3 had significantly lower day 0 PI values compared to Group 1 and 2 (p=0.008). PI values of Group 3 increased after ibuprofen treatment and became similar to Group 1 and 2 after PDA closure on the postnatal days 2 and 3.

Conclusion PI values of infants with hemodynamically significant PDA were lower at postnatal day 0 and with ibuprofen treatment; PI values increased to levels of infants without significant PDA. Our data show that PI is an early and noninvasive parameter predicting poor perfusion and may be helpful in decision making for PDA closure.

26 IMPACT OF SEVERITY OF PERINATAL ASPHYXIA ON PERIPHERAL OXYGENATION AND PERFUSION IN NEONATES

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Objective The aim was to investigate the influence of perinatal asphyxia on peripheral oxygenation and perfusion in neonates in a prospective observational study.

Methods Neonates with over 34 weeks gestational age and birth weight >2000g without sepsis or connatal malformations were included. Neonates with an umbilical artery pH of (UapH) ≤7.15 and 5 minute APGAR score ≤6 were investigated. Neonates with an UapH ≥7.15, and 5 minute APGAR score ≥7 served as control group.

Peripheral muscle near infrared spectroscopy (NIRS) measurement in combination with venous occlusion was performed once in the first 48 hours after birth. Tissue oxygenation index (TOI), mixed venous oxygen saturation (SvO2), fractional oxygen extraction (FOE), haemoglobin flow (Hbflow), oxygen delivery (DO2) and oxygen consumption (VO2) were assessed. Furthermore arterial oxygen saturation, heart rate, blood pressure und temperatures were measured. UapH was correlated to NIRS parameters.

Results Eight asphyxiated neonates were included. In the asphyxiated group significant correlations between UapH and DO2 (r=0.78), VO2 (r=0.80) and FOE (r=–0.75) were found. The asphyxiated neonates were compared to 30 neonates in the control group. TOI (67.7±5.5%) and DO2 (29.0±14.2 μmol/100/l/min) were significantly lower in asphyxiated neonates compared to the controls (TOI 71.8±4.9%, DO2 43.9±16.9 μmol/100/l/min), FOE was significantly higher (0.33±0.05) compared to the controls (0.28±0.06). No correlation of UapH with NIRS parameters was observed in the control group.

Conclusion Peripheral oxygenation and perfusion measured with NIRS is compromised in neonates with perinatal asphyxia with worsening of parameters with severity of asphyxia.

27 METABOLIC OUTCOMES OF CHILDREN AND ADULTS BORN PRETERM

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Babies below 37 weeks gestation now account for 9–12% of all births, and babies < 32 weeks gestation for 1–2%. Survival is also rising, and the expectation of life-long health. Preterm babies appear to be at substantially greater risk of features of the metabolic syndrome. For example it is estimated that currently 1 in 15 newly diagnosed hypertensives will have been born preterm. Early nutrition is the likely candiate mediator of long-term effects as well as a potential attenuator of aberrant trajectories of metabolic health. We will summarise research addressing childhood and adult metabolic health following preterm birth, the evidence that early nutrition and preterm growth affects risk for the metabolic syndrome. We will discuss methodological aspects of establishing causal relationships between infant feeding and later health outcomes, the pros and cons of observational versus randomized trials, practical issues in conducting infant nutrition studies/trials and performing long-term follow-up studies. We will provide an overview of the wide range of non-invasive technologies available for the identification of biomarkers in infants (including metabolomic technologies (using multi-component NMR/GCMS/LCMS platforms), genetic analyses using buccal swabs, and in vivo magnetic resonance imaging and spectroscopy to measure metabolites in the liver and brain.

28 THE QUEST TO IDENTIFY BIOMARKERS OF LONG-TERM OUTCOME IN THE NEWBORN

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We know that many events in the perinatal period have lifelong health implications. Work from animal models, and limited human data, suggest that deleterious long-term outcomes could be prevented by intervention in the neonatal period. While many studies of early life interventions are currently ongoing, outcome measures have to be in the short to medium term, even though the greatest impact of these interventions may not become apparent until well into adulthood. We are currently looking for biomarkers which can be measured non-invasively in the short term, but which have a strong association with long term outcome and may therefore provide indications of what the long-term effect of our experimental intervention may be. Methods currently being investigated include metabolomic technologies (using multi-component NMR/GCMS/LCMS platforms), genetic analysis using buccal swabs; in vivo magnetic resonance imaging and spectroscopy to measure metabolites in the liver and brain.

29 HEAD INJURIES

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This lecture will provide an overview of the pathophysiology of severe traumatic brain injury in children and the intensive care management of a child with severe TBI, focusing on the new WFPICS guidance (2012) and tiers of evidence. It will then present evidence for the nursing management of these children.

30 BIRTH AND REBIRTH - PARENTAL EXPERIENCES OF THEIR NEWBORN INFANTS TREATED WITH HYPOTHERMIA FOLLOWING PERINATAL ASPHYXIA

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The normal caring and nursing of newborn infants is to keep them warm and close to their parents. Fullterm newborn infants suffering from perinatal asphyxia are treated with induced hypothermia treatment (IHT) for three days at the Neonatal Intensive Care Unit (NICU) in order to prevent or decrease brain damages. The design of the study was a descriptive qualitative study. The aim was to describe and understand experiences of parents whose newborn infants were treated with IHT following perinatal asphyxia. A total of ten parents participated in the study, seven mothers and three fathers. Open-ended recorded interviews were conducted 4–12 months after the birth of their infants. Inductive content analysis

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was used as method of analysis. Four main themes emerged from the data:

i. emotional landscapes,
ii. adaptation to a new situation (with subthemes: creating control, external and internal support in a difficult situation, normalizing the abnormal and reconciliation to uncertainty),
iii. moments of rebirth and
iv. transformation of attitudes towards life and the existence.

31 CRANIAL NEUROSURGERY WITHOUT HAIR REMOVAL AND SHAMPOO CARE: RETROSPECTIVE ANALYSIS OF 450 CASES

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Background Trichotomy is a standard procedure in neurosurgery that aims at reducing infection rates. In children, psychological consequences associated to the whole head's hair removal are remarkable. Over the past twenty years the risk of infection associated to neurosurgical procedures has been thoroughly analyzed. Two negative consequences are associated to trichotomy: the loss of the natural defences offered by hair, and multiple skin lesions that increase bacterial growth. Our hospital established a protocol consisting of head washes before and after cranial neurosurgery with antiseptic shampoo, followed by daily washes with neutrum soap when the patient is discharged ("shampoo care").

Goal. To assess infection rate in a population of children who underwent cranial neurosurgery without hair removal.

Methods Retrospective analysis of clinical records of children undergoing cranial neurosurgery with "shampoo care" during one year.

Results 450 children were included. 5.55% of them had a wound complication, with only two cases of infection (0.4%). Available literature was revised to assess the effectiveness of our protocol. Wound complication and infections rates found in our experience were lower than those reported in patients treated with a standard trichotomy.

Discussion Cranial neurosurgery without hair removal and "shampoo care" is an effective method to reduce infection rates. This results in a shorter hospital stay, better self-esteem and improved quality of life when the child goes back to family life and school.

32 CHRONIC PAIN IN THE NEWBORN, A DELPHI SURVEY TO DEFINE THE CONCEPT

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Chronic pain in the newborn has been poorly addressed in neonatal pain research. To date there is no clear definition. A three round, webbased Delphi survey aiming at providing a definition of chronic pain in the newborn was designed. We invited an international panel of experts in the field of neonatology and neonatal pain to participate.

Participants (n=189) answered in the first round three open-ended questions: (1) what is the definition of chronic pain, (2) what are possible causes and (3) what are the signs and symptoms? The answers were categorized into 437 statements. These statements were valued by the participants on a 5-point Likert scale in the second round. Statements with mode or median ≥ 4 and mean ≥ 3.75 were selected for analysis in the third round of the survey. These threshold values were used to provide the opportunity to reach consensus in subsequent rounds. In the third round the remaining participants (n=72) were asked to reflect on the group response regarding the remaining 65 statements. Provided with their own value from the previous round, the participants were able to revalue the statements. This process resulted in 34 statements with mode, mean and median of ≥ 4, in which the participants reached consensus.

Several etiologic factors were defined, but no useful diagnostic criterion could be identified. The Delphi survey resulted in a description of chronic pain in the newborn. Identifying chronic pain is clinically relevant because it interferes with growth, prolongs hospitalization and leads to altered pain perception.

33 THE BLACK BOX OF PAIN ASSESSMENT IN EXTREMELY PREMATURE NEWBORNS REMAINS CLOSED

doi:10.1136/archdischild-2012-302724.0033

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Background and aims In our NICU nurses assess the neonates' pain with the validated COMFORTneo scale three times per day and additionally if they suspect pain. We treat more and more extremely premature neonates from 24 weeks gestation. In this study we explore if the COMFORTneo scale is valid for these extreme premature neonates.

Methods COMFORTneo scores and Numeric Rating Scale (NRS) scores for pain and distress from 2011 were extracted from the patient data management system. We selected scores assigned in the first 28 postnatal days and considered three gestational age groups: extreme prematures: 23.6 to 27.0 wks, prematures: 27.1 to 35.6 weeks and term borns: 36 weeks and older.

Results We retrieved 9915 scores in 638 newborns. The median number of scores per patient was 41 (IQR 28 to 55) for 76 extreme prematures; 8(IQR 3 to 18) for 329 prematures; and 3 (IQR 1 to 9) for 233 term borns. 10.0% of scores for the extreme prematures; 9.1% of scores for the prematures; and 15.8% of scores for the term borns suggested pain or distress (COMFORTneo score ≥ 14). Correlations between the COMFORTneo scale and the NRS pain ranged from 0.42 (extreme prematures) to 0.53 (prematures); those between the COMFORTneo scale and the NRS-distress 0.76 (extreme prematures) to 0.85 (term borns). Internal consistencies varied from Cronbach's alpha 0.73 (in extreme prematures) to 0.85 (in term borns).

Conclusions The COMFORTneo scale has acceptable psychometric properties for extreme prematures but we should continue to study other assessment strategies.

34 PARENTAL VIEWS OF PAEDIATRIC INTENSIVE CARE TRANSFERS

doi:10.1136/archdischild-2012-302724.0034

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Background In 2001a study was performed exploring the parental experience of our combined retrieval service for critically ill children, (Colville, Orr & Gracey 2003). The results of this study changed the way the service was provided and introduced the opportunity for a family member to travel with their child in the ambulance for the transfer. Ten years on it was decided to repeat a questionnaire to gain an insight into how families perceived the current service and seek further ways to improve the parental experience at this stressful time.

Method Having gained approval from the Research and Develop team at the base hospital a questionnaire was given to all families whose child was transferred by the South Thames Retrieval Service to the Evelina Children's Hospital during January 2012.

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