SUCCESSFUL AVOIDANCE OF TOTAL PARENTERAL NUTRITION (NEOCATE) IN INFANCY. Gigi A. Veereman-Wauters, Els Van Elsacker, Ilse Hoffman, Liliane De Swert, Pediatric Gastroenterology, Univ Hospitals Leuven, Leuven, Belgium; Pediatric Allergology, Univ Hospitals Leuven, Leuven, Belgium. Total parenteral nutrition (TPN) is a necessary route for nutritional support in cases of severe food intolerance in infancy but involves life threatening risks (sepsis, hepatotoxicity), a high level of care and high costs. We report on 7 infants in whom the use of an amino-acid based enteral formula (Neocate®) allowed discontinuation of TPN. Over a 9 months period (9/98-6/99) we treated 7 infants (3 girls, 4 boys, mean age 10,7 mo-range 2-23 mo) with Neocate® after failure of feeding attempts with various semi-elemental formulations. Food intolerance was a consequence of short gut syndrome (3), multiple food allergies (2) and status post toxic megacolon with enterocolitis (2). In the 3 infants with short gut syndrome advancing semi-elemental feeds failed to increase lactostomy output (>50%) or malabsorption (reducing substances >2g%) with less than 20% of total caloric requirements being provided enterally. Introduction of Neocate® allowed increase of enteral caloric intake from 13 to 52 Cal/kg over 44 days in a baby who subsequently underwent liver transplantation, and from 17 to 95 Cal/kg over 97 days and 12 to 104 Cal/kg over 226 days respectively in 2 patients in whom TPN was definitely stopped. Two infants with multiple food allergies and 2 patients recovering from severe enterocolitis (1 Hirschsprung, 1 unclear need) NPN b/o repeated symptomatic relapse (bloody stools) upon reintroduction of semi-elemental feeds. A similar gradual enteral regimen using Neocate® allowed discontinuation of TPN in all. After a period of at least 3 months, reintroduction of other nutrients was thusfar successful in all. In infants, with severe intestinal insufficiency (short gut) who receive semi-elemental food but remain TPN dependent or with severe inflammation and who do not tolerate elemental diets, Neocate® can improve enteral tolerance to full energetic requirements and lead to discontinuation of parenteral support.

HUMAN NEUTROPHIL MEMBRANE FLUIDITY AFTER INCUBATION IN STRUCTURALLY DIFFERENT LIPID EMULSIONS. Geert J. Wanten, Anton H. Naber, Acad Hosp Nijmegen, Nijmegen, Netherlands; Univ of Amsterdam, Amsterdam, Netherlands. Rationale: Medium chain triglyceride (M)-containing lipid emulsions actuate human neutrophils in vitro, contrary to long-chain (L) and structured lipid (SL) emulsions. To test the hypothesis that these distinct responses result from alterations in cell membrane fluidity induced by various emulsions, we performed the present study. Method: Isolated neutrophils from 6 volunteers were incubated in medium or 2.5 mM lipid emulsions containing L, M, mixed L,M, enriched with α-tocopherol (LME) or SL emulsions. This lipid concentration is physiological in patients when emulsions are administered intravenously. Thereafter the cells were washed twice and membrane fluidity was measured as the fluorescence polarization of diphenyl-hexatriene (DPH). Results are presented as fluorescence anisotropy r, the reciprocal of membrane fluidity. Results: Compared to lipid-free incubation (0.182±0.020), L (0.128±0.016), as well as LME (0.124±0.019), SL (0.167±0.029) and M (0.095±0.038) significantly decreased r (and thus increased membrane fluidity). In all < p<0.05 (N=4 volunteers significance on test), while L (0.171±0.017) had no effect (p=0.14). While LM and LME were not different (p=0.33), M further reduced r compared to both previous emulsions (P<0.01). In conclusion these data suggest that an increased membrane fluidity may be one of the mechanisms by which MCT-containing lipid emulsions actuate human neutrophils.

EFFECTS OF STRUCTURALLY DIFFERENT LIPID EMULSIONS ON HUMAN NEUTROPHIL MIGRATION. Geert J. Wanten, Dirk Roos, Anton H. Naber, Acad Hosp Nijmegen, Nijmegen, Netherlands; Univ of Amsterdam, Amsterdam, Netherlands. Background: While the use of intravenous lipids has been associated with an increased risk for infectious complications, the immunomodulatory characteristics of structurally different emulsions have not been well characterized. Aim: To test the hypothesis that human neutrophil migration is dose-dependently increased by structurally different lipid emulsions in physiological concentrations, i.e. concentrations (up to 10 mM) reached in patients when lipids are administered intravenously. Method: Isolated neutrophils from 8 volunteers were incubated in medium or 2.5 mM lipid emulsions containing long-chain (L), medium-chain (M), mixed L,M, tocopherol-enriched LM (LME) or structured lipids (SL). The cells were loaded above 3 pm-pore-sized filters and migration was measured after 1 hour as the percentage filter passage in the presence (chemotaxis) or absence (random migration) of chemotactic factor (formylated peptide (FMLP) or zymosan-activated serum (ZAS)). Results: FMLP-induced chemotaxis under lipid-free conditions amounted to 61±14% and decreased with LM to 11±9%, with LME to 18±10%, with SL to 39±18%, and with M to 5±2% (all p<0.05 with Wilcoxon signed ranks test), while L had no effect (59±10%, p=0.59). ZAS-induced chemotaxis showed similar results. Compared to lipid-free incubation (19±10%), random migration significantly decreased with LM (11±2%), LME (12±2%) and M (5±2%), while L (18±3) and SL (20±1%) had no effect. Compared to LM, chemotaxis with LME significantly increased (p=0.004). Chemotaxis decreased in direct proportion to LM concentration, reaching steady state at 2 mM. Conclusion: Human neutrophil migration is dose-dependently increased by structurally different lipid emulsions, depending on triglyceride chain length and concentration, as well as tocopherol content.