Lab Dept: Hematology

Test Name: HEMOLYTIC ANEMIA EVALUATION

General Information

Lab Order Codes: HMAE

Synonyms: HA Evaluation

CPT Codes:
82657 – Hexokinase B
82955 – G-6-PD
83020 – Hemoglobin electrophoresis (alkaline)
83021 – Hemoglobin A(2) and F
83068 – Hemoglobin stability
84087 – Glucose phosphate isomerase
84220 – Pyruvate kinase
85060 – Morphology review
85557 – Osmotic fragility

Reflexes if appropriate:
83915 – RBC Enzymes
82978 – Glutathione
83789 – Hemoglobin variant by mass spectrometry
85660 – Hemoglobin S solubility
88184 – Hemoglobin F, red cell distribution
81269 – Alpha globin gene analysis
81259 – Alpha globin gene sequencing
81364 – Beta globin gene sequencing
81363 – Beta globin cluster locus deletion/duplication
81479 – Gamma globulin full gene sequencing

Test Includes: This is a consultative evaluation in which the case will be evaluated at Mayo Medical Laboratories, the appropriate tests performed.

The following tests will always be performed with this profile: Hemolytic Anemia Interpretation; Hemoglobin A2 and F; Hemoglobin Electrophoresis; Hemoglobin, Unstable; Osmotic Fragility, RBC; G-6-PD, QN; Pyruvate kinase, RBC; Glucose Phosphate Isomerase; Hexokinase; Morphology Review. The following reflex tests may be performed at an additional charge if indicated: Reflexed RBC Enzymes, Glutathione, Hemoglobin S Screen, Hemoglobin F Red Cell Distribution, IEF Confirms, Hemoglobin by Mass Spec, Alpha Globin Gene Analysis, Alpha Globin Gene Sequencing, Beta Globin Gene Sequencing, Beta Globin Cluster Locus Deletion/Duplication, Gamma Globulin Full Gene Sequencing, Hemolytic Anemia Summary Interp
Note: RBC Enzymes include: adenosine deaminase, adenylate kinase, phosphfructokinase, phophoglycerate kinase, triosephosphate isomerase, and pyrimidine 5'nucleotidase.

Logistics

Test Indications:	Evaluation of lifelong or inherited hemolytic anemias, including red cells membrane disorders, unstable or abnormal hemoglobin variants, and red cell enzyme disorders. Cold agglutinin disorders and autoimmune disorders should be excluded prior to testing. This evaluation is not suitable for acquired causes of hemolysis.
Lab Testing Sections:	Hematology - Sendouts
Referred to:	Mayo Medical Laboratories (MML Test: HAEVP)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Draw Sunday – Thursday only
Turnaround Time:	3 – 25 days, test is set up Monday - Friday
Special Instructions:	Please submit a Thalassemia/Hemoglobinopathy Information Sheet to be included with the specimen. Contact the lab for the correct form (Mayo Supply T705). Special tubes are available from lab. See Container. Specimens **must arrive at Mayo within 72 hours of draw**.

Specimen

Specimen Type:	Whole blood
Container:	Yellow top tube (ACD-solution B) **and** Lavender (EDTA) top tubes
Draw Volume:	**Patient:** 12 mL (Minimum: 5 mL) ACD blood **and** 10 mL (Minimum: 3 mL) EDTA blood **Control:** 4 mL (Minimum: 3 mL) EDTA blood (Clearly label as CONTROL SPECIMEN) **Indicate sex of control specimen on tube label.**
Processed Volume:	Same as Draw Volume
Collection:	Routine venipuncture
Special Processing:	Lab Staff: **Do Not centrifuge**. Immediately refrigerate specimens after collection. Specimens **must arrive within 96 hours** of draw. Send specimens Monday through Friday **only**. **Make two well-made peripheral blood smears**, Wright-stained or fixed in absolute methanol to include with blood specimens. Label appropriately. Send patient and control whole blood specimens refrigerated. Do not transfer blood to other containers**. Indicate sex of control on tube label**. Specimens cannot be frozen.

Patient Preparation:	None
Sample Rejection:	Mislabeled or unlabeled specimens; frozen specimens; gross hemolysis; no control sample provided or abnormal control sample

Interpretive

Reference Range:

Definitive results and an interpretive report will be provided. See Hemoglobin Electrophoresis Cascade Reflex.

A hematopathologist who is an expert in these disorders evaluates the case, appropriate tests are run, and an interpretive report is issued.

Critical Values: N/A

Limitations:

Preliminary screening tests, such as complete blood count with peripheral smear and direct Coombs test, should be run before ordering this evaluation.

A normal shipping control for osmotic fragility (OF) is necessary to exclude false-positive results due to preanalytical artifact. OF and eosin-5-maleimide (EMA) binding testing will be cancelled if no shipping control is received or if the shipping control is abnormal.

This panel is most effectively interpreted in the context of clinical information and the peripheral blood morphology. Please fill out the Hemolytic Anemia Patient Information sheet (T705) to maximize the interpretive capabilities of the panel. This group of tests should not ordinarily be requested in patients who are likely to have immune hemolytic anemia (HA), such as that due to either warm or cold antibodies or to paroxysmal nocturnal hemoglobinurias. Coombs tests, tests for cold agglutinins, sucrose hemolysis, and Hams and Crosby tests are not part of the HA evaluation. In general, the foregoing tests should have been done prior to requesting HA evaluation. Since Wilson's disease is another rare cause for acute intermittent hemolysis, a test for Wilson's disease also may be appropriate prior to requesting HA evaluation.

Methodology:

Consultative Interpretation
Cation Exchange/High-Performance Liquid Chromatography HPLC)
Capillary Electrophoresis
Isopropanol Stability
Osmotic Lysis
Kinetic Spectrophotometry (KS)
Consultant Review
Hemoglobin S Solubility
Flow Cytomertry
Mass Spectrometry (MS)
Electrophoresis
Polymerase Chain Reaction (PCR) Analysis/Mulitplex Ligation-Dependent Probe Amplification (MLPA), Polymerase Chain Reaction (PCR)/DNA Sequencing

References: Mayo Medical Laboratories Web Page February 2018

Update:

8/25/2010: Unit and reference range update for Pyruvate Kinase, RBC and G6PD portions of testing
1/25/2011: Hgb ELP update. Reference values created for pediatric patients. Change in reflexing sequence.
4/4/2011: Specimens previously needed to arrive within 72 hours. Now need 2 stained smears.
6/7/2012: Updated reference range for adenylate kinase.
3/5/2018: Updated possible reflex testing.