

## 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 D* is one type; *sickle hemoglobin* is another type.

### HEMOGLOBIN TYPE IS INHERITED.

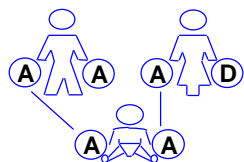
*...we inherit our hemoglobin type from our parents*

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

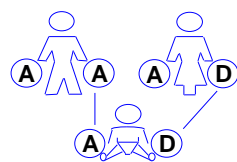
*...we pass our hemoglobin type to our children.*

When one parent has hemoglobin D trait and the other parent has normal hemoglobin, the child will inherit:

- two normal hemoglobin genes *or*
- one normal hemoglobin gene and one hemoglobin D gene



child with normal hemoglobin  
50% chance



child with hemoglobin D trait  
50% chance

## WHAT IF MY PARTNER ALSO HAS HEMOGLOBIN D TRAIT?

If you and your partner have hemoglobin D trait, there is a 25% chance *with each pregnancy* that your child will inherit both hemoglobin D genes and have homozygous hemoglobin D. Homozygous hemoglobin D is not associated with health problems.

### WHY SHOULD I BE CONCERNED IF I HAVE HEMOGLOBIN D TRAIT ?

You should not be concerned for your own health, but if your partner has sickle cell trait, there is a 25% chance with each pregnancy that your child will have **hemoglobin SD disease**, which can be serious.

### WHAT IS IT LIKE TO HAVE HEMOGLOBIN SD DISEASE?

A person with **hemoglobin SD disease** may suffer from anemia and bouts of pain called crises. These crises can occur without warning, affect any part of the body and last hours or days. There may also be problems with frequent infections and unexplained fevers.

Daily doses of penicillin and folic acid are required.

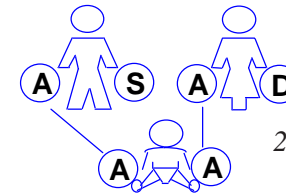
A pregnant woman with **hemoglobin SD disease** may have complications.

The severity of the disease varies in individuals from mild anemia to frequent problems with pain and infection.

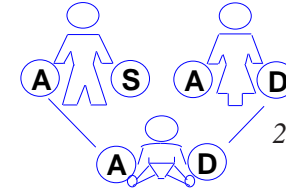
## CAN I HAVE A CHILD WITH HEMOGLOBIN SD DISEASE?

Yes...if you have hemoglobin D trait and your partner has sickle cell trait then, there is a 25% chance *with each pregnancy* that your child will inherit:

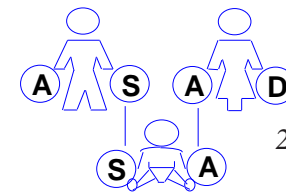
- two normal hemoglobin genes *or*
- one normal gene and one hemoglobin D gene *or*
- one normal gene and one sickle cell gene *or*
- one hemoglobin D gene and one sickle cell gene



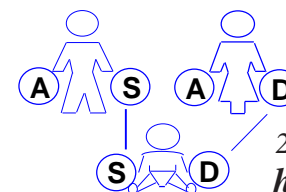
25% chance of a child with normal hemoglobin



25% chance of a child with hemoglobin D trait



25% chance of a child with sickle cell trait



25% chance of a child with hemoglobin SD disease

A = normal hemoglobin gene  
S = sickle hemoglobin gene  
D = hemoglobin D gene

## HOW CAN I FIND OUT WHAT MY HEMOGLOBIN TYPE IS?

A blood test is required to determine hemoglobin type. The test is not done routinely and must be requested by name. The test is called *hemoglobin electrophoresis*.

## HOW COMMON ARE UNUSUAL HEMOGLOBINS?

There are many unusual hemoglobins. Although anyone can inherit an unusual hemoglobin, they tend to be found in people of certain ethnic and racial groups.

Hemoglobin D is found in people whose ancestors come from Pakistan and Northwestern India and occasionally Europeans especially the British and Irish.

Sickle hemoglobin is the most common unusual hemoglobin in the world. It is found in people whose ancestors come from Africa and countries around the Caribbean Sea, such as Puerto Rico, Cuba, Haiti and Jamaica, and also from countries around the Mediterranean Sea, such as Italy, Greece, Turkey, Syria and South India.

Sickle cell trait occurs in approximately 8% of African-Americans.

The second most common unusual hemoglobin in the world is hemoglobin E. It is most commonly found in people from Southeast Asia, including Thailand, Malaysia, Indonesia, Vietnam, Cambodia, and Laos.

# HEMOGLOBIN D

*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?*