It is over twenty years since epidemiological studies revealed that there was a relationship between patterns of early growth and risk of developing type 2 diabetes in later life. Studies of identical twins, individuals who were in utero during periods of famine and animal models have provided strong evidence that the early environment, including early nutrition, plays an important role in mediating this relationship. The concept of “early life programming” is therefore widely accepted. However the mechanisms by which a phenomenon that occurs in early life can have long-term effects on the function of a cell and therefore metabolism of an organism many years later are still emerging.

These include:
1. Permanent structural changes in an organ due to exposure to suboptimal levels of essential hormones or nutrients.
2. Permanent effects on regulation of cellular ageing through increases in oxidative stress and mitochondrial dysfunction leading to DNA damage and telomere shortening.
3. Persistent alterations in epigenetic modifications (including DNA methylation, histone modifications and miRNAs) leading to changes in gene expression.

Several transcription factors have been shown to be susceptible to programmed changes in gene expression through such epigenetic mechanisms. These are conceptually attractive targets of programmed epigenetic regulation, as through regulation of their expression a network of other genes will be regulated. Further understanding of the extent and nature of these programming mechanisms could enable the development of preventative and intervention strategies to combat the burden of diseases such as type 2 diabetes.

**Conclusion** We conclude that Fgfr10 may have a protective/regenerative effect on lung injury by increasing secondary septa formation.

**177 AUTOMATION OF RESPIRATORY SUPPORT IN THE NEONATE: FACT OR FICTION**

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Premature infants frequently present with respiratory instability that is associated with fluctuations in ventilation and gas exchange. Frequent adjustments of respiratory support to match the infant’s needs are time consuming and are limited by staff availability and workload. Hence, automation is being developed as a way of improving the care of the premature infants and reduce staff workload.

Some of these automated modes of respiratory support are becoming available for clinical use in preterm infants. These include volume targeted ventilation where peak inspiratory pressure is automatically and continuously adjusted to deliver a preset tidal volume. Another modality is target minute ventilation where the ventilator rate is adjusted automatically to maintain a preset minute ventilation. Proportional assist ventilation is another modality where airway pressure is adjusted in proportion to flow or tidal volume generated by the infant. Using this principle recently NAVA has been introduced for use in neonates where the airway pressure generated by the ventilator is proportional to the electrical signal captured from the diaphragm. Finally, automated adjustment of inspired oxygen concentration is becoming available in some ventilators to adjust FiO2 and maintain oxygen saturation within a preset range. These modes are expected to compensate for some of the limitations that exist in the present forms of respiratory support. Available evidence and preliminary findings for short term effects are promising but further investigation is needed to determine the effects of these modalities on the long term outcome of preterm infants.

**176 THE ROLE OF FGF10 FOR ALVEOGENESIS IN BRONCHOPULMONARY DYSPLASIA**

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**Background and aim** Bronchopulmonary dysplasia (BPD) is associated with impaired alveolar growth and pathologic vascularization. As a chronic lung disease it remains an important complication for preterm infants, especially born before 28th week of gestational age. Fetal/blast-growth-factor 10 (Fgf10) is known to play an important role in lung morphogenesis. We aim to investigate the role of Fgf10 for alveogenesis in a mouse model of BFD.

**Methods** Using an inducible double transgenic mouse line (SPC-RTA; tet(O)Fgf10) we established a BFD model by exposing the pups to 85% oxygen (experimental and control group) and normoxia (control group) for 28 days. Activation of the transgene Fgf10 was done after birth (P0) by doxycycline treatment. Gene expressions for Fgf2b and Fgf10 were analyzed by quantitative real-time PCR. To study lung morphology histology, mean linear intercept (MLI) and radial alveolar count (RAC) were done after birth (P0) by doxycycline treatment. Results Real-time PCR results showed a significant decrease of Fgf2b and Fgf10 expression in the hyperoxia group at day 21 and day 28 indicating epithelial cell damages. The histology showed a simplification of alveoli in the hyperoxia group (85% oxygen) but not in the normoxia group after 14 days. In contrast, the hyperoxia group with overexpression of Fgf10 showed less simplification of alveoli. These findings were confirmed by MLI and RAC.

**Conclusion** We conclude that Fgf10 may have a protective/regenerative effect on lung injury by increasing secondary septa formation.
was reported in 5 (28%). There were no changes along the ten years reviewed.

Conclusion Most deaths in infants with HIE are preceded by a clear decision of W/LT, usually within the first three days of life. The W/LT may last usually a few hours to days. We did not find changes surrounding end of life during the decade.

Background Ethical issues often arise near the end-of-life (EOL) because of concerns about what is appropriate care and who should decide. Differences may exist between paediatric intensivists and non-intensivist paediatricians.

Aim The aim of study was to assess if the approach toward EOL ethical issues differ between paediatric intensivists and non-intensivist paediatricians.

Methods Questionnaire was given to intensivists working in the Slovene paediatric ICUs and to paediatricians participating at a yearly meeting on issues in critically ill child. The questionnaire was assessing the opinion about EOL ethical issues and experiences with them.

Results Twenty-four out of 30 Slovene paediatric and neonatal intensivists and 35 out of 65 non-intensivist paediatricians responded. The average ages in both groups were 42 years. Over 90% of intensivists as compared to less than a third of non-intensivists knew whom to counsel in ethical dilemmas (p=0.004). Eighty-three percent of intensivists accepted withdrawing of treatment as ethically appropriate as compared to 53% of the non-intensivists (p=0.0002). Do-not-resuscitate order was always followed by 59% of paediatric intensivists. Neither group found physician’s religious and cultural beliefs to be very important in decision-making process (69% and 66%).

Conclusions Substantial differences existed between paediatric intensivists and non-intensivis paediatrician in EOL ethical issues. Since only a third of non-intensivist paediatricians knew whom to counsel when facing an ethical dilemma and only around half of them accepting withdrawing of care as ethically appropriate, better ethical training is needed. Interestingly, neither group considered physician’s religious and cultural beliefs to be very important.

PARENT’S PERCEPTION OF END OF LIFE IN BRAZILIAN PEDIATRIC INTENSIVE CARE UNITS

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Objective Assess the parents perception of patients who died in the Pediatric Intensive Care Unit (PICU) about the care given by health staff in the moments preceding the children’s death.

Methods Exploratory-descriptive study with a qualitative approach. Settings: 2 PICU in southern Brazil. Subjects: 15 parents of children who died from April to September 2008. Data collection was performed through 3 steps:

a. The researchers contacted the parents by phone call to invite them to attend to the hospitals.

b. The doctors who assisted the children clarified doubts about the therapy offered.

c. A semi-structured interview, was carried out by researchers who had not participated of the care.

Results The analysis resulted in 4 categories: a. the moment of death in the PICU; b. talking with the attending physicians; c. parental involvement in decision making; d. parental participation in research.

The results show that parents lack a peaceful environment where they can adequately carry out the goodbyes at the time of death of their children. They emphasized the solidarity provided by the nursing staff at this point and the little involvement of the medical team. The opportunity to revisit the process of their children’s death with the team physician was considered positive. Parents felt that they did not have an effective participation in decision taking.

Conclusion The research shows that the difficulty of communication between health staff and parents is a factor that impacts negatively on the decision taking and grieving processes.

NEC PATHOGENESIS - NEWS FROM PRETERM PIGS

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Nutritional, microbiological and immunological dysfunctions all play a role in NEC etiology but the relationship among these determinants is not understood. The preterm gut is very sensitive to enteral feeding which may either promote gut adaptation or induce gut dysfunction via bacterial overgrowth and inflammatory reactions. Tumor necrosis factor alpha, toll-like receptors and heat-shock proteins are identified among the immunological components of the early mucosal dysfunction. It remains difficult, however, to