Vitamin B12 Deficiency Cascade

In the United States and the United Kingdom, vitamin B12 deficiency is estimated to affect about 6% of people below age 60 and nearly 20% above age 60.[1]

Vitamin B12 is an essential nutrient for the production of normal red blood cells, DNA synthesis, and normal neurological function.[2] Low B12 status is rarely attributable to dietary insufficiency and is more typically the result of malabsorption related to chronic inflammation of the stomach or the use of medications such as proton pump inhibitors and metformin.[3,4] One of the most common causes of vitamin B12 deficiency is a condition known as Pernicious Anemia (PA), a type of autoimmune-mediated chronic atrophic gastritis.[5,6] Patients with PA lack intrinsic factor proteins, which are essential for vitamin B12 absorption, and result in the production of large, abnormal red blood cells.[7] This particular type of megaloblastic anemia can frequently coexist with other autoimmune disorders including thyroiditis and type 1 diabetes mellitus.[8] Parietal Cell Antibodies (PCA) and Intrinsic Factor Antibodies are present at a high frequency in PA and are considered highly specific predictive markers of subsequent gastric mucosa atrophy.[9] Emerging evidence indicates that low (although not necessarily deficient) B12 is associated with increased risk of chronic conditions such as cognitive dysfunction, cardiovascular disease, and osteoporosis.[3]

Screening average-risk adults for vitamin B12 deficiency is not recommended.[10] However, testing for vitamin B12 deficiency should be considered in patients with risk factors and/or complete blood count (CBC) values suggestive of B12 deficiency.[10] Although often used as the first-line screening test for B12 deficiency, serum B12 measurement used in isolation generally has poor sensitivity and specificity for detection of B12 deficiency, causing a significant number of patients with vitamin B12 deficiency to be overlooked.[11]

Labcorp's **Vitamin B12 Deficiency Cascade [141503]** utilizes a sequential selection algorithm to properly identify patients with vitamin B12 deficiency and to understanding the cause of the nutritional deficit, such as Pernicious Anemia (see algorithm on the reverse). In this approach, a second-line assay, **Methylmalonic Acid (MMA), Serum or Plasma [706961]**, is performed when the outcome of the first-line assay falls in an "equivocal" range. It has been suggested that borderline B12 levels (200–400 ng/L) should be followed up with measuring MMA levels.[5] MMA levels below the upper limit of the reference interval (0-378 nmol/L) are strongly suggestive of normal B12 status. Patients whose serum B12 results and/or serum MMA results are consistent with vitamin B12 deficiency can subsequently be tested for **Antiparietal Cell Antibody (APCA) [006486]** and **Intrinsic Factor Blocking Antibodies [010413]**, as results may help to differentiate a root cause diagnosis.

Test Name	Test No.
Vitamin B12 Deficiency Cascade	**141503**

For the most current information regarding test options, including specimen requirements and CPT codes, please consult the online Test Menu at **Labcorp.com**.

See page two for Vitamin B12 Deficiency Cascade (Test No. 141503)

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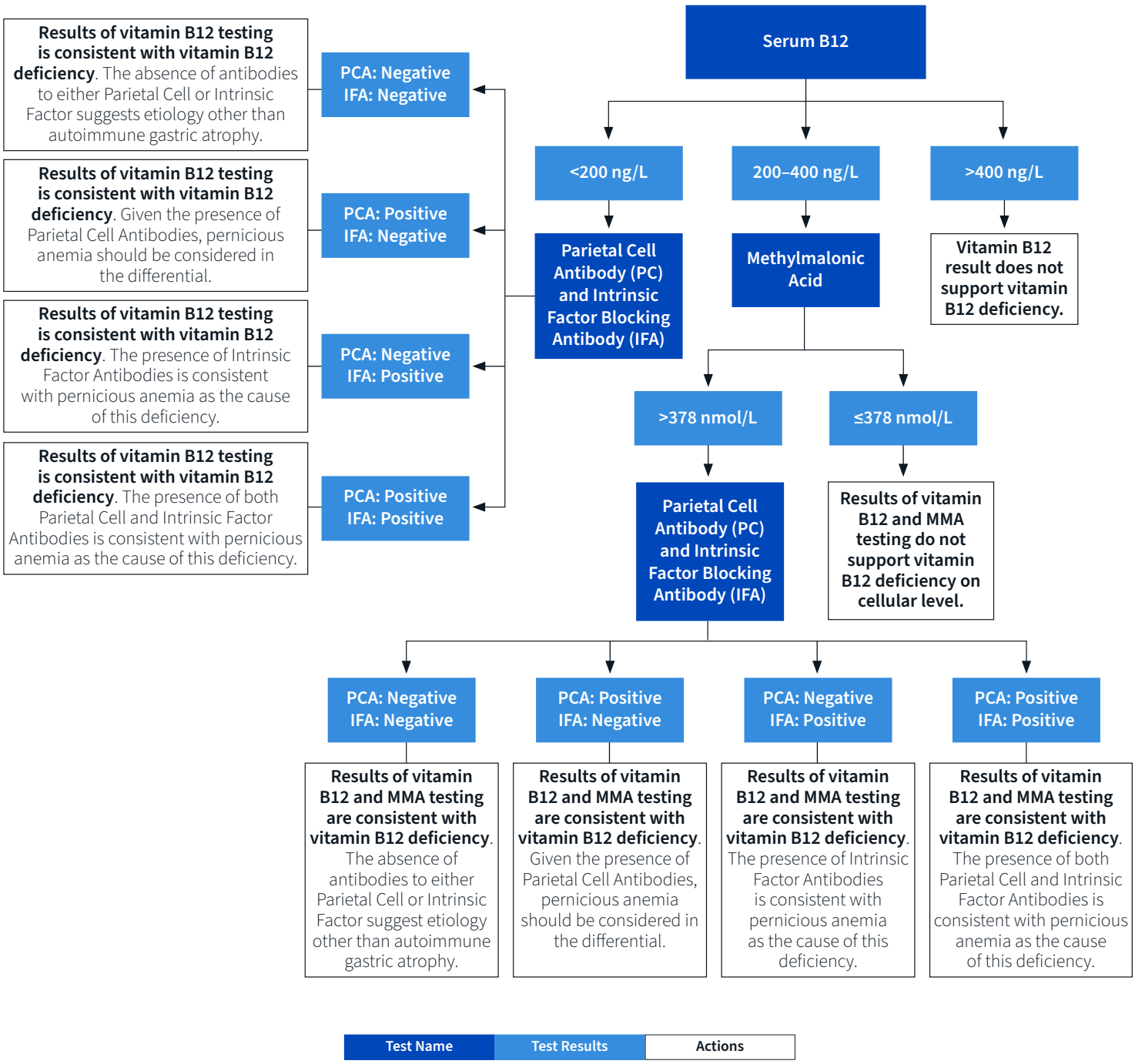

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