Abstract PO-0578 Figure 1

Objective To assess the impact of phototherapy as the risk factor on the reduction of serum globulin in neonatal hyperbilirubinemia.

Methods Total of 430 full term infants aged at 1–28 days diagnosed with neonatal hyperbilirubinemia was enrolled in this study. Intrauterine infection, genetic abnormal and congenital diseases was excluded. All newborns received single-side phototherapy (halogen lamps for 12 h per day, 3 days) or plus intravenous albumin (1 g/kg.d, two days) or plus intravenous immuneglobulin (1 g/kg.d, two days). The total serum bilirubin (TSB), albumin (ALB) and globulin (GLB) levels were detected twice at the first day and fourth day of hospitalisation respectively.

Results TSB concentrations decreased from 299.6 ± 83.9 μmol to 163.6 ± 57.6 μmol/L after three days intensive treatment (p < 0.001). Pearson correlative analysis shows that TSB is significant correlated to GLB level (r = 0.245, p < 0.01) and not related to ALB. There was a significant reduction of GLB levels in each age groups after treatment (p < 0.001). The GLB concentrations decreased 2–4 g/L (10–20% compared to their basic levels) and dramatically decreases in groups of >7 days of birth age (p < 0.001). The reductions of GLB level were from 21.3 ± 4.1 g/L to 18.5 ± 4.2 g/L in phototherapy group, and 23.0 ± 3.9 g/L to 16.6 ± 4.5 g/L in phototherapy plus IVALB (p < 0.001). The effect of phototherapy on reduction of GLB levels was correlated to the ages of birth.

Conclusions These results demonstrated that phototherapy accelerates serum globulin clearance which implies infants facing to the risk of immunity injure, especially in age over 16 days, while additional IVALB aggravated the reduction along with the ages.

Neonatal Infections

PO-0578a | **EPIDEMIOLOGY AND ANTIBIOTIC SUSCEPTIBILITY OF GRAM-NEGATIVE (GN) NEONATAL INFECTIONS OVER 10 YEARS: DATA FROM THE NEONIN INFECTION SURVEILLANCE NETWORK (WWW.NEONIN.ORG.UK)**

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Background and aims Gram-negative sepsis is associated with high morbidity and mortality in neonates and necessitates prompt treatment with appropriate antibiotics. This study focused on the epidemiology and antibiotic susceptibility of GN pathogens over the last 10 years using data from a neonatal infection network.

Methods neonIN is an international web-based surveillance database which captures culture proven neonatal infections. Data for UK neonatal-units (NNUs) on GN infection episodes between April 2004 and May 2014 were extracted. Late-onset sepsis (LOS) was defined as an episode occurring from 48-hours after birth.

Results There were 605 episodes from 28 NNUs (involving 540 neonates). Overall incidence was 0.87/1000 live-births and 7.10/1000 NNU-admissions. LOS accounted for the majority of all GN episodes (532, 87.9%) and was associated with an earlier gestation-age than early-onset sepsis (median 26 vs 30 weeks, p < 0.001). E. coli was the commonest pathogen (217, 35.9%) followed by Klebsiella sp. (120, 19.8%) and Enterobacter sp. (102, 16.9%). The pathogens were predominately isolated from blood (544, 89.9%). 74 (12.2%) episodes were treated as meningitis with no significant difference in meningitis rates between pathogens. Resistance data were available for 342 (56.5%) episodes. Resistance to 3rd-generation cephalosporins was 19.7% (36/183), to aminoglycosides 9.9% (29/291) and to quinolones 13.1% (23/175).

Conclusion GN infections represent a significant burden of infection in the hospitalised neonate. Rates of 3rd-generation cephalosporin resistance pose a challenge for their use as empiric therapy. Ongoing surveillance of antibiotic susceptibility is necessary to ensure optimal antibiotic practice.

On behalf of the Neonatal Infection Surveillance Network (neonIN).

Neonatal Nutrition and Gastroenterology

PO-0579 | **RISK FACTORS FOR IRON DEFICIENCY AND IRON DEFICIENCY ANAEMIA IN LATE PRETERM INFANTS AT THE AGE OF 6 WEEKS**

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Background and aims Iron deficiency (ID) has long-term detrimental effects on neurodevelopment. Preterm infants are at risk for developing ID or iron deficiency anaemia (IDA) during the first weeks of life. The aim of this study was to identify early risk factors during hospitalisation for a deprived iron status in late preterm infants at the age of 6 weeks.

Methods We analysed the iron status of 99 infants born between 32 and 35 weeks of gestational age from March 2011 to May 2013 in three non-tertiary hospitals in the Netherlands. ID and IDA at the age of 6 weeks were defined as a ferritin concentration <70 μg/L and the combination of a haemoglobin level < 110 mg/dL and ID, respectively.

Abstract PO-0579 Table 1   Univariate analysis at the age of 6 weeks

	Normal iron status (n = 65)	Iron deficiency (n = 34)	p-value
Gestational age (in weeks)	34,0 (SD 0,8)	33,7 (SD 0,8)	0.055
Birth weight (in grams)	2137 (SD 335)	1757 (SD 379)	0.000*
Mean total fluid (ml/kg per day)	159,2 (SD 6,2)	161,2 (SD 4,8)	0.213
Parenteral feeding (yes)	4/32 (12,5%)	19/26 (73,1%)	0.000*
Type of enteral feeding			0.453
- Breast milk	7/44 (15,9%)	4/34 (11,8%)	
- Formula feeding	12/44 (27,3%)	6/34 (17,6%)	
- Combination of breast milk and formula feeding	25/44 (56,8%)	24/34 (70,6%)	
Mean iron intake (in mg/kg per day)	1,2 (SD 0,8)	1,0 (SD 0,9)	0.636
Blood transfusion (yes)	1/65 (1,5%)	2/34 (5,9%)	0.411
Oral iron supplementation (yes)	0/31 (0%)	4/26 (15,4%)	0.024*
Blood draws (total number of draws of > 0.2 ml)	15 (SD 5)	19 (SD 8)	0.018*
Necrotizing enterocolitis (yes, only Bell stage 1 or 2)	1/31 (3,2%)	2/26 (7,7%)	0.452
Sepsis (yes)	5/31(16,1%)	6/26 (23,1%)	0.508
Infant respiratory distress syndrome (yes)	1/31 (3,2%)	3/26 (11,5%)	0.221
Ferritin at 1 week (in μg/l)	217 (SD 133)	132 (SD 89)	0.004*

Abbreviations: SD = standard deviation

Results ID and IDA at 6 weeks were present in 34% and 28% of the infants, respectively. Until now risk factors for ID were collected in 63 infants (shown in table 1). Multivariate regression analysis showed that ID at the age of 6 weeks was associated with a lower birth weight, a lower serum ferritin at the age of 1 week (p = 0.013) and a higher number of blood draws during hospitalisation (p = 0.018). IDA was also associated with the number of blood draws (p = 0.023). ID and IDA were not associated with mean iron intake.

Conclusion ID and IDA are quite common among late preterm infants at the age of 6 weeks. Risk factors include a low birth weight, a lower serum ferritin at 1 week and a higher number of blood draws during hospital stay.

PO-0580	**DOES GROWTH COULD BE PROVIDED BY HIGH ENERGY FORMULA IN DISCHARGED INFANTS WHO HAVE GROWTH PROBLEM?**

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Objectives The aim of this study was to investigate the effect of high energy formula to the short term growth of infants who could not reach the postnatal growth target.

Methods The infants with postnatal growth problem who were followed in an outpatient unit of a tertiary neonatal intensive care unit between September 2012 and September 2013 were included. Demographical, clinical, feeding and growth patterns were investigated retrospectively and weight, height and head circumference at the 1st, 2nd and 3rd months were compared after adding high energy formula (Similac High Energy, Abboutt Laboraties BV, Zwolle, Holland) to nutrition.

Results 6 infants with congenital heart disease, 1 infant with perinatal asphyxia, 1 infant with chilotorax and 6 preterm infants were included. The median of birth weight and gestational age of these infants were 2595 (750–3110) gr and 35.4 (28–40) weeks respectively. The difference of 1st, 2nd and 3rd month weight, height and head circumference z-score were found statistically significant between daily calorie of 102.1 ± 32.1 kc/kg/day before starting high energy formula and 106.1 ± 20.8 kc/kg/day with high energy formula (Table 1).

Conclusion This pilot study showed that growth parameters could be improved by adding high energy formula to nutrition in preterm infants with serious growth problem and term infants with an illness.

PO-0581	**NUTRITION DURING THERAPEUTIC HYPOTHERMIA IN NEONATES**

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Adequate nutrition during therapeutic cooling for ischaemic injury in the newborn is important in minimising long-term neurological morbidity.[1]

National TOBY guidelines suggest enteral feeds may be 'cautiously introduced' during cooling following the correction of biochemical and metabolic disturbances.[2]

Abstract PO-0580 Table 1   The comparison of z-scores of weight, height and head circumference before and after starting high energy formula at the beginning and 1st, 2nd and 3rd month

INFANTS	BEGINNING	1st MONTH	2nd MONTH	3rd MONTH	p
	-3.733	-3.405	-2.985	-2.793	
Weight z-score	(4.635–1.338)	(4.524–1.576)	(4.615–0.880)	(2.793–0.461)	0.019
	-1.897	-1.824	-1.429	-1.339	
Height z-score	(5.116–1.164)	(3.821–0.973)	(2.861–0.053)	(3.423–0.187)	<0.0001
Head circumference	-2.716	-2.282	-1.713	-2.125	
z-score	(5.820–0.246)	(5.456–0.071)	(4.819–0.731)	(4.005–0.045)	0.001