

WHAT IS HEMOGLOBIN ?

Hemoglobin is a protein found in red blood cells that carries oxygen and gives blood its red color. Most people have the type of hemoglobin called **hemoglobin A** (also called normal or adult hemoglobin). However there are many different types of hemoglobin found in people throughout the world. **Hemoglobin E** is one type; sickle hemoglobin is another type.

HEMOGLOBIN TYPE IS INHERITED.

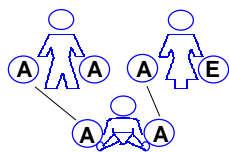
...we inherit our hemoglobin type from our parents

If you have been told you have hemoglobin E trait, it means you inherited one hemoglobin E gene from one parent and one hemoglobin A gene from the other parent. A person with hemoglobin E trait is well and may not be aware of having the trait.

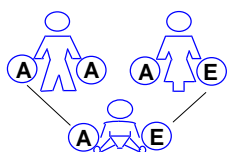
...we pass our hemoglobin type to our children.

When one parent has hemoglobin E trait and the other parent has hemoglobin A, the child will inherit:

- two hemoglobin A genes *or*
- one hemoglobin A gene and one hemoglobin E gene



child with hemoglobin A
50% chance



child with hemoglobin E trait
50% chance

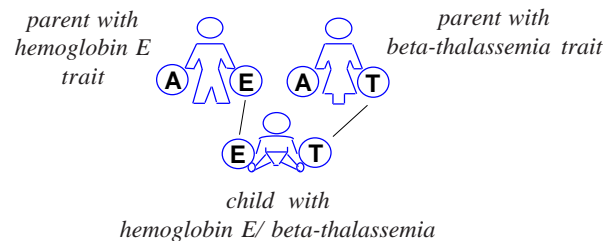
HEMOGLOBIN EE

If a person inherits the hemoglobin E gene from both parents, no hemoglobin A is made in the body. Only hemoglobin E is made. This condition is called hemoglobin EE

In hemoglobin EE, the red blood cells are smaller than usual. A person with hemoglobin EE will have no associated health problems but will pass the gene for hemoglobin E on to each of his/her children. If one parent has hemoglobin EE, and the other has only hemoglobin A, all of the children will have hemoglobin E trait. Hemoglobin E trait causes no health problems.

HEMOGLOBIN E/beta-THALASSEMIA

In hemoglobin E/beta-thalassemia, an individual inherits one gene for hemoglobin E from one parent and one "beta-thalassemia" gene from the other parent. The beta-thalassemia gene causes the body to make less than the usual amount of hemoglobin. These two genes together lead to hemoglobin E/beta-thalassemia, a disease which can be life threatening.



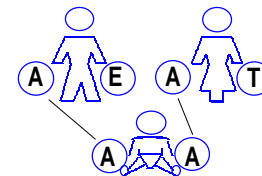
There is no known cure for hemoglobin E/beta-thalassemia. Untreated, this disease can result in heart failure from the severe destruction of red blood cells. It can also cause severe enlargement of the liver and spleen, poor growth, and changes in the bones.

Treatment for people with hemoglobin E/beta-thalassemia include repeated blood transfusions.

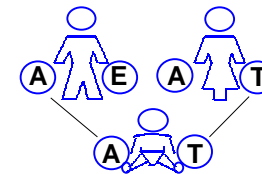
CAN I HAVE A CHILD WITH HEMOGLOBIN E/beta-THALASSEMIA?

If you have hemoglobin E trait and your partner has beta-thalassemia trait then, there is a 25% chance **with each pregnancy** that your child will inherit:

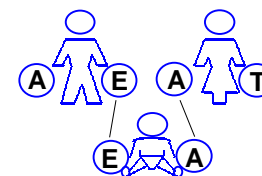
- two hemoglobin A genes *or*
- one hemoglobin A gene and one hemoglobin E gene *or*
- one hemoglobin A gene and one beta-thalassemia gene *or*
- one hemoglobin E gene and one beta-thalassemia gene



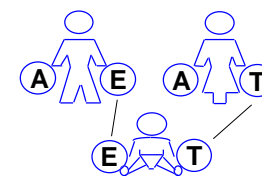
25% chance of a child with hemoglobin A



25% chance of a child with beta-thalassemia trait



25% chance of a child with hemoglobin E trait



25% chance of a child with hemoglobin E/beta-thalassemia

A = hemoglobin A gene
E = hemoglobin E gene
T = beta-thalassemia gene

HOW CAN I FIND OUT WHAT MY HEMOGLOBIN TYPE IS?

It can be helpful for people to know about their hemoglobin type so they can make informed decisions when planning a family.

A blood test is required to determine hemoglobin type and beta-thalassemia trait. The tests are not done routinely and must be asked for by name. The test for hemoglobin type is called *hemoglobin electrophoresis*.

The test for beta-thalassemia trait is a special test and measures hemoglobin A₂.

HOW COMMON ARE UNUSUAL HEMOGLOBINS?

There are many unusual hemoglobins. Although anyone can inherit an unusual hemoglobin, they tend to be found in people from certain ethnic and racial groups. Sickle hemoglobin is the most common unusual hemoglobin in the world.

Hemoglobin E is the second most common unusual hemoglobin. It is found in people whose ancestors come from Southeast Asia, including Thailand, Malaysia, Indonesia, Vietnam, Cambodia, and Laos. People whose ancestors are from southern China, the Philippines, India and Turkey may also have hemoglobin E.

Beta-thalassemia trait is found in people living in the Mediterranean countries (Greece and Italy), the Arabian Peninsula, Turkey, Iran, Africa, India, Southeast Asia, and southern China and in people whose ancestors come from these countries.

HEMOGLOBIN E

What is it?



For further information
ask your health care provider
or call or write to us:

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*What Does it Mean
for Me and My Family?*