Haemoglobin C: Information Sheet

Produced by Specialist Haematology, Canterbury Health Laboratories

Te Whatu Ora Health New Zealand Waitaha Canterbury | Canterbury Health Laboratories www.chl.co.nz | 0800THEL

What is Haemoglobin?

Haemoglobin (Hb) is a protein found in red blood cells; it carries oxygen from the lungs to all parts of the body and gives blood its red colour. Hb is made up of haem groups, which contain iron and globin chains which are made of protein.

The combination of different globin chains with the haem groups produces the different types of haemoglobin present in people. The normal adult haemoglobin is Hb A.

Where a person has inherited Hb A from both parents, they will have the usual Hb combination, Hb AA.

What is Haemoglobin C?

Haemoglobin C (Hb C) is a variant Hb and occurs when the structure of the globin chain is altered.

Heterozygous haemoglobin C (haemoglobin C trait) occurs when a person inherits the normal haemoglobin from one parent and the haemoglobin C from the other (Hb AC).

When a person inherits the haemoglobin C from both parents, they are said to have homozygous haemoglobin C (Hb CC).

Haemoglobin C occurs most frequently in people from Africa, particularly West Africa. There is also a significant incidence in North Africa, the Caribbean and southern Europe.

What is the Treatment?

Haemoglobin C *is **not** an illness* and *requires no regular medical follow-up or treatment.*

Haemoglobin C may be mistaken for iron deficiency anaemia and iron tablets may be given unnecessarily. Iron tablets should only be taken if your doctor has done a special blood test to check that you lack iron.

How is Haemoglobin C inherited?

Haemoglobin C is inherited from either one or both parents who carry the Haemoglobin C gene on the DNA in their cells.

If a person is born with Haemoglobin C, they will have it all their life. It is **not** contagious or infectious.

How Will This Affect My Children?

Every child inherits haemoglobin genes from each parent. The type of haemoglobin gene inherited from the parent determines the type of haemoglobin the child will have.

A person with heterozygous Hb C will pass on either a Hb C gene **or** a normal Hb gene to each of their children.

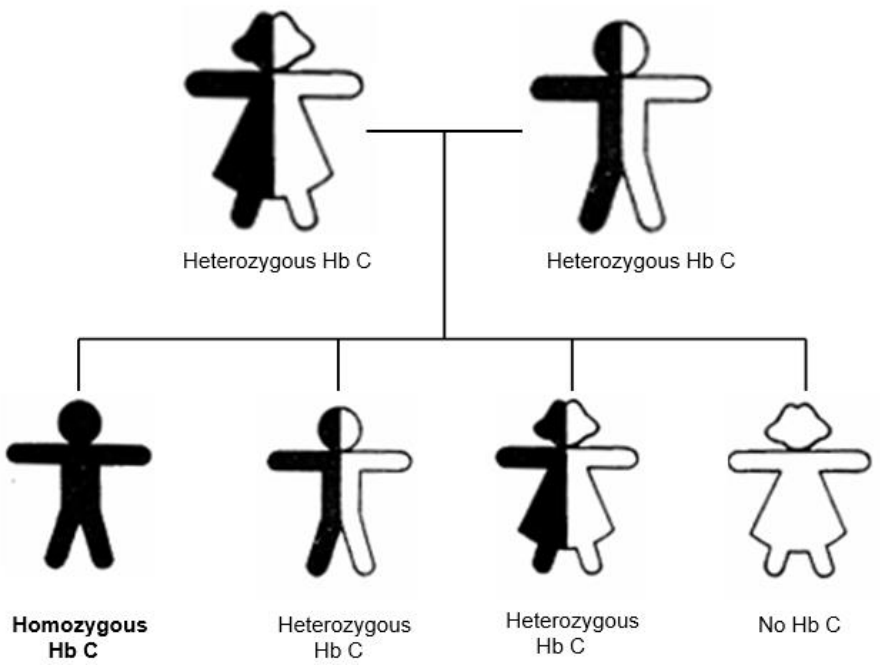
When **both** parents carry a gene for a variant Hb, there is a chance that any child could have a severe form of the variant haemoglobin.

When **two** people with heterozygous Hb C become parents, there are several possible outcomes:

- 25% chance that the child will inherit a Hb C gene from each parent and be homozygous for Hb C
- 50% chance that the child will inherit one normal Hb gene and one Hb C gene and be heterozygous for Hb C like its parents
- 25% chance that the child will inherit two normal haemoglobin genes from its parents and will not have Hb C

These odds are the same for each pregnancy when **both** parents are heterozygous for Hb C.

BOTH PARENTS WITH HETEROZYGOUS Hb C



Why is Knowing About Haemoglobin C so Important?

The inheritance of heterozygous Hb C produces a mild condition.

Homozygous Hb C produces a clinically mild, chronic haemolytic anaemia. Because of the chronic haemolysis (destruction of red blood cells) there is increased incidence of gallstones. Medical follow-up is usually required.

There are other variant haemoglobins or thalassaemias which if inherited together with Hb C can produce a severe condition requiring significant medical follow-up.

If you have Hb C it is important to have your partner tested for the presence of a variant haemoglobin or thalassaemia before you have children.

Is There a Test for Haemoglobin C?

YES ! Blood tests can show whether an individual has haemoglobin C.

It is important to have your partner tested for a variant Hb or thalassaemia before you have children. Other members of your family who are of reproductive age should also be tested for haemoglobin C.

The documentation of carrier status is important as:

1. It avoids the need for repeat testing in the future.
2. Haemoglobin C is often confused with iron deficiency and iron therapy may be given unnecessarily.
3. Haemoglobin C is an inherited disorder which can be passed on to your child.

If two people with a variant Hb do become parents, there are special prenatal tests that can be done to detect a severe condition in the fetus.

Early diagnosis of a possible severe form of variant Hb is important to prevent as many complications as possible.

Can Haemoglobin C Be Prevented?

Haemoglobin C cannot be prevented at this time, but a programme of health education, testing for the trait and genetic counselling can provide families with full medical information to help them have healthy children.

People who think they may have Haemoglobin C should go to their family doctor for advice and testing.

Your family doctor can contact a Haematologist at the Community Laboratory or the Haematology Department at Canterbury Health Laboratories on (03) 364 0300 if further clinical input is required.

The Specialist Haematology Laboratory at Canterbury Health Laboratories provides a comprehensive diagnostic service in conjunction with the family doctor.

Contact for Canterbury Health Laboratories

Laboratory Services: Specialist Haematology Laboratory, Canterbury Health Laboratories.
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On behalf of the Clinical Haematology Team at Christchurch Hospital