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Sickle cell anemia

Sickle cell anemia affects one out of every 400-600 black Americans. Other medical problems include low blood pressure, pain, and damage to major organs. This condition is known as sickle cell disease because sickle cells may become stuck in the small blood vessels and cause pain and damage to major organs. The body's response to sickle cell disease, and sickle cell anemia, is to lengthen and thin out the sickle cells, making them more sluggish in the blood flow. This makes sickle cell anemia a serious health condition.

AA = Normal Hemoglobin

A person with the genotype AA will have normal hemoglobin. The A allele codes for a normal form of hemoglobin, which is not affected by the disease.

AS = Sickle Cell Trait

A person with the genotype AS will have one normal A allele and one sickle cell allele (S). They will not have sickle cell anemia, but they can pass the sickle cell allele to their children. This is an indication of the potential for sickle cell disease in the family.

SS = Sickle Cell Anemia

A person with the genotype SS will have sickle cell anemia. They will have two sickle cell alleles (S), which means they will experience the symptoms of sickle cell anemia.

A discussion in relation to the possible changes in normal hemoglobin.

Hemoglobin S, Hemoglobin C, and Other Hemoglobin Genotypes

Each parent of a person who has hemoglobin disease may have one of several different types of hemoglobin. These types are determined by the genes that are inherited from the parents. The genes for hemoglobin are inherited in a specific pattern, which is illustrated in the table below.

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Hemoglobin Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Sickle cell</td>
</tr>
<tr>
<td>AS</td>
<td>Sickle cell trait</td>
</tr>
<tr>
<td>AA</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Hemoglobin S and Hemoglobin C

This discussion is related to two of the possible changes in normal hemoglobin.
HEMOGLOBIN S TO HAVE A CHILD WITH SICKLE CELL ANEMIA. BOTH PARENTS MUST HAVE AT LEAST ONE GENE FOR SICKLE CELL ANEMIA.

Sickle cell anemia. There is no chance that the child will have sickle cell trait (AS) or the child will have sickle cell disease (SS). Two in four have normal hemoglobin (AA); two in four have sickle cells in their blood. The chances with each pregnancy are one in four that a child will have sickle cell anemia.

AS
AA

When one parent has normal hemoglobin and the other parent has sickle cell trait:

SS
SS

When both parents have sickle cell trait:

SS
SS

The chances with each pregnancy are one in four that a child will have sickle cell anemia.
Four in four children will have Hemoglobin C disease (CC).

When both parents have Hemoglobin C Trait:

- If a person inherits a gene for Hemoglobin C from both parents (CC), that person will have Hemoglobin C disease.
- If a person inherits a gene for Hemoglobin C from one parent and a normal gene (AC), that person will be a carrier of Hemoglobin C Trait.

Hemoglobin C Trait (AC)

Hemoglobin C Disease (CC)

Hemoglobin C Trait (AC)

Hemoglobin C disease is relatively rare and appears in approximately one out of every 10,000 black Americans. Hemoglobin C disease is characterized by mild to moderate anemia, jaundice, enlarged spleen, and gallstones. However, some people with Hemoglobin C disease do not have any of these symptoms.
disease (SC). In four out of five children, one parent will have sickle cell hemoglobin S (SC), and the other will have sickle cell trait (AS); and one in four children will have normal hemoglobin (AA); one in four children will have sickle cell trait (AS). The chances of each pregnancy are one in four, that a child will have sickle cell hemoglobin C disease (SC).
<table>
<thead>
<tr>
<th>Hemoglobin Types</th>
<th>Inheritance</th>
<th>Symptoms</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sickle cell</td>
<td>always pass on a normal</td>
<td>Sickle cell anemia</td>
<td>SS</td>
</tr>
<tr>
<td>Hemoglobin C</td>
<td>may also pass on a normal</td>
<td>Sickle cell anemia</td>
<td>SC</td>
</tr>
<tr>
<td>Hemoglobin C</td>
<td>always pass on a normal</td>
<td>May be similar to sickle cell</td>
<td>CC</td>
</tr>
<tr>
<td>Hemoglobin C</td>
<td>none</td>
<td>None</td>
<td>AA*</td>
</tr>
<tr>
<td>Hemoglobin C</td>
<td>none</td>
<td>None</td>
<td>AC*</td>
</tr>
</tbody>
</table>

As you can see, if one gene in the pair is Hemoglobin A, there will usually be no health problems associated with that condition.
For additional information contact:

A simple blood test can determine your hemoglobin type. Talk with your healthcare provider if you have questions or want to be tested with a universal hemoglobin, but treatment is available. As yet there is no universal cure for the conditions associated with abnormal hemoglobin.

Unusual hemoglobins are not contagious and do not affect intelligence.

Hemoglobin will identify the risk of having a child with abnormal hemoglobin, which is a common screening test. If both parents have an unusual hemoglobin type, the chance of having a child with the abnormal hemoglobin is increased, but not certain. If one parent is found to have an unusual hemoglobin trait, the chance of a child having the abnormal hemoglobin is reduced. If you have an unusual hemoglobin trait, it is possible for your child to inherit the trait.

Hemoglobin unless you are tested.

You will not know if you have a gene for an unusual type of hemoglobin unless you are tested. Limited States.

Importance of Knowing Your Hemoglobin Type