Background and aims Hepcidin, which acts as a negative feedback regulator of iron homeostasis, may in future serve as a non-invasive iron status parameter to monitor iron supplementation in preterm infants. For this, coexisting influencing factors should be taken into account. Our objective was to evaluate in preterm infants whether red blood cell (RBC) transfusions have a short-term effect on hepcidin concentrations in serum (Hep(S)) and urine (Hep(U)).

Methods Prospective observational study including very preterm infants receiving RBC transfusions. The concentration of the mature, 25 amino-acid form of hepcidin was determined in serum and urine by enzyme-linked immunosorbent assay together with cellular indices before and after RBC transfusion.

Results The study was conducted between May 2009 and September 2010 at Tübingen University Hospital. 20 preterm infants born at a mean gestational age of 26.0 (interquartile range: 24.9–27.4) and with a mean postnatal age of 30.8 (interquartile range 29.9–32.1) days received 27 RBC transfusions. When measured shortly after transfusion (mean 10 h), hematocrit values increased from a median of 26.6% (SD 2.8) to 32.1% (SD 3.2; p < 0.0001); Hep(S) also increased (geometric mean: 44.3 ng/mL (95% confidence interval: 30.8–63.8) vs. 58.0 ng/mL (95% confidence interval: 35.7–94.3; p < 0.05) but Hep(U) remained unaffected.

Conclusion These data indicate a short-term effect of RBC transfusions on serum hepcidin concentrations in preterm infants. Further longer-term observational studies are needed to understand the dynamics of hepcidin regulation in preterm infants.

Background and aim Polysaturated fatty acids (PUFAs) are essential for early human neurodevelopment. Since breast milk represents the main dietary source of PUFAs for preterm infants, its fatty acid composition is of particular interest. Breast milk fatty acid composition fluctuates from one woman to another, by duration of gestation and stage of lactation, and among countries.

As PUFAs composition of breast milk from Western Canadian mothers of preterm infants has been previously described, the aim of this pilot study was to describe the compositional variations of PUFAs in breast milk of Eastern Canadian mothers of preterm infants over the first 6 weeks of lactation.

Methods Samples of breast milk were collected on the 7th, 21st, and 42nd day of lactation from 40 Eastern Canadian mothers who had given birth to preterm infants of gestational age less than 30 weeks. Lipids were extracted using the Folch method (Folch et al., 1957). Thereafter, the method of direct transesterification was performed (Lepage and Roy, 1986) and PUFAs were quantified by gas chromatography.

Results Throughout the study, fatty acids from the n-3 and n-6 families, linoleic acid (C18:2n-6), α-linolenic acid (C18:3n-3), and eicosapentaenoic acid (C20:5n-3) remained stable, whereas arachidonic acid (C20:4n-6) and docosahexaenoic acid (C22:6n-3) decreased significantly.

Conclusion Results on the compositional variations of PUFAs in breast milk over the first weeks of lactation are somewhat similar to results of previous European studies. However, values of PUFAs in preterm breast milk of Eastern Canadian mothers are lower than those of Western Canadian mothers.