MAYO CLINIC LABORATORIES

**NEW TEST**

Notification Date: February 9, 2021
Effective Date: March 22, 2021

# Hemoglobin Electrophoresis Evaluation, Blood

**Test ID:** HBELP

**Note**: This test will replace HBELX / Hemoglobin Electrophoresis Cascade, Blood.

The following Reflex Tests will have a Reporting Name change:

- IEF – Isoelectric Focusing, B
- HPFH – Hb F Distribution, B
- SDEX – Sickle Solubility, B
- UNHB – Hb Stability, B

## Useful for:

Diagnosis and classification of hemoglobin disorders, including thalassemias and hemoglobin variants

## Profile Information:

| Test ID | Reporting Name | Available Separately | Always Performed |
|---|---|---|---|
| HBELI | Hb Electrophoresis Interpretation | No | Yes |
| HGBCE | Hb Variant, A2 and F Quantitation,B | Yes | Yes |
| HPLC | HPLC Hb Variant, B | No | Yes |

## Reflex Tests:

| Test ID | Reporting Name | Available Separately | Always Performed |
|---|---|---|---|
| HPFH | Hb F Distribution, B | No | No |
| MASS | Hb Variant by Mass Spec, B | No | No |
| SDEX | Sickle Solubility, B | Yes | No |
| IEF | Isoelectric Focusing, B | No | No |
| UNHB | Hb Stability, B | No | No |
| ATHAL | Alpha-Globin Gene Analysis | Yes | No |
| WASQR | Alpha Globin Gene Sequencing, B | Yes (Order WASEQ) | No |
| WBSQR | Beta Globin Gene Sequencing, B | Yes (Order WBSEQ) | No |
| WBDDR | Beta Globin Cluster Locus Del/Dup,B | Yes (Order WBDD) | No |
| WGSQR | Gamma Globin Full Gene Sequencing | No | No |
| HBEL0 | Hb Electrophoresis Summary Interp | No | No |

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## Methods:

Capillary Electrophoresis (HGBCE), Cation Exchange/High-Performance Liquid Chromatography (HPLC), Isoelectric Focusing (IEF), Mass Spectrometry (MASS), Flow Cytometry (HPFH), Isopropanol and Heat Stability (UNHB).

## Reference Values:

**HEMOGLOBIN A**:
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%
> or =24 months: 95.8-98.0%

**HEMOGLOBIN A2**:
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%

**HEMOGLOBIN F**:
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%
> or =24 months: 0.0-0.9%

**VARIANT 1**
0.00

**VARIANT 2**
0.0

**VARIANT 3**
0.0

## Specimen Requirements:

**Container/Tube:**

| | |
|---|---|
| **Preferred:** | Lavender top (EDTA) |
| **Acceptable:** | ACD (solution B), green top (sodium heparin) |
| **Specimen Volume:** | 10 mL |
| **Collection Instructions:** | Send specimen in original tube. **Do not aliquot.** |
| **Minimum Volume:** | 1 mL (this volume will limit reflex testing possibilities)<br>3 mL if multiplex ligation-dependent probe amplification is desired |

## Specimen Stability Information:

| Specimen Type | Temperature | Time |
|---|---|---|
| Whole Blood EDTA | Refrigerated | 7 days |

## Cautions:

Some hemoglobin disorders and variants are not detected by the screening methods including common alpha thalassemia conditions and require further reflex testing to identify. If a family history of a known hemoglobin disorder, prior therapy for a hemoglobin disorder, or otherwise unexplained lifelong/familial symptoms such as hemolysis, microcytosis, erythrocytosis/polycythemia, cyanosis, or hypoxia are present, this should be clearly communicated to the laboratory so appropriate reflex testing can be added, see Metabolic Hematology Patient Information (T810).

Recent transfusion may mask protein results including hemoglobin electrophoresis, hereditary persistence of hemoglobin F (HPFH) by flow cytometry, stability studies, and sickle solubility studies depending on percentage of transfused cells present.

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Some hemoglobin variants can originate from the donor blood product and not from the tested recipient. These are typically found in low percentage.

If the patient has undergone a bone marrow transplant, the results may show atypical results and should be interpreted in the context of clinical information.

Some therapies cause artefactual effects in protein studies, including hydroxyurea and decitabine (increased Hb F levels), Voxelotor (artefactual peaks) and gene therapy (alternate protein detection, Beta T87Q, by mass spectrometry). Clear communication of prior therapy is strongly recommended.

## CPT Code:

83020-Quantitation by electrophoresis
83021-Quantitation by HPLC
82664-Electrophoresis, not elsewhere specified (if appropriate)
83068 (if appropriate)
83789 (if appropriate)
88184 (if appropriate)

**Day(s) Setup:** Monday through Saturday **Analytic Time:** 2 days

## Questions

Contact Amy Nelson, Laboratory Technologist Resource Coordinator at 800-533-1710.

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