

# Sickle cell disease

## What is sickle cell disease?

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Sickle cell disease is a blood disorder affecting haemoglobin production. Haemoglobin is a protein in the blood that carries oxygen around our bodies.

Sickle cell disease is passed from parent to child in genes. Genes carry information about human characteristics such as eye colour, hair colour and haemoglobin.

**Sickle cell disease is inherited.**

**Sickle cell disease is not contagious.**

**Sickle cell disease is not transmitted by germs.**

Sometimes changes occur to genes, resulting in medical conditions. Such changes occur to beta ( $\beta$ ) globin genes in sickle cell disease:

- A person normally inherits two  $\beta$  globin genes for the production of the beta globin protein in haemoglobin.
- A person may have an alteration (mutation) in one of their two  $\beta$  globin genes. This person is called a sickle cell carrier and is healthy.
- Carriers may be at risk of having a child affected with sickle cell disease if their partner is also a sickle cell carrier.
- When a person has the sickle alteration (mutation) in one of their  $\beta$  globin genes, and they have a certain alteration in their other  $\beta$  globin gene they may have a condition called sickle cell disease.

## Treatment

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Those with sickle cell disease require regular medical management to prevent and manage short and long term complications.

## The health of sickle cell carriers

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A carrier can expect to be healthy. It is important that their doctor knows they are a carrier to distinguish any anaemia from anaemia caused by low iron levels.

## Beta thalassaemia and family planning

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The genes for sickle cell disease are common in people of African, Middle Eastern, Southern European, Indian, Pakistani and Caribbean origin.

Couples planning a family, or early in pregnancy, should have a blood test to determine whether or not they are carriers, if the origin of either of their families is one of the areas listed above; or if they have a family history of any blood disorder or anaemia. This test is needed to determine if there is any risk of having a child affected by a genetic blood disorder.

Those at risk of having an affected child have options. These conditions can be diagnosed as early as the 12th week of pregnancy. Termination of pregnancy can then be considered, if appropriate. People can adopt or can consider assisted reproductive techniques (such as preimplantation genetic diagnosis, the use of donor eggs or donor sperm). Others may choose to take the chance of having an affected child. All of these options can be discussed with a Genetic Counsellor.

Testing can be arranged by your local doctor or by contacting the hospitals listed at the end of this pamphlet.

## Important information for your family

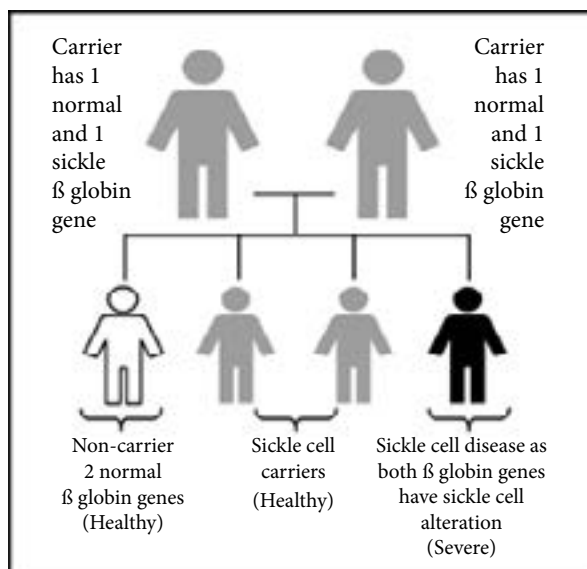
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If you are a carrier of HbS gene (sickle alteration), other members of your family may also be carriers and at risk of having children with a severe blood condition. It is recommended that other family members **and** their partners be tested for their carrier status **prior** to having children of their own.

## Chances of having a child affected with sickle cell disease

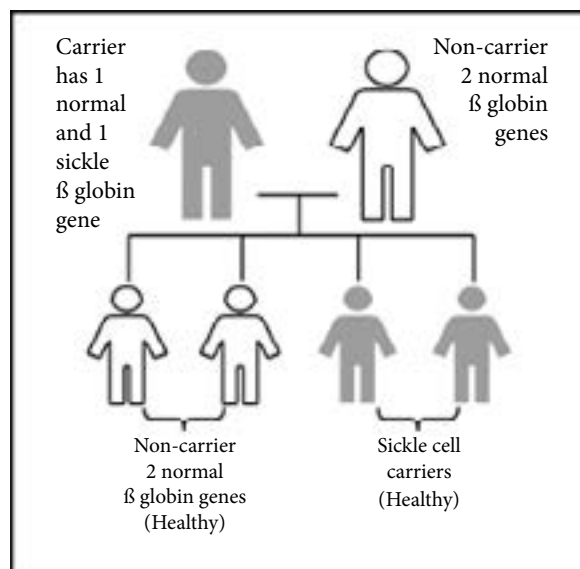
**Figure 1:**

Both parents are carriers of  $\beta$  thalassaemia



**Figure 2:**

Only one parent is a sickle cell carrier



With **each** pregnancy, this couple has a:

- 1 in 4 chance of having a child with 2 normal  $\beta$  globin genes.
- 2 in 4 chance of having a sickle cell carrier.
- 1 in 4 chance of sickle cell disease.

With **each** pregnancy, this couple has a:

- 2 in 4 chance of having a child with 2 normal  $\beta$  globin genes.
- 2 in 4 chance of having a sickle cell carrier.

### Useful contacts

#### [Royal Perth Hospital](#)

Wellington St, Perth WA 6000

Phone: +61 8 9224 2244

#### [Perth Children Hospital](#)

[Department of Oncology and Haematology](#)

15 Hospital Ave, Nedlands WA 6009

Phone: +61 8 6456 2222

#### [Genetics Services WA](#)

King Edward Memorial Hospital,

lvl 4, Agnes Walsh House

374 Bagot Road, Subiaco WA 6008

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