Sickle cell anemia (also known as homozygous sickle cell anemia, HbSS, in its major and severest form) is a very serious blood disorder with almost 1% of all infants in sub-Saharan Africa being born with sickle anemia each year. Stroke is both frequent and the most serious complication resulting in physical disability and the impairment of cognition. The life expectancy of patients with sickle cell disease is below 20 years in Africa with the younger children being at particularly high risk. Since abnormal blood cell interactions with the vessel walls of the circulatory system have been implicated in the disease and in view of previous research indicating that omega-3 fatty acid via fish oil can have favourable effects on such interactions, the therapeutic potential of omega-3 supplementation on HbSS was investigated.

Patients (140) aged 2-24 years with HbSS were assigned to receive (daily) a placebo capsule (lacking DHA/EPA) or a supplement providing 25 mg of DHA plus EPA per kg body weight (with a DHA:EPA ratio of 7:1) for a period of one year. Thus, a patient weighing 21 kgm in the omega-3 group would receive 460 mg DHA plus 65 mg EPA (sum of 525 mg) each day via supplementation. Blood analyses performed at baseline and at one year showed a marked increase in DHA and EPA levels in the omega-3 group but not in the placebo (control) group. Interestingly, the rates of clinical ‘vaso-occlusive’ crises (painful events such as musculoskeletal or other leading to hospitalization) were markedly reduced in the omega-3 group relative to controls throughout the 12-month period. Furthermore, complications of severe anemia were lower by 80% and blood transfusions were lower by 73% in the omega-3 group. In addition,
the inability to attend school at least once during the study period due to sickle cell-related illness was lower by 60% in the omega-3 group. The researchers concluded that the findings from their present trial as reported ‘suggest that omega-3 fatty acids can be an effective, safe, and affordable therapy for sickle cell anemia’.

Dr. Holub’s Comments:

This present study and publication is one of the most promising and exciting in recently-published research to appear in the DHA/EPA omega-3 field with respect to the complementary treatment of a most serious clinical condition. It is understood that these findings will need follow-up and confirmation in a large multicenter trial as acknowledged by the authors. While the supplemental levels of DHA/EPA employed are very much above current intakes in Africa and most other countries, they are typical of intakes in a large number of Japanese residents and are well below safety limits as set by health agencies in North America and elsewhere. On a personal note, I extend my congratulations to all members of this research team and wish also to highlight the ongoing contributions of one of the co-authors, Dr. Michael Crawford (Professor) - often referred to most appropriately and respectfully as ‘one of the fathers of omega-3 research’.