Lab Dept:	**Chemistry**
Test Name:	**VITAMIN B12 & FOLATE**

General Information

Lab Order Codes:	B12F
Synonyms:	B12/Folate; Vit B12 and Folate; Folate/Vitamin B12; Cyanocobalamin and Folate
CPT Codes:	82607 – Cyanocobalamin (Vitamin B12) 82746 – Folic acid; serum
Test Includes:	Vitamin B12 level reported in ng/L and Folate level reported in mcg/L.

Logistics

Test Indications:	Useful in detecting vitamin B12 deficiency anemia. Helps diagnose the cause of anemia, especially when the RBC's are described as macrocytic in non-neonates. Helps diagnose the cause of dementia or other CNS symptoms.
Lab Testing Sections:	Chemistry - Sendouts
Referred to:	Mayo Medical Laboratories (MML Test: FB12)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	1 – 3 days
Special Instructions:	See Patient Preparation, Contraindications

Specimen

Specimen Type:	Blood
Container:	SST (Marble, gold or red top tube)
Draw Volume:	3 mL (Minimum: 1.5 mL) blood

Processed Volume: 1 mL (Minimum: 0.5 mL) serum

Note: Submission of the minimum volume will not allow for repeat analysis and could result in a QNS (quantity not sufficient) result.

Collection: Routine venipuncture

Special Processing: Lab Staff: Centrifuge specimen. Separate and transfer serum into a screw-capped plastic vial. Store and ship at refrigerated temperatures.

Patient Preparation: For Folate: Patients should be fasting (8 hours recommended) and should not have recently received methotrexate or other folic acid antagonist.

Sample Rejection: Specimens other than serum; specimens received at ambient temperatures; slight hemolysis; mislabeled or unlabeled specimen

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Interpretive

Reference Range:

Vitamin B12 Levels	
All ages:	180 - 914 ng/L
Folate Levels	
All ages:	≥4.0 mcg/L

Critical Values: N/A

Limitations: **Vitamin B 12:** Patients taking vitamin B12 supplementation may have misleading results.

Many other conditions are known to cause an increase or decrease in the serum vitamin B 12 concentration including: **Increases:** Ingestion of vitamin C, ingestion of estrogens, ingestion of vitamin A, hepatocellular injury, myeloproliferative disorder, uremia. **Decreases:** Pregnancy, aspirin, anticonvulsants, colchicine, ethanol ingestion, contraceptive hormones, smoking, hemodialysis, multiple myeloma.

The evaluation of macrocytic anemia requires measurement of both vitamin B 12 and folate levels; ideally they should be measured simultaneously.

Folate: Patients with combined deficiency of folate and iron may not demonstrate the erythrocyte macrocytosis otherwise typical of folate deficiency anemia. In these patients, however, the red cell distribution width (RDW) will typically be elevated.

A non-fasting specimen results in falsely elevated results.

Patients taking folate may have misleading results.

Folates other than (*N*)-5-methyltetrahydrofolate and folic acid antagonists (such as methotrexate) may, under some circumstances, be present in serum and will also be measured by this method.

The analytic variability (CV) of both serum and red blood cell folate assays is considerable. Homocysteine and methylmalonic acid levels are alternate determinates of folate deficiency.

Methodology:

Vitamin B12: Immunoenzymatic Assay
Folate: Competitive Binding Receptor Assay

Contraindications:

For Folate: This test should not be requested on patients who have recently received methotrexate or other folic acid antagonist.

References:

Mayo Medical Laboratories Web Page October 2014

Updates:

5/3/2010: Updated collection volumes.
7/12/2010: Units update for folate from ug/L to mcg/L.
5/3/2012: Reference range change, previously listed as ≥3.5 mcg/L.
8/22/2016: Tube update.