What you should know about Sickle Cell trait

What is Sickle Cell trait?

Sickle cell trait (SCT) is not a mild form of sickle cell disease. Having SCT simply means that a person carries a single gene for sickle cell disease (SCD) and can pass this gene along to their children. People with SCT usually do not have any of the symptoms of SCD and live a normal life.

Hemoglobin is found in red blood cells and it gives blood its color. It carries oxygen to all parts of the body. Hemoglobin is made from two similar proteins, one called alpha-globin and one called beta-globin, that "stick together." Both proteins must be present and function normally for the hemoglobin to carry out its job in the body. People with SCT have red blood cells that have normal hemoglobin and abnormal hemoglobin.

Genes are the instructions that control how red blood cells make alpha- and beta-globin proteins. All people have two genes for making beta-globin. They get one beta-globin gene from each parent. SCT occurs when a person inherits a gene for sickle beta-globin from one parent and a gene for normal beta-globin from the other parent. This means the person won't have sickle cell disease, but will be a trait "carrier" and can pass it on to their children.

What is Sickle Cell Disease?

SCD is a genetic condition that is present at birth. In SCD, the red blood cells become hard and sticky and look like a C-shaped farm tool called a "sickle." The sickle cells die early, which causes a constant shortage of red blood cells. Also, when they travel through small blood vessels, they get stuck and clog the blood flow. This can cause pain and other serious problems. It is inherited when a child receives two sickle beta-globin genes— one from each parent. Therefore, a child can only have SCD when both of his/her parents have at least one abnormal
beta-globin gene.

Who is affected by Sickle Cell trait?

SCT is more common among people whose ancestors come from Africa, the Mediterranean region, Middle East, and South Asia, but anyone can have SCT.

- **1 in 12** blacks or African Americans in the United States has SCT, **whereas 1 in 20-25 blacks in sub-Saharan AFRICA has SCT trait**

What Are The Chances That A Baby Will Have Sickle Cell Trait or Sickle Cell Disease?

The most important thing to know about having SCT is that you could have a baby with SCD if your partner also has an abnormal hemoglobin gene.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS252247-A

If both parents have SCT, each child that they have together has a

- 1 in 2 (50%) chance of having SCT. Children with SCT will not have symptoms of SCD, but they can pass SCT on to their children.
- 1 in 4 (25%) chance of having sickle cell anemia, one of several types of SCD. Sickle cell anemia is a serious medical condition.
- 1 in 4 (25%) chance that they will not have SCD or SCT.

If one parent has SCT and the other parent has another abnormal hemoglobin gene (like hemoglobin C trait or beta-thalassemia trait), each of their children has a

- 1 in 2 (50%) chance of having SCT.
- 1 in 4 (25%) chance of having SCD (not sickle cell anemia). These other types of SCD can be more or less severe depending on the specific abnormal hemoglobin gene.
- 1 in 4 (25%) chance that they will not have SCD or SCT.

If only one parent has SCT, each of their children has a

- 1 in 2 (50%) chance of having SCT.
- 1 in 2 (50%) chance that they will not have SCT.

What health problems might occur in people with Sickle Cell trait?

Most people with SCT do not have any health problems caused by sickle cell trait. *However, there are a few, rare health problems that may potentially be related to SCT*. For example, if people with SCT have pain when traveling to or exercising at high altitudes, they should tell their healthcare provider. People with SCT and eye trauma should seek out medical attention and inform the physician about the trait status. *People with SCT should drink plenty of water during exercise.* People with SCT should contact and inform their doctor if they notice blood in their urine. To find out more about SCT and to get specific answers to your questions, call your healthcare provider.

How Will A Person Know If He Or She Has Sickle Cell Trait?

To find out if you have SCT, your doctor needs to order a blood test. If you find out you and/or your loved one has SCT, talk to your healthcare provider and/or a genetic counselor about what that means. It is important that you know what SCT is and how it can affect you and your family.

For more information visit: www.cdc.gov/sicklecell