

Applying LRAR would have reduced follow-up resulting in cost-savings of £8,068; in total £9,718.

Conclusion Implementing the LRAR in children presenting with AI in the UK is safe from a clinical view point; will reduce radiography and follow-up, resulting in significant cost-savings.

PS-147 **ULTRASOUND CARDIAC OUTPUT MONITORING (USCOM) IN MECHANICALLY VENTILATED CRITICALLY ILL CHILDREN**

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Background and aims Haemodynamic monitoring plays an important role in the management of critically ill patients. The goal of this study was to evaluate haemodynamic changes within first 48 h after initiation of mechanical ventilation (MV).

Methods Critically ill children were included and divided into two groups according to the indication for MV. Group A ventilated for pulmonary pathology (P), group B ventilated for non pulmonary pathology (NP). Noninvasive haemodynamic monitoring (USCOM) was used in both groups after the initiation of MV (Time 1) and at 6, 12 and 48 h intervals (Time 2, 3, 4). Parameters such as CI, SVRI, SVI, SBP and DBP were analysed. Strategies of protective MV were applied in both groups.

Results Group A included 36 children, mean age 44 months. Group B included 13 children, mean age 58 months. The comparisons within the groups and between the groups are presented in Table 1.

Abstract PS-147 Table 1

	Pulmonary group - P			Non pulmonary group - NP		
	Time 1	Time 4	comparison	Time 1	Time 4	comparison
CI	4.30 ± 1.25	4.09 ± 1.08	NS	4.33 ± 1.57	3.59 ± 1.03	NS
SVRI	1193 ± 592	1321 ± 557	NS	1050 ± 193	1607 ± 570	p < 0.005
SVI	34 ± 11	35 ± 11	NS	36 ± 12	37 ± 12	NS
SBP	90 ± 21	102 ± 25	p < 0.0142	87 ± 21	102 ± 19	p < 0.0251
DBP	52 ± 15	56 ± 17	NS	47 ± 15	55 ± 17	NS

Conclusions SVRI increased during first 48 h of ventilation in NP group, SBP increased in both groups. No other clinically significant haemodynamic changes in either group were found.

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PS-148 **PRE-HOSPITAL TRANSPORT PRACTICES PREVALENT AMONG CHILDREN REQUIRING PICU ADMISSION IN A TERTIARY CARE CENTRE OF A DEVELOPING COUNTRY**

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Background and aims While specially trained paediatric transport teams are firmly in place in the developed nations for transporting the critically ill to the paediatric intensive care unit (PICU), the same is not true for the resource restricted ones. Although well known, this finding is underreported. The aim of our study was to evaluate the pre-hospital transport practices of those requiring PICU admission and their subsequent clinical course.

Methods We collected information on the pre-hospital transport factors of children requiring PICU admission at presentation to our paediatric emergency department (PED), over a period of 6 months (Jan–Jun 2013) and recorded their outcomes. The study was approved by the IEC.

Results A total of 319 patients presented to the PED during the study period. Fifty four children (17%) required PICU admission. Majority (60%) were males. Septic shock (48%) was the commonest admitting diagnosis. Only 2 patients referred were transported by ambulance (unaccompanied). Majority (35, 65%) reached the hospital by public transport systems such as auto rickshaw and bus. The median PIM2 probability was 56%. Of those admitted, 18% needed mechanical ventilation, and 46%, inotropic support within the first hour. Sixteen children (30%) died during PICU stay.

Conclusions There is an urgent need to develop and integrate paediatric retrieval teams into the health care system of our country. Special telemedicine facility or call centres could be set up for this purpose so that the information could reach these teams and the patient could be transferred in a timely and appropriate manner to the nearest PICU available.

PS-148a **DOES OBSTRUCTIVE SLEEP APNEA CONTRIBUTE TO ELEVATED INTRACRANIAL PRESSURE IN CHILDREN WITH SYNDROMIC CRANIOSYNOSTOSIS? A PROSPECTIVE COHORT STUDY**

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Background and aims Children with syndromic or complex craniosynostosis have a prevalence of 68% of obstructive sleep apnea (OSA), which has been associated with an increased risk for developing elevated intracranial pressure (ICP). The objective of this study was to evaluate how often and to what extent OSA increases the risk of elevated ICP in patients with syndromic and complex craniosynostosis and to prospectively evaluate our current clinical treatment protocol.

Methods A prospective observational cohort study of patients with syndromic or complex craniosynostosis treated at the Sophia Children’s Hospital, started in January 1st 2007. All patients received repeated sleep studies and fundoscopy (to evaluate papilledema as proxy for elevated ICP), according to a standardised protocol.

Results Sixty-two patients underwent full analysis, with a mean age at time of latest follow-up of 6.0 years. Mean age at first presentation of papilledema was 1.9 years (range 0.4–6.0). Twenty-three of 62 patients (37.1%) had papilledema, of whom 13 (21.0%) pre-operative. Thirty-nine of 62 (62.9%) patients had OSA. Compared to patients without OSA, papilledema was not more frequently present in patients with mild or moderate OSA. However, patients with severe OSA had pre-operatively significantly more often papilledema (p = 0.015).

Conclusions Children with syndromic craniosynostosis are at risk of elevated ICP due to a complex interaction of risk factors. The relationship between mild and moderate OSA and elevated ICP is weak, however in individual patients OSA may be the decisive factor. Severe OSA significantly increases the risk of elevated ICP.

Intervention/Hypothermia

PS-149 INITIATION OF THERAPEUTIC HYPOTHERMIA BY REFERRING HOSPITALS DURING NEONATAL TRANSPORT – EXPERIENCE IN VICTORIA, AUSTRALIA

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Background Hypothermia is an effective treatment for moderate-severe hypoxic-ischaemic encephalopathy (HIE) in term newborns. Non-tertiary units (NTUs) may initiate controlled whole-body hypothermia to a target rectal temperature of 33–34°C in consultation with the Newborn Emergency Transport Service (NETS) by removing external heat sources prior to arrival of the NETS team. We aimed to evaluate temperature outcomes during neonatal transport when hypothermia was initiated by the referring NTU.

Method We retrospectively audited NETS records of infants with HIE treated with hypothermia from September 2008–August 2012. Infants in whom hypothermia was initiated by the NTU were compared with those in whom the NETS team started cooling.

Results Demographics of the 123 included infants were comparable between groups. Infants cooled by NTUs began cooling earlier (1.10 vs. 3.25 h after birth, $p < 0.01$) and reached the target temperature (33–34°C) sooner (3.35 vs. 4.54 h, $p < 0.01$) than infants cooled by NETS. There was no difference in time of referral, stabilisation, or arrival at receiving hospital. There was a trend towards more infants cooled by NTUs achieving the target temperature (33–34°C), OR 2.19 (0.96, 4.96). Infants cooled by NTUs were more likely to have temperatures $< 33^{\circ}\text{C}$, OR (95% CI) 5.39 (1.64, 22.83), but had fewer temperatures $> 37^{\circ}\text{C}$, OR (95% CI) 0.25 (0.07, 0.85).

Conclusions Controlled whole body-hypothermia initiated by regional NTUs, with guidance from NETS, allows earlier initiation of cooling, and attains the target 33–34 °C sooner to optimise neuroprotection in newborns with HIE. Clinical practice should focus on avoiding temperatures $< 33^{\circ}\text{C}$ and preventing hyperthermia.

PS-150 CAN CEREBELLAR AND BRAINSTEM APPARENT DIFFUSION COEFFICIENT (ADC) VALUES PREDICT NEUROMOTOR OUTCOME IN TERM NEONATES WITH HYPOXIC-ISCHAEMIC ENCEPHALOPATHY (HIE) TREATED WITH HYPOTHERMIA?

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Objective To evaluate apparent diffusion coefficient (ADC), measured in specific infratentorial brain structures in the first

weeks of life, as prognostic indicator of neuromotor outcome for HIE neonates both treated and not with whole-body hypothermia (TH).

Methods We retrospectively evaluated 71 MRI studies of term neonates, born between 2010 and 2013 at Boston Children's Hospital. Selected cases were classified into three groups: 1) HIE neonates who underwent TH, 2) HIE normothermics (TN), and 3) controls. The neuromotor outcome was categorised as normal, abnormal and death. The ADCmean was calculated for six infratentorial brain regions.

Results 51 infants were included: 29 HIE TH treated, 11 HIE TN, and 11 controls (mean gestational age of 39.07 weeks; 62% male; 11.7% non-survivors). Mean age at first MRI was 3.6 days (range, 1–14 days). Statistically significant correlation was shown between motor outcome and the ADC mean in the vermis ($p = 0.002$), cerebellar left hemisphere ($p = 0.035$), midbrain ($p = 0.028$), and pons ($p = 0.008$). In patients treated with TH, only in the vermis did ADC mean remained significantly lower than controls ($p = 0.03$). There were significant correlation between infant survival and ADC mean in all ROIs except the pons and medulla.

Conclusions ADC mean values during the first week of life in vermis, cerebellar left hemisphere, midbrain and pons are correlated with the motor outcome in infants with HIE. Therefore, this objective tool could be used to detect particularly severe cases of HIE for assessing prognosis at the first week of life.

PS-151 ALTERED MICRORNA EXPRESSION IN UMBILICAL CORD BLOOD OF INFANTS WITH HYPOXIC ISCHAEMIC ENCEPHALOPATHY

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Background To guide the neuroprotective management of infants with hypoxic ischaemic encephalopathy (HIE), early identification is essential. MicroRNAs are small non-coding RNA molecules with potential for use as biological markers for disease. The aim of this study was to investigate the expression profile of miRNA in umbilical cordblood (UCB) from infants with HIE.

Methods Full term infants with perinatal asphyxia (PA) were identified by a cord pH < 7.1 and/or five minute Apgar score ≤ 6 and/or requirement for intubation/CPR at birth. Degree of encephalopathy was defined using both continuous multichannel-EEG in the first 24 hours, and modified Sarnat score. In total, 70 infants, 52 cases (32 PA without HIE, 20 with HIE) and 18 controls, were included in the study. miRNA was extracted from UCB and the expression profiles of 866 miRNAs were determined using a microarray assay. Significant findings (fold change $> \pm 1.3$) were validated using quantitative RT-PCR (qRT-PCR).

Results On microarray 70 miRNAs were differentially expressed between the HIE and the control group. Of these hsa-miR-374a was the most significantly downregulated in HIE vs controls ($p < 0.001$). Validation of expression using qRT-PCR confirmed a significant reduction in expression among HIE vs. perinatal asphyxia vs. controls (mean RQ (SD) = 0.5215 (0.374) vs 1.1022(1.521) vs 1.755 (1.689), $p < 0.02$).

Conclusion To our knowledge, this is the first study to describe the miRNA profile present in umbilical cord blood following