Lab Dept: Hematology

Test Name: HEMOGLOBINOPATHY & THALASSEMIA EVALUATION

General Information

Lab Order Codes: THEV

Synonyms: Hemoglobin cascade; Hemoglobin Electrophoresis Cascade Level 1; Hemoglobin Molecular studies

CPT Codes:
83020 – 26-Hemoglobinopathy Interpretation
83020 – Hb Variant, A2 and F Quantitation
83021 – Hemoglobin fractionation and quantitation; chromatography
82728 – Ferritin
82664 – Electrophoresis, agar (if appropriate)
83068 – Unstable hemoglobin (if appropriate)
83789 – Hemoglobin variant by mass spectrophotometry (if appropriate)
88184 – Hemoglobin F, RBC distribution (if appropriate)

Test Includes: This evaluation will always include hemoglobins (Hb) A2 and F and hemoglobin electrophoresis utilizing cation exchange high-performance liquid chromatography (HPLC) and capillary electrophoresis methods. This is a consultative evaluation in which the case will be evaluated at Mayo Clinic Laboratories, the appropriate tests performed at an additional charge, and the results interpreted.

Hemoglobin electrophoresis reflex testing, performed at additional charge, may include any or all of the following as indicated to identify rare hemoglobin variants present: sickle solubility (hemoglobin S screen), hemoglobin heat and isopropanol stability studies, isoelectric focusing, HbF distribution by flow cytometry, cation exchange HPLC, DNA (Sanger) testing for beta-chain variants and the most common beta thalassemias (beta-globin gene sequencing), multiplex ligation-dependent probe amplification testing for beta-cluster locus large deletions and duplications, including large deletional hereditary persistence of fetal hemoglobin (HPFH), delta-beta, delta thalassemias, gamma-delta-beta, and epsilon-gamma-delta-beta thalassemias (beta-globin cluster locus deletion/duplication), large deletional alpha thalassemias and alpha-gene duplications (alpha-globin gene analysis), alpha-chain variants and nondeletional alpha thalassemias (alpha-globin gene sequencing), and gamma-chain variants and nondeletional HPFH (gamma-globin full gene sequencing).

See the reference lab’s test catalog for further details.

Logistics

Test indications:	Useful for the evaluation of microcytosis, the extensive and economical diagnosis and classification of hemoglobinopathies or thalassemia, including complex disorders, or the diagnosis of hereditary persistence of hemoglobin
Lab Testing Sections:	Hematology - Sendouts
Referred to:	Mayo Clinic Laboratories (MML Test Code: THEV1)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	2 to 25 days
Special Instructions:	Metabolic Hematology Patient Information **(T810) is strongly recommended**. Testing may proceed without this information, however if the information requested is received, any pertinent reported clinical features and data will drive the focus of the evaluation and be considered in the interpretation. Send this form to the lab with the specimen or deliver to Children's Sendouts lab department via email, pneumatic tube, or fax.

Specimen

Specimen Type:	Whole blood AND serum are both required
Container:	Lavender (EDTA) top **and** SST (serum separator red/gold) are both required
Draw Volume:	15 mL (minimum 2.5 mL) in EDTA **and** 1.8 mL (minimum 1.5 mL) in SST are both required.
Processed Volume:	15 mL whole blood EDTA **and** 0.6 (minimum 0.3) mL serum
Collection:	Routine blood collection
Special Processing:	Lab Staff: 1. Lavender EDTA tube must remain as whole blood in original container. Do not centrifuge or aliquot. 2. Centrifuge SST (red/gold top) within 2 hours of collection. Aliquot serum into a plastic vial. **Write SERUM on the label.** 3. Send both specimens together at refrigerated temperature. Specimens stable refrigerated for 7 days.

Patient Preparation:	For 12 hours before specimen collection, patient should not take multivitamins or dietary supplements (e.g., hair, skin, and nail supplements) containing biotin (vitamin B7).
Sample Rejection:	Mislabeled or unlabeled specimens: incorrect anticoagulant; gross hemolysis

Interpretive

Reference Range:	Definitive results and an interpretive report will be provided.
Critical Values:	N/A
Limitations:	DNA probe studies reveal deletional alterations that include most, but not all, alpha thalassemias.
Methodology:	THEVI, THEV0: Medical Interpretation HGBCE: Capillary Electrophoresis HPLC: Cation Exchange/High-Performance Liquid Chromatography (HPLC) FERR1: Electrochemiluminescence Immunoassay IEF: Isoelectric Focusing MASS: Mass Spectrometry (MS) HPFH: Flow Cytometry UNHB: Isopropanol and Heat Stability
References:	Mayo Clinic Laboratories April 2025
Updates:	04/01/2025: Initial entry