impairment (NDI) in extremely preterm infants born at 26 weeks gestation or less. There were more than 12 thousand infants in the analysis who were born between 1998 and 2009. The two measures were almost equally predictive of the composite outcome and the risk fell by 2.2% for each additional day of gestation in this patient group. Considered separately NDI was less well predicted by these measures than risk of mortality. *See page 494*

ADRENAL INSUFFICIENCY AND HYPOTENSION IN PRETERM INFANTS

In this review Pak Cheung Ng summarises the data describing the association between hypothalamic-pituitary-adrenal axis immaturity, adrenal insufficiency and refractory hypotension in preterm infants. Practical management is straightforward but interpretation of any investigation of cortisol levels is much less clear. *See page 571*