Highlights from this issue

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OUTCOME OF INFANTS WITH APGAR SCORE OF ZERO AT TEN MINUTES

Historical data on the outcomes of infants who still had an Apgar score of zero at ten minutes showed almost universal death, with severe disability in the small number of survivors. Emerging data have begun to make the outcome more uncertain. The 2010 International Liason Committee for Resuscitation Concensus on Science and Treatment Recommendations discussed this issue. At that time, one study had reported a contemporary cohort of infants some of whom were randomised to post-resuscitation hypothermia where a small number of survivors were free from severe neurologic deficits. The evidence was considered insufficient to support or refute any recommendation regarding how much time should elapse with a heart rate of <60 but >0 beats per minute before discontinuing resuscitative efforts. The conclusion of the 2010 guidance was that in a newly born baby with no detectable heart rate which remains undetectable for 10 minutes, it is appropriate to then consider stopping resuscitation. 2015 brings new evidence and new guidance. A report by Kasdorf and colleagues brings together data from 4 recent studies and a further case series from a single centre to describe the outcomes of 90 infants with an Apgar score of zero at 10 minutes who went on to receive treatment in the neonatal unit. Death occurred in 45 of the 90 infants, 22 were neurologically normal on follow up and 23 had abnormal neurodevelopmental outcome. It is important to recognise that these data describe the outcomes of infants who reached the neonatal unit alive for ongoing treatment and they are likely to be greatly outnumbered by other infants with Apgar score of zero at 10 minutes who did not get that far, so they should not be considered to represent the whole population survival outcome. Nevertheless, close to half of the survivors were normal. The resuscitation that is offered must depend on what post-resuscitation and decision making options are possible. ILCOR will shortly produce updated guidelines and it will be interesting to see how this complex situation is nuanced in their new treatment recommendations. *See page F102*

UMBILICAL CORD BLOOD FLOW PATTERS DURING STABILISATION WITH AN INTACT CORD

It is now widespread practice for there to be a period of delay before the umbilical cord is clamped after birth but guidance varies as to the duration and the infants that receive the intervention. In this highly informative study Boere and colleagues measured umbilical arterial and venous flow during delayed cord clamping using Doppler ultrasound in uncomplicated term vaginal deliveries. In 10% no flow was observed. In 57% flow was observed to cease prior to clamping at a median (interquartile range) of 4 minute 34 seconds (3:03 to 7:31). In the remaining 33% flow was still present when the cord was clamped at a median 5 minutes 13 seconds. Flow was intermittent initially and increased with large breaths and stopped or reversed with crying before becoming continuous. Pulsations were commonly considered to be palpable in the cord when no arterial flow was demonstrable by ultrasound and were not therefore a reliable measure of whether flow was present. The findings suggest that a great deal more evidence will be required to optimise transition and that future guidance will need to incorporate additional factors other than just timing. *See page F121*

FLUCTUATIONS IN TISSUE GLUCOSE IN STABLE FULLY ENTERALLY FED PRETERM INFANTS

This study by Flemmer and colleagues adds an interesting newcomer to our list of the things that we didn't know we didn't know. Preterm very low birth weight infants were studied once they were clinically stable and had been on full enteral feeds by intermittent bolus 2–4 hourly for at least 5 days. Continuous subcutaneous glucose monitoring was performed for 72 hours and calibrated against intermittent blood glucose measurements. Tissue glucose measurements showed cyclical fluctuations below 2.5 mmol/l and above 8.3 mmol/l throughout the day in relation to feeding in the infants with birth weight less than 1000 g. In infants with birthweights 1000–1500 g the fluctuations were smaller. Both subgroups were studied at a similar corrected gestational age of around 33 weeks. The duration of the periods with low tissue glucose were variable in duration but were sometimes longer than 1 hour. These infants were beyond the stage when they would normally have been getting ongoing glucose monitoring and the significance of these previously unrecognised fluctuations is unknown. Their recognition may stimulate further research to identify whether such fluctuations influence outcome and, if so, the effect of different feeding approaches on the phenomenon. *See page F126*

IMPACT OF RETINOPATHY OF PREMATURITY ON OCULAR STRUCTURES AND VISUAL FUNCTIONS

This highly informative article by Fielder and colleagues offers a great deal more than the title suggests. There is a helpful background to the categorisation of the disease and its natural history and treatment. There is also a summary of the epidemiology demonstrating the greatly enlarged burden of severe visual impairment resulting from the condition in middle income countries where access to screening and treatment of ROP has lagged behind the development of neonatal intensive care. The later structural and functional implications of more severe disease, even if treated, remain significant and demand continued focus on prevention. *See page F179*

LACTATE AS CEREBRAL FUEL DURING HYPOGLYCAEMIA

Harding and colleagues measured concentrations of plasma glucose, ß-hydroxybutyrate, lactate and insulin in newborns who had remained hypoglycaemic for more than 1 hour during the first 48 hours after birth. Ketone levels were low but lactate was often plentiful. The data suggest that ketones are not likely to provide neuroprotection when there is hypoglycaemia during the first 48 hours and that lactate may be a more important cerebral fuel during this time period. An accompanying editorial by ADC Senior Editor Martin Ward-Platt discusses the biochemical processes and clinical and research implications of the study. *See pages F161 and F96*

BRACELET

The Bracelet study is an important study of the experiences and perceptions of parents whose babies died after enrollment in randomised controlled trials in the neonatal period and of the health professionals who cared for them. A detailed report is published elsewhere[1] and this should be of interest to all who are involved in neonatal research. Embleton and Rankin summarise the study and call for further work to embed the findings in the design and conduct of future randomised controlled trials in infants and children. *See page F97*

BEING BABY FRIENDLY: EVIDENCE-BASED BREASTFEEDING SUPPORT

This article by Cleminson *et al* is an excellent educational resource for healthcare professionals who treat young infants and advise their parents and wish to improve their personal influence and that of their institution on the initiation and maintenance of breastfeeding. *See page F173*

REFERENCE

1 Snowdon C, Brocklehurst P, Tasker R, *et al*. Death, bereavement and randomised controlled trials (BRACELET): a methodological study of policy and practice in neonatal and paediatric intensive care trials. *Health Technol Assess* 2014;18:1–410.