Conclusions DM supplement to MM supports growth in VLBWI without adversely affecting LowNa or NumNa.

### 1398 EFFECT OF FORTIFIERS AND ADDITIONAL PROTEIN ON THE OSMOLARITY OF HUMAN MILK: IS IT SAFE FOR THE PREMATURE INFANT?

doi:10.1136/archdischild-2012-302724.1398

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**Background and Aims** A new additional protein supplement (Aptamil Protein+®/Milupa) was developed to meet special protein requirements of infants with a birthweight below 1000g (4.0–4.5 g protein/kg/day). So far it was unknown, how this new protein supplement influences osmolality, which is known to be a risk factor for necrotising enterocolitis (NEC). The aim of this study was to evaluate the effects of fortification on the osmolarity of human milk (HM).

**Methods** Osmolality of breast milk was measured in native HM, in HM+HMF (human milk fortifier; Aptamil FMS 4.3%, Milupa) and in HM+ HMF+ Protein+ gaining in 0.5 g steps up to 4 g. Measurements were performed immediately after adding on fortifier and/or protein and after 24 hours. In addition, changes in osmolality after adding therapeutic additives like iron (Ferrum Hausmann®, Vifor), multivitamin supplement (Protovit®, Bayer) and calcium-phosphorus capsules were measured.

**Results** Osmolality of native human milk (n=84) was 297mosm/l, (Median, Range 278–348). Adding HMF increased osmolality up to 436mosm/l (Median, Range 356–486). Additional Protein+ supplement increased osmolality by 25.5mosm/l (Median) per 0.5g step, up to a maximum of 605 mosm/l (+4g). Osmolality of HM/fortifier/Protein+ mixes remained stable for 24 hours. Multivitamin supplements increased osmolality up to 842mosm/l.

**Discussion** Additional Protein+ increased osmolality of HM up to a critical cut off point (400mosmol) and therefore might be a risk factor for developing NEC. Additional fortification of HM +HMF with Protein+ should not be applied together with multivitamins or other additives.

### 1399 NUTRITION OF THE EXTREMELY LOW BIRTH WEIGHT (ELBW) INFANTS: ARE WE MAKING A DIFFERENCE?

doi:10.1136/archdischild-2012-302724.1399

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**Background** Adequate nutrition of ELBW infants is difficult to achieve, yet crucial for their survival and neurodevelopment. Awareness of the problem and consistency in the care provided is a necessary step for improving outcome.

**Aim** To evaluate the impact of recently instituted nutritional guidelines in ELBW in our NICU.

**Methods** Our NICU instituted nutritional guidelines in July 2008 after exhaustive review and discussion of best available evidence. Recommendations included early introduction of trophic enteral feeding (TF), timing and rate for advancing enteral feeds and criteria for its discontinuation, among others. We performed a retrospective review of charts in all ELBW admitted between January 2007 and December 2010. Demographic information, time to introduction of TF, age at which feedings were advanced and full feed were achieved, days on Total Parenteral Nutrition (TPN) and days of Percutaneously Inserted Central Catheters (PICC), growth parameters and outcome were analyzed and compared for ELBW population before (Period 1) and after (Period 2) the institution of nutritional guidelines.

**Results**

**Abstract 1399 Table 1** Comparison between Period 1 and Period 2

<table>
<thead>
<tr>
<th></th>
<th>Period 1 (n=83)</th>
<th>Period 2 (n=103)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF at 48 hs (%)</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>Enteral feeds &gt; 20 ml/kg by DOL 7 (%)</td>
<td>42</td>
<td>60 *</td>
</tr>
<tr>
<td>Full feeds at DOL 28 (%)</td>
<td>41</td>
<td>80 *</td>
</tr>
<tr>
<td>Days on TPN (mean±SE)</td>
<td>32±3.8</td>
<td>22.7±2.4 *</td>
</tr>
<tr>
<td>PICC days (mean±SE)</td>
<td>32.7±4.2</td>
<td>21.4±2.5 *</td>
</tr>
<tr>
<td>NEC Stage 2 (%)</td>
<td>12.7</td>
<td>13</td>
</tr>
</tbody>
</table>

*p≤0.05; #p≤0.02.

**Conclusions** The institution of nutritional guidelines resulted in significant improvement in nutritional indicators in our population.

### 1400 BODY FAT IN VLBW IS INFLUENCED BY DURATION OF TOTAL PARENTERAL NUTRITION (TPN)

doi:10.1136/archdischild-2012-302724.1400

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**Background** Adequate postnatal nutrition and growth are essential for optimal neurodevelopment in VLBW infants. In an effort to optimize nutrition, early TPN implementation is recommended while enteral nutrition is achieved. However, excessive caloric intake could result in disproportionate accretion of body fat leading to metabolic syndrome later in life.

**Aim** To identify the influence of early postnatal nutrition on body fat composition in VLBW infants.

**Design/methods** We included all infants admitted to our NICU from July 30, 2011 to December 31, 2011 with a birth weight ≤1500 grams that survived at least 4 weeks and received TPN. We excluded infants with major congenital anomalies. Body composition was measured weekly using an air displacement plethysmograph (Pead, CosMed).
Results  Twenty two infants met inclusion criteria. Over 90 measurements were obtained. TPN days ranged from 5 to 39 days. Seventeen infants (77%) received TPN for less than 21 days of TPN. Their mean percent of body fat was 10.9%, significantly lower than the 22% measured in those babies on ≥ 21 days on TPN.

Conclusion  In our population of VLBW, those who received TPN for longer than 3 weeks have a significant increase in body fat composition. This could result in increased risk for metabolic syndrome in early adulthood in this population. Our eagerness to avoid postnatal malnutrition could lead to an iatrogenic neonatal origin of adult disease. We are currently analyzing potential confounders and the TPN composition associated with these findings.

Abstract 1401  COMPUTER AIDED NUTRITION - EFFECTS ON GROWTH IN PRETERM INFANTS GA < 32 WEEKS

doi:10.1136/archdischild-2012-302724.1401

Background and Aims  Preterm infants (PI) are often discharged from the NICU with suboptimal growth. It seems obvious that a commercial nutrition calculating program (NCP) could help to compute macro- and micro nutrients more easily. The aim of this intervention study was to determine whether a NCP could optimise the growth of PI.

Methods  In 78 PI (GA<32+0) cases grouped in 35 PI before (CG) and 43 after (IC) the implementation of the NCP Nutrium weight, length and head circumference at birth, day 28, GA 36 and discharge were compared.

Additionally daily intake of total fluid, energy, carbohydrate (CH), aminoacids (AA), fatty acids (FA), Na, K, Ca, Mg, P, Fe, Zn and vitamine A, E and D in postnatal weeks 1–7 were recorded and compared.

Results  AA, CH, Ca, P, Zn intake was significantly increased. FA and total energy was marginally increased in week 1. Vitamin A, E and D intake was optimised in IG and tended to be overdose in CG (Recommendations based on Tsiang/ESPGHAN).

Conclusion  By using the NCP growth overall and especially length-growth was significantly optimised in PI (GA<32+0) trough optimising intake of CH, AA, Ca, P, Zn. In the IG it was more likely that Vitamins were dosed correctly.

Abstract 1402  CHANGES ON PARENTERAL NUTRITION FOR VERY PRETERM BABIES DURING THE FIRST WEEK AND THEIR EFFECT ON GROWTH DURING ADMISSION

doi:10.1136/archdischild-2012-302724.1402

Introduction  During pregnancy the fetus swallows and absorbs an increasing amount of amnioticfluid. It remains unclear whether a lack of absorption of amniotic fluid may result in low birth weight (BW). There are a few studies evaluating the significance of amniotic fluid on fetal growth and the their results are controversial. This study was carried out to evaluate the intraterine nutritive role of amniotic fluid on fetal growth.

Method  Neonates with atresia of gastrointestinal tract (GIT) during a period of 12 years were studied retrospectively. 29 from 100 patients were excluded from the statistical analysis because of VATER (VACTERL) association (8), chromosomal abnormalities (11) and congenital heart anomalies (10). BW and birth length (BL)