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## Sickle Cell Anemia

**Also called: Hemoglobin SS disease**

Sickle cell anemia is a disease in which your body produces abnormally shaped red blood cells. The cells are shaped like a crescent or sickle. They don't last as long as normal, round red blood cells. This leads to anemia [<http://www.nlm.nih.gov/medlineplus/anemia.html>] . The sickle cells also get stuck in blood vessels, blocking blood flow. This can cause pain and organ damage.

A genetic problem causes sickle cell anemia. People with the disease are born with two sickle cell genes, one from each parent. If you only have one sickle cell gene, it's called sickle cell trait. About 1 in 12 African Americans has sickle cell trait.

The most common symptoms are pain and problems from anemia. Anemia can make you feel tired or weak. In addition, you might have shortness of breath, dizziness, headaches, or coldness in the hands and feet.

A blood test can show if you have the trait or anemia. Most states test newborn babies as part of their newborn screening programs.

Sickle cell anemia has no widely available cure. Treatments can help relieve symptoms and lessen complications. Researchers are investigating new treatments such as blood and marrow stem cell transplants, gene therapy, and new medicines.

*NIH: National Heart, Lung, and Blood Institute*

### Start Here



- Facts about Sickle Cell Disease [<http://www.cdc.gov/ncbddd/sicklecell/facts.html>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/ncbddd/Spanish/sicklecell/facts.html>]
- JAMA Patient Page: Sickle Cell Vasculopathy [[http://jama.jamanetwork.com/data/Journals/JAMA/4443/jpg1210\\_2690\\_2690.pdf](http://jama.jamanetwork.com/data/Journals/JAMA/4443/jpg1210_2690_2690.pdf)]  
(American Medical Association) - PDF  
Available in Spanish [<http://jama.jamanetwork.com/data/Journals/JAMA/4443/pdfpat121008.pdf>]
- Sickle Cell Anemia [<http://www.mayoclinic.org/diseases-conditions/sickle-cell-anemia/basics/definition/CON-20019348?p=1>]  
(Mayo Foundation for Medical Education and Research)
- Sickle Cell Anemia [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/>]  (National Heart, Lung, and Blood Institute)  
Available in Spanish [[http://www.nhlbi.nih.gov/health/dcisp/Diseases/sca/sca\\_what.html](http://www.nhlbi.nih.gov/health/dcisp/Diseases/sca/sca_what.html)]
- Sickle Cell Disease [<http://familydoctor.org/familydoctor/en/diseases-conditions/sickle-cell-disease.printerview.all.html>]  
(American Academy of Family Physicians)  
Available in Spanish [<http://es.familydoctor.org/familydoctor/es/diseases-conditions/sickle-cell-disease.printerview.all.html>]
- Sickle Cell Disease [<http://www.cdc.gov/ncbddd/sicklecell/index.html>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/ncbddd/spanish/sicklecell/index.html>]
- Sickle Cell Disease (SCD) [<http://bethematch.org/for-patients-and-families/learning-about-your-disease/sickle-cell-disease/>]  
(National Marrow Donor Program)
- When Blood Cells Bend: Understanding Sickle Cell Disease [<http://newsinhealth.nih.gov/issue/Apr2012/Feature2>]  
 (National Institutes of Health)

### Latest News



- Few Sickle Cell Patients Receiving Beneficial Drug, Study Finds [[http://www.nlm.nih.gov/medlineplus/news/fullstory\\_152252.html](http://www.nlm.nih.gov/medlineplus/news/fullstory_152252.html)]  
(04/28/2015, HealthDay)

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## Diagnosis/Symptoms

- Blood Smear [<http://labtestsonline.org/understanding/analytes/blood-smear/tab/test>] (American Association for Clinical Chemistry)
- Complete Blood Count [<http://labtestsonline.org/understanding/analytes/cbc/tab/test>] (American Association for Clinical Chemistry)
- Hemoglobinopathy Evaluation [<http://labtestsonline.org/understanding/analytes/hemoglobin-var/tab/test>] (American Association for Clinical Chemistry)
- How Is Sickle Cell Anemia Diagnosed? [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/diagnosis.html>]  (National Heart, Lung, and Blood Institute)
- Sickle Cell Tests [<http://labtestsonline.org/understanding/analytes/sickle/tab/test>] (American Association for Clinical Chemistry)
- What Are the Signs and Symptoms of Sickle Cell Anemia? [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/signs.html>]  (National Heart, Lung, and Blood Institute)

## Treatment

- Blood and Marrow Stem Cell Transplant [<http://www.nhlbi.nih.gov/health/health-topics/topics/bmsct/>]  (National Heart, Lung, and Blood Institute)
- Complications and Treatments [<http://www.cdc.gov/ncbddd/sicklecell/treatments.html>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/ncbddd/spanish/sicklecell/symptoms.html>]
- How Is Sickle Cell Anemia Treated? [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/treatment.html>]  (National Heart, Lung, and Blood Institute)  
Available in Spanish [<http://www.nhlbi.nih.gov/health-spanish/health-topics/temas/sca/treatment>]
- MedlinePlus: Bone Marrow Transplantation [<http://www.nlm.nih.gov/medlineplus/bonemarrowtransplantation.html>]  (National Library of Medicine)  
Available in Spanish [<http://www.nlm.nih.gov/medlineplus/spanish/bonemarrowtransplantation.html>]


## Prevention/Screening

- Genetic Counseling (For Parents) [[http://kidshealth.org/parent/system/medical/genetic\\_counseling.html](http://kidshealth.org/parent/system/medical/genetic_counseling.html)] (Nemours Foundation)  
Available in Spanish [[http://kidshealth.org/parent/en\\_espanol/embarazo/genetic\\_counseling\\_esp.html](http://kidshealth.org/parent/en_espanol/embarazo/genetic_counseling_esp.html)]


## Coping

- Information and Resources for Caregivers: Sickle Cell Disease [[http://www.netofcare.org/content/specific\\_illnesses/sickle\\_cell.asp](http://www.netofcare.org/content/specific_illnesses/sickle_cell.asp)] (Beth Israel Medical Center, Department of Pain Medicine and Palliative Care)


## Disease Management

- Living Well with Sickle Cell Disease [<http://www.cdc.gov/ncbddd/sicklecell/healthyliving-living-well.html>] (Centers for Disease Control and Prevention)
- Living with Sickle Cell Anemia [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/livingwith.html>]  (National Heart, Lung, and Blood Institute)
- Sickle Cell Pain [[http://www.stoppain.org/pain\\_medicine/content/chronicpain/sickle.asp](http://www.stoppain.org/pain_medicine/content/chronicpain/sickle.asp)] (Beth Israel Medical Center, Department of Pain Medicine and Palliative Care)

## Related Issues

- Five Tips to Help Prevent Infections [<http://www.cdc.gov/ncbddd/sicklecell/healthyliving-prevent-infection.html>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/ncbddd/spanish/sicklecell/healthyliving-prevent-infection.html>]
- For People of African, Mediterranean, or Southeast Asian Heritage: Important Information about Diabetes Blood Tests [<http://diabetes.niddk.nih.gov/dm/pubs/traitA1C/index.aspx>]  (National Institute of Diabetes and Digestive and Kidney Diseases)
- Hemoglobin C, S-C, and E Diseases [[http://www.merckmanuals.com/home/blood\\_disorders/anemia/hemoglobin\\_c\\_s-c\\_and\\_e\\_diseases.html](http://www.merckmanuals.com/home/blood_disorders/anemia/hemoglobin_c_s-c_and_e_diseases.html)] (Merck & Co., Inc.)
- Sickle Cell Disease and Pulmonary Hypertension [<http://www.phassociation.org/document.doc?id=960>] (Pulmonary Hypertension Association) - PDF

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- Stay Healthy with Sickle Cell Disease [<http://www.cdc.gov/Features/SickleCell/>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/spanish/especialesCDC/AnemiaDrepanocitica/>]
- What Causes Sickle Cell Anemia? [<http://www.nhlbi.nih.gov/health/health-topics/topics/sca/causes.html>]  
 (National Heart, Lung, and Blood Institute)


## Health Check Tools

- Sickle Cell Anemia with Pain [<http://www.freemd.com/sickle-cell-anemia-with-pain/visit-virtual-doctor.htm>] (DSHI Systems)
- Sickle Cell Disease Quiz [<http://www.cdc.gov/ncbddd/sicklecell/quiz/>] (Centers for Disease Control and Prevention)



## Tutorials

- What Is Sickle Cell Disease? [<http://www.yourgenesyourhealth.org/sickle/whatisit.htm>] (Dolan DNA Learning Center)

## Clinical Trials

- ClinicalTrials.gov: Anemia, Sickle Cell [<http://clinicaltrials.gov/search/open/condition=%22Anemia,+Sickle+Cell%22>]  
 (National Institutes of Health)

## Genetics

- Genetics Home Reference: Sickle cell disease [<http://ghr.nlm.nih.gov/condition/sickle-cell-disease>]  (National Library of Medicine)
- Learning about Sickle Cell Disease [<http://www.genome.gov/page.cfm?pageID=10001219>]  (National Human Genome Research Institute)
- Sickle Cell Trait [<http://www.cdc.gov/ncbddd/sicklecell/traits.html>] (Centers for Disease Control and Prevention)

## Journal Articles

### References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Proportion of adults with sickle cell anemia and pain crises... [<http://www.ncbi.nlm.nih.gov/pubmed/25919532?tool=MedlinePlus>]
- Article: Cognitive behavioral therapy in patients with sickle cell disease. [<http://www.ncbi.nlm.nih.gov/pubmed/25842524?tool=MedlinePlus>]
- Article: Sickle cell disease: time for a targeted neonatal screening programme. [<http://www.ncbi.nlm.nih.gov/pubmed/25803954?tool=MedlinePlus>]
- Sickle Cell Anemia -- see more articles [[http://www.ncbi.nlm.nih.gov/pubmed?term=anemia,sickle+cell\[majr\]+AND+english\[la\]+AND+humans\[mh\]+AND+\(review\[pt\]+OR+guideline\[pt\]+OR+clinical+trial\[pt\]+OR+jsubsetaim\[text\]+OR+jsubsetn\[text\]+OR+jsubsetk\[text\]+OR+patient+education+hand+out\[pt\]\)+NOT+\(letter\[pt\]+OR+editorial\[pt\]\)+AND+%22last+1+Year%22\[edat\]&tool=MedlinePlus](http://www.ncbi.nlm.nih.gov/pubmed?term=anemia,sickle+cell[majr]+AND+english[la]+AND+humans[mh]+AND+(review[pt]+OR+guideline[pt]+OR+clinical+trial[pt]+OR+jsubsetaim[text]+OR+jsubsetn[text]+OR+jsubsetk[text]+OR+patient+education+hand+out[pt])+NOT+(letter[pt]+OR+editorial[pt])+AND+%22last+1+Year%22[edat]&tool=MedlinePlus)]


## Dictionaries/Glossaries

- Glossary [<http://www.sicklecelldisease.org/index.cfm?page=glossary>] (Sickle Cell Disease Association of America)

## Directories

- Sickle Cell Clinics, Contacts, and Resources [<http://scinfo.org/sickle-cell-clinics-contacts-and-resources>]  
(Georgia Comprehensive Sickle Cell Center at Grady Health System)

## Organizations

- National Heart, Lung, and Blood Institute [<http://www.nhlbi.nih.gov/>] 
- Sickle Cell Disease Association of America [<http://www.sicklecelldisease.org/>]
- Sickle Cell Information Center [<http://scinfo.org/>] (Georgia Comprehensive Sickle Cell Center at Grady Health System)

## Law and Policy

- Sickle Cell Disease: Americans with Disabilities Act [<http://scinfo.org/world-wide-resources/americans-with-disabilities-act>]  
(Georgia Comprehensive Sickle Cell Center at Grady Health System)

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## Statistics

- Children with Sickle Cell Disease Had Significantly Higher Medical Costs Than Those without SCD [[http://www.cdc.gov/Features/dsSickleCell\\_MedicalCosts/](http://www.cdc.gov/Features/dsSickleCell_MedicalCosts/)] (Centers for Disease Control and Prevention)
- Data and Statistics [<http://www.cdc.gov/ncbddd/sicklecell/data.html>] (Centers for Disease Control and Prevention)  
Available in Spanish [<http://www.cdc.gov/ncbddd/spanish/sicklecell/data.html>]

## Children

- Do You Know about Sickle Cell Anemia? [[http://kidshealth.org/kid/health\\_problems/blood/sickle\\_cell.html](http://kidshealth.org/kid/health_problems/blood/sickle_cell.html)] (Nemours Foundation)
- Sickle Cell Disease (For Parents) [[http://kidshealth.org/parent/medical/heart/sickle\\_cell\\_anemia.html](http://kidshealth.org/parent/medical/heart/sickle_cell_anemia.html)] (Nemours Foundation)
- Sickle Cell Disease and Your Baby [<http://www.marchofdimes.com/baby/sickle-cell-disease-and-your-baby.aspx>]  
(March of Dimes Birth Defects Foundation)  
Available in Spanish [<http://nacersano.marchofdimes.com/complicaciones/anemia-falciforme.aspx>]
- Truth about Transfusions [[http://kidshealth.org/kid/feel\\_better/things/transfusions.html](http://kidshealth.org/kid/feel_better/things/transfusions.html)] (Nemours Foundation)

## Teenagers

- Sickle Cell Anemia [[http://kidshealth.org/teen/diseases\\_conditions/blood/sickle\\_cell\\_anemia.html](http://kidshealth.org/teen/diseases_conditions/blood/sickle_cell_anemia.html)] (Nemours Foundation)  
Available in Spanish [[http://kidshealth.org/teen/en\\_espanol/enfermedades/sickle\\_cell\\_anemia\\_esp.html](http://kidshealth.org/teen/en_espanol/enfermedades/sickle_cell_anemia_esp.html)]

## Women

- What You Should Know about Sickle Cell Disease and Pregnancy [[http://www.cdc.gov/ncbddd/sicklecell/documents/scd-factsheet\\_scd--pregnancy.pdf](http://www.cdc.gov/ncbddd/sicklecell/documents/scd-factsheet_scd--pregnancy.pdf)] (Centers for Disease Control and Prevention) - PDF

## Patient Handouts

- Hemoglobin electrophoresis [<http://www.nlm.nih.gov/medlineplus/ency/article/003639.htm>]  
Available in Spanish [<http://www.nlm.nih.gov/medlineplus/spanish/ency/article/003639.htm>]
- Sickle cell anemia [<http://www.nlm.nih.gov/medlineplus/ency/article/000527.htm>]  
Available in Spanish [<http://www.nlm.nih.gov/medlineplus/spanish/ency/article/000527.htm>]
- Sickle cell test [<http://www.nlm.nih.gov/medlineplus/ency/article/003666.htm>]  
Available in Spanish [<http://www.nlm.nih.gov/medlineplus/spanish/ency/article/003666.htm>]



## MEDICAL ENCYCLOPEDIA

- Hemoglobin electrophoresis [<http://www.nlm.nih.gov/medlineplus/ency/article/003639.htm>]
- Hemoglobinuria test [<http://www.nlm.nih.gov/medlineplus/ency/article/003363.htm>]
- Sickle cell anemia [<http://www.nlm.nih.gov/medlineplus/ency/article/000527.htm>]
- Sickle cell test [<http://www.nlm.nih.gov/medlineplus/ency/article/003666.htm>]
- Total iron binding capacity [<http://www.nlm.nih.gov/medlineplus/ency/article/003489.htm>]

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**Related Health Topics**

Blood, Heart and Circulation [<http://www.nlm.nih.gov/medlineplus/bloodheartandcirculation.html>]

Genetics/Birth Defects [<http://www.nlm.nih.gov/medlineplus/geneticsbirthdefects.html>]

**National Institutes of Health**

The primary NIH organization for research on *Sickle Cell Anemia* is the National Heart, Lung, and Blood Institute [<http://www.nhlbi.nih.gov/>]

**NIH MedlinePlus Magazine**

"I Have Sickle Cell Disease, But Sickle Cell Doesn't Have Me" [<http://www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg19.html>]

Latest Sickle Cell Research [<http://www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg21.html>]

Sickle Cell Disease: "Be Sickle Smart!" [<http://www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg16.html>]

Sickle Cell Disease: Symptoms, Diagnosis, Treatment and Recent Developments [<http://www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg18.html>]

Sickle Cell Research: Yesterday, Today, and Tomorrow [<http://www.nlm.nih.gov/medlineplus/magazine/issues/winter11/articles/winter11pg17.html>]

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Page last updated on 12 May 2015

Topic last reviewed: 14 August 2014