

Results 168 children included aged 5.1 ± 0.1 years. 133 preterm-born children, born: 29.2 ± 1.4 weeks gestation; 35 full-term children aged five.

Systolic BP (sBP) was 97.5 ± 7.1 mmHg in preterm-born children versus 92.2 ± 8.1 mmHg in full-term controls, $p=0.0001$. In preterm-born children, sBP increased by ($\beta \pm \sigma$): 2.2 ± 1.0 mmHg for each gram/kg increase in proteins/day on day 28, and decreased by -3.0 ± 1.4 in case of bronchopulmonary dysplasia, after adjustment on gender and height at five years.

eGFR was 176.3 ± 37.1 mL/min/1.73m² at five in preterm-born children. It was significantly decreased when children had presented hyaline membrane disease or necrotising enterocolitis, respectively ($\beta \pm \sigma$): -17.6 ± 6.7 and -25.7 ± 10.4 mL/min/1.73m². eGFR at five was not associated with neonatal nutrition.

14.4% preterm-born children had an albumin ratio >2 mg/mmol vs. 11.1% full-terms, $p=0.7$.

Renal volume, absolute or relative, at five years was negatively correlated to protein intakes from day 14 onwards in the neonatal period: $R=-0.69$, $p=0.006$.

Conclusion Protein intakes in the neonatal period are associated to an increased BP and decreased renal volume in five year-old preterm-born children.

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HUMAN MILK FORTIFICATION WITH DIFFERENT AMOUNTS OF FORTIFIER AND ITS ASSOCIATION WITH GROWTH AND METABOLIC RESPONSES OF PRETERM INFANTS

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Background Fortification of human milk (HM) is a common clinical practice to adapt human milk to the nutritional needs of very low birth weight infants. The optimal method for HM fortification still remains to be determined and a great variety of protocols are currently used in the neonatal intensive care units.

Objective Since it is believed that the standard fortification is insufficient to meet the needs of VLBW, we designed a randomized prospective study in which blind fortification was administered in three different amounts of fortifier and aimed to assess short term growth and metabolic responses of preterm infants.

Methods Eligible infants were randomized into three groups; standard fortification (SF), moderate fortification (MF) and aggressive fortification (AF) groups. Short term growth, feeding intolerance and urea, calcium, phosphorus, alkaline phosphatase levels were assessed.

Results Twenty six, 29 and 29 infants were eligible in SF, MF and AF group, respectively. The baseline characteristics of the groups were similar. Daily weight gain, length at discharge did not differ between groups however head circumference was significantly higher in MF and AF group when compared with SF group. Urea, calcium, phosphorus, alkaline phosphatase levels were similar between groups.

Conclusion We demonstrated that blind fortification of HM even with higher amounts than recommended by commercials was safe and did cause a marked effect on weekly increase in head circumference but not on the other anthropometric measurements and metabolic responses of preterm infants.

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PARENTERAL NUTRITION IN VERY LOW BIRTH WEIGHT NEWBORNS: AUDIT OF CLINICAL PRACTICE

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Background and Aims Parenteral nutrition (PN) is an integral part of neonatal intensive care, especially in the early nutritional support of very low birthweight (VLBW) newborns. However, it is associated with potentially serious complications such as sepsis and metabolic derangement. The aim of the study was to review PN use and complications in VLBW newborns at Royal Bolton Hospital with specific European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) guidelines as the standard.

Methods PN use was reviewed in all VLBW newborns who received PN for more than 1 day during January 2009 to December 2010. ESPGHAN standards audited were the time of commencement of PN and composition of the PN bag.

Results Of the 42 VLBW newborns included, the median gestational age and weight was 27^{+0} weeks and 923g respectively. In this group, 24% of newborns met the ESPGHAN standard for amino acid commencement and 88% for lipid commencement. The glucose and phosphate content of the PN bag did not match ESPGHAN standards as the glucose content was higher and phosphate content lower than recommended. Most common PN complication was hyperglycaemia (64%), followed by hypophosphataemia (45%) and sepsis (38%). Coagulase negative Staphylococci were the most common organism cultured (94%).

Conclusion There was a delay in commencement of PN. To achieve full compliance with ESPGHAN guidelines, amino acids and lipids should be commenced as recommended. Modifying constituents of the PN bag may help reduce complication rates of hyperglycaemia and hypophosphataemia.

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BACTERIAL COLONIZATION OF PRETERM INFANTS: IMPACT OF BIOFILM FORMATION ON THE NASOGASTRIC FEEDING TUBES

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Background Nowadays, hospitals foment breastfeeding or human donor milk to provide the best feeding option to the preterm infant. This fact may represent a key factor in the initiation and development of the infant gut microbiota.

Aims To analyse the bacterial diversity in meconium and feces of preterm neonates and to evaluate the impact of the nasogastric enteral feeding tubes and the feeding option in its evolution.

Method 26 mother/preterm neonates (<32 weeks gestation) pairs participated in the study providing a sample of colostrum/breast milk and meconium/feces. Milk samples were obtained after their pass through the nasogastric feeding tubes. Samples were plated onto different culture media. The isolates were identified by PCR sequencing. Scanning electron microscopy (SEM) was used to observe biofilm formation on the feeding tubes.

Results Approximately 4,000 isolates were identified. The dominant genera in both samples were *Staphylococcus*, *Enterococcus*, *Serratia*, *Klebsiella* and *Escherichia*. They were present at high concentrations independently of the feeding option. Lactobacilli and bifidobacteria were detected in a low percentage of the samples. Analysis of several parts of the nasogastric tubes by SEM revealed the presence of a dense bacterial biofilm. Biofilms were composed of the same bacterial groups that dominated in the fecal and milk/formula samples.

Conclusions There is a direct relationship between the high bacterial concentrations found in the biological samples and the biofilm formed in the nasogastric tubes. Fecal microbiota of preterm neonates are strongly influenced by those species highly prevalent the hospitalary environment.