Abstract PO-0460 Figure 1 Preterm FFMI increases progressively until 40 weeks, then remains constant over time like terms

FFM and FM can define nutritional depletion or obesity. We present longitudinal data from a large dataset of stable growing infants.

Methods BC data (n = 857) from 574 infants (22–42 wks) enrolled in 4 longitudinal studies, 2/3rd were preterm, was considered as independent data points. Preterms on fortified breast milk or formula (80 kcal/dL), term infants on breast milk or formula (67 kcal/dL). Time points of measurement : after reaching full enteral feeding, at term and two further time points until a maximum of 6 months of corrected age. BC was measured by Dual energy X-ray absorptiometry (QDR 1500; Hologic). R software (GAMLSS) used for construction of growth curves.

Results Length of preterms remain shorter than terms, both increases linearly at 0.7 cm/wk. Median FM/FFM in preterm is 500 g/2450 g (40 wks) and 1700 g/4500 g (60 wks) compared to 430 g/2790 g (40 wks) and 2400 g/4700 g (60 wks) for term. Preterm FMI centiles are higher than terms till 45–50 wks corrected. Preterm FFMI increases progressively till 40 wks, then remains constant over time like terms (Figure 1).

Conclusion Growth pattern for preterm vary from term, justifying their higher nutritional requirement to support rapid FFM growth initially. FM being inverse of FFM, length normalised indices rather than percentages allow independent assessment of growth in each body compartment, while compensating for difference in body size of term and preterm infants.

PO-0460 IDENTIFYING TRAJECTORIES FOR HEALTHY POSTNATAL GROWTH OF PRETERM INFANTS

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Background Growth of preterm infants should follow intrauterine rates. Postnatal loss of extracellular fluid shifts growth trajectories to a percentile below that in-utero. Which 'new' trajectory a preterm infant should adjust to after completed postnatal adaptation is unknown.

Objective 1) To develop a model for postnatal growth trajectories of preterm infants by characterising growth of such infants which required only minimal postnatal support; 2) to predict trajectories for healthy postnatal growth in any given infant.

Methods Inclusion criteria: infants with (A) 30–35 and (B) 24–29 weeks GA, admitted 2008–2012 to participating hospitals. Exclusion criteria: (A)+(B) maternal diabetes/substance use, nosocomial sepsis (positive blood culture until day of life (DoL) 21 (A) nCPAP >3 days, not on full enteral feeds by DoL 10, (B) mechanical ventilation on DoL >3, FiO₂ ≥ 0.3 within first 21 DoL, NEC >stage 2, IVH >2, PVL. Models to predict body weight trajectories on DoL 14 and 21 were developed.

Results 890 infants were eligible of 6915 meeting inclusion criteria. Infants had maximum weight loss by DoL 5, regained birth weight by DoL 11 and showed stable growth parallel to intrauterine percentiles during DoL 7–21. Surprisingly the new trajectory was independent from GA with a z-score difference from birth of (A) -0.96 ± 0.75 and (B) -0.88 ± 0.67 at DoL14. Linear regression models predicted weight at DoL 14 ($R^2=0.88$) and 21 ($R^2=0.82$).

Conclusions 1) The study provides robust estimates of ideal postnatal growth trajectories for preterm infants. 2) The impact on long-term outcome using these trajectories for nutritional adjustment needs to be assessed, ideally in an RCT.

PO-0461 HEART RATE VARIABILITY IN FULL-TERM NEONATES WITH HYPOXIC ISCHAEMIC ENCEPHALOPATHY

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Background Hypoxic Ischaemic Encephalopathy (HIE) remains a significant cause of neonatal death and long term disability. Heart rate variability (HRV) may help identify the presence and severity of encephalopathy. Our aim was to analyse HRV features in full-term neonates with HIE and assess its ability to grade severity of HIE and predict neurodevelopmental outcome at 2-years of age.

Methods This was a retrospective study of healthy full-term neonates and full-term neonates with HIE. All neonates had multichannel EEG and ECG monitoring from as soon as possible after birth. EEGs were graded at 12, 24, and 48 h (mild, moderate, severe) and 1 h epochs of EEG and ECG data were extracted. Features of HRV were calculated from ECG recordings in each epoch. A comparison of HRV features between HIE and healthy groups and within HIE groups (mild/moderate/severe) was performed. The ability of HRV features to predict neurodevelopmental outcome at 2-years of age was also assessed.

Results 44 neonates with HIE and 17 healthy controls were included. Measures of HRV were significantly negatively correlated with EEG grade of HIE severity. HRV was significantly reduced between mild and moderate HIE groups. EEG grade of HIE measured at 12, 24, and 24 h after birth has a strong positive predictive value and reduced HRV at 24 and 48 h has a strong negative predictive value for 2 year neurodevelopmental outcome.

Conclusion HRV features significantly correlate with the grade of HIE severity and may be useful for the prediction of long term outcome.

PO-0462 CEREBELLAR HAEMORRHAGE IN THE PRETERM INFANTS IN A UNIVERSITY REGIONAL TERTIARY NEONATAL UNIT: ULTRASONOGRAPHIC AND CLINICAL RISK FACTORS

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Background Cerebellar haemorrhages (CBH) are increasingly recognised in extremely preterm infants with advances in early ultrasound neuroimaging. Information on incidences, risk factors, mortality and neurodevelopmental sequelae remains limited.

Aim To investigate the incidence of cerebellar haemorrhage in preterm infants diagnosed by ultrasound and identify risk factors and outcomes in a Tertiary Neonatal Intensive Care Unit.

Methods Preterm infants with cerebellar haemorrhage over 5 years (January 2009 to December 2013) were identified from a

systematic electronic radiological database. Cases of cerebellar haemorrhage were diagnosed by cranial-ultrasound using the mastoid window and detailed medical record reviews were done.

Results A total of 13 cases were identified to have cerebellar haemorrhages (2641 infants <35 weeks were born during the study period). The gestation ranged from 23 to 28 weeks and birth weight ranged from 500 to 1940 grams. Isolated Cerebellar haemorrhages were seen in 4 cases (30%) with a preponderance of right sided haemorrhages (55%) and associated supra-tentorial lesions in 9 cases (70%). Analysis identified early postnatal haemodynamic risk factors. Neonatal mortality was significantly high amongst cases with combined cerebellar and supra-tentorial haemorrhage.

Conclusion In our study cerebellar haemorrhages is predominantly seen in the extreme preterm infants. It is associated with high mortality and predictors of risk factors appear to be multifactorial and include early postnatal haemodynamic factors. Early diagnosis and developmental follow-up help to identify infants with highest risk of developing long-term neurodevelopmental sequelae.

PO-0463 LOW INCIDENCE OF NEUROSENSORY DEAFNESS IN INFANTS TREATED WITH HYPOTHERMIA FOR NEONATAL HYPOXIC-ISCHAEMIC ENCEPHALOPATHY CAN BE RELATED TO AVOIDANCE OF OTOTOXIC ANTIBIOTICS

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Background and aims Hypoxic-ischaemic encephalopathy is a risk factor for neurosensory deafness. Incidences up to 10% were described by some groups. Hypothermia can alter drug metabolism leading to increased risk of toxic levels. We aim to evaluate the incidence and identify risk factors for deafness in our patients.

Methods We studied all infants treated with hypothermia at our NICU in a 4-year period (2010–2013). Demographic and clinical data, including drug use and hearing screening result, were collected from our prospectively collected database. Hearing follow-up of children now over 24 months was also collected.

Results 50/59 newborns treated survived (66% male, mean GA 39 weeks, mean BW 3121 g, median Apgar scores 2/4/5, 84% ventilated >4 days, 54% inotropes, 6% >2 anticonvulsants, 64% furosemide). Initial antibiotherapy was ampicillin+cefotaxime in 96%, vancomycin was used in 12% for late sepsis (toxic levels in 1/6 patients). Auditory evoked-potentials performed in 92%, acoustic otoemissions performed in 4%, no hearing screening test on 4%. Only 2 failed on hearing screening, one died and the other is being evaluated. On follow-up of 17 patients at 2 years, 16 have normal hearing and 1 is being treated for hearing loss due to glue ear.

Conclusions Despite potential risk factors on our patients, the occurrence of deafness was rare. Our protocol that avoids the use of gentamicin as first line antibiotic therapy can explain the important difference in incidence when compared to other studies. When their use is unavoidable, close monitoring of ototoxic drug levels should be performed.

Abstract PO-0462 Table 1 Early postnatal risk factors and mortality rates associated with cerebellar haemorrhages

Age at diagnosis	Day 1 to 14
Chorioamnionitis	4/13 (30%)
RDS	13/13 (100%)
Hypotension/PDA	9/13 (69%)
Anaemia	8/13 (61%)
Thrombocytopenia	5/13 (38%)
IVH and CBH	9/13 (69%)
Early Mortality	7/13 (53%)