Abstract 1349 Table 1

	Treatment with Abidec Median (range)	Treatment with Cholecalciferol Median (range)
Birth Weight (kilogram)	3.26 (2.25–5.01)	3.27 (1.94–4.72)
Gestaional Age (weeks)	39.5 (36–42)	40 (36–43)
Initial Vitamin D levels (ng/dl)	14.9 (3.1–54)	12.8 (1.3–69.8)
Post Treatment Vitamin D levels	32.2 (11.6–44.1)	40.6 (26.3–8–0.2)
Time from birth to initial Vitamin D levels (days)	1 (0–69)	2 (0–38)
Time between initial and post treatment Vitamin D levels (days)	49 (37–122)	77 (18–266)

Conclusions Abidec alone is effective treatment for infants with maternal vitamin D deficiency.

1350 LOW 25-HYDROXYVITAMIN D LEVEL AND ADIPONECTIN IS ASSOCIATED WITH INSULIN SENSITIVITY IN LARGE GESTATIONAL AGE INFANTS

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Objective To investigate the relationship between adipokines (visfatin, adiponectin) and 25-hydroxyvitamin D (25(OH)D), and markers of insulin sensitivity in large for gestational age (LGA) infants.

Patients and Methods Forty LGA infants (25 LGA born to diabetic mothers and 15 LGA born to non-diabetic mothers) and 34 appropriate for gestational age (AGA) infants were recruited.

Results FGIR, QUICK-I, adiponectin and 25(OH)D levels were significantly lower in LGA with diabetic mother group than AGA and LGA with non-diabetic mother group. HOMA-IR, fasting insulin, visfatin and parathormone (PTH) levels levels were significantly higher in LGA with diabetic mother group than AGA and LGA with non-diabetic mother group.

Conclusion Based on the findings of this study, visfatin, adiponectin and 25(OH)D levels can be used as specific markers for insulin sensitivity and may help advance new therapies for glucose intolerance spectrum.

1351 OSTEOPENIA IN HIGH RISK PRETERM POPULATION IN MANITOBA: A CASE-CONTROL STUDY

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Background Despite recent advances in care of VLBW infants, osteopenia of prematurity (OP) remains an important problem in most NICUs.

Objective To compare demographic, perinatal and postnatal characteristics of OP in VLBW babies admitted to our Level III NICU, to elucidate risk factors and association of biochemical bone markers with radiological changes and the clinical outcome.

Design/methods Infants born ≤29 weeks GA and admitted between October 2007 to January 2011. Only those infants with both chest X-rays and biochemical markers at or beyond 6 weeks post natal age were included. Infants were grouped as cases and controls based on serum Ca, P, ALP and X-ray findings and were stratified by GA: 24–25, 26–27 and 28–29 weeks. X-ray findings and biochemical results were considered in 2 week periods.

Results Of 176 potentially eligible infants 54 (GA 26.9±0.2 wks, BW 970±34 g) met the criteria for inclusion. 26% of the cases vs. 3% of the controls were from communities north of the 55° latitude ($p<0.05$). Serum Ca levels were within the normal range, but serum P levels were subnormal. The most significant biochemical discriminator between the two groups was the serum ALP level.

Table: Main characteristics of the groups. (Mean ±SE)

	24-25 GA		26-27 GA		28-29 GA	
	Cases (n:6)	Controls (n:6)	Cases (n:10)	Controls (n:14)	Cases (n:7)	Controls (n:11)
Gestational age (wk)	24.8±0.2	25±0.1	26.3±0.1	26.7±0.2	28.7±0.2	28.6±0.2
Birth weight (g)	818±49	793±42	918±87	945±39	1023±132	1194±72
Mech. Vent. (d)	50±6	44±7	26±4	25±8	17±3	16±4
CPAP&Nasal flow(d)	119±15	119±11	108±14	83±12	67±13	75±10
Ca (mmol/L)	2.3±0.03	2.3±0.06	2.3±0.04	2.27±0.04	2.24±0.05	2.3±0.04
P (mmol/L)	1.7±0.05	1.84±0.06	1.7±0.05	1.76±0.04	1.64±0.08*	1.82±0.04
ALP (IU/L)	449±21**	308±17	405±22**	287±12	390±33**	285±16
Albumin (g/L)	24.3±0.8	24.9±1	24.9±0.7*	26.8±0.7	23.4±0.9*	26.2±0.9

*p<0.05, **p<0.01, between cases and controls

Conclusions Our results suggest that geographic factors may be a surrogate marker for maternal factors contributing to the etiology of OP. Future prospective studies may be helpful to define this. Biochemical markers, excepting ALP, are not predictive for OP diagnosis.

1352 SURVEY OF MANAGEMENT OF NEONATAL HYPERGLYCAEMIA IN LEVEL 3 NEONATAL UNITS IN UK

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Introduction and aim: Hyperglycaemia in preterm babies is a common problem. It is known to be associated with an increased risk of morbidity and mortality, especially in extreme preterm babies. Despite this, there is little established consensus of management. Nonetheless, practice is improving as the neonatal units develop local guidelines on the basis of the limited available research. Currently we don't know the specifics of the prevailing practice, and this is the first needed step in order to carry out any substantial further research.

We carried out the survey to study the prevailing practice in level 3/tertiary units in the United Kingdom.

Methods We collated a list of level 3 units from the British Association of Perinatal Medicine (BAPM) website. We sent an online questionnaire to the Neonatal Consultant. We followed up with a phone call to get more responses.

Results We received responses from 51 units (81%). It showed that the 80% of units either follow local or regional guidelines and the majority (78.4%) now use gas machine for measuring blood glucose. We found there is quite a variation in definition of hyperglycaemia, modalities of management, insulin regimen and the endpoint of treatment.

Conclusions Management of neonatal hyperglycaemia is very unit dependant. We agree with other experts that large randomised trials in hyperglycaemic VLBW neonates that are powered on clinical outcomes are needed to determine whether and how the hyperglycaemia should be treated.

1353 INSULIN-TREATED HYPERGLYCAEMIA IS ASSOCIATED WITH LOWER AMINO ACID LEVELS IN VERY PRETERM INFANTS RECEIVING PARENTERAL NUTRITION

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Background Hyperalimentation describes the increase in glucose, amino acid (AA) and lipid intake designed to overcome postnatal growth failure in preterm infants. We have previously shown increasing parenteral AA intake increased 14/22 individual AA levels with only tyrosine lower. Hyperalimentation increases hyperglycaemia requiring insulin treatment. We hypothesised insulin administration may increase AA utilisation so lowering AA levels.
Aim To compare the plasma AA profiles in preterm infants with insulin-treated hyperglycaemia with those whose did not receive insulin.
Methods Infants < 29 weeks gestation were originally randomised to receive hyperalimentation (25% more glucose, 4g/kg/day versus 3g/kg/day protein/lipid) or a control regimen within 5 days of birth with head growth as the primary outcome. The study protocol recorded actual nutrient intake and parenteral nutrition "intolerance" including hyperglycaemia, insulin use and AA profiles. AA levels were measured on day 9 (ion exchange chromatography).
Results 118 AA profiles were obtained from 142 infants on day 8–10. Secondary analysis restratified data to compare insulin (n=57; hyperalimentation n=37) with no insulin (n=61; hyperalimentation n=20) treatment. Infants receiving insulin were of lower gestation/birthweight ($p<0.01$) and received more protein (3.0g/kg/day versus 2.7g/kg/day; $p=0.02$) mainly as intravenous AA, when compared to those not receiving insulin. The insulin-treated group had lower levels in 9/22 AAs ($p<0.05$) and no statistically significant difference in the remaining 13 ($p>0.05$).
Conclusion Preterm infants with insulin-treated hyperglycaemia have lower AA levels on day 8–10 despite lower birthweight, gestation and higher protein intake. This suggests exogenous insulin may improve AA utilisation for protein synthesis.

1354 EVALUATION AND COMPARISON OF CALCIUM AND PHOSPHORUS IN THE IMPROVEMENT OF METABOLIC BONE DISORDER IN PREMATURE INFANTS

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Background Metabolic bone disease is a common condition among premature Neonates. The aim of this study was to determine the impact of calcium and phosphorus on radiological and biochemical character osteopenia in premature neonates.
Methods This trial was done in forty premature Neonates over a period of six months in the All these babies are fed with breast milk, and 400 units of vitamin D daily They, randomly divided into two groups. Half of these babies received supplement of Calcium (45 mg/kg/day) and phosphorus (24mg/kg/day).

Serum calcium, phosphorus, and alkaline phosphatase with growth parameters (including weight, height, and head circumference) was measured every two weeks. At the end of this time wrist x-ray for evaluating of osteopenia was done. The collected data was analyzed with SPSS 11.5.
Results Radiological changes characteristic of osteopenia have been found in 40% (8 cases) of infants in the case group and 65% (13 cases) of infants in the control group ($P= 0.113$). Serum calcium, phosphorus, and alkaline phosphatase levels was not statistically different ($P>0.05$). Weight gain was similar in both groups ($P= 0.097$). but, linear and head circumference rise in the case group were significantly greater than control group ($P= 0.002$ and $P= 0.015$, respectively).
Conclusion Calcium and phosphorus supplementation in preterm breast-fed infants were seem to be effective on prevention of osteopenia and improvement of growth. Thus, we recommend oral calcium and phosphate supplement addition accompanying with breast-feeding in premature neonate.

1355 INCIDENCE OF SERUM HYPOPHOSPHATEMIA IN GROWTH RESTRICTED AND APPROPRIATELY GROWN PRETERM INFANTS

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Background Infants with intrauterine growth restriction (IUGR) often have metabolic and electrolyte abnormalities. Our aim was to determine the incidence of hypophosphatemia in IUGR versus appropriate for gestational age (AGA) premature infants.
Methods A retrospective review of infants ≤32 weeks or ≤1500 grams who had a serum phosphorus within 48 hours after birth. We collected maternal and neonatal demographic data and electrolyte values. Infants below the 10th percentile on the Fenton Growth Curve were categorized as IUGR. Serum hypophosphatemia was defined as < 4mg/dL and serum hypokalemia as < 3.5mg/dL.
Results Over a 4 year period, 304 infants were eligible. Of these, 54 were IUGR (mean birth weight (BW) of 848 grams and mean gestational age (GA) of 28+6 weeks) and 250 were AGA (mean BW of 1067 grams and mean GA of 27+6 weeks). 48% of the IUGR infants had hypophosphatemia compared with only 6% of the AGA infants ($p<0.05$). The IUGR infants with hypophosphatemia had a lower birth weight and GA than the IUGR infants without hypophosphatemia. This difference was not observed among AGA infants. 15.1% of the IUGR infants (8/53) had a serum potassium of < 3.5mg/dL compared to 7.6% of the AGA infants (19/250). There was a moderate correlation between serum phosphorus and serum potassium. Overall mortality was < 1%.
Conclusions Hypophosphatemia is very common among IUGR infants < 32 weeks GA and there is a moderate correlation with hypokalemia. These electrolyte abnormalities probably reflect adaptive mechanisms associated with growth restriction in utero.

1356 CONTINUOUS GLUCOSE MONITORING IN VERY LOW BIRTHWEIGHT PRETERM INFANTS ON FULL ENTERAL FEEDS

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Background We previously observed hypoglycaemic episodes in preterm infants after achieving full enteral feeds and during a stable postnatal period. The purpose of this study was to prospectively determine subcutaneous glucose levels in this population.
Methods Preterm infants < 32wks gestational age were enrolled for continuous subcutaneous glucose monitoring over 72hrs in two cohorts: A: 500–999g (n=16); B: 1000–1500g (n=9). All infants were fed according to a standard feeding protocol where full feeds are provided at 150–180ml/kg/d of fortified EBM or premature formula at 110–135kcal/kg/d. Primary outcome was the frequency and quality of hypoglycaemic episodes within 72 hours, defined as tissue glucose < 2.5mmol/L.
Results 81.3% of the infants in A and 44.4% in B showed relevant glucose fluctuations during monitoring. Hypoglycaemic episodes occurred in 37.5% in group A, compared to 22.2% in group B. In group A 7% of infants showed glucose values below 1.7mmol/L. We also observed hyperglycaemic episodes (>8.3mmol/L) after feeds (A: 57%, B:17%), followed by rapid drops in both cohorts. Cumulatively, all hypo- and hyperglycaemic episodes lasted >60 min (16%), 35–60 min (21%), 10–30min (60%) and < 5min (3%) per patient. The main risk factors for glucose instability were gestational age and weight at trial.