Stage II NEC (p = 0.82) or sepsis (p = 0.21) nor of stool alpha-1-antitrypsin in those with any NEC (p = 0.70); ≥Bells Stage II NEC (p = 0.87) or sepsis (p = 0.81).

Discussion In this cohort, the SAT by lactulose:mannitol ratios and stool A1AT did not show evidence of increased intestinal permeability at 2 weeks of age in infants who subsequently developed NEC or sepsis.

Background and aim It remains unknown whether near-infrared spectroscopy (NIRS) can be used to assess intestinal perfusion. Intestinal fatty acid binding proteins in plasma (I-FABPp) and urine (I-FABPu) are a direct measure of intestinal epithelial cell damage that may occur after intestinal hypoperfusion. We measured splanchic fractional tissue oxygen extraction (FTOE) and correlated these FTOE values with I-FABP levels in preterm infants in the first 16 h after onset of necrotizing enterocolitis (NEC).

Methods Preterm infants born between October 2010 and November 2012 were prospectively included when NEC was diagnosed (Bell stage ≥2). Regional tissue oxygen saturation of the liver (r_livSO2) and infra-umbilical (r_intSO2) region were measured continuously by NIRS. Mean 8-hour FTOE values were calculated: FTOE = (SpO2-rSO2)/SpO2. Plasma and urine samples collected in the first 16 h after onset of symptoms were used for analysis. Spearman’s correlation test was used to calculate correlation coefficients.

Results Twenty-one preterm infants were included (median [range] gestational age 28 [25–36] weeks, birth weight 1290 [740–2400] grams). Median [range] liver FTOE (livFTOE) was 0.33 [0.07–0.81], infra-umbilical FTOE (intFTOE) 0.48 [0.13–0.82], I-FABPp 16.3 [0.54–3748] ng/mL, and I-FABPu 89.9 [3.2–23,336] ng/mL. Table 1 shows strong positive correlations between FTOE and I-FABP.

Conclusion High intFTOE values, suggestive of an impaired intestinal blood flow, correlated strongly with I-FABP, i.e. with the extent of intestinal epithelial cell damage. These results indicate that intestinal NIRS monitoring can be used to assess intestinal perfusion in preterm infants with an impaired intestinal blood flow such as occurs in NEC.