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**Lab Dept:** Hematology

**Test Name:** HEMOGLOBIN VARIANT, A2 & F  
QUANTITATION

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***General Information***

**Lab Order Codes:** HGBCE

**Synonyms:** Hbg S and F Quantitation for Therapeutic Monitoring

**CPT Codes:** 83020 – Hemoglobin fractionation and quantitation; electrophoresis

**Testing includes:** Hemoglobin variant, A2 and F measurement by capillary electrophoresis and reported as a % for patients <24 months of age.

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***Logistics***

**Test Indications:** **ORDERED BY LAB ONLY for patients <24 months of age.**  
*Providers should order the Hemoglobin Variant, A2 & F Quantitation (HGBA2F) test available in the EHR. Lab staff will reorder the sendout test if applicable.*

Useful for monitoring patients <24 months of age with sickling disorders who have received hydroxyurea or transfusion therapy. This test is not intended for diagnostic purposes; thus it is assumed the patient's diagnosis is established. If the patient has never been appropriately studies, hemoglobin electrophoresis is necessary.

**Lab Testing Sections:** Hematology - Sendouts

**Referred to:** Mayo Clinic Laboratories (MML Test: HGBCE)

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 1-2 days, performed Monday - Friday

**Special Instructions:** This test is not intended for diagnostic purposes; sendout test is reserved for lab use only based on patient age. See [Test Indications](#).

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***Specimen***

**Specimen Type:** Whole blood

<b>Container:</b>	Lavender (EDTA) top tube Alternate tube: Yellow (ACD)
<b>Draw Volume:</b>	4mL (Minimum: 1 mL) blood
<b>Processed Volume:</b>	Same as Draw Volume.
<b>Collection:</b>	Routine venipuncture
<b>Special Processing:</b>	Lab Staff: <b>Do Not</b> centrifuge. Specimen should remain in original collection container. <b>Do not</b> freeze. Send refrigerated.  Specimen is stable refrigerated for 10 days.
<b>Patient Preparation:</b>	None
<b>Sample Rejection:</b>	Testing cannot be performed on clotted samples; frozen specimens; mislabeled or unlabeled specimens.

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***Interpretive***

**Reference Range:**

Hgb Fraction	Age	Range
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<b>Hgb A</b>	1 – 30 days:	5.9 – 77.2%
	1 – 2 months:	7.9 – 92.4%
	3 – 5 months:	54.7 – 97.1%
	6 – 8 months:	80.0 – 98.0%
	9 – 12 months:	86.2 – 98.0%
	13 – 17 months:	88.8 – 98.0%
	18 – 23 months:	90.4 – 98.0%
<b>Hgb A2</b>	1 – 30 days:	0.0 – 2.1%
	1 – 2 months:	0.0 – 2.6%
	3 – 5 months:	1.3 – 3.1%
	>or = 6 months	2.0 – 3.3%
<b>Hgb F</b>	1 – 30 days:	22.8 – 92.0%
	1 – 2 months:	7.6 – 89.8%
	3 – 5 months:	1.6 – 42.2%
	6 – 8 months:	0.0 – 16.7%
	9 – 12 months:	0.0 – 10.5%
	13 – 17 months:	0.0 – 7.9%
	18 – 23 months:	0.0 – 6.3%
<b>Variant 1</b>	All ages:	0.0%
<b>Variant 2</b>	All ages:	0.0%
<b>Variant 3</b>	All ages:	0.0%

**Critical Values:**

N/A

**Limitations:**

This test is not intended for diagnostic purposes. See [Test Indications](#).

Peaks present in zones Z9, Z7, Z6, Z5, Z3, and Z2 – recently labeled the Z(A), Z(F), Z(D), Z(E), Z(A2) and Z(C) zones, respectively – may not represent the hemoglobin fractions the zones are named after as other variants can migrate to these positions, including the F, A and A2 positions. See the reference lab catalog for more information.

**Methodology:**

Capillary electrophoresis

**References:**

[Mayo Clinic Laboratories](#) June 2024

**Updates:**

6/11/2024: Changed test indications to clarify that this is ordered only by lab based on patient age. Patients  $\geq$  24 months of age will have the testing performed in-house; lab staff will reorder for the sendout if appropriate. Added specimen stability. Modified collection volume. Omitted rejection due to hemolysis. Omitted reference ranges for patients  $\geq$  24 months. Changed test performance days of the week.

5/14/2025: Omitted green top tube, no longer acceptable.