

Hemoglobin C Trait Fact Sheet

What is hemoglobin?

Hemoglobin (Hb) is the special protein within the red blood cell, which carries oxygen from the lungs to all parts of the body.

Where does hemoglobin come from?

Your hemoglobin type is inherited through family genes. The color of your hair, the color of your eyes, your body build, and your hemoglobin type are all examples of things about you that are determined by genes. You receive one gene for hemoglobin type from your mother and one from your father.

Hemoglobin A or normal adult hemoglobin is the most common type. There are over 700 different types of hemoglobin.

What is hemoglobin C?

Hemoglobin C is a form of hemoglobin found primarily in West Africans and descendants from that area. In the United States, hemoglobin C occurs in 2 to 3% of the African American population.

What is hemoglobin C trait?

People with hemoglobin C trait inherit a normal hemoglobin gene (Hb A) from one parent and hemoglobin C gene (Hb C) from the other parent. These people produce both hemoglobin A and hemoglobin C. Persons with hemoglobin C trait are also known as hemoglobin C carriers.

Hemoglobin C trait is not a disease. It will not turn into a disease. Your child should have no health problems related to the hemoglobin C trait and will require no special medical care.

If hemoglobin C trait is found, education and counseling regarding the trait are important because the hemoglobin C gene can be passed on to a carrier's children.

The most important aspect of identifying people with hemoglobin C trait is informing them of their risk of having a child affected with a serious disease (e.g., sickle-hemoglobin C disease).

What are the patterns of inheritance?

If two people with hemoglobin C trait have a child, there is a 50% risk that the child will have hemoglobin C trait (Hemoglobin AC). There is also a 25% chance the child will be unaffected (Hemoglobin AA) and a 25% chance that the child will have hemoglobin C disease (Hemoglobin CC). These risks are true for each pregnancy.

If one parent has hemoglobin C trait and the other has normal hemoglobin, it is unlikely that any of their children will have hemoglobin C disease. However, there is a 50% chance with each pregnancy that the child will have hemoglobin C trait.

If one parent has sickle cell trait (Hb AS) and one parent has hemoglobin C trait (Hb AC), there is a 25% risk that the child will have sickle cell trait and a 25% risk that the child will have hemoglobin C trait. There is also a 25% chance the child will be unaffected (Hb AA), and a 25% chance that the child will have sickle-hemoglobin C disease (Hb SC). These risks are true for each pregnancy.