OPTIMISING THERAPEUTIC HYPOTHERMIA
Using the National Neonatal Research Database, Lara Shipley and colleagues studied infants ≥36 weeks gestation who were admitted to UK neonatal units with moderate or severe hypoxic ischaemic encephalopathy (HIE). Between 2011 and 2016 there were 5059 infants. Birth in a centre which provided servo controlled therapeutic hypothermia (a cooling centre) vs a non-cooling centre was associated with increased survival to discharge without seizures (35.1% vs 31.8%; OR 1.15, 95%CI 1.02 to 1.31; p = 0.02). Fewer infants born in cooling centres were diagnosed with seizures (60.7% vs 64.6%). Survival was similar. There were 2364 infants who were born in a non-cooling centre. Non-cooling centres would initiate passive cooling pending transfer of the infant to a cooling centre. Amongst the 2027 of these infants with a recorded admission temperature at the time of arrival at the cooling centre, 259 (12.7%) had a temperature in the recommended therapeutic range before 6 hours of age. There were a further 48.3% who arrived at the cooling centre between 6 and 12 hours of age with a temperature in the recommended range. The authors conclude that almost half of all infants with a recorded admission temperature are in the recommended range. The authors suggest that the use of servo controlled hypothermia (cooling) may result in better survival than non-cooling centres. The evidence is not strong enough to give rise to a clear recommendation for all. See page F13

LIFE THREATENING BPD
Rebecca Naples and colleagues report a prospective national study conducted through the British Paediatric Surveillance Unit of Infants with life threatening BPD. This was defined as a requirement for positive pressure respiratory support or pulmonary vasodilators at 38 weeks corrected gestational age after birth before 32 weeks corrected gestational age. From June 2017 to July 2018 153 infants were reported from the UK and Ireland, giving a minimum incidence of 13.9 per 1000 infants born before 32 weeks. From this statistic, three neonatal units in the UK and Ireland will see around one such infant per year. The statistic does not include the infants with severe BPD who have already died by 38 weeks so it will underestimate the mortality from severe BPD. It is easy to be tempted into pessimism about the outcomes of infants with such severe BPD, but the results of this study give grounds for a more positive outlook. By 1 year of age 16% of the infants had died, so survival was the usual outcome. Discharge home was achieved by 81%, mostly on low flow oxygen – 9% required long term ventilation. Median age at discharge was 143 days. Post-discharge, two infants required new invasive ventilation, one required CPAP and eight required high flow during readmissions in the first year of life. Major concern about neurodevelopmental impairment was present at 1 year in around 1 out of 5 surviving infants. See page F13

AUTOMATED CONTROL OF FIO₂
Numerous systems have now been reported for delivering automated control of FIO₂ to newborn infants on ventilation and non-invasive respiratory support. All have shown that automated control results in more time within target range. It remains to be shown that their use improves clinical outcomes. This will require large trials and for these to be interpretable we will need to know whether the different devices result in similar or different achieved oxygen saturation profiles for a given target, as it may be inappropriate to consider the devices to be interchangeable. Hylike Salverda and colleagues performed a cross-over study comparing two different devices that are in current use and showed potentially important differences in performance, with one device achieving more time in target range than the other. One device resulted in more time with lower than intended SpO₂ and the other in more time with higher than intended SpO₂. See page F20

SPONTANEOUS Breathing During Delayed Cord Clamping
Here are some more data on the haemodynamics of transition with the cord intact. Emma Brouwer and colleagues performed continuous ultrasound recordings of blood flow during transition in 13 term born infants with delayed cord clamping. They found that during inspiration the inferior vena cava collapsed and blood flow into the foetus from the placenta increased, suggesting that inspiration may be an important driver of net placental transfusion. See page F65

HFNC VERSUS CPAP FOR PRIMARY SUPPORT IN PRETERM INFANTS
Shaam Bruet and colleagues performed a systematic review and meta-analysis of studies comparing nasal CPAP with high flow nasal cannula (HFNC) as primary treatment for preterm infants. They included 10 studies that enrolled 1830 patients. Treatment failure, as defined by the authors of the individual studies, was more common with HFNC than with CPAP (RR=1.34, 95%CI 1.01 to 1.68, I²=16.2%), but there was not a significant difference in the number of patients who required intubation. Nasal trauma was less common with HFNC (RR=0.48, 95%CI 0.31 to 0.65, I²=0.0%). Protocols of six studies allowed cross over to CPAP in infants on HFNC meeting failure criteria, meaning that infants crossed over to CPAP and were not intubated. Individual morbidities were not significantly different. The authors of the review prefer initial treatment with HFNC to avoid nasal trauma, with cross over to CPAP if required. The data are not strong enough to give rise to a clear recommendation for all. See page F56

REFERENCE