

the 53 European countries with more than 200 million children aged less than 18 years and with more than 200.000 paediatricians. Paediatrics respects the rules on child development which state that an adolescent is not a young adult, a school child is not a small adolescent, an infant is not a small child, a neonate is not a small infant and a premature newborn is not a small neonate. Paediatricians care for both healthy and sick children. Health care management differs according to where it is offered such as inpatient care in hospitals, outpatient care in hospitals or in private practices, homecare and rehabilitative care in special rehabilitation units. Paediatric health care focuses on the patient and not on diseases; however children with acute diseases need a completely different case management than children with chronic diseases. Special care is given to underprivileged and marginalised children such as children with chronic diseases and disabilities, children with a migrant background and poor children. Children have no voice in society and their caregivers do not speak with one voice, which has led to considerable inequity of health care in many European countries.

There is currently no European wide “bank” of data to enable comparative studies of service outcomes to encourage health service research relating to infants, children and young people. The aim of our presentation is to improve international cooperation in child health care in all European countries in order to improve future services. Understanding how and why services work, relating structure and process to experience and outcomes is essential at a time of economic recession. Paediatricians should not aim at creating a monopoly; instead they must favour the team approach of all caregivers.

Neonatal Brain and Development – Evolving Techniques

IS-008 SHEDDING LIGHT ON THE NEONATAL BRAIN

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Brain injury in the newborn remains a major cause of death and serious lifelong disability, with alterations in cerebral perfusion and oxygenation implicated in the pathophysiology of injury in both preterm and term infants. Near-infrared light shows a strong absorption dependency on oxygenation state and provides a safe, non-invasive means of monitoring cerebral function at the bedside. Improved continuous quantification in newer generation instruments are an important step in developing clinically useful monitors. Multi-channel systems allow images of the haemodynamic response to functional activation to be reconstructed.

A collaborative group, **neoLAB**, has been created between Cambridge and University College London (UCL) with the aim of developing and refining optical systems to study the development of haemodynamic activity in the developing brain.

A frequency multiplexed optical topography system, designed and built at UCL, has been used to study novel haemodynamic events associated with seizures in the newborn. Work is currently being undertaken to look at the development of functional resting state cortical networks.

The UCL group has also developed the first 3D optical imaging system. The optical tomography system uses time-correlated single photon counting (TCSPC) technology to measure the flight times of photons as they are transmitted between points

on the surface in order to generate 3D images of regional blood volume and oxygenation.

The latest generation of this system has a significantly improved time resolution designed to capture dynamic changes in regional blood flow associated with functional activation.

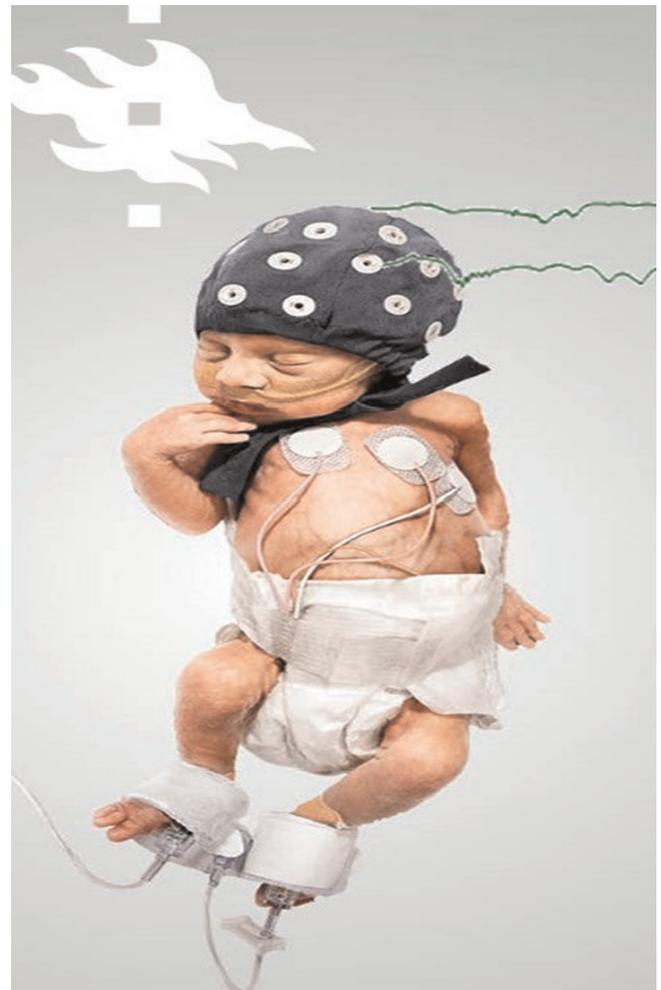
IS-009 EVENTFUL WIRING AND MONITORING OF NEONATAL BRAIN

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Since the beginning of preterm EEG practise half a century ago, the interpretation of EEG has remained phenomenological, and based on observing clinical correlates of otherwise unexplained waveforms. Recent developments in basic neurobiology, as well as in the EEG recording and analysis techniques, have offered pathways to paradigm shifts at multiple levels.

Experimental studies have shown that early brain activity consists of events that are crucial for the activity-dependent, experience-independent network growth that takes place during last trimester and/or early prematurity. New recording techniques have made it possible to characterise these events from the human preterm babies, hence opening a window to translational



Abstract IS-009 Figure 1