

Sickle Cell Anemia Fact Sheet

Sickle Cell Anemia

Sickle cell anemia is a recessive genetic blood disorder caused by a defect in the gene which codes for hemoglobin. The defective gene is called hemoglobin S, which changes the shape of the red blood cells from circular to crescent- or sickle-shaped. With this change in shape, the red blood cells deliver less oxygen to the body's tissues and there is an increased chance of the cell getting caught in the small blood vessels and breaking apart; both of which can interrupt blood flow. These issues will decrease the amount of oxygen flowing to the tissues.

Being a recessive genetic disorder, sickle cell is shown when both parents have the disorder, one parent has the disorder and the other is a carrier (known as sickle cell trait), or both parents are carriers for the disorder. People with the trait do not have the symptoms of sickle cell anemia but have the ability to pass the disorder to their children.

Sickle cell anemia is most common among people of African and Mediterranean descent. It is also common in people from South American or Central American countries, the Caribbean and the Middle East. In the United States, it affects around 72,000 people, most of whom have ancestors from Africa. About 2 million Americans, or 1 in 12 African Americans, carry the sickle cell trait.

The disorder's course does not follow a single pattern; some patients may have mild symptoms, while others have severe symptoms which can require hospitalization. The symptoms occur in painful episodes, called crises, which can last from hours to days. Crises can cause pain the bones of the back, long bones, and the chest.

In a severe crisis, the following symptoms may be experienced:

- Fatigue
- Paleness
- Rapid heart rate
- Shortness of breath
- Jaundice (yellowing of the eyes and skin)

If small blood vessels become blocked by the sickle-shaped cells, the following symptoms may occur:

- Priapism (painful and prolonged erection)
- Poor eyesight and blindness
- Problems thinking or confusion caused by small strokes
- Ulcers on the lower legs

Over time, the spleen no longer works and the following symptoms or infections can occur:

- Bone infection (osteomyelitis)

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- Gallbladder infection (cholecystitis)
- Lung infection (pneumonia)
- Urinary tract infection

The following other symptoms can occur:

- Delayed growth and puberty
- Painful joints caused by arthritis

Hemoglobin electrophoresis is the most common method of testing for sickle cell anemia. This blood test measures the different types of the oxygen-carrying protein (hemoglobin) in the blood. Each state began screening at different times; beginning with New York on April 1, 1975. Pennsylvania began testing in September 28, 1992. As of 2012, all states test newborn infants for sickle cell anemia.

There are many treatment options to reduce the number of crises. Folic acid supplements, which are needed to make new red blood cells, should be taken. Treatment options include:

- Blood transfusions
- Pain medicines
- Plenty of fluids
- Hydroxyurea: a medicine that may help reduce the number of pain episodes in some people

Treatments to manage possible complications due to sickle cell anemia include:

- Dialysis or kidney transplant for kidney disease
- Counseling for psychological complications
- Gallbladder removal in people with gallstone disease
- Hip replacement for avascular necrosis of the hip
- Surgery for eye problems
- Treatment for overuse or abuse of narcotic pain medicines
- Wound care for leg ulcers

Due to a better understanding and management of the disease, the prognosis for sickle cell anemia is better today than it was in the past. The most common causes for death due to sickle cell anemia include organ failure and infection.

The NCAA Division III recently updated their policy on testing for sickle cell anemia. It is now required that all athletes be tested for the trait or sign a written release declining the test before competing. This is new to Division III, but has been mandatory for Division I and II schools. There are many reasons for this change. People with sickle cell trait (they are carriers for the disorder) normally do not show symptoms of the disorder, however, there is still the

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possibility of experiencing severe reactions, including sudden death when severely dehydrated or during intense physical activity. The mandatory testing is to give coaches and athletic trainers awareness that some athletes may need to take precautions.

Sources:

<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001554/>

http://www.ornl.gov/sci/techresources/Human_Genome/posters/chromosome/sca.shtml

<http://www.medpagetoday.com/Orthopedics/SportsMedicine/36947>



SICKLE CELL TRAIT STATUS VERIFICATION FORM

Name: _____ Sport: _____

Date of Birth: _____ Year of Eligibility: 1 2 3 4

Student I.D. # _____ Cell Phone #: _____

Local Address: _____

Please list the date of the Sickle Cell Trait testing: _____

Please list the result of the Sickle Cell Trait Screen: Positive _____ Negative _____

If available: Hemoglobin electrophoresis result _____

Are there any restrictions to participation: No restrictions _____

Restricted to _____

I verify that the above named individual has been tested for Sickle Cell Trait.

Signature of Health Care Provider: _____

Date: _____

Health Care Provider Printed Name: _____

Address: _____

Phone Number: _____

SIGN AND RETURN ALL FORMS TO GABLE HEALTH CENTER

13th & BERN STREETS, READING, PA 19612 FAX 610-921-7590



Sickle Cell Trait Status Testing Waiver

I _____ understand and acknowledge that:
(Student-Athlete Name)

I have read and fully understand the facts about sickle cell trait and sickle cell trait testing.

The NCAA recommends, and Albright College Athletics require, that all student-athletes have knowledge of their sickle cell trait status before participating in any intercollegiate athletic event, including strength and conditioning sessions, practice, and competitions.

Recognizing that my true physical condition is dependent upon an accurate medical history and a full disclosure of any symptoms, complaints, prior injuries, ailments, and/or disabilities experienced, I hereby affirm that I have fully disclosed in writing any prior medical history and/or knowledge of sickle cell trait status to the Albright College Athletic Training Staff.

I do not wish to undergo sickle cell trait testing as part of my pre-participation physical examination and I agree to defend, hold harmless, indemnify and release the Board of Trustees of Albright College, and their officers, employees, agents, and volunteers, from and against any and all claims, demands, actions, or causes of action of any sort on account of personal injury or death which may result from my non-compliance with the recommendation of the NCAA and requirement of Albright College Athletics.

I have read this document and acknowledge that I understand its significance. I further state that I am at least 18 years of age and competent to sign this waiver, or that if I am under 18 years of age, I have the approval of my parents or guardian to sign this waiver as evidenced by their signature on this document.

(student-athlete name, please print)

(sport)

(student-athlete signature)

(date)

(parent/guardian signature, if under 18 years of age)

(date)

SIGN AND RETURN ALL FORMS TO THE GABLE HEALTH CENTER STAFF

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