

(120.3 mL/kg/min (35.1) vs. 167.4 mL/kg/min (67.3);  $p$  value  $<0.001$ ) but remained stable by 10 min (189.2 mL/kg/min (26.2); ns). The increase in LVO was significantly correlated to an increase in HR and left ventricle end diastolic diameter (14.3 mm at 2 min, 16.0 mm at 5 min and 16.6 mm at 10 min;  $p<0.001$ ). We observed a bidirectional ductal flow in the first minutes, but large inspirations following a cry overruled the bidirectional ductal flow causing a large left to right shunting.

**Conclusion** At birth, the most significant hemodynamic change occurred in the first 5 minutes whereby an increase in preload and heart rate increased LVO. Inspirations had a major influence on ductal flow, causing large left to right shunting. Blood pressure at birth remained stable.

### 106 EARLY POSTNATAL CHANGES IN SPLANCHNIC CIRCULATION IN HEALTHY TERM NEWBORNS

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**Objective** To characterize hemodynamic changes in celiac artery (CA) and superior mesenteric artery (SMA) in healthy term newborns during the first six hours after birth by means of Doppler ultrasonography.

**Materials and methods** The study included 30 healthy term newborns. The ultrasound examinations using Aloka  $\alpha$ -10 were performed at the age of 2.4 and 6 hours after birth. The statistical analysis of Doppler variables was performed using the non-parametric Friedman test with all pairwise multiple comparisons. Presented results are shown as median (interquartile range).

**Results** A reversed blood flow in SMA, documented by negative values of end diastolic velocity (EDV) [-10.90 cm.s<sup>-1</sup> (-13.21–0.00)], changed to positive during the first six hours after birth (7.08 cm.s<sup>-1</sup> (6.29–13.48),  $p<0.001$ ). In CA, EDV increased in this period, but negative values were not recorded [11.83 cm.s<sup>-1</sup> (9.34–13.86) and 18.03 cm.s<sup>-1</sup> (14.20–27.57)].

**Conclusion** Dramatic changes occur in splanchnic circulation during the first six hours after birth. In superior mesenteric artery, the negative diastolic blood flow turns to positive as a part of circulatory transition in the presence of a ductal steal.

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### 107 SURVIVAL OF VERY PRETERM CHILDREN BORN IN 2011: FIRST RESULTS OF THE EPIPAGE 2 COHORT STUDY

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**Aims** The number of neonates born preterm is increasing and children born at low gestational ages face a range of risks. We present the first results of the EPIPAGE 2 study, a national cohort of very and moderately preterm children in France.

**Methods** EPIPAGE 2 is a prospective population-based cohort study conducted in 25 regions of France in 2011 including extremely (22–26 weeks, 8-month recruitment), very (27–31 weeks, 6-month recruitment) and moderately preterm (32–34 weeks, 1-month recruitment) children. It aims to examine short and long term outcomes (survival, health and development) of these children and their determinants. Data on pregnancy, delivery, and neonatal events were extracted from the obstetric and neonatal records.

**Results** A total of 5565 births were included in the EPIPAGE 2 study: 1752 were born extremely preterm (898 (51%) stillbirths and 854 (49%) live births), 2728 very preterm (298 (11%) stillbirths and 2430 (89%) live births), and 1085 moderately preterm (28 (2.5%) stillbirths and 1057 (97.5%) live births). The survival rates for extremely preterm babies were 23% of all births and 48% of live births. The corresponding survival rates were respectively 83% and 93% at 27–31 weeks and 96% and 99% at 32–34 weeks. In 1997 (EPIPAGE 1 study), the survival rates were 20% of all births and 46% of live births at 22–26 weeks and 76% of all births and 88% of live births at 27–31 weeks.

**Conclusion** Survival has improved among very preterm children, but has not changed at extremely low gestational ages.

### 108 ALTERED FRONTO-TEMPORAL NEUROANATOMY IN VERY PRETERM BORN ADULTS DURING COMPLETION OF A VERBAL FLUENCY TASK

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**Background and aims** Several studies have described poorer cognitive performance in various aspects of language such as comprehension, naming, expressive language and verbal fluency in individuals who were born very preterm compared to controls. Neuroimaging investigations have also described structural and functional changes that could underlie such language deficits. In this pilot study we used functional MRI to explore whether alterations in the neuroanatomy of phonological verbal fluency persisted into adulthood following very preterm birth.

**Methods** Twenty-two young adults (26–28 years old, females=11, males=11) were examined. Eleven individuals were born very preterm (gestational age:  $<33$  weeks) and 11 were full-term born controls. All participants underwent functional MRI using a 3T scanner while completing a phonological verbal fluency task. All data pre- and post-processing was performed using FSL ([www.fmrib.ox.ac.uk/fsl](http://www.fmrib.ox.ac.uk/fsl)).

**Results** During successful verbal fluency trials, very preterm-born individuals showed significantly decreased blood-oxygen-level-dependent signal compared to controls in several brain areas including the orbitofrontal/medial frontal cortex bilaterally ( $x=8$ mm,  $y=52$ mm,  $z=-28$ mm) and the left fusiform/parahippocampal gyrus ( $x=-34$ mm,  $y=-30$ mm,  $z=-24$ mm),  $p<0.05$  family wise-error corrected (FWE). On-line performance did not significantly differ between the groups.

**Conclusions** Previous studies with functional MRI in younger samples have shown neuroanatomical alterations (increased and decreased activation) in fronto-temporal and fronto-striatal networks in very preterm born individuals when performing different cognitive tasks. Our results suggest that neuroanatomical alterations during language processing persist into adult life following very pre-term birth, and specifically involve fronto-temporal networks, with important implications for a wide range of high order cognitive functions.

### 109 NEONATAL CEREBRAL OXYGENATION IS ASSOCIATED WITH NEURODEVELOPMENTAL OUTCOME OF PRETERM INFANTS AT 2 TO 3 YEARS OF AGE

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