MAYO CLINIC LABORATORIES

Test Definition: SDEX

Sickle Solubility, Blood

Overview

Useful For
Screening for presence or absence of hemoglobin S (sickle cell disease)

Method Name
Hemoglobin S Solubility

NY State Available
Yes

Specimen

Specimen Type
Whole Blood EDTA

Ordering Guidance
This is a screening test only. For quantification of hemoglobin S, order HBEL1 / Hemoglobin Electrophoresis Evaluation, Blood.

Necessary Information
1. Patient's age is required.
2. Include recent transfusion information.

Specimen Required
Container/Tube:
Preferred: Lavender top (EDTA)
Acceptable: Yellow top (ACD solution B), green top (heparin)
Specimen Volume: 1 mL
Collection Instructions:
1. Invert several times to mix blood.
2. Send whole blood specimen in original tube. **Do not aliquot.**

Forms
If not ordering electronically, complete, print, and send a Benign Hematology Test Request Form (T755) with the specimen.

Specimen Minimum Volume
0.5 mL

Reject Due To

Gross hemolysis	Reject
Fully clotted	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole Blood EDTA	Refrigerated	14 days	

Clinical & Interpretive

Clinical Information

Homozygous hemoglobin (Hb) S (sickle cell disease) is a serious chronic hemolytic anemia most commonly found in those of African or Middle Eastern descent.

Hemoglobin S is freely soluble when fully oxygenated; when oxygen is removed, polymerization of the abnormal hemoglobin occurs, forming tactoids that are rigid and deformed cells. This leads to sickling of the cells, hemolysis, and many other complications.

Heterozygous Hb S (sickle cell trait) is the most common hemoglobinopathy in the United States. This condition is present in about 8% of African Americans. Usually, Hb S trait exhibits no clinical or hematological effects. A small fraction of people with sickle cell trait have recurrent hematuria.

Reference Values

Negative

Interpretation

A positive result should be followed by a complete hemoglobin (Hb) evaluation (HBEL1 / Hemoglobin Electrophoresis Evaluation, Blood) to confirm the presence and concentration of Hb S.

Cautions

A positive test is presumptive evidence for hemoglobin (Hb) S (sickle cell disease). However, rare sickling Hbs such as Hb C-Harlem (C-Georgetown) and Hb I will also produce a positive result.

This test only detects the presence of Hb S. It cannot differentiate sickle cell trait (heterozygous Hb S) from sickle cell disease (homozygous Hb S), or Hb S in combination with other abnormalities (eg, S/C, S/D, S/G, S/E, S/beta-thalassemia, S/O-Arab, S/New York, and C-Georgetown trait).

The use of packed red blood cells (RBC) instead of whole blood significantly reduces false negatives due to anemia and false positives due to hypergammaglobulinemia (eg, multiple myeloma).

False positives can occur due to large numbers of nucleated RBC.

False negatives can occur due to an insufficient quantity of Hb S due to age (neonates) or transfusion. Hb S

concentrations of 15% to 20% or less may give a negative result.

Clinical Reference

1. Fairbanks VF. Laboratory methods and case studies. In: Decker BC, ed. Hemoglobinopathies and Thalassemias. Thieme-Stratton Inc; 1980:105-107
2. Sauntharajah Y, Vichinsky EP. Sickle cell disease: Clinical features and management. In Hoffman R, Benz EJ, Silberstein LE, et al, eds. Hematology: Basic Principles and Practice. 7th ed. Elsevier; 2018:584-607

Performance

Method Description

Hemoglobin S reduced by dithionite is insoluble in concentrated inorganic buffers, and thus, the solution is so turbid that newsprint cannot be read through a tube containing the hemolysate and reagents.(Fairbanks VF, Klee GG. Biochemical aspects of hematology. In: Burtis CA, Ashwood ER, eds. Tietz Textbook of Clinical Chemistry. 3rd ed. WB Saunders Company; 1999: 1678-1679; Greene DN, Vaughn CP, Crews BO, Agarwal AM. Advances in detection of hemoglobinopathies. Clin Chim Acta. 2015;439:50-57)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 4 days

Specimen Retention Time

7 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

85660

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SDEX	Sickle Solubility, B	6864-3

Result ID	Test Result Name	Result LOINC® Value
9180	Sickle Solubility, B	6864-3