Results In total 164 infants were evaluated. Infants with increased placental ischemia and a higher placental maturation score had elevated levels of BNP at birth (r^2 0.12; p<0.001). Furthermore BNP was found to be associated with (chronic) prenatal hypoxia-ischemia (nucleated red blood cells (r^2 0.22; p<0.001); intrauterine growth retardation (r^2 0.18; p<0.01); postnatal thrombocytopenia), and acute perinatal hypoxia (umbilical artery pH (r^2 0.14; p<0.001); serum lactate (r^2 0.11; p<0.001).
Conclusion Elevated BNP levels after birth are found in those preterm infants with significant perinatal hypoxia-ischemia and are possibly related to placental dysfunction. If BNP levels are related to prenatal signs of circulatory compromise needs further investigation.

789 IMPACT OF OPEN DUCTUS ARTERIOSUS ON CEREBRAL OXYGENATION DURING THE FIRST DAY OF LIFE

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Background In neonates the ductus arteriosus (DA) plays an important role in hemodynamics and oxygenation. Aim of this study was to analyse influence of an open DA on cerebral tissue oxygenation ($crSO_2$) during the first day of life.
Methods In this prospective observational study near-infrared-spectroscopy (NIRS) measurements were performed on the right forehead during the first 24 hours of life in preterm and term infants. Cardiac ultrasound was performed immediately after beginning and after cessation of NIRS measurements. Based on the second ultrasound infants were divided into "open DA" and "closed DA" group. Diameter and DA-ratio (time left to right/total shunt time) were assessed in case of open DA.
Results Altogether 28 neonates with gestational age of 35±3 weeks and birth weight of 2457±929g were included. Cardiac ultrasounds were performed at 5±3 and 24±5 hours after birth. All infants had an open DA on the first ultrasound without significant difference between the two groups concerning ductal diameter and DA-ratio.

17 neonates had a closed DA and 11 an open DA on the second ultrasound. Groups did not differ in demographic data.

$crSO_2$ of closed DA group was significantly higher from 4 to 8 and 10 to 24 hours after birth. Mean $crSO_2$ of the 24 hours was 80% in closed DA and 65% in open DA group.
Conclusion Infants with a closed DA at the end of the first day of life have significantly higher $crSO_2$ during the first 24 hours of life than infants with an open DA.

790 EFFECT OF PHOTOTHERAPY ON EPISODES OF APNEA AND BRADYCARDIA IN PRETERM INFANTS BREATHING SPONTANEOUSLY

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Background and Aims We asked whether rates of apnea and bradycardia increase during phototherapy in preterm infants breathing spontaneously.
Methods Preterm infants (n=60, median gestational age 29 weeks (range 24–32), birth weight 1205 g (630–1750), age at study 3 d (1–10) receiving phototherapy for hyperbilirubinemia (total serum bilirubin 8.5 (4.2–16.1) mg/dl) underwent continuous registration of body temperature, heart rate, respiratory rate, arterial oxygen saturation, and transcutaneous (tc) pCO2 for 12 h (3 h before, 6 h during, 3 h after phototherapy). Rates of bradycardia (heart rate <80 bpm) and oxygen desaturation (< 80%) were determined for each of the 3 observation periods.
Results Body temperature (37.0/37.1/37.2°C; p<0.001) and heart rate (142/149/148 bpm; p<0.001) increased significantly, while tcpCO2 decreased (42.5/38.0/37.0 mmHg; p<0.001). Average oxygen saturation and respiratory rate remained unchanged. Rates of bradycardias and desaturations decreased after phototherapy, compared to rates before or during phototherapy (p<0.001 for both parameters), and numbers of infants with a least one bradycardia/3h declined (13/10/2).
Conclusions Phototherapy was not associated with increased cardiorespiratory instability. Unexpectedly, episodes of apnea and bradycardia decreased significantly during the first 3 hours after phototherapy.

791 EFFECTS OF AQUAPHOR ON TRANSEPIDERMAL WATER LOSS AND ELECTROLYTE BALANCE IN PRETERM NEWBORN INFANTS

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Background The skin of the preterm infant is immature at birth and unable to serve as an effective epidermal barrier whose major functions and prevention of transepidermal water loss (TEWL).
The Aim of the study is to determine the effect of topical ointment therapy (Aquaphor) in newborn preterm infants on their TEWL measured using total body water (TBW), fluid intake and metabolic balance in the first week of life. Secondary outcomes were all so noted (sepsis, CLD, PDA and IVH).
Methods This is a prospective randomised controlled trial in a single tertiary centre. Twenty six newborn preterm infants <30 weeks gestation were randomised into 2 groups; treatment with Aquaphor or a control group. The infants TBW was measured using the Body Stat method as described for neonates by Tang that measured total body water content using bioelectric impedance.
Results There was no statistically significant difference in TBW between the 2 groups from day 4–7 of life. However, the treated group showed an improved trend in their base deficts from day 1 to 7 when compared to controls. This finding supports the hypothesis that metabolic balance in extreme preterm babies may improve with Aquaphor treatment in the first week of life.
Conclusions There was no increase in sepsis or metabolic derangement. Rather, the trend was for better metabolic balance in the treated group from day 1–7 when compared to controls. Larger studies are needed to elucidate the role of Aquaphor in preterm fluid control.

792 PREDICTORS OF FLUID RESPONSE IN A ANIMAL MODEL OF HEMORRHAGIC SHOCK

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Background and Aims Prediction of fluid response is of paramount importance when managing shock. The aim of the present study was to test the hypothesis that pre-infusion values of several hemodynamic and perfusion parameters could help to predict fluid responsiveness in an infant animal model of hemorrhagic shock.
Methods Prospective, observational study in 20 two month-old piglets (9.9±2kg). Following mechanical ventilation, hypovolemia was induced by controlled 30 ml/kg bleed. After 30′ pigs received Normal Saline (NS) 30 ml/kg, n=10 or Albumin 5% plus Hypertonic

3% Saline (AHS) 15 ml/kg, n=10, over 30 min. Hemodynamic parameters determined by femoral arterial thermodilution calibrated pulse contour analysis, central venous saturation (SvO_2), and intramucosal gastric pH (pHi) were recorded before and after fluid load. Non-parametric correlations between pre-infusion parameters and post-infusion changes with cardiac index increase (ΔCI) were analyzed.

Results CI (median; IQR) increased from 2.1 (1.7–2.7) to 4.1 (3.6–4.6) L/min/m^2. There were no correlations between ΔCI and pre-infusion parameters or post-infusion changes in most parameters. Only pre-infusion stroke volume index (SVI) and global end diastolic volume index (GEDVI) showed strong negative correlation (SVI r: –0.61, p: 0.009; GEDVI r: –0.75, p: 0.001). ΔCI showed also strong correlation with SVI increase (r: 0.89, p: 0.000) and GEDVI increase (r: 0.88, p: 0.000).

Conclusion Pre-infusion SVI and GEDVI were predictor parameters of fluid response in this model of hemorrhagic shock. Other parameters previously proposed as predictors of fluid response as SvO_2, PPV and SVV were not able to predict changes in cardiac index.

793 MANAGEMENT OF ACUTE CIRCULATORY FAILURE IN CHILDREN BASED ON THE EVALUATION BY ECHOCARDIOGRAPHY IN PEDIATRIC INTENSIVE CARE UNIT (PICU)

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Background and Aims Echocardiography has an important role to perform in the PICU, as it is an efficient, accurate, non invasive diagnostic modality that can aid the intensivist in the management of the acute circulatory failure in children to Improve the hemodynamic Management.

The Aim is to describe how echocardiography can answer 3 of the more commonly asked questions that arise in the PICU: Complete the clinical diagnosis, guide the therapeutics, and Repeat the measures for the evaluation.

Methods In this prospective study, children who had an acute circulatory failure, the evaluation of the cardiaque output, contractility and the indications of filling were obtained by echocardiography. Each patient had a measurement before therapeutic and after to evalulate treatment.

Results In 20 children, 06 patients had septic shock, 09 with sever sepsis and 05 with severe brain injury. Median age was 3.5 years.

Intervention Standardized volume expansion (VE) when the Respiratory variations in aortic blood flow (ΔV Peak Ao > 12%), the VE-induced increase in LV stroke volume was > 15%.

Treatment inotrope when, is an acute circulatory failure related to impaired myocardial contractility responsible for a decrease in cardiac output (Cardiogenic shock or myocardial dysfunction in the septic shock).

Norepinephrine when the mean pressure decrease with normal myocardial contractility and cardiaque output.

Conclusion Echocardiography is a incountournable tool in the evaluation and management of acute circulatory failure in children in PICU because its guide therapeutic, evalulate the efficiency of treatment and improve the surveillance.

794 A PDA SCORE AT 48 TO 72 HOURS OF AGE (MANITOBA SCORE) PREDICTS A HEMODYNAMICALLY SIGNIFICANT PDA

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Objectives To determine whether a composite PDA score (Manitoba score), determined at 48–72 hours of age can predict a hemodynamically significant PDA (HSPDA) requiring closure in Infants <31 weeks.

Study Design Infants <31 weeks GA, admitted August 2010 to September 2011, to NICU Winnipeg, Canada, following parental consent, had a blinded echocardiogram and a novel PDA score determined at 48–72 hours postnatally. The PDA score is a numerical score (maximum 28) incorporating echocardiographic parameters reflective of both volume and pressure overload (max score 15), and clinical, radiological and laboratory features of both pulmonary over-circulation and systemic hypo-perfusion (max score 13). PDA diameter >1.5mm with left to right non-restrictive shunt by echo was considered for this study the reference standard for HSPDA requiring treatment. All components of the score were correlated with this reference standard.

Results 70 of 132 eligible neonates were studied. HSPDA was present in 24 (34%) infants, a non significant PDA in 32 (46%) and no PDA in 14 (20%). Infants with HSPDA were of lower birth weight and less mature than those without (non-HSPDA/no PDA) (905±46 vs. 1218±43 grams; p<0.001, 28.6 ±0.3 vs. 26.8± 0.3 weeks). Both the clinical and echo component correlated strongly with each other and with overall score (p<0.001, Kendall's tau test. The PDA score and components significantly predicted HSPDA.

Conclusion The Manitoba PDA score performed at 48–72 hours of age predicts HSPDA who eventually received treatment. Use of PDA score may reduce the number of infants who are treated with non significant PDA.

795 ARTERIAL BLOOD PRESSURE VARIATION IN CRITICALLY ILL NEWBORNS. CAN WE PREDICT THE VOLUME STATUS?

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Volume expansion is one of the most frequent used interventions in critically ill newborns, despite lack of hard evidence. In a case of a truly hypovolaemic patient, for example after massive hemorrhage secondary to an abruptio placentae, volume expansion is life-saving. However, volume expansion in a normo- and/or hypervolemic newborn infant is not without risk. Excessive fluid intake is associated with a disturbed neurologic outcome, an increased prevalence of chronic lung disease and an increased mortality. It would be profitable when the volume status of a critically ill newborn infant could objectively be assessed so the response to volume expansion could be predicted ('fluid responsiveness' - FR). The clinical assessment of the volume status is rather unreliable. Recently new dynamic parameters are introduced that reliably predict fluid responsiveness in ventilated adult patients. These variables, like 'pulse pressure variation' (PPV) and 'systolic pressure variation' (SPV), are based on arterial blood pressure variations secondary to mechanical ventilation (heart-lung interaction).This inspired us to study the phenomenon of arterial blood pressure variation in critically ill newborn infants under several clinical conditions. The (preliminary) data will be presented.

796 PALMER'S POINT FOR SAFE INSERTION OF PERCUTANEOUS DIALYSIS CATHETER IN NEONATES

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