South Tyneside and Sunderland
Area Prescribing Committee

Vitamin B12 Prescribing Guideline for Adults

Author	Medicines Optimisation Team, Sunderland CCG
Approved by	South Tyneside and Sunderland Area Prescribing Committee and relevant groups / committees within stakeholder organisations
Current Version	1
Published on	August 2021
Review date	August 2024

Version control

This guideline is intended for use in primary care

Vitamin B12 Prescribing Guideline for Adults

Signs and Symptoms [1,2]

- Anaemia
- Macrocytosis (of red blood cells) occurs in around 60% of patients with a B12 deficiency
- Non-neurological symptoms
  - Shortness of breath
  - Extreme fatigue
  - Brittle nails & Dry skin
  - Mouth ulcers
  - Diarrhoea
  - Loss of appetite / Weight loss
  - Hair loss
  - Cracked or swollen tongue
- Neurological symptoms*
  - Balance problems / Vertigo
  - Dizziness / Syncope
  - Numbness / Tingling / Burning sensations
  - Neuropathic pain / Fibromyalgia
  - Tinnitus
  - Incontinence
  - Sensory impairment
  - Lack of coordination
  - Confusion / Inability to concentrate
  - Memory loss
  - Irritability / Depression

*Symptoms of impaired cognition are unlikely to be caused by a borderline low B12 level.

Check Vitamin B12 levels if:

- Unexplained or disproportionate normocytic anemia exists
- Macrocytic anaemia exists
- Clinical symptoms exist which strongly suggest vitamin B12 deficiency after differential diagnosis.

When checking B12 it is also advisable to check folate levels for additional context.

Investigating Causes

Pernicious anaemia is the most common cause of severe B12 deficiency in the UK and is diagnosed by a positive result for anti-intrinsic factor antibodies (anti-IFAB). The test only has a sensitivity of 40-60%, so a negative result does not rule out pernicious anaemia.[3,4] Other causes of B12 deficiency exist - understanding which cause applies may affect the treatment plan:

Modifiable Causes

- Nutritional – malnutrition, vegetarian or vegan diet.
- Drug abuse – excess alcohol, nitrous oxide.
- Medicines - colchicine, metformin, PPI's, H2-receptor antagonists, cholestyramine, Slow-K.
  If drug-induced deficiency is suspected, consider stopping the drug if possible, and discussing risks vs benefits of plan with haematology if necessary.

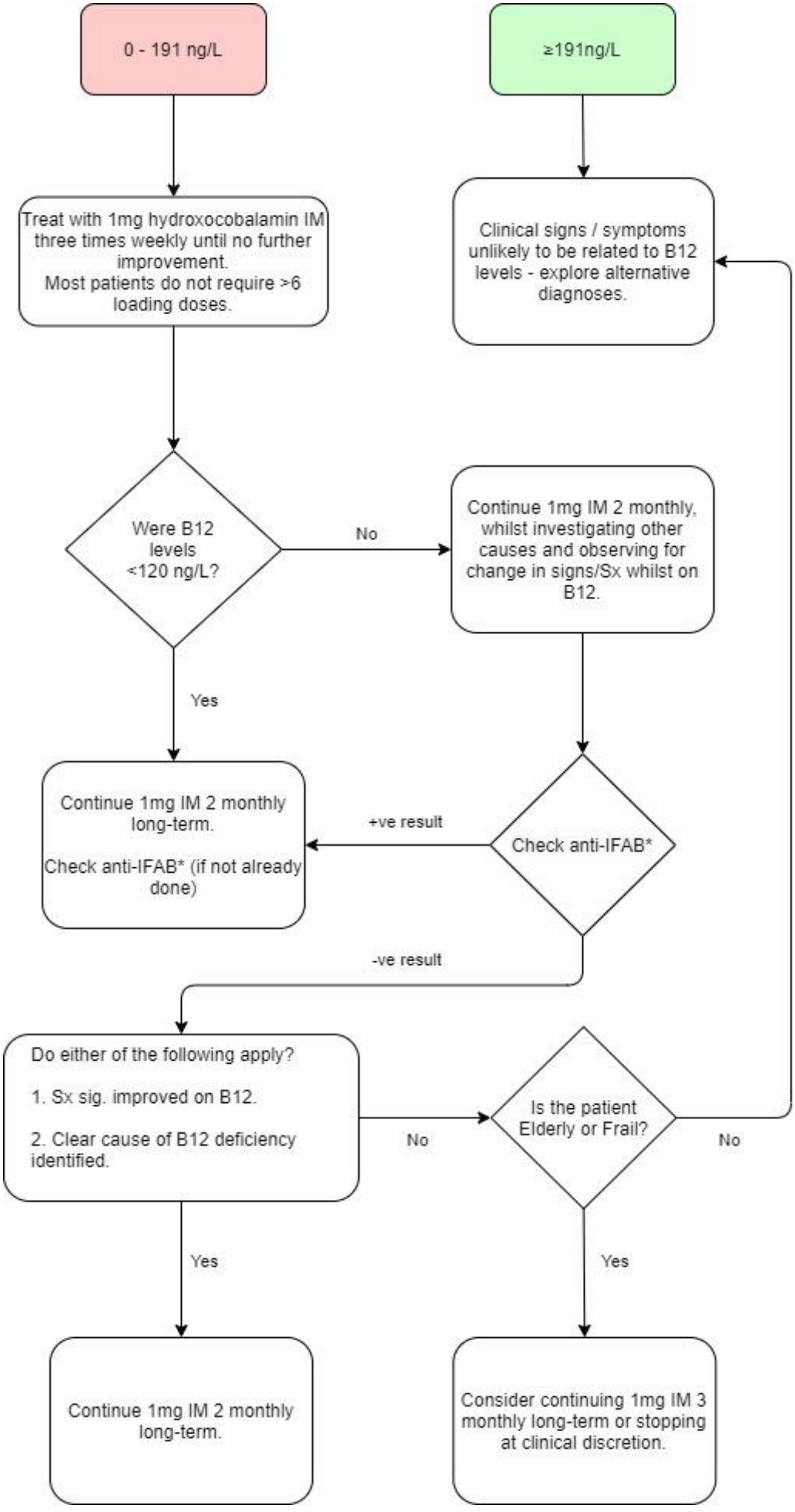
Non-modifiable Causes

- Gastric causes – gastrectomy, congenital intrinsic factor deficiency, Zollinger-Ellison syndrome.
- Positive result for anti-intrinsic factor antibodies (pernicious anaemia).
- Intestinal causes – malabsorption, ileal resection, Crohn's disease.
- Inherited - a genetic intrinsic factor receptor deficiency (Imerslund Gräsback syndrome).[1,5]

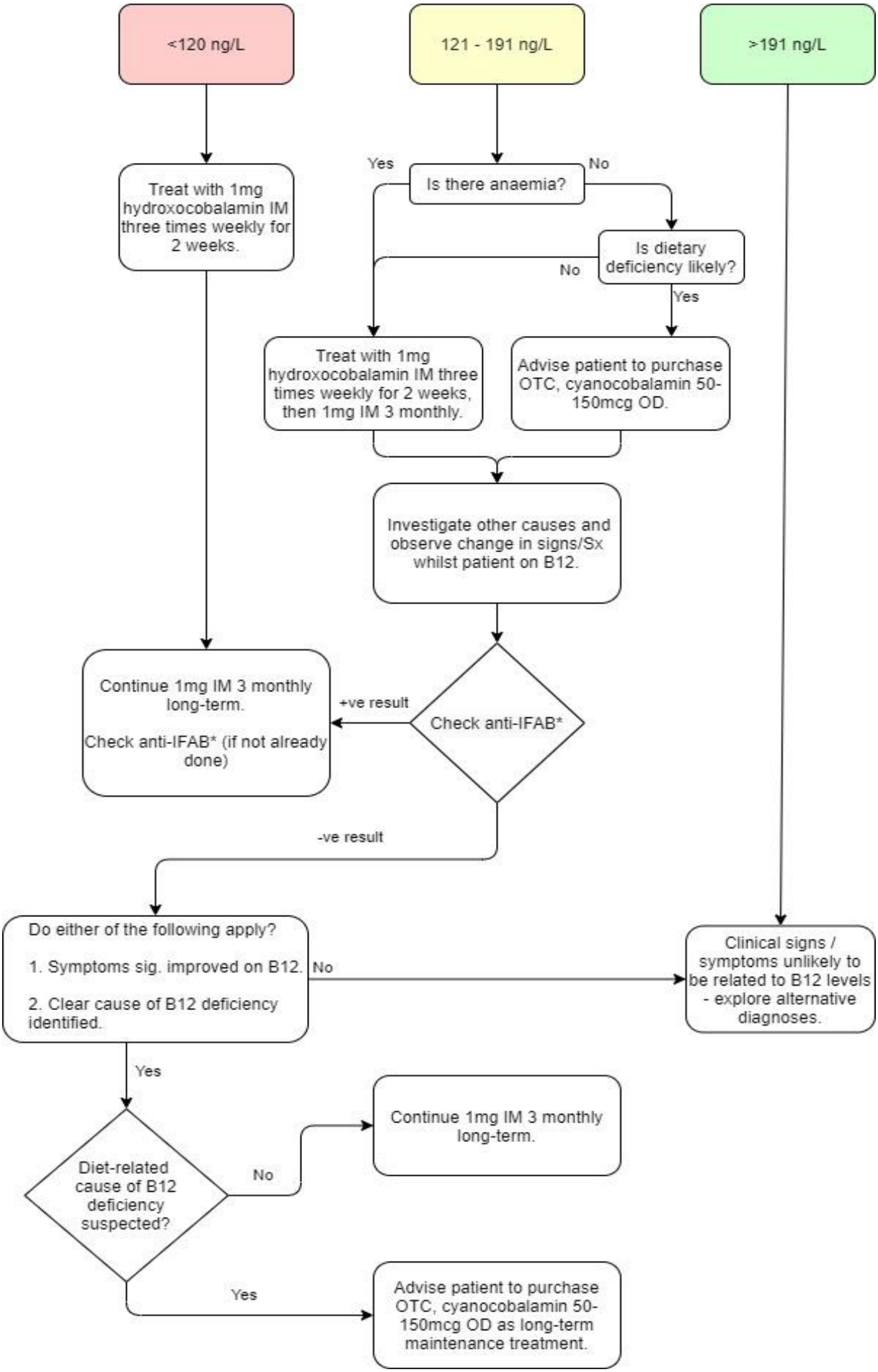
Confounding Factors

- Serum vitamin B12 levels commonly fall slightly in pregnancy or with use of combined oral contraceptives due to a decrease in carrier protein. However, this may not result in true deficiency.[5,6,7]

Vitamin B12 result WITH Neurological Symptoms



Vitamin B12 result WITHOUT Neurological Symptoms



**A vitamin B12 injection within 48 hours of anti-IFAB testing and, in some cases, within 2 weeks of testing can interfere with results. Testing should either be done before treatment or ≥2 weeks after an injection.*[8,9]

Reviewing long-term B12 prescriptions

Step 1 – Identify why vitamin B12 is being prescribed

- Ensure the suspected cause of the B12 deficiency is documented.
- If the cause is suspected to be modifiable, but an anti-IFAB test has not been completed – check this now.

Step 2 – Consider if the indication is eligible to stop

- Do not deprescribe B12 if any of the following apply:
    - Patients who have had neurological symptoms as a result of B12 deficiency
    - Non-modifiable cause of B12 deficiency exists
    - +ve result for anti-IFAB
    - If original B12 level <120ng/L (pernicious anaemia is likely even if not detected on anti-IFAB)

Step 3 – Stop vitamin B12 *(if no exclusions apply from step 2)*

- Stop prescription immediately.
- Patients with dietary deficiency may wish to continue oral vitamin B12 long-term (purchased OTC).
- Provide advice regarding dietary sources of vitamin B12 – see appendix A.
- Monitor B12 levels 3-monthly for 1 year, then 6-monthly for 1 year, then annually for 1 year.
- If B12 levels drop or clinical symptoms emerge, apply the protocols above (from page 1) to determine appropriate treatment.

References

Produced in collaboration between SCCG and Dr V. Hervey (Haematologist at City Hospitals Sunderland).

1. Hunt, A., Harrington, D., & Robinson, S. (2014). Vitamin B12 deficiency. *Bmj*, *349*.
2. https://pernicious-anaemia-society.org/articles/symptom-checklist/ Accessed on 20/11/2020.
3. Devalia, V., Hamilton, M. S., Molloy, A. M., & British Committee for Standards in Haematology. (2014). Guidelines for the diagnosis and treatment of cobalamin and folate disorders. *British journal of haematology*, *166*(4), 496-513.
4. https://pernicious-anaemia-society.org/diagnosis/ Accessed on 20/11/2020.
5. https://cks.nice.org.uk/topics/anaemia-b12-folate-deficiency/ Accessed on 20/11/2020.
6. Sütterlin, M. W., Bussen, S. S., Rieger, L., Dietl, J., & Steck, T. (2003). Serum folate and Vitamin B12 levels in women using modern oral contraceptives (OC) containing 20 µg ethinyl estradiol. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *107*(1), 57-61.
7. Siddiqua, T. J., Allen, H. L., Raqib, R., & Ahmed, T. (2014). Vitamin B12 deficiency in pregnancy and lactation: is there a need for pre and postnatal supplementation. *J Nutr Disorders Ther*, *4*(2), 142.
8. https://labtestsonline.org/tests/intrinsic-factor-antibody Accessed on 21/11/2020
9. https://pernicious-anaemia-society.org/articles/testing-for-pernicious-anaemia Accessed on 21/11/2020
10. British National Formulary, Accessed on 16/11/2020: https://bnf.nice.org.uk/drug/hydroxocobalamin

Appendix A

Foods rich in vitamin B12

- Meat
- Fish
- Liver (note unsuitable for pregnant women)
- Milk
- Cheese
- Eggs
- Fortified breakfast cereals
- Fortified plant-based milks
- Fortified spreads
- Fortified yeast extract, e.g. Marmite®

People who are vegan should consume foods fortified with vitamin B12 at least twice a day. If these foods are not consumed in adequate amounts, the Vegan Society recommends a vitamin B12 supplement which can be purchased from a pharmacy or health food shop.