St. Jude Children's Research Hospital
ALSAC • Danny Thomas, Founder
Finding cures. Saving children.

Red Blood Cell Transfusions for Sickle Cell Disease

Red Blood Cell Transfusions for Sickle Cell Disease

Produced by St. Jude Children's Research Hospital, Departments of Hematology, Patient Education, and Biomedical Communications. Funds were provided by St. Jude Children's Research Hospital, ALSAC, and a grant from the Plough Foundation.

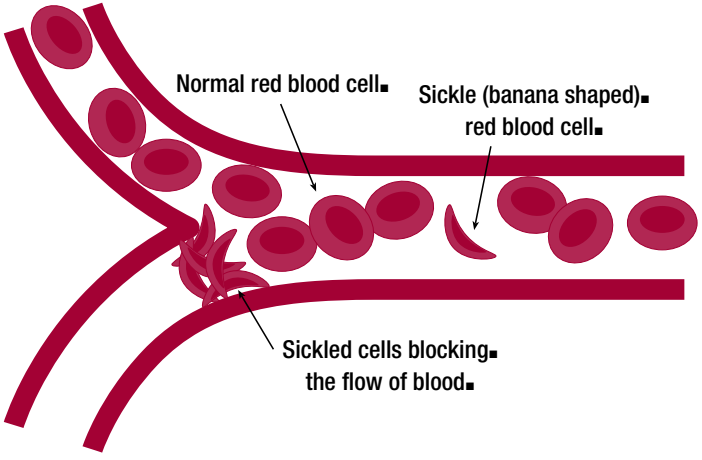
This document is not intended to take the place of the care and attention of your personal doctor. Our aim is to promote active participation in your care and treatment by providing information and education. Questions about individual health concerns or specific treatment options should be discussed with your doctor. For more general information on sickle cell disease, please visit our Web site at *www.stjude.org/sicklecell*.

What is a red blood cell transfusion?

This type of procedure involves the transfer of red blood cells from one (1) person to another. Red blood cells are obtained when a person donates blood. The red cells are separated from the other parts of blood. These red blood cells are collected in a bag, stored in a refrigerator, and then given to another person through a vein. Donated blood cells are carefully tested for infections and closely matched to the recipient to prevent reactions.

Why is a red blood cell transfusion given to sickle cell patients?

Normal red blood cells carry oxygen throughout the body. The red blood cells of people with sickle cell disease do not deliver oxygen as well as normal red blood cells do. In addition, these cells may change into a sickle shape, which blocks the flow of blood through the vessels. When a person with sickle cell disease has certain complications (health problems) from the disease, transfusing normal red blood cells may help deliver oxygen to the body and unblock blood vessels.



How long are transfusions needed?

Transfusions are given for different health problems caused by sickle cell disease. For some problems, a blood transfusion may be a life-saving measure. Sometimes only a single transfusion is needed. Other times patients need "chronic" transfusions, which could mean receiving blood one (1) time a month for many years.

These are some of the reasons a sickle cell patient might need blood transfusions:

- **Stroke** When a stroke occurs, the brain suffers damage because blood circulation is blocked to a portion of the brain.

  Chronic transfusions are used to prevent further strokes and brain damage, and they are usually given for many years.

- **Acute chest syndrome (pneumonia)** When anemia is worse, breathing is hard and often the oxygen level in the body is lower than it should be. At these times, a transfusion may be needed.

  Chronic transfusions may be used to prevent further episodes of acute chest syndrome, and they are usually given for one (1) or 2 years.

- **Abnormal transcranial Doppler ultrasound (TCD)** TCD is a sound wave test that measures the blood flow in blood vessels of the brain. Very fast blood flow indicates that a child is at high risk for having a stroke.

  Chronic red blood cell transfusion has been proven to greatly decrease the risk for strokes in these patients.

How is a transfusion given?

Red blood cells may be infused through a regular IV or through a central line or port in patients who have them. Transfusions can be given in the hospital or in an outpatient unit. Usually the patient goes home right after the transfusion is complete.

What are the benefits of transfusion?

Providing normal red blood cells in the circulation:

- Allows more hemoglobin to better deliver oxygen to the body,
- Prevents blockage of flow in blood vessels, and
- Decreases the need to produce new red blood cells, because transfused red blood cells live longer in the body than sickle-shaped red blood cells.

Chronic transfusions greatly decrease health problems caused by sickle cell disease (such as acute chest syndrome). They also can prevent stroke (or repeat stroke) from occurring.

What are the possible risks of transfusion?

- **Iron overload** Excess iron from transfused red blood cells can build up and remain in the body. This can lead to major damage in the heart, liver, and other organs. After about 2 years of chronic transfusions, patients often need to be treated with medicines to help remove iron from the body (iron chelators).
- **Transfusion reactions** The body's immune system may have a reaction to parts of the transfused blood. Symptoms include rash, itching, chills, fever, and pain. More serious reactions may cause shortness of breath. Transfusion reactions also occur when the body's immune system makes chemicals called antibodies against the transfused blood cells. These antibodies may develop after only a few transfusions and make it harder to find matched blood. Sometimes the patient may have to stop receiving chronic transfusions and consider other types of medical treatment.

- **Transmission of infections** All blood products are carefully screened to prevent the patient receiving the blood from getting an infectious disease such as hepatitis or HIV. Fortunately, the chance of getting an infection from a blood transfusion is extremely small. For example, at the present time, the risk of getting HIV from a blood transfusion is less than one (1) in a million.

Are chronic transfusions the only treatment for sickle cell disease?

Chronic transfusions are one (1) treatment option at this time. Treatments such as hydroxyurea have also been proven to control symptoms of sickle cell disease. Stem cell (bone marrow) transplants (replacing the patient's bone marrow with normal bone marrow) can cure sickle cell disease. But these transplants require a suitable donor and can sometimes cause severe side effects.

With whom can I talk about red blood cell transfusion?

At St. Jude Children's Research Hospital, we have been using red blood cell transfusions to treat children with sickle cell disease for many years. Our doctors and other staff members are experts and can answer your questions. We encourage families to discuss treatment options and to ask questions to learn more about the care of their children with sickle cell disease.

Notes

For ordering information contact:
St. Jude Children's Research Hospital
262 Danny Thomas Place, Mail Stop 800
Memphis, TN 38105-3678
901.595.5684

www.stjude.org/sicklecell

BMC–02/16 (L7600)