

## THALASSEMIA TRAIT

### INTRODUCTION

Thalassemia trait (also called thalassemia minor) is a common inherited condition (i.e., runs in families) causing a mild life-long anemia. There is no treatment or cure. However, the condition usually causes no symptoms and is not a serious problem.

### WHAT IS THALASSEMIA?

Thalassemia is a form of anemia that results from reduced production of hemoglobin in the red blood cells. Red blood cells are elements produced in the bone marrow (the cavity inside of the bones). These cells contain a red protein called hemoglobin. The function of hemoglobin is to pick up oxygen in the lungs and carry it throughout the body. A reduction in the number of red blood cells is termed anemia. Hemoglobin consists of several building blocks, the most important of which are termed alpha and beta. Thalassemia results in a deficiency of either the alpha or beta building blocks. Therefore, there are two types of thalassemia, alpha thalassemia and beta thalassemia.

### HOW ARE THESE CONDITIONS INHERITED?

Alpha and beta thalassemia can both be passed on from parent to child. In general, there is a 50-50 chance that each son or daughter of someone with alpha or beta thalassemia trait will be affected. If both parents have thalassemia trait, there is sometimes up to a 1 in 4 chance that their offspring may have thalassemia major, an extremely serious blood disorder (see below).

### WHAT ARE THE BLOOD COUNTS LIKE IN THALASSEMIA MINOR?

In thalassemia trait, the degree of anemia is very mild. The usual hemoglobin count (which measures the severity of anemia) is between 9.5 and 12 gm/dl (with the normal value being 11 and 15 gm/dl, depending upon the sex and age of the patient). There are usually no signs or symptoms. The physical examination is normal. Patients with thalassemia trait are generally quite well.

Thalassemia trait is often confused by patients and physicians with iron deficiency since in both thalassemia and iron deficiency the red blood cells are small (i.e., the MCV or mean corpuscular volume of the red blood cells is reduced). Several simple tests can usually differentiate iron deficiency from thalassemia trait. Although patients with iron deficiency should be treated with iron, iron therapy is of no value in thalassemia trait.

## HOW IS THALASSEMIA TRAIT DIAGNOSED?

Thalassemia is seen primarily in individuals who are not of Northern European ancestry. Therefore, the condition is uncommon in Caucasians whose ancestors came from England, Germany, Scotland, France, etc. On the other hand, beta thalassemia is quite common in individuals from Southern Europe (Italy and Greece). Beta thalassemia is also common in Africans (and therefore in African-Americans) and individuals from the Middle East and South Asia. Alpha thalassemia trait is very common in Africans and African-Americans as well as in persons from Southeast Asia.

## WHY DOES SOMEONE NEED TO KNOW THAT THEY HAVE THALASSEMIA TRAIT?

As indicated above, thalassemia trait is not a serious condition. It does not cause illness or “turn into” other worrisome medical conditions. However, there are two reasons why you should know if you or your child has it.

1. Persons with thalassemia trait will have a life-long mild anemia which resembles iron deficiency. However, they should not be treated on a long-term basis with iron (unless they are proven also to have iron deficiency). Repeated blood tests are not necessary to monitor the anemia since it will always be present.
2. If two individuals with thalassemia become partners and have children, there is a possibility (up to a 1 in 4 chance) that their children can have a serious and even fatal form of thalassemia called thalassemia major or Cooley’s anemia. This should be discussed with a physician so that appropriate testing can be conducted. When a young child is diagnosed as having thalassemia trait and their parents are interested in having more children, we sometimes therefore recommend that the parents be tested as well. Severe forms of thalassemia rarely occur in blacks but are sometimes seen in Asians or persons of Southern European extraction.

There are two special circumstances regarding African-Americans with thalassemia trait. First, if they have beta thalassemia trait and choose as their partner a person with sickle cell trait, there is 1 in 4 chance that their children will have a potentially serious form of sickle cell disease called sickle beta thalassemia. On the other hand, if an African-American has alpha thalassemia trait, there is virtually no possibility that their offspring could have a more severe form of thalassemia.

## ANY QUESTIONS?

If there are any questions regarding the content of this brochure, please contact a member of the hematology staff at Children’s Medical Center Dallas at 214/456-2382 or consult the Cooley’s Anemia Foundation website ([www.cooleysanemia.org](http://www.cooleysanemia.org)).