

2. Early left hemispheric lesions may induce reorganisation to the right – in homotopic areas.

3. This happens on the expense of right hemispheric functions.

4. Language quality in reorganised language is not impaired for everyday language, but there are differences in complex linguistic aspects, which supports the idea of a genetic predisposition.

5. The time frame for reorganisation is not very clear, but there is no evidence for successful reorganisation after preschool age.

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The Child

IS-022 CRITICAL CARE FOR THE CHILDREN OF THE WORLD

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The burden of sepsis in the developing world Early childhood and neonatal sepsis has become a global public health concern. Nearly seven million children die each year before reaching their fifth birthday and around 50% of these deaths are attributable to sepsis and possible serious infections.

Studies have demonstrated the effectiveness of community interventions in reducing neonatal deaths due to sepsis and other severe diseases. But in resource poor settings, the lack of access to health facilities, acute shortage of a trained health workforce and unsatisfactory diagnosis and treatment in the facilities have been identified as some of the major contributors to high sepsis related mortality. Sepsis should be recognised early and treated aggressively. Therefore the quality of care at health facilities needs to be ensured to provide comprehensive management to all sepsis cases in order to prevent or decrease the onset of fatal consequences like septic shock and vital organ failure. A systematic review of thirteen studies in developing country context reported that the post discharge mortality rate may vary between 1% and 18%. The burden of morbidity and mortality of post discharged sepsis cases needs to be further evaluated in developing country context.

As representatives of the Global Sepsis Alliance (<http://global-sepsisalliance.com/>) we have had fruitful discussions with the WHO and the Global Burden for Disease experts who are eager to highlight the burden posed by sepsis. You can make a difference. Joining the World Sepsis Day initiative is a welcome start (<http://www.world-sepsis-day.org/>).

The Gut

IS-023 CLINICAL ASPECTS OF NEONATAL CHOLESTASIS

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Neonatal cholestasis most often presents as prolonged jaundice, beyond 2 weeks of age. Such babies should always be investigated for conjugated hyperbilirubinemia and if this is detected further work-up for cholestasis is mandatory. Simultaneously, prothrombin time must be checked and pathologic levels need to be treated with intravenous vitamin K, to avoid detrimental bleedings. Neonatal cholestasis occurs in approximately 1 in 2500 term infants, the most common underlying diseases being

biliary atresia (BA), viral infections, α_1 -antitrypsin deficiency and other genetic cholestatic disorders.

Patients with BA most commonly present with jaundice and pale stools. Population based screening of all infants, by the use of stool colour cards sent to the parents can speed up the detection of cases with BA and thereby improve the success rate of the surgical procedure.

Once cholestasis is established, there is a need for a relatively rapid series of investigations. The reason for this “semiacute” management is to define certain situations where early treatment is lifesaving, such as septicemia, galactosemia or hypocortisolism, as well as to ensure timely surgical management in BA patients. A stepwise approach of investigations is suggested, where percutaneous liver biopsy is of value to select patients with suspected biliary atresia for laparotomy.

All patients, regardless of aetiology, should receive fat soluble vitamins as long as they are cholestatic. Although widely used, the effect of ursodeoxycholic acid is less well proven. However, it seems to be beneficiary in subsets of patient groups and the side effects are very minor.

The Heart

IS-024 FETAL CARDIAC INTERVENTIONS

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Fetal cardiac interventions are currently performed for critical aortic stenosis (CAS), pulmonary atresia intact septum (PA/IVS) and closed atrial septum in hypoplastic left heart syndrome (HLHS). The rationale is to change fetal hemodynamics, prevent secondary damage and improve long term outcome at an acceptable risk for mother and fetus.

In fetal CAS the left ventricle (LV) dilates, shortening decreases and endocardial fibroelastosis develops. The most important issue is to identify those patients, who will benefit from this procedure.

Intervention has been shown to improve fetal hemodynamics. The risk of intrauterine death is around 12%. A biventricular outcome has been reported in 1/3 to 2/3 of these fetuses.

At the Children's Heart Centre Linz, 57 procedures were performed in 50 fetuses, with a success rate of 83% and a biventricular outcome after a median follow-up period of 43 months of 56%.

Intervention in fetal PA/IVS is technically more challenging. In our centre 12 attempts have been performed in 10 fetuses all with suprasystemic RV pressures. There was no serious complication so far. Successful intervention (in 8 fetuses) resulted in better RV filling and continuous, but slower than normal growth of tricuspid valve and RV. After 1 year, 4/5 newborns are biventricular and well, 1 child received a Glenn shunt. One 6 months old patient still has a Blalock Taussig shunt, 2 fetuses are still in-utero.

Intact atrial septum in fetal HLHS has to be treated with transseptal stent placement to prevent re-occlusion. Results however are still poor (Own experience with 5 procedures).

IS-025 FUNCTIONAL ECHOCARDIOGRAPHY: CORE COMPETENCY FOR THE NEONATOLOGIST?

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Point of care ultrasound: a core competency for the neonatologist? Nick Evans: Newborn Care, RPA Hospital and University of Sydney, Sydney, Australia.

Introduction Protagonists of point of care clinician performed ultrasound (CPU) point to the value of 24/7 immediate diagnosis, antagonists point to limited formal accreditation and risk of misdiagnosis. Implementation of CPU should embrace the benefits while minimising the risk of harms.

Cardiac ultrasound Permits a window on haemodynamic pathophysiology where there are few alternatives. There is a range of acute care indication and with systematic use of ultrasound, the extent to which clinical and vital signs have misled us has become apparent.

Other organ ultrasound Beyond the heart, NPU extends to acute head ultrasound to exclude cerebral haemorrhage. Abdominal and thoracic ultrasound to diagnose abnormal fluid. Bladder ultrasound to confirm urine prior to supra-pubic aspiration. Screening of the entry points of the IVC and SVC into the heart can exclude an intra-cardiac tip position. Ultrasound allows real time localisation of UVC tip position during insertion. There is evolving use of lung ultrasound to diagnose a range of pulmonary conditions and gut ultrasound for NEC.

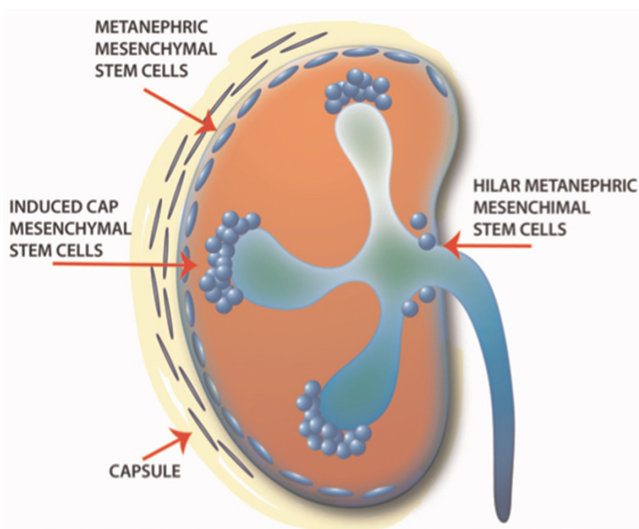
Training and accreditation It's hard to see that ultrasound skills are not going to become a core competency for neonatologists. There is a need for formal training and accreditation structures. We have such a structure in Australasia in the form of the Certificate of Clinician Performed Ultrasound (CCPU). The training needs in neonatology should be determined by neonatologists, not by other specialties.

The Kidney

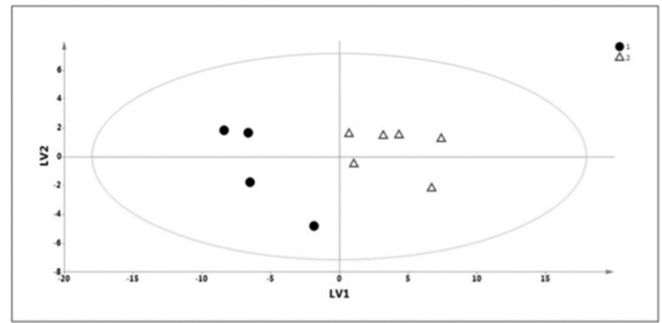
IS-026 NEW DIRECTIONS IN NEONATAL NEPHROLOGY RESEARCH

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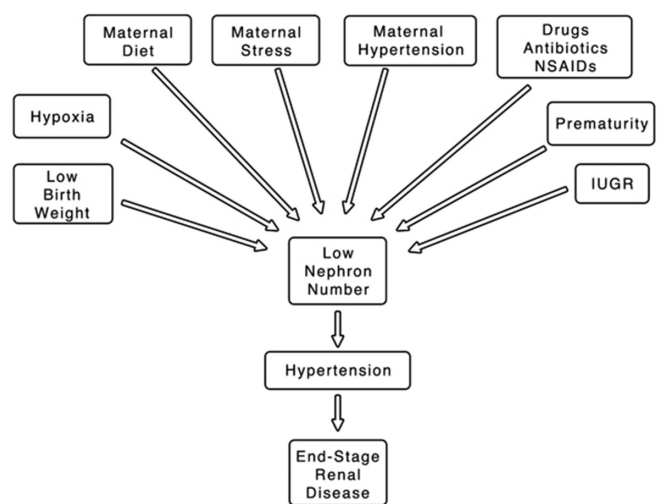


Abstract IS-026 Figure 1 Renal stem cells in preterm kidney. From Faa G. *et al.* Renal stem cells in preterm kidney. *J Pediatr Neonat Individual Med.* 2014, in press; with permission



Abstract IS-026 Figure 2 Urinary metabolomics in newborn piglet model of asphyxia. PLS-DA model between piglets with Recovery Time (RT) after asphyxia < 15' (black circles) and piglets with RT > 68' (open triangles). Model parameters for the explained variation (R2X and R2Y), and the predictive capability, Q2, were: R2X = 0.789; R2Y = 0.869; Q2 = 0.689. From: Murgia F, *et al.* Is the quickness of resuscitation after hypoxia influenced by the oxygen concentration? Metabolomics in piglets resuscitated with different oxygen concentrations. *J Pediatr Neonat Individual Med.* 2013;2(2):e020233, with permission

Our experience is presented in neonatal nephrology research: embryology, regenerative medicine, metabolomics, perinatal programming (Figures 1–3, with permission). We studied kidney embryology with conventional histology, immunohistochemistry (WT1, MUC1, CD10, CD44, mTOR protein, BCL2, Kim1, Thymosins beta 4 and 10, hCTR1, Glypican 3, Galectin, Nestin, etc.) (Faa G. *J Cell Physiol* 2012), electron microscopy, embryonic kidney cell line to study the effect of drugs in the normal rate of cell proliferation. We hypothesised the concept of physiological renal regenerative medicine, using the stem cell naturally present in the kidney (Fanni D. *JMFNM* 2012). Metabolomics (Fanos V. *SFNM* 2013) is performed by us in studying experimental models of renal damage (i.e. asphyxia, drugs), in the early diagnosis of infection and sepsis induced AKI in the newborn, and in monitoring the patient renal function (Fanos V. *Molecules* 2013, *Clin Biochem* 2014). Big data analysis is performed connecting immunohistochemistry and metabolomics in experimental models. Finally we studied the long term cardio-renal effects of extreme prematurity on a cohort of apparently healthy adults born ELBW (Bassareo PP. *JPNIM* 2013). The life



Abstract IS-026 Figure 3 Epigenetic modulation of kidney development. From Faa G. *et al.* Kidney embryogenesis: how to look at old things with new eyes. In: Fanos V., Chevaller R.L., Faa G., Cataldi L. Quartu S. Elena, Hygela Press, 2011, with permission