**THE SPECTRUM OF INFECTION IN SCD**

**Rationale:**

Children with SCD are highly susceptible to infection primarily as a result of poor nutritional status and loss of adequate function of the spleen. In the absence of vaccination or prophylaxis, SCD patients are estimated to be at a 4-600-fold increased risk of infection from encapsulated organisms, especially *Strep pneumoniae*, and death can often occur within 12 hours of the onset of infection. Platelet-activating factor receptor (PAFr) mediates pneumococcal invasion, and up-regulation of PAFr on chronically activated endothelia has recently been shown to contribute to increased bacterial invasion. A community-based study from Kenya likewise showed a 30-fold greater risk of septicemia from enteric bacteria, especially salmonella. It has been suggested that the spectrum of bacterial infections in Africa may not be the same as those encountered in the US, however, studies from both Abuja, Nigeria and Kumasi, Ghana, showed that *S. pneumonia* was the main organism causing acute infection; *S. typhi* was thought to play a significant role in the Nigerian cohort. Peak ages of risk are between ages 0 – 10, although life-threatening infections they can occur at any age and even in the presence of appropriate prophylaxis. Infections are also a frequent inciting cause of painful crises or severe episodes of hemolysis.

While the overwhelming concern in relation to infections in patients with SCD is to implement effective regimens of vaccination and PCN prophylaxis, additional data from other geographic and socio-cultural settings are needed, and innate factors influencing immune response require additional study.

**Specific Aims:**

Determine the spectrum of infection in additional cohorts of patients with SCD, and further refine our understanding of the pathophysiology of the immune response in these patients.