exposed in controlled conditions (silent room, active sleep, randomised order) to three odours presented on a Q-tips:
- water (control);
- a hand rub (DES60®) diluted to match the odour’s intensity released by hands;
- an adhesive remover (Convacare®).

We recorded bilaterally cortical activation in orbito-frontal gyri (OFG), prefrontal (PFC) and somatosensory (S1 and S2) cortices during 40s (10s-baseline, 10s-presentation, 20s-post-stimuli) by multichannel-NIRS. HbO2 changes were analysed from baseline (ANOVA) and by subgroups (Kruskall-Wallis).

**Results**
In the whole population, we observed:
- no activations for water.
- cortical activations (HbO2 increase) for DES60® (p < 0.001), unilaterally in OFG, PFC, and bilaterally in S1 and S2; whereas only in S1 (unilaterally) for Convacare® (p < 0.001).

We noticed significant profiles of response for all infant’s subgroups, in at least one olfactory and one pain processing areas. The average magnitude of HbO2 increase from baseline was higher in full-terms vs both subgroups of preterms: 8.5(2.8–12.6) µmol/l vs 5.9(2.6–10.4) and 5.7(1.8–9.2) µmol/l for DES60® (p < 0.001).

**Conclusion**
Full-term and preterm newborns can perceive OS at a cortical level. Exposure to OS can activate trigeminal/olfactory and pain processing areas and may induce discomfort/pain in newborns.

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**PLASMA METABOLOME IN A NEWBORN PIGLET MODEL FOR ASPHYXIA AND RESUSCITATION**

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**Background and aims**
Post-asphyxia resuscitation with air improves survival. We aimed to find reliable biomarkers of brain injury secondary to hypoxia/ischemia in plasma in a newborn piglet model for asphyxia.

**Methods**
Hypoxia was introduced to newborn piglets (standardised model). Plasma metabolomic profiles reflecting the effects of asphyxia and resusculation were studied, and changes in target metabolites of the Kennedy pathway were analysed by LC-MS.

**Results**
A set of metabolites reflecting metabolic changes after asphyxia and resuscitation was identified. Increased levels of choline, cytidine and uridine (Kennedy pathway) during hypoxia were observed (see Figure 1). No differences were found between resuscitation using air and air+2.1% H2.

**Conclusions**
Untargeted metabolomics enabled the monitoring of changes occurring during asphyxia and resuscitation on a molecular level. A set of candidate biomarkers was identified. In accordance to previous results, alterations in the Kennedy pathway are reported. The performance of candidate biomarkers for clinical grading will be evaluated in further studies.

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**CORPUS CALLOSUM SIZE AS A PREDICTOR OF VISUAL PROBLEMS AMONG 4-YEAR-OLD VERY LOW BIRTH WEIGHT CHILDREN**

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**Background**
Correlation between corpus callosum (CC) size and motor performance in prematurely born children has been described. It is speculated that the organisation of CC can be associated with visual acuity in preterm children.

**Aim**
To assess the relation between CC size and vision impairment, results of Frostig test of visual perception and Visual evoked potentials (VEP) in a group of VLBW children.

**Methods**
40 children born with a mean birthweight of 1023g (SD 230g) were evaluated at the mean age of 4 years (range 3.7–4.3). The children were examined for clinical signs of vision impairment and were subjected to Frostig test. VEP was recorded after checkeredboard pattern and flash stimulation.
Morphological brain changes and CC size were evaluated using standard MRI sequences. The MRI evaluators were not informed about the results of visual examinations.

Results Impaired visual acuity was detected in 9/12 cases with abnormal CC (75%) and in 10% of children with normal CC (p < 0.01). There was a significant correlation between the CC size and Frostig test results (abnormal CC group vs. normal CC group: 91 vs. 80.7 points; p = 0.03 adjusted for history of ROP). Absence of stereoscopic vision was more frequent in the group of abnormal CC (7/12 vs. 2/20; p = 0.03). The frequency of abnormal VEP was similar in the both groups.

Conclusion A strong correlation between vision impairment and CC size was observed. This suggests that CC plays important function in integration of visual perception.

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PO-0416 2ND TRIMESTER HEAD SIZE IN FETUSES WITH CONGENITAL HEART DISEASE: A COHORT STUDY

Background and aims Congenital heart disease (CHD) is associated with neuro-developmental disorder. The influence of CHD on the brain is believed to begin during pregnancy. The aim of this study is to describe a 2-year cohort of fetuses with major and minor CHD and to investigate if and when during pregnancy cerebral growth is disrupted. We hypothesise that fetal cerebral growth is impaired as early as 2nd trimester.

Method Pregnant women in Denmark (more than 95%) attend antenatal care and the vast majority (90%) have an anomaly scan at around 20 weeks GA. The majority (70%) of the women undergo pregnancy follow-up at a congenital heart disease follow-up clinic at the University Hospital Aarhus. The data collected include: GA, sex, and major/mild CHD. Fetuses with syndromic CHD either during pregnancy or up to 6 months after birth, are included in the study.

Results 129 fetuses with CHD were identified prenatally. Ninety-eight (76%) were genetically screened, primarily by chromosomal micro-array analysis (n = 72). Nineteen (15%) declined invasive testing. Twenty-three fetuses (18%) were excluded due to genetic syndromes, mainly aneuploidies (n = 14) and seven (5%) were excluded due to extra-cardiac malformations. Ninety-nine fetuses (77%) with presumed non-syndromic CHD were included. Head circumference in week 19–20 was significantly smaller than average with a mean z score of -0.4 (95% CI: -0.7, -0.2) (p < 0.01). Analyses are undergoing and results will be presented at the meeting.

Conclusions Preliminary unadjusted results suggest that fetal cerebral growth in children with CHD may be disrupted as early as 2nd trimester.

PO-0417 WITHDRAWN

PO-0418 BRAIN PROCESSING OF MUSIC IN THE NEWBORNS

In newborns, some basic music processing seems to be present days after birth (1). Neonatal intensive care units are willing to use music to enrich preterm infant environment. Indeed, researches in neonatal intensive care units showed music impacts on physiological and behavioural responses, caloric intake, and energy expenditure of premature babies (2). The aim of this study is to understand how music is processed in newborns and if premature birth impacts on this processing.

PO-0419 INCIDENCE OF CEREBRAL OXYGEN DESATURATION AMONG NEONATES UNDERGOING GENERAL ANAESTHESIA

Background Cerebral autoregulation (CA) is a physiologic mechanism ensuring constant blood flow to the brain independent of changes (within physiological limits) in mean systemic blood pressures. Compromised CA can lead to ischemia, associated with hypoxic injury and long term sequelae. The efficiency of CA in neonates is not well-known, especially during general anaesthesia. We aimed to determine incidences of significant cerebral desaturation (S_O2).

Methods Observational data were collected from 33 premature and term neonates (up to post-menstrual age 44 weeks), receiving general anaesthesia for surgery. Near-infrared spectroscopy (ForeSight® CerebralOximeter, CASMED, USA) was used to non-invasively measure regional S_O2. When used, invasive arterial pressures were recorded electronically. We then calculated the