

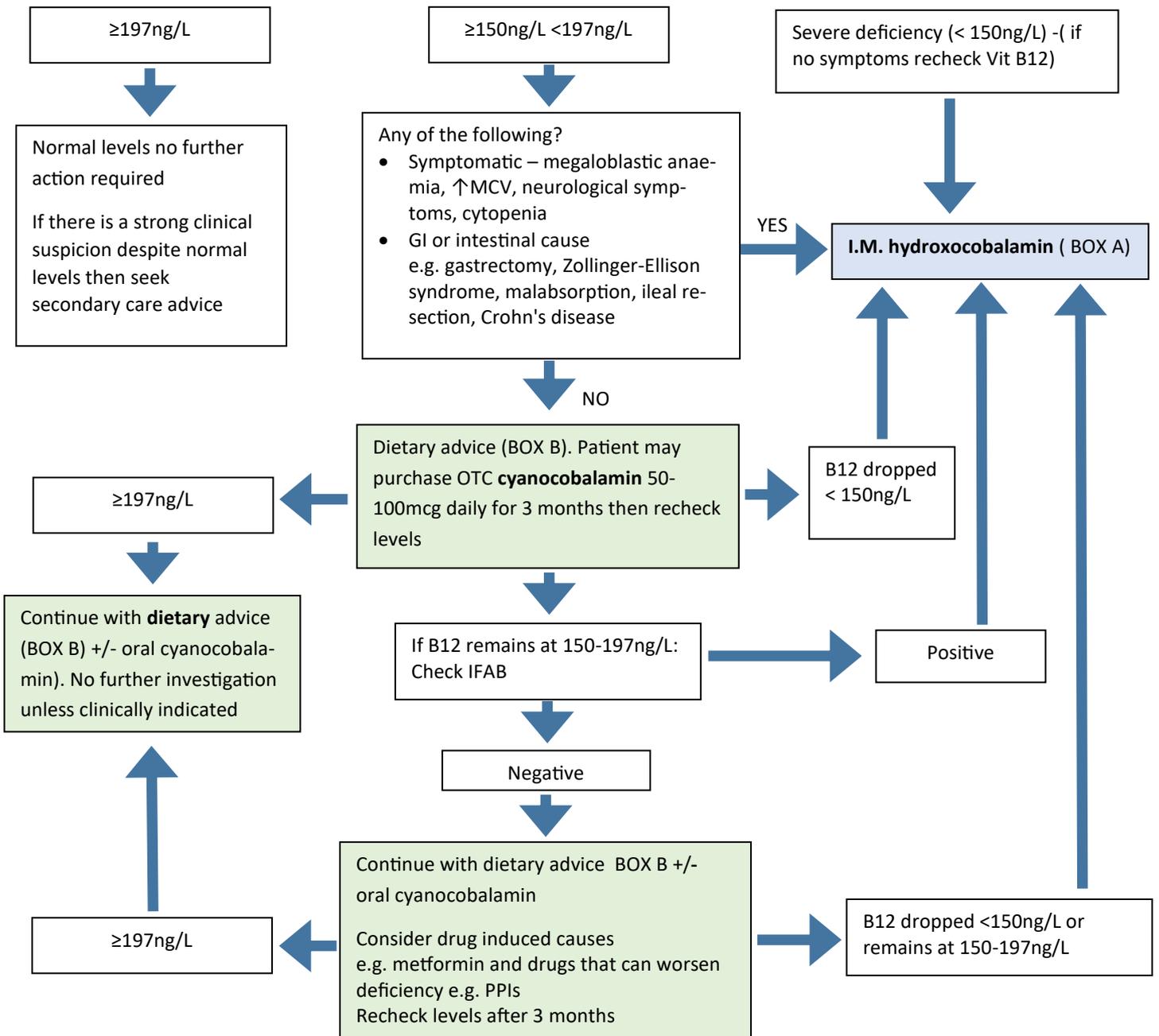
## Management of Vitamin B12 Deficiency in Primary Care

**Vitamin B12 reference range** in non-pregnant adult: 197-771ng/L  
 In pregnancy seek advice from secondary care

### Key points

- If suspicion of neurological symptoms, start treatment whilst waiting for any results.
- IM treatment will be required for most patients because pernicious anaemia and other causes related to absorption are unlikely to respond to licensed doses of oral cyanocobalamin.
- Ongoing monitoring of vitamin B12 levels is not required for patients being treated with I.M. hydroxocobalamin.
- If anti-intrinsic factor antibody (IFAB) is present, pernicious anaemia is very likely, but its absence does not rule out a diagnosis of pernicious anaemia.

### Management



## BOX A: Hydroxocobalamin Doses

**Patients with neurological symptoms** – initially hydroxocobalamin 1 mg I.M. on alternate days until there is no further improvement (review 3 weeks), then **hydroxocobalamin 1 mg I.M every 2 months**.

**Patients with no neurological involvement** - hydroxocobalamin 1 mg I.M. three times a week for 2 weeks. Then maintenance dose depending on cause:

Not thought to be diet related — administer **hydroxocobalamin 1 mg I.M. every 2–3 months** for life.

Thought to be diet related — see below

## BOX B: Diet related vitamin B12 deficiency

Patients should be given dietary advice about foods that are a good source of vitamin B12 for example eggs, meat, milk and other dairy products, salmon or cod or food such as breakfast cereal or bread which has been fortified with vitamin B12. Where improvement to diet is not enough or not possible (e.g. vegan) OTC oral cyanocobalamin 50-150microgram daily can be recommended to purchase.

In vegans, treatment may need to be life-long; for other people with dietary deficiency, it may be possible to stop replacement treatment once the vitamin B12 levels have been corrected and the diet has improved.

Where self-care is not appropriate and clinical discretion suggests that prescribing vitamin B12 supplementation would be appropriate, prescribers should consider two options:

Hydroxocobalamin IM 1mg every 6 months – annual prescribing cost £4.24 (May 2019 Drug Tariff)

Cyanocobalamin (orally)50-150microgram daily – annual prescribing cost £79 to £237 (May 2019 Drug Tariff)

NB. Where deficiency is thought to be a **side effect of medication**, prescribing supplements would be appropriate and in line with the Worcestershire self-care policy but B12 deficiency should only be assessed if there is objective evidence.

## NOTES

**Diagnosis** of anaemia caused by vitamin B12 or folate deficiency should be made through history, examination, and investigations. If there are strong clinical features of B12 deficiency such as megaloblastic anaemia, despite a normal serum vitamin B12 level, consider asking the lab to retain the sample and discuss further testing with them. If there is a suspicion of neurological symptoms start treatment whilst awaiting any additional results.<sup>1</sup>

Authors of the 2019 Red Whale update<sup>2</sup> comment that “Prescribing replacement and additional tests are not warranted in all patients who have soft symptoms or are tired all the time, but it would be an option for this group to consider a trial of OTC oral vitamin B12 for 2-3 months”.

**Evidence** A Cochrane Review<sup>3</sup> in 2018 looked at three small trials reporting that oral replacement can be as effective as IM vitamin B12 replacement when given at doses of 1000-2000 microgram, as enough can be absorbed by passive diffusion. This was felt to be low quality evidence. This is more common practice in the USA and some European countries but differs from standard CKS and BNF guidance.

A licensed 1mg tablet is not currently available in the UK and it may be less effective if there is malabsorption across the GI tract; there may also be concordance issues, so this is not recommended as a prescribed treatment option.

**Anti-intrinsic factor antibodies**<sup>1</sup> are highly specific for pernicious anaemia. It has a PPV of 95% so most patients with a positive result have pernicious anaemia. Sensitivity is low so only about half of patients with pernicious anaemia will have a positive result so it cannot be used to rule it out.

**Drug induced vitamin B12 deficiency** is rare but can be associated with drugs e.g. metformin, colchicine or anticonvulsants. Long term use of H2-receptor antagonists & PPIs can worsen deficiency. B12 deficiency should only be assessed in patients taking medication if objective evidence of deficiency is present.

## References

1. Clinical Knowledge Summary – anaemia – B12 and folate deficiency <https://cks.nice.org.uk/anaemia-b12-and-folate-deficiency> ( Accessed: 5/3/2019)
2. Red Whale GP Update handbook -online content. B12 deficiency. (Accessed: 21/2/2019)
3. Oral vitamin B12 compared with intramuscular vitamin B12 for vitamin B12 deficiency [https://www.cochrane.org/CD004655/ENDOC\\_oral-vitamin-b12-compared-intramuscular-vitamin-b12-vitamin-b12-deficiency](https://www.cochrane.org/CD004655/ENDOC_oral-vitamin-b12-compared-intramuscular-vitamin-b12-vitamin-b12-deficiency) ( Accessed:5/3/2019)
4. British National Formulary online (Accessed: 5/3/2019)