

Microvascular cerebral blood flow in sickle cell disease

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We are conducting a study of children with sickle cell disease and healthy controls to improve our ability to safely measure blood flow in the brain and in the arm muscle. We will measure blood flow with 2 new technologies called diffuse correlation spectroscopy, combined with near-infrared spectroscopy (seen in figure on right). These techniques use light to study the brain.



What happens in the study?

A small sensor containing flexible optical fibers is secured to the patient's head and/or the arm. This sensor uses red light to measure blood flow in the tissue underneath it. Another separate sensor will be placed on upper arm and forefinger to measure blood pressure. We will ask your child to lie flat on a hospital bed for 5 minutes, and then we will raise the head of the bed for 5 minutes, followed by another 5-minute period with the bed flat. We will monitor blood flow and blood pressure continuously during this 15-minute time frame. **The measurement session will last up to one hour, including setup.** If you are interested, we may also ask you to arrange a voluntary follow-up study visit within one month of your initial study visit. The follow-up study procedure will be the same as the first visit's procedure.

This is a minimal risk study, meaning it poses no more risk than your child would encounter in everyday life. This study does not interfere with any treatment or routine care of your child. There is no direct benefit to children who participate. However, we believe that, as a result of this study, the devices that we are developing will improve our ability to detect neurological abnormalities and monitor the brain health of children with sickle cell disease.

Who can participate?

Your child may be eligible for this study if he/she:

- has sickle cell disease, or does not have sickle cell disease (control group).
- Is between the ages of 2 and 10 years old.

If interested, a study staff member will confirm that your child meets all our eligibility criteria.

If you participate, you will receive \$50 per measurement session as a token of our appreciation.

If you are interested in participating, please contact _____ at Phone: _____ or Email: _____.