Megaloblastic Anemia Testing

INDICATIONS FOR TESTING
Macrocytic anemia and/or clinical features of megaloblastic anemia (neurologic symptoms)

ORDER
Serum vitamin B₁₂ test

Vitamin B₁₂ >400 pg/mL

Recent vitamin B₁₂ injections?

Yes

Vitamin B₁₂ deficiency unlikely

Consider folate deficiency

ORDER
Folate test

Low

Folate deficiency

Adequate serum folate
High suspicion for deficiency

ORDER
RBC folate test

Low

Folate deficiency

ORDER
Homocysteine¹ test

No folate deficiency

<100 pg/mL

No pernicious anemia

>100 pg/mL

Pernicious anemia

¹Although the homocysteine test is not specific, an increased homocysteine level is consistent with folate deficiency. For additional information about this test, see the ARUP Consult Vitamins topic.

No

ORDER
Serum or plasma methylmalonic acid test

Vitamin B₁₂ 200-400 pg/mL

≥0.4 µmol/L

ORDER
Intrinsic factor blocking antibody testing

Negative

Pernicious anemia

Positive

Pernicious anemia

Vitamin B₁₂ <200 pg/mL

Vitamin B₁₂ deficiency probable

Consider pernicious anemia

ORDER
Parietal cell antibody testing

Negative

Pernicious anemia

Positive

Pernicious anemia

<0.4 µmol/L

Yes

REPEAT
Serum vitamin B₁₂ test

No

<0.4 µmol/L

ORDER
Folate test

Low

Folate deficiency

Adequate serum folate
High suspicion for deficiency

ORDER
RBC folate test

Low

Folate deficiency

ORDER
Homocysteine¹ test

No folate deficiency

<100 pg/mL

No pernicious anemia

>100 pg/mL

Pernicious anemia

ORDER
Intrinsic factor blocking antibody testing

Negative

Pernicious anemia

Positive

Pernicious anemia

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