

## What is Hemoglobin E?

Hemoglobin is a part of your blood, and hemoglobin E is a type of hemoglobin. In order to understand hemoglobin E, it helps to understand a little more about our blood.

## Blood and Hemoglobin

One role of the blood is to take oxygen from air breathed into the lungs and bring it to the rest of the body. The part of the blood that does this is the red blood cell. Hemoglobin is the part of the red blood cell that carries the oxygen.

The type of hemoglobin that a person makes depends on the genes he or she inherits from each parent. Genes carry instructions on how to make different parts of a person. Every gene carries different instructions.

We inherit our genes from our parents in pairs. One gene from each pair comes from each parent. Each child inherits genes from the father and genes from the mother that instruct the body how to make hemoglobin.

People with hemoglobin E trait generally experience no symptoms.

You may have hemoglobin E trait and not know it.



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## What is Hemoglobin E?

## Hemoglobin E Trait

If a child inherits one gene for normal hemoglobin and one gene for hemoglobin E, they are said to have **hemoglobin E trait**. Hemoglobin E trait is **NOT** a disease and does **NOT** cause any mental or physical problems for the child.

Hemoglobin E trait causes the size of the red blood cells to be smaller than usual. If a person with normal hemoglobin has small red blood cells, a doctor may recommend that he take iron pills to make the cells grow larger. But this won't work if a person has hemoglobin E trait, because his body doesn't know how to make them any bigger.

People with hemoglobin E trait may pass the hemoglobin E gene to their children. If only **one** parent has hemoglobin E trait, there is a 50/50 chance with every pregnancy that the child may inherit the trait.

## Why is it important to know if I have the trait?

If you have hemoglobin E trait and have a child with a person who has beta thalassemia trait, there is a 25% chance that your child will be born with a serious blood disease that may require lifelong blood transfusions and drug treatments.



one parent carries the beta thalassemia trait



and the other parent carries the hemoglobin E trait

25%  
E-beta thalassemia



normal hemoglobin



hemoglobin E trait



beta thalassemia trait

## How do I find out if I have Hemoglobin E Trait?

Finding out if you have hemoglobin E trait is easy.

The first step to finding out if you have hemoglobin E trait is to ask your doctor to look at the size of your red blood cells. The size of your red blood cells is shown by the Mean Corpuscular Volume (or MCV). This is a common reading when you have a Complete Blood Count (CBC).

If your MCV reading is less than 75, that may be the first sign that you have hemoglobin E trait.

Your doctor may then need to request more specialized tests, such as a hemoglobin electrophoresis and iron studies. These tests will show your doctor if you have any different types of hemoglobin.

If you or your spouse have hemoglobin E trait and plan to have children, you should seek the advice of a genetic counselor.

## E-Beta Thalassemia

E-beta thalassemia happens when a child inherits one gene for hemoglobin E from one parent and one beta thalassemia gene from the other parent. The beta thalassemia gene instructs the body to make less hemoglobin than the usual amount. When these two genes come together in one child, they lead to a disease that causes the red blood cells to be destroyed.

Most people with E-beta thalassemia need frequent blood transfusions to live. Receiving blood transfusions can cause problems because of extra

iron that builds up in the body. Sometimes there are also infections in the blood that can lead to problems. Drug treatments are used to help control the amount of iron left in the body.



For more information about thalassemia, please contact: Cooley's Anemia Foundation at (800) 522-7222 or [info@cooleysanemia.org](mailto:info@cooleysanemia.org). You can also visit our web site at [www.cooleysanemia.org](http://www.cooleysanemia.org)

## What do I do if I have Hemoglobin E Trait and want to have a baby?

If you have hemoglobin E trait and are considering having a child or are already pregnant, your partner should be tested to see if he or she has any other type of hemoglobin.

Inform your doctor if you have hemoglobin E trait. Discuss what it might mean for your unborn child. There are tests that can tell you which genes your unborn child has inherited from you and your partner.