Lab Dept: Hematology

Test Name: ERYTHROPOIETIN

General Information

Lab Order Codes:	EPOS
Synonyms:	Erythropoietin (EPO), Serum
CPT Codes:	82668 - Erythropoietin
Test Includes:	Erythropoietin level reported in mIU/mL.

Logistics

Test Indications:	This test is mainly used for the differential diagnosis of primary and secondary polycythemia and to determine the cause of anemia. In the diagnosis of primary polycythemia (polycythemia rubra vera) due to an uncontrolled increase in the number of erythrocytes carrying high concentrations of oxygen, the EPO level is suppressed. The test is also useful for diagnosis of appropriate secondary polycythemia caused by high-altitude living, pulmonary disease, and tobacco use, which increase EPO levels. In patients with inappropriate secondary polycythemia caused by renal tumors and extrarenal tumors, the EPO level is also increased. Patients with anemia of bone marrow failure, iron deficiency, or thalassemia also have increased EPO levels
Lab Testing Sections:	Hematology - Sendouts
Referred to:	Mayo Medical Laboratories (MML Test: EPO)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	2 - 4 days, test set up Monday - Saturday
Special Instructions:	N/A

Specimen

Specimen Type:	Blood
Container:	SST (Gold, marble or red) tube
Draw Volume:	1.8 mL (Minumum: 1.5 mL) blood

Processed Volume:	0.6 mL (Minimum: 0.5 mL) serum
Collection:	Routine blood collection
Special Processing:	Lab Staff: Centrifuge specimen, aliquot into a screw-capped plastic vial. Store and ship at refrigerated temperatures. Forward promptly.
Patient Preparation:	None
Sample Rejection:	Mislabeled or unlabeled specimen; gross hemolysis

Interpretive

Reference Range:	2.6 – 18.5 mIU/mL
	Interpretation: In the appropriate clinical setting (eg, confirmed elevation of hemoglobin >18.5 gm/dL, persistent leukocytosis, persistent thrombocystosis, unusual thrombosis, splenomegaly, and erythromegaly), polycythemia vera is unlikely when EPO levels are elevated and polycythemia vera is likely when EPO levels are suppressed. EPO levels are also increased in patients with anemia of bone marrow failure, iron deficiency, or thalassemia. Patients who have either poor or no erythropoietic response to EPO therapy, but high-normal or high EPO levels, may have additional, unrecognized cause(s) for their anemia. If no contributing factors can be identified after adequate further study, the possibility that the patient may have developed EPO-antibodies should be considered. This can be a serious clinical situation that can result in red cell aplasia, and should prompt expeditious referral to hematologists or immunologists skilled in diagnosing and treating this disorder.
Critical Values:	N/A
Limitations:	EPO levels alone cannot reliably distinguish between primary and secondary polycythemia; EPO levels are within normal limits in some patients with primary polycythemia. People living at high altitudes may have higher EPO levels than people living at lower altitudes. This assay cannot distinguish between endogenous and exogenous EPO. There are no specific assays for measuring recombinant EPO compounds. Drug levels can only be roughly estimated from the cross-reactivity of the compounds in EPO assays. Because results obtained with one commercial EPO assay may differ significantly from those obtained with any other, it is recommended that any serial testing performed on the same patient over time should be

performed with the same commercial EPO test.

Heterophilic antibodies may interfere in this assay. Results markedly at variance with presentation should be questioned. Additional specimen workup to eliminate heterophilic antibody interference will be performed upon request.

Lower EPO levels than expected have been seen with anemias associated with the following conditions: rheumatoid arthritis, acquired immunodeficiency syndrome, cancer, and ulcerative colitis, sickle cell disease, and in premature neonates.

After allogenic bone marrow transplant, impaired erythropoietin response may delay erythropoietin recovery.

Patients with hypergammaglobulinemia associated with multiple myeloma or Waldenstroms's disease have impaired production of erythropoietin in relation to hemoglobin concentration. This has been linked to increased plasma viscosity.

Methodology: Immunoenzymatic Assay (Beckman Coulter Dxl 800)

References: Mayo Medical Laboratories Web Page February 2018

Updates: 7/11/2005: Method change, previously listed as Immunochemiluminometric Assay (ICMA – Nichols Diagnostics). Units updated, previously listed as mU/mL.
5/26/2010: Method change [oreviously listed as Immunochemiluminometric Assay (ICMA – DPC)], reference value change.
2/1/2018: Collection container update.