



Hemoglobin E Trait

What is Hemoglobin?

Hemoglobin is a protein inside of red blood cells that carries oxygen to all parts of the body. Normal adult hemoglobin is called hemoglobin A.

What is Hemoglobin E Trait?

People with hemoglobin E trait inherit a normal hemoglobin gene (hemoglobin A) from one parent and an abnormal hemoglobin gene (hemoglobin E) from the other parent. People with hemoglobin E trait make both hemoglobin A and hemoglobin E. Hemoglobin E trait is not a disease. It will not turn into a disease. Hemoglobin E trait will not cause health problems and will require no special medical care.

Why is it Important to Know if You Have Hemoglobin E Trait?

The most important aspect of identifying people with hemoglobin E trait is to educate and inform them of the risk of having a child affected by a potentially more serious hemoglobin disorder, some of which include:

Hemoglobin SE (a mild form of sickle cell disease):

If a child inherits one copy of the hemoglobin E gene from one parent and a copy of the sickle cell gene (hemoglobin S) from their other parent, it results in a mild type of sickle cell disease called hemoglobin SE. Hemoglobin SE is a blood disorder that may require periodic visits to a blood specialist for medical care.

Hemoglobin EE:

If a child inherits one copy of the hemoglobin E gene from one parent and a second copy of the hemoglobin E gene from their other parent, it results in a hemoglobin disorder called hemoglobin EE disease. Hemoglobin EE disease does not usually cause symptoms or serious health problems but can reduce the number and size of red blood cells in your body causing a mild anemia.

Hemoglobin E beta thalassemia:

If a person inherits one copy of the hemoglobin E gene from one parent and a beta thalassemia trait (a different type of hemoglobin disorder) from their other parent, it results in a condition called hemoglobin E beta thalassemia. The symptoms of hemoglobin E beta thalassemia can range from mild to severe and require close lifelong follow-up with a blood specialist.

Because hemoglobin E trait is an inherited condition, genetic counseling and possibly genetic testing for the family should be considered so that they can be fully informed of their potential risks of having a future child affected by one of the more serious hemoglobin disorders.

The content of this fact sheet has been reviewed by the NBS Advisory Hemoglobinopathy Subcommittee.