Highlights from this issue

Martin Ward Platt

ENCEPHALOPATHY

This month we have a lot to say about neonatal encephalopathy. Lally *et al* report the outcomes of 10 babies with mild encephalopathy who all got cooled; two of them had a poor neurodevelopmental outcome at 2 years. For these observations there are three possible interpretations: in mild encephalopathy, cooling may be harmful, cooling makes no difference, and the criteria for cooling should be extended. Which is right? It's an important question to answer because Oliveira *et al* show that there is practice creep across the UK to cool more mildly affected babies which has the potential to cause considerable harm until we know the answer. Perhaps we should first concentrate on identifying accurately those babies for whom there is already good evidence of benefit; Vesoulis *et al* make a case for universal umbilical cord gas measurement as a way of identifying more babies with at least moderate encephalopathy in a timely fashion. British readers will know that this would be contrary to current NICE guidance. Finally, Gale *et al* use data from the UK Neonatal Research Database to address the question as to whether diagnosed neonatal brain injury could be ascertained and monitored using routinely collected data. Maybe. The accompanying Editorial by Marion Knight argues for a cautious approach to this suggestion. ***See pages F383, F388, F377, F301 and F296.***

A GUIDE FOR UAC LENGTH

It is of course physically impossible to predict accurately the position of a 3-dimensional thing, such as the course of an umbilical arterial catheter, from 2-dimensional measurements in a single plane, but that does not prevent eager neonatologists from trying. Lean *et al* evaluated the relative accuracy of all 11 currently used formulae and concluded that those that used actual measurements of the infant were the least inaccurate, which is helpful. But even the best formula was sufficiently erroneous to warrant line manipulation on a quarter of occasions. Given the substantial anatomical variations in the course and connections of the hypogastric and internal iliac arteries, not to mention the variable backwards and downwards curve of the hypogastric artery from the umbilicus to the posterior abdominal wall, should we be surprised? ***See page F364.***

A GUIDE FOR ETT TUBE LENGTH

Getting endotracheal tube length right is tricky, especially in the smallest babies where the sweet spot between the thoracic inlet and the carina can be very short. So does it help to mark the tube itself as a guide, compared with using the Tochen formula? Gill *et al*, who conducted a neat randomised trial, found not. The accompanying letter from Garg *et al* points out that there is more to getting a good tube position than the intubation itself. This is partly because people often push a tube in a bit further for fear of accidental extubation, and also because the process of tube fixing and the different fixation devices can also result in malposition of the tube. My imagination was much exercised by one of their suggestions for influencing behaviour: 'Even-handed encouragement is given to staff for acceptable ETT placement, in the clinical arena and in radiology meetings.' ***See pages F312 and F395.***

SUBGLOTTIC STENOSIS

Symptomatic subglottic stenosis is a serious complication of neonatal intubation, yet very little has been written about it in the last 20 years or so. Most of the literature is from the 1980s, and publications since then have tended to suggest that in spite of increased survival among the most preterm babies, the rate is probably falling. Thomas *et al* have the advantage of an easily studied population in Western Australia, so it looks as if their case ascertainment was nearly complete, allowing them to undertake a high quality case control study which included very low gestation babies. There is genuinely new information here, including the fact that around a third of the babies with significant acquired subglottic stenosis did not present in the neonatal period, and that extreme prematurity is indeed an important risk factor. Most of all—avoid using unnecessarily large endotracheal tube sizes. ***See page F349.***

MORTALITY FUNNEL PLOTS

British readers will be familiar with the funnel plot mortality outputs in the annual reports of MBRRACE-UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK). Abdel-Latif *et al* have tackled the thorny issue of comparing mortality below 32 weeks for the 8 NICUs in the New South Wales—Australian Capital Territory neonatal network, also using funnel plots. Importantly they avoided 'controlling' for the potential mediators of mortality, and focused instead on antenatal and perinatal antecedents when adjusting the crude rates. Once the appropriate adjustments for case mix were made, all the units fell comfortably within the control limits, suggesting that there was little variation in outcome by unit over the timeframe 2007 to 2014. Even with these sizeable services (8 NICUs for an annual birth rate of over 100,000), one can only meaningfully address variation, or the lack of it, by accruing many years of data. Politicians and journalists, who often fixate on year-to-year 'variations', should take note. ***See page F355.***

NON-INVASIVE HFOV

There is an intuitive attraction in the notion of applying high frequency oscillatory ventilation non-invasively, though the fluid mechanics of this are likely to be fundamentally different when the airway consists of the nasal passages, pharynx and trachea rather than an endotracheal tube. Klotz *et al*, in a randomised cross-over trial of 26 babies of less than 31 weeks, were unable to demonstrate any advantage of non-invasive HFOV over nasal continuous positive airway pressure in terms of carbon dioxide removal. This was a good idea that deserved a thorough evaluation, but now we know it does not work so we can all move on. ***See page 317.***