Oral Presentations

01 USING FUTILITY STUDY DESIGNS AND SAMPLE SIZE CALCULATIONS TO IMPROVE EARLY LABORATORY STUDIES

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Futility designs have been used in Phase II human studies in cancer research for over thirty years. More recently the same designs have been applied in Phase II human studies in neurology. There has been little, if any application of these designs to laboratory studies. For initial laboratory experiments the sample size is often chosen as an n of 5, increasing the n a few more depending on observed results. Futility studies provide a more rigorous approach to determining the initial sample size for an experiment. To apply a futility design, investigators must have some knowledge of historical control rates in similar experiments in their laboratory, and must be able to specify the magnitude of an effect that would make an experiment worthwhile to pursue further. Using a futility approach to plan an initial laboratory study could reduce the chance of missing important effects that should be carried forward into more comprehensive experiments, and could reduce the chance of carrying forward experiments that have little likelihood of success. This session will present the concept of futility studies, provide laboratory-based examples, and discuss sample size calculation. At the end of the session participants should understand the concept of futility, be able to use standard software for sample size calculation, and be able to plan their own studies using a futility approach.

02 QUALITY IMPROVEMENT IN PEDIATRIC PRIMARY CARE

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This session will address the issue of improving quality of pediatric care. It will emphasize pediatric primary care and draw on the experiences of the US Agency for International Development's Health Care Improvement Project in low and middle income economies. It will address the issue of quality in health care, the methodology for improving health care quality and use several examples to illustrate how improvements can be made and what results can be obtained. Following the session, participants will be able to:

1. Articulate what is meant by quality pediatric care.
2. Discuss the principles of improving health care quality.
3. Explain how to integrate discipline specific knowledge into the organization of care in order to improve quality of care.
4. Describe examples of quality improvement in pediatric primary care.

03 A DRAMATIC IMPROVEMENT OF THE QUALITY OF THE MEDICAL RECORD, USING THE INNOVATIVE COMPUTERIZED INFERENCE ALGORITHM TECHNOLOGY

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Background and aims accurate knowledge of a Patient's medical problem is critical for clinical decision making, quality measurement, and clinical research. Common structured sources of problem information, include patient problem list and billing data; however, these sources are often inaccurate and incomplete. Innovative

computerized inference algorithm (ICIA) based decision support system was developed for Pediatric Primary Care in 2009. ICIA system will navigate Physicians; how to take patients' histories, what to write on physical examinations, and what to do for laboratory and medication. We evaluated the performance of ICIA technology by analyzing the quality of medical record data.

Methods We compared the quality of the manual chart (data used: before 2008) and the ICIA supported chart (data used: after 2010). The data used, were 1,000 randomly sampled from 100,000 patients' data, respectively. Each chart were scored by 3 physicians, who are highly trained and experienced in clinical research. The average score were used for analysis. Seven parameters (score) were defined as, clinical accuracy (0–10), legal accuracy (0–10), scientific accuracy (0–10), logical description (0–5), definition of terms (0–5), evidence based medicine (0–5), treatment plan (0–5) and total score (0–50).

Result The average of the total score was 38.0(±2.5) for the manual chart, and 43.0(±1.4) for the ICIA supported chart [P-value <0.001].

Conclusion The ICIA based decision support system improved the quality in medical record data, dramatically. The ICIA technology, from management sciences and engineering, will change the quality in patients' safety, clinical research and risk-management.

04 TRIALS OF IMPROVED PRACTICES - A PILOT STUDY EVALUATING THE ACCEPTABILITY AND PREFERENCES FOR A CHLORHEXIDINE CORD CARE INTERVENTION

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Background Chlorhexidine, a broad-spectrum topical antiseptic with strong residual activity, has a potential to reduce infections during the neonatal period. However, the challenge remains what would be the best mode to deliver the intervention. As a part of formative research, we evaluated three possible modes of chlorhexidine delivery i.e. 100ml bottle with cotton swab, 10ml single use dropper bottle and 3g single application squeeze tube containing gel, as an umbilical cord care intervention using Trials for Improved Practices (TIPS) methodology in preparation for a large double-blind randomized controlled trial evaluating the impact of chlorhexidine. in Pemba, Tanzania.

Methods 204 mother-newborn pairs were enrolled from hospital and community setting. Three different modes of application of intervention were tested (3 days for each preparation) in a cross over design. Mothers (on day 10), MCH, TBA and hospital staff was interviewed about their experience and feedback of their preference among the three delivery modes. Convenient and preference scores were calculated based on their feedback.

Results 97% mothers applied intervention for all 9 days. 10ml dropper bottle (49.7%) was rated as most convenient by the mothers, gel tube (32.2%) and 100ml bottle (19.8%). Mothers opted 10ml dropper bottle (44.6%) as their first choice over the 100ml bottle (21.5%) or gel tube (33.9%). MCH/hospital staff's choice was to use gel tube (84%) or 10ml dropper bottle (82%).

Conclusions Overall acceptability was high, in terms of convenience and preference 10ml dropper bottle was a winner. Based on their choice the 10ml dropper bottle was selected for RCT.

05 DIFFERENTIAL IN HEALTH-CARE SEEKING BEHAVIOR FOR MOTHERS VERSUS CHILDREN IN RURAL WESTERN INDIA

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Background and aims Health-care seeking behavior is affected by various socio-economic, physical and cultural factors. A proper understanding of such factors can improve access to health-care and focus the development of health outreach programs. We determined factors that influence and differentiate health-seeking behaviors for children compared to care for mothers among women in rural India.

Method Cross-sectional health survey of women, 18–45 years conducted by female interviewers in a hospital clinic and in sixteen surrounding villages in rural Gujarat, India. As a part of the survey, respondents identified the “most significant factor” that influences their decision when selecting a health-care provider. Additionally, respondents with a living child were also asked the same question in regards seeking care for their children.

Results 681 women completed the survey, of which 496 reported having a living child. Of these 496, 193 (39%) identified cost as “most significant factor” when choosing a provider for themselves compared with only to 73 (15%) for their children (χ^2 , $p < 0.0001$). Quality of the care provided is a more significant factor when seeking care for children (11%) than for mothers (4%) (χ^2 , $p < 0.0001$). Education and income significantly influence mothers' behavior when choosing a healthcare provider for themselves, but not for their children.

Conclusion Health-seeking behavior is an important variable in the success of outreach health programs. Mothers in this area of India consider quality of care more and cost less when selecting provider for their children's care in contrast to their own.

06 COMMUNICATION BETWEEN DOCTORS AND PATIENTS/PARENTS IN PAEDIATRIC OUT-PATIENT CLINIC SETTING

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Background General Medical Council (GMC) has produced guidance to standardise what constitutes ‘good communication’ in order to provide a framework for clinicians. Excellent communication in the paediatric setting is challenging and paediatricians are faced with the challenge to meet the needs of heterogeneous paediatric patient group of different ages along with the presence of parents/extended family during the consultation.

Aim To evaluate the communication between doctors and patients/parents in paediatric out-patient clinic setting.

Methods Willing parents and young persons were asked to fill out a standardized questionnaire following their consultation in the children's out-patient clinic. In order to limit bias, the clinicians were blinded and data collection was carried out in the reception area without their knowledge.

Results 100 questionnaires were completed. All parameters scored at least 47% in the ‘excellent’ category. The highest proportions of ‘excellent’ (70%) results were seen in the ‘polite and caring’ category (95% CI 61.02 to 79.98). The area requiring most attention was ‘giving the parents/patients opportunity to ask questions’. Consultants received a higher proportion of ‘excellent’ results than paediatric trainees. Overall satisfaction rate (good and excellent) was close to 90%.

Conclusion Although majority of the feedback on communication was good to excellent, there was room for further improvement. This can be targeted using communication skills tools involving role players in simulated setting during departmental and regional

teaching sessions. Assessment of communication should constitute one of the components of annual appraisals for junior paediatric trainees. This should also be incorporated into GMC's revalidation procedure.

07 HYPOGLYCAEMIA AND HIGHER LEVELS OF HOMOCYSTEINE ARE ASSOCIATED WITH WATERSHED AND WHITE MATTER INJURY IN NEONATAL ENCEPHALOPATHY FOLLOWING HYPOXIA-ISCHEMIA

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Objective Neonatal encephalopathy (NE) is a serious condition, primarily seen following hypoxia-ischemia. Different patterns of brain injury can be recognised following perinatal hypoxia-ischemia (HI). Whether these patterns of injury can be attributed to different associated risk factors still needs to be established.

Aim To identify the association of antenatal, perinatal and thrombophilic risk factors in infants with NE following HI with pattern of brain injury.

Methods In 110 infants with clinical signs of NE following perinatal HI, thrombophilic factors were prospectively investigated. These included factor V Leiden and prothrombin gene mutation, C677T and A1298C polymorphisms in the MTHFR gene and plasma levels of homocysteine and lipoprotein(a). Antenatal and perinatal variables were studied.

Results White matter/watershed injury was seen in 44 infants (40%), basal ganglia/thalamus injury in 34 (31%) and normal neuro-imaging in 32 infants (29%). Antenatal factors did not differ across the different patterns of injury. The basal ganglia/thalamus pattern was associated with emergency Cesarean section. White matter/watershed pattern was associated with hypoglycaemia (< 2.0 mmol/L) (OR 5.3; 1.6–17.8 (95% CI)), CT or TT 677 polymorphism in the MTHFR gene and plasma homocysteine levels in the upper quartile (OR 2.9; 1.01–8.4 (95% CI)) compared to the no injury group.

Conclusion Across three patterns of injury in infants with NE following perinatal HI, predominant white matter/watershed pattern was associated with hypoglycaemia, the MTHFR 677CT or TT genotype, and higher levels of plasma homocysteine. Basal ganglia/thalamus injury showed an association with signs suggestive for more severe, acute HI.

08 IMPACT OF INHALED NITRIC OXIDE ON HYPEROXIA-INDUCED WHITE MATTER DAMAGE IN NEONATAL RATS

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White matter damage (WMD) and chronic lung disease (CLD) are the two main complications occurring in very preterm infants. Clinical and experimental evidence suggest that the use of high oxygen in preterm infants lead to both WMD and CLD. Inhaled nitric oxide (iNO) has been proposed to promote alveolarization in the developing lung, and we have reported that iNO promotes myelination and induces neuroprotection in neonatal rats with excitotoxic brain damage.

We made the hypothesis that iNO may be neuroprotective in rat pups exposed to hyperoxia. Pregnant rats were randomly assigned to hyperoxia (80% O₂) or normoxia for 8 days (E21 to postnatal