

NEC severity and the influence of enteral nutrition in a Caucasian population compared to a historic control group.

**Material and methods** Since 2010, VLBW infants born

**Results** 230 infants were included (mean gestational age: 27+2, birth weight: 900g) and compared with 233 controls (28+5, 980g). After implementation of Infloran® NEC decreased by 32% (10.3% before vs. 7% after implementation of probiotics,  $p = 0.092$  – corrected for confounding variables birth weight and gestational age). Probiotics had no influence on NEC severity. A NEC reduction was shown in breast fed infants only and not in formula fed infants.

**Discussion** The effect of Infloran® was less effective in our Caucasian population than expected. Interestingly, NEC incidence was not reduced in exclusively formula fed infants. The inefficacy in this subgroup is alarming. Therefore, the impact of enteral nutrition on probiotic effects should be explored in further prospective randomised controlled trials.

**PS-182 EFFECT OF COMBINED USAGE OF PREBIOTIC OLIGOSACCHARIDES ON THE GROWTH OF BIFIDOBACTERIUM BREVE**

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Non-digestive oligosaccharides are often added to infant formula to help formula-fed infants develop an intestinal microbiota composed predominantly of Bifidobacteria, similar to that of breast-fed infants. Because various types of oligosaccharides exhibit specific microbial metabolism, the combined usage of oligosaccharides is considered to provide additive or synergistic effects for Bifidobacteria growth in the intestinal microbiota. The aim of this study was to evaluate the combined effect of lactulose, raffinose, and galacto-oligosaccharide (GOS) on the growth of *Bifidobacterium breve*, one of the major Bifidobacteria found in infant intestinal microbiota, using an *in vitro* mixed culture model. Seven typical bacterial species found in infant intestinal microbiota, including *B. breve*, were selected and then co-cultured under anaerobic conditions to mimic the infant intestinal environment. Each oligosaccharide was added to the medium, alone or in combination with other oligosaccharides. At all times, the total amount of added oligosaccharides composed 1% of the medium. Cells were harvested after several hours of incubation, and bacterial genomic DNA was extracted. Bacterial cell numbers were determined using quantitative realtime-PCR, with specific primers targeting the 16S rRNA genes of different bacterial groups. The combination of lactulose, raffinose, and GOS promoted the growth of *Bifidobacterium breve* compared with any single oligosaccharide or the combination of lactulose and raffinose. The combined usage of lactulose, raffinose, and GOS may provide the benefit of promoting a Bifidobacteria-predominant intestinal microbiota in formula-fed infants.

**PS-183 BLOOD TRANSFUSIONS ARE NOT A RISK FACTOR FOR NECROTIZING ENTEROCOLITIS IN EXTREMELY PRETERM INFANTS**

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**Background** Transfusion practices are highly variable between hospitals and previous studies have suggested that blood transfusions may increase the risk of necrotizing enterocolitis (NEC).

**Aim** To explore the association between blood transfusions and incidence of NEC in extremely preterm infants.

**Methods** We used data from a Swedish population-based study including extremely preterm infants (<27 weeks) born between 2004–2007, ( $n = 602$ ). All data on blood transfusions and haemoglobin (Hb) concentrations up to 28 days of age was collected for survivors. We performed a nested case-control study where two controls were chosen for each case of NEC ( $n = 21$ ).

**Results** During the first 28 days of life, infants received a median (25<sup>th</sup>–75<sup>th</sup> percentile) of 6 (3–9) blood transfusions resulting in 75 (44–120) ml/kg of blood. Predictors for receiving a higher volume of blood transfusions were days on respiratory support ( $R = 0.345$ ,  $p < 0.001$ ), hospital ( $R = 0.339$ ,  $p < 0.001$ ), low birth weight ( $R = -0.236$ ,  $p < 0.001$ ) and total steroid dose ( $R = 0.209$ ,  $p < 0.001$ ). Hb was not a significant predictor.

Overall NEC incidence was 5.8%. There was no significant difference between NEC cases and controls in number of blood transfusions ( $p = 0.420$ ), volume of blood transfused from birth to NEC diagnosis ( $p = 0.274$ ), or during the 48 h preceding NEC diagnosis ( $p = 0.459$ ).

**Conclusions** Blood transfusions were given liberally in Sweden compared to other studied populations. Morbidity related variables, especially those related to respiratory illness, were significant predictors of blood transfusion. NEC incidence was comparable with other populations but no significant association was found between blood transfusions and NEC among these extremely preterm infants.

**PS-184 INTESTINAL PERMEABILITY PRECEDING NECROTISING ENTEROCOLITIS AND SEPSIS IN PRETERM INFANTS**

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**Introduction** Increased intestinal permeability may precede the onset of several important diseases in preterm infants including necrotising enterocolitis (NEC) and Gram negative septicaemias.

Hypothesis that increased intestinal permeability is evident at 2 weeks of age and may precede the onset of NEC or Gram negative septicaemias.

**Methods** Infants <31 weeks gestation were enrolled. Intestinal permeability was assessed by the sugar absorption test (SAT) using lactulose and mannitol and gut leakage by stool alpha-1-antitrypsin (A1AT). Clinical data were prospectively collected.

**Results** Thirty-six infants were enrolled. The median (range) gestation was 27 weeks (24–30) and median birth weight was 900g (585–1460). Nine infants (25%) developed suspected or proven NEC (any NEC) of whom 5 (14%) developed  $\geq$ Bells Stage II NEC. Four infants (11%) developed Gram negative septicaemias. Results are compared between infants with either NEC or sepsis and those with neither.

The median (range) lactulose:mannitol ratio (L:M) for all infants was 0.38 (0.01–5.46) and median A1AT was 128 (41–1518) mg/L. There was no statistically significant difference by L:M in infants who developed any NEC ( $p = 0.75$ );  $\geq$ Bells