6.3(2–11) days. Average weight gain was 14.5g/kg/day for E1 and 17.8g/kg/day for E2 cohort (p<0.05). No patients in either epoch had necrotising enterocolitis.

Conclusions We demonstrate that feeding regime standardisation results in better early weight gain. The latter has been associated with improved long-term motor and cognitive development, as shown by Franz et al in 2009. Our sample size prohibits further conclusions. More studies including larger numbers are warranted.

1395 MASSAGE THERAPY BY MOTHER OR NURSE: EFFECT ON WEIGHT GAIN OF PREMATURE INFANTS

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Introduction Since the introduction of surfactant the survival rate of preterm infants increased significantly. This has brought the expert's attention to maximizing the growth and development of this fragile population. Many studies demonstrated that massage has some roles in the weight gain of preterm infants. Our aim is to compare the effect of massage therapy among those who were massaged by a nurse or mother or none.

Method Our randomized clinical trial has three groups;

1. The infants who only received routine care and no massage,
2. those who received massage by an expert nurse and
3. and those who received massage by their mothers.

We recorded daily weight gain, the length of stay and fluid intake. We used the Kriskal-wallis test and the SPSS software.

Results The gestational age ranged between 28 to 34 weeks. At the end of the fifth day the group who were massaged by a nurse had significantly more weight gain compared to the other two groups. With 6.5+1.5 for the nurse group, 1+4.6 for the mother group and 1.5+3.7 for the control group, P-value = 0.001. Those who were massaged by their mother had gained significantly more than the control group P-value=0.05. there was no significant difference in the length of hospital stay among groups.

Discussion Our study shows that the five days massage therapy is a safe procedure for stable preterm infants to facilitate their weight gain. Mothers can perform this procedure. However more studies are needed to increase the efficacy of their performance.

1396 CAN EARLY PARENTERAL LIPID AND HIGH DOSE AMINO ACID ADMINISTRATION IMPROVE GROWTH IN VLBW INFANTS?

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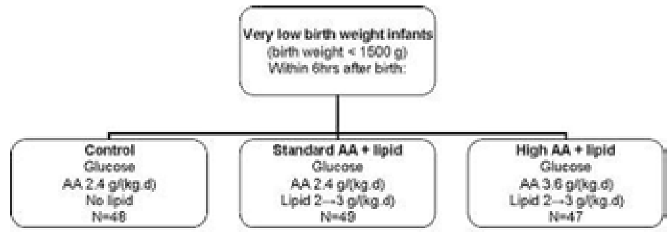
Introduction The beneficial effects of early nutrition in preterm infants are well known. Nonetheless, almost all very low birth weight (VLBW; BW < 1500g) infants develop a protein and energy deficit in the first week of life and are growth impaired at discharged home.

We hypothesized that early parenteral lipid and high dose amino acid (AA) administration from birth onwards to VLBW infants is safe and increases growth.

Methods Inborn VLBW infants were randomized to one of three different parenteral nutritional regimens within 6hrs after birth (Figure).



Abstract 1396 Figure 1 Study design

Growth rates during the first 28 days of life and during total hospital stay were calculated and the incidence of common neonatal morbidities (e.g., BPD, PDA, NEC, sepsis, IVH, ROP) was recorded.

Results Growth was not significantly different between groups (Table; mean±SD). Mortality and the incidence of common neonatal morbidities were not significantly different between groups.

Abstract 1396 Table 1 Growth rates

	Control	Standard AA + lipid	High AA + lipid
Regain birth weight (d)	8±4	8±4	9±6
Weight gain first 28 days (g/(kg.d))	12.9±5.5	12.9±5.0	12.5±5.9
Head circumference gain first 28 days (mm/wk)	6.6±3.7	5.6±2.8	5.9±2.4
Weight gain until discharge home (g/(kg.d))	26.7±9.5	24.9±5.4	27.3±6.6

Conclusion Introduction of 2g lipids/(kg·d) and 3.6g AA/(kg·d) from birth onwards seems safe and does not affect the incidence of common neonatal morbidities. Growth was not improved by increasing amino acid or lipid intake in first few days of life.

1397 WEIGHT GAIN (WG) AND SODIUM MONITORING IN VLBW INFANTS (VLBWI) FED DONOR HUMAN MILK (DM+) VERSUS NO DONOR MILK (DM-)

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Background and Aims The impact of supplementing mother's milk (MM) with donor milk (DM) upon VLBWI WG and serum Na (sNa) is unclear. This study aimed to compare WG, lowest sNa (LowNa), and number of sNa samples (NumNa) between birth and 56 days in DM+ versus DM- VLBWI.

Methods Single-center clinical/nutritional data, weekly weights and all sNa during the first 56 days were collected between 10/2009–9/2011 for inborn VLBWI still hospitalized at 28 days. DM was tested for association with WG, LowNa, and NumNa.

Results 95 VLBWI were studied, with GA 28.4±2.8 weeks, BWt 1031±295 grams, 29 (31%) DM+. Median enteral intake in the first 28 days (EI28) was 1791 ml (range 0–5882); among DM+, median DM intake (DMI28) was 787 ml (range 76–2105). DM+ versus DM- did not differ in GA, BWt, gender, race, EI28, or days on ventilator, CPAP or parenteral nutrition in the first 28 days. At 56 days, overall median (IQR) WG was 1047 (902, 1192) gm/kg BWt, overall LowNa was 132 (128.5, 135) mEq/L. NumNa was 19 (9.5, 37). In univariate analysis, DM+ and DM- did not differ regarding WG, LowNa, or NumNa (Table1). In multivariable linear mixed modeling DMI28 was associated with a statistically significant but trivial decrease in LowNa (Table2), and was not an independent determinant of WG or NumNa.

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

Table 1: Univariate comparisons of VLBW infants receiving any donor human milk (DM+) and no donor milk (DM-). The two groups did not differ with respect to lowest serum Na, number of serum Na samples, or weight gain.

	DM+	DM-	P*
Lowest serum Na between birth and 56 days, mEq/L	134 (129, 135)	131.5 (128, 135)	0.509
Number of serum Na samples between birth and 56 days	15 (9, 33)	20.5 (11, 37)	0.363
Weight gain at 28 days, grams/kg BWt	239 (230, 409)	292 (230, 395)	0.193
Weight gain at 56 days, grams/kg BWt	1034 (931, 1190)	1048 (893, 1209)	0.368

*Mann-Whitney U test.
Data given as median, (25th, 75th percentile). BWt: birth weight

Table 2: Multivariate linear mixed model examining lowest serum Na between birth and 56 days of age in VLBW infants. Each 100 ml of donor milk intake was associated with a 0.12 mEq/L reduction in lowest serum Na after adjusting for age, prematurity, illness severity, and overall nutritional intake.

	Lowest serum Na, mEq/L	95% CI	P
Adjusted mean at 28 days, mEq/L	136	129, 143	<0.001
Day 35, compared with day 28	-0.18	-1.55, 1.20	0.799
Day 42, compared with day 28	1.14	-0.28, 2.56	0.113
Day 49, compared with day 28	1.13	-0.27, 2.53	0.112
Day 56, compared with day 28	1.46	0.08, 2.83	0.038
GA, per week	0.07	-0.33, 0.47	0.731
BWt, per 100 grams	0.02	-0.01, 0.05	0.268
Days on mechanical ventilator or CPAP in 1st 28 days, per day	-0.09	-0.19, 0.01	0.057
Donor milk intake in 1st 28 days, per 100 ml	-0.12	-0.21, -0.03	0.007
Total enteral intake, 1st 28 days, per 100 ml	-0.01	-0.13, 0.11	0.831
Days parenteral nutrition in 1st 28 days, per day	-0.03	-0.24, 0.17	0.745

BWt: birth weight; GA: gestational age

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

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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 osmolarity, 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 Osmolarity 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 osmolarity after adding therapeutic additives like iron (Ferrum Hausmann®, Vifor), multivitamine supplement (Protovit®, Bayer) and calcium-phosphorus capsules were measured.
Results Osmolarity of native human milk (n=84) was 297mosm/l, (=Median, Range 278–348). Adding HMF increased osmolarity up to 436mosm/l (=Median; Range 386–486). Additional Protein+ supplementation increased osmolarity by 23.5mosm/l (Median) per 0.5g step, up to a maximum of 605 mosm/l (+4g). Osmolarity of HM/fortifier/Protein+ mixes remained stable for 24 hours. Multivitamin supplements increased osmolarity up to 842mosm/l.
Discussion Additional Protein+ increased osmolarity 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?

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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 neccesary 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

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

*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)

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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 (Pea-Pod, CosMed).