

Terry, 31, lives with sickle cell disease

Know Your Numbers

Understanding Your Red Blood Cell Health in Sickle Cell Disease

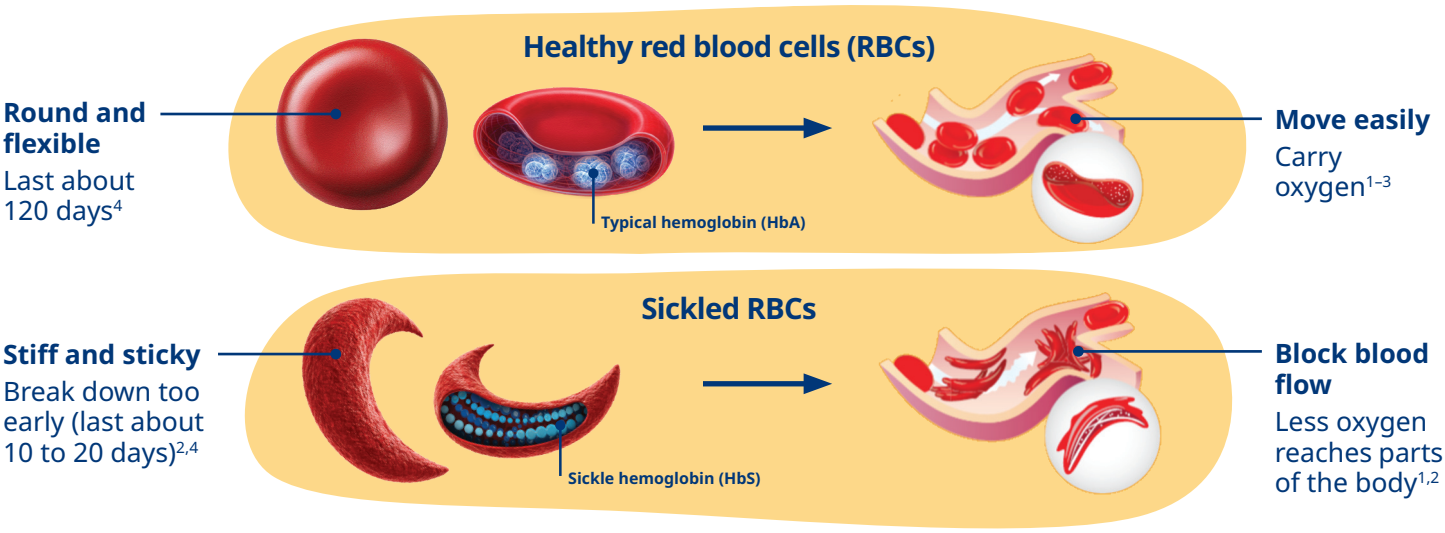
SCD can affect your body in ways you can feel, and in ways you may not notice right away.

Even when you feel well, damage may still be happening silently.[1,2]

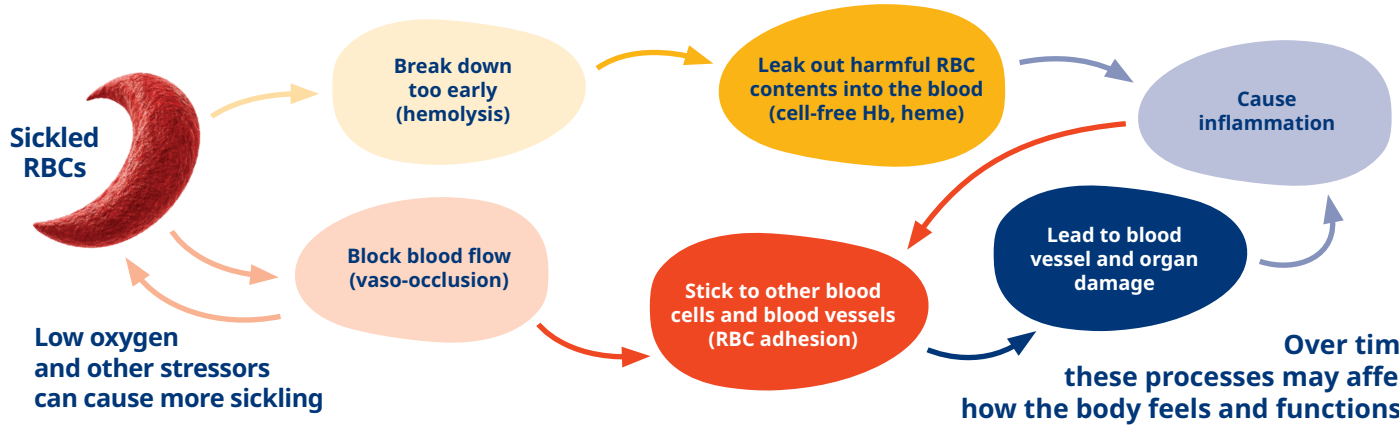
Blood tests can help you and your care team understand what's happening inside your body.[3]

How Does SCD Affect My Red Blood Cells (RBCs)?

SCD can affect the shape of RBCs, causing them to break down faster and reducing their ability to carry oxygen throughout the body.[1,2,4]



What Happens When RBCs Are Sickled?[5,6]



Keeping your RBCs healthy longer is an important part of managing SCD and protecting your long-term health

What Your Numbers Can Tell You

Different blood tests give you and your care team helpful clues about how your RBCs are doing.[3] Knowing *your* usual (or baseline) numbers can help to spot changes and show how SCD may be affecting your body over time.

Blood test		What it can tell you	What the results may mean
Hemoglobin *(part of RBCs that carries oxygen)* Part of a complete blood count (CBC) test Often lower in SCD		How well oxygen is being carried throughout your body	↓ **Lower levels** may make you feel tired, weak, or short of breath and may contribute to increased risk of organ damage[5,7,8]
Markers of hemolysis *(RBC breakdown)* Panel of lab markers Often higher in SCD	**Reticulocyte count** *(young RBCs)*	How quickly your body is making new RBCs	↑ **Higher levels** may mean your body is trying to replace RBCs that are breaking down faster than usual[1-3,6]
	Lactate dehydrogenase (LDH) and bilirubin (indirect) *(signs of RBC breakdown)*	Whether your RBCs may be breaking down too quickly	↑ **Higher levels** may be a sign that your SCD is becoming more active and causing more RBCs to break down[2,3]

Lab results are only one part of the picture. Your care team also considers your symptoms, treatment plan, and other factors—such as recent infections, pain crises, blood transfusions, or hydration—that may affect your test results. Baseline numbers can vary from person to person, even among people with the same SCD genotype.

Why Looking at Trends Over Time Matters

One number is a snapshot. Trends tell a story.

Changes in your blood test results over time may be a sign of:

- More RBC sickling
- Increased RBC breakdown
- Inflammation related to SCD

These changes may help explain fatigue, pain crises, or other changes in your health.[6]

Monitoring trends can help you and your care team spot changes early **and take active steps to support your health.**[3]

Ask your doctor about your numbers:

Knowing your baseline numbers is just the beginning. Understanding what they mean and how they may change can help you take an active role in your care.

- What is my usual hemoglobin level?
- What are my usual blood test results for RBC breakdown?
- How have my numbers changed over time and what might those changes mean?
- How often should my blood be checked?
- How might my treatment plan affect my numbers?
- How can I help protect my RBC health?

Know your baseline numbers and how they change over time

Tracking them can help you and your care team understand your RBCs and support your long-term health

Keep learning.

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By scanning, we may collect aggregate data for analytics, but not any personal information.

Abbreviations
Hb, hemoglobin, LDH, lactate dehydrogenase; RBC, red blood cell; SCD, sickle cell disease.

References
1. Kavanagh PL, Fasipe TA, Wun T. Sickle cell disease: a review. *JAMA*. 2022;328(1):57-68. **2.** Kato GJ, Piel FB, Reid CD, et al. Sickle cell disease. *Nat Rev Dis Primers*. 2018;4:18010. **3.** Kalpatthi R, Novelli EM. Measuring success: utility of biomarkers in sickle cell disease clinical trials and care. *Hematology Am Soc Hematol Educ Program*. 2018;2018(1):482-492. **4.** Xue J, Li X-A. Therapeutics for sickle cell disease intravascular hemolysis. *Front Physiol*. 2024;15:1474569. **5.** Sundd P, Gladwin MT, Novelli EM. Pathophysiology of sickle cell disease. *Annu Rev Pathol*. 2019;14:263-292. **6.** Elendu C, Amaechi DC, Alakwe-Ojimba CE, et al. Understanding sickle cell disease: causes, symptoms, and treatment options. *Medicine (Baltimore)*. 2023;102(38):e35237. **7.** Ershler WB, De Castro, LM, Pakbaz Z, et al. Hemoglobin and end-organ damage in individuals with sickle cell disease. *Curr Ther Res Clin Exp*. 2023;98:100696. **8.** Ataga KI, Gordeuk VR, Agodoa I, et al. Low hemoglobin increases risk for cerebrovascular disease, kidney disease, pulmonary vasculopathy, and mortality in sickle cell disease: a systematic literature review and meta-analysis. *PLoS One*. 2020;15(4):e0229959.

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