Carrying haemoglobin S (sickle cell)
(also known as being AS, or having sickle cell trait)

- A carrier of haemoglobin S is a healthy person.
- Carrying haemoglobin S does not weaken them physically or mentally.

They do not need any medical treatment because they carry haemoglobin S.

What does it mean to carry haemoglobin S?
Haemoglobin S is one of many possible variations in the blood called *haemoglobin gene variants*, or *haemoglobin variants*.
Haemoglobin is what makes blood red. Carriers of haemoglobin S have both the usual haemoglobin (haemoglobin A) and an unusual haemoglobin called haemoglobin S.
A carrier will always be a carrier, and no-one can catch it from them. They inherited haemoglobin S from one of their parents, and could pass it on to their children.
Anyone can carry Haemoglobin S. It is very common among people who originate from Africa, including African Americans and African Caribbeans, and in parts of the Middle East and India. It also occurs in people who originate from Portugal, Italy, Greece, Cyprus, Turkey or North Africa. It is found occasionally in North Europeans.

Can carrying haemoglobin S cause any health problems?
Carrying haemoglobin S is not an illness, and will never turn into an illness. In fact, carriers are less likely than other people to catch malaria. Carriers can eat what they want, and do any kind of work they choose.
There is a small risk that if a carrier gets extremely short of oxygen, they may have an attack of pain called a "sickle cell crisis". People can get short of oxygen, for example, by competing to hold their breath under water. Such activities should be avoided. People who carry haemoglobin S should also avoid extreme endurance exercises in very hot conditions.
When a carrier sees a health professional (doctor, dentist, nurse or midwife) they should tell them that they carry haemoglobin S, so that they can have appropriate health care. For example if they have an anaesthetic the medical staff need to know.
Carriers can give blood provided that they are not anaemic (do not have a lower haemoglobin level than usual). However, every unit of blood is now filtered for additional safety. The red blood cells of people who carry haemoglobin S may get stuck in the filter and block it. The blood transfusion service cannot use blood from people who carry haemoglobin S until this technical problem has been solved.

Could a carrier of haemoglobin S have children with a serious haemoglobin disorder?
Only if their partner also carries a haemoglobin variant.
With medical help, such a couple can have healthy children.

What should a carrier do if they are thinking of having children?
They should tell their partner that they carry haemoglobin S, and ask him or her to have a blood test “for haemoglobin disorders”. This test should be done before they start a pregnancy, or as soon as possible once a pregnancy has started. Their GP can arrange it.
If their partner is not a carrier, there is nothing to worry about.

What should they do if their partner is also a carrier?
They should ask their GP for an immediate appointment with a specialist counsellor. This is particularly important if they have already started a pregnancy. They can also contact the counselling service directly.

Is there anything else that a carrier should do?
If a carrier has brothers or sisters, or already has children, they need to know that they may also carry haemoglobin S. They should ask their GP or practice nurse for a blood test “for haemoglobin disorders”.

Counselling services for haemoglobin gene variants are provided by:

Sickle Cell and Thalassaemia Support Project Paycare House George Street Wolverhampton WV2 4DX www.sctsp.org.uk	Sickle Cell and Thalassaemia Centre (SCaT) Midland Metropolitan University Hospital Grove Lane Smethwick B66 2RT www.swbh.nhs.uk/services/sickle-cell-and-thalassaemia