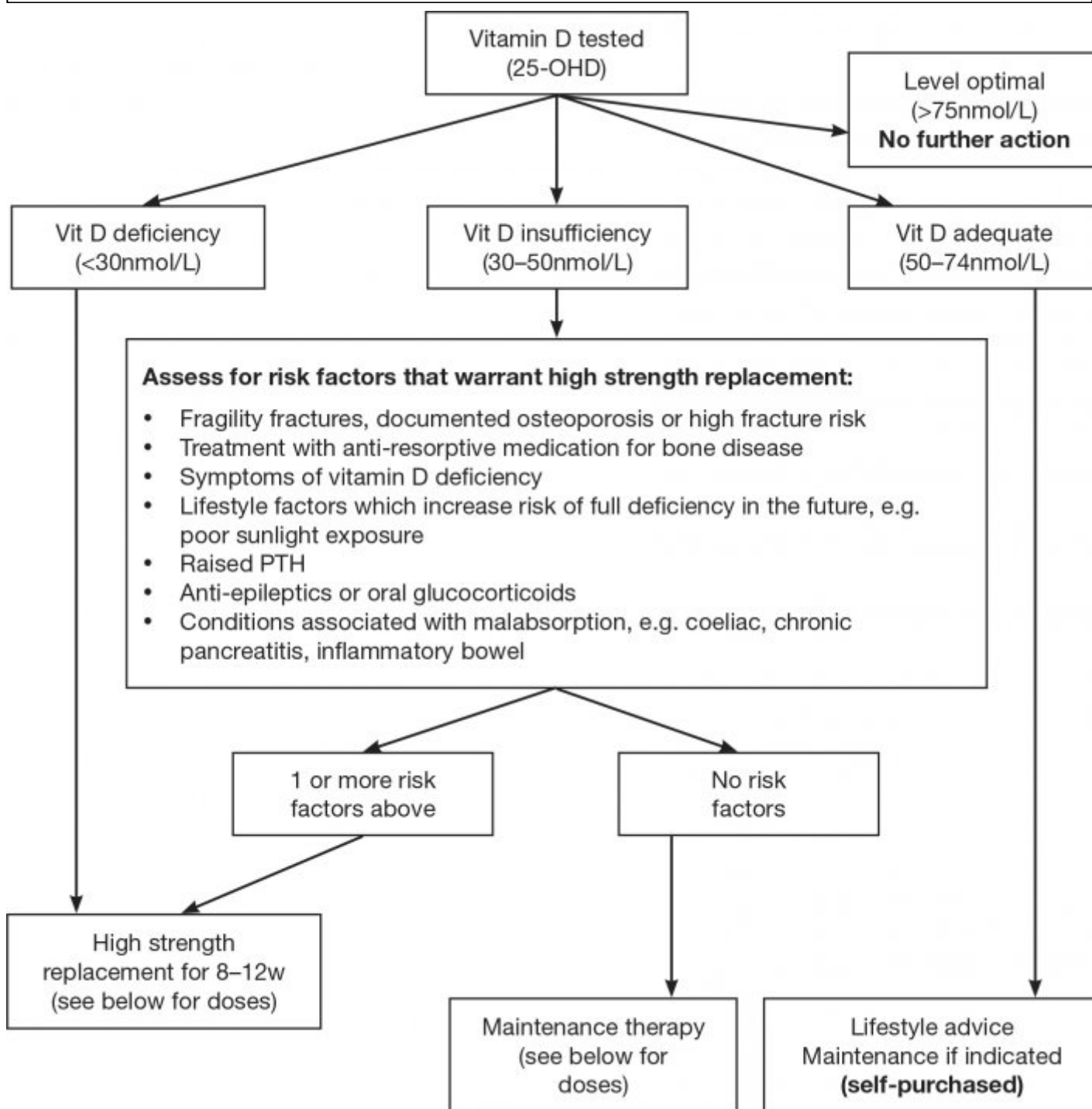


This guideline proposes the following cut-off values for action:



What are the high strength replacement (loading) options?

- **Oral vitamin D3 is the replacement and maintenance treatment of choice.**
- If urgent replacement is required, e.g. in very symptomatic patients or those starting strong anti-resorptive medications such as zoledronate or denosumab: give 300 000IU total dose over 6–12w. Regimen can vary depending on local availabilities and most cost-effective preparation, e.g.:
 - 50 000IU capsule once weekly for 6w
 - 20 000IU capsule two per week for 7w
 - 800IU capsules five per day for 10w.
- **Do not use combined vit D/calcium tablets for the above regimens as this will overdose on calcium.**
- If there is no need for urgent replacement, a maintenance regimen of 800–2000IU per day can be started and continued long term.
- Annual high dose IM vitamin D injections are not recommended because of their variable bioavailability and concerns about toxicity.

Whilst not mentioned in the guideline, the best option now is to prescribe generic colecalciferol at the dose you require and let the pharmacist source the most cost-effective preparation. However, local policy may vary.

What are the maintenance options?

- Maintenance treatment should start 1m after loading treatment.
- Doses equivalent to 800–2000IU per day are recommended. You can buy 1000IU tablets over the counter for <3p/day.
- This can be given as a daily or monthly dose based on patient preference.

- For patients with osteoporosis if calcium supplementation is also required, a combined preparation can be used for maintenance treatment.

What monitoring is required?

- Check corrected calcium levels 1m after high dose replacement to check for unmasked primary hyperparathyroidism.
- If calcium level is raised stop any further vitamin D supplementation until this has been investigated (see Online handbook for more details on evaluating hypercalcaemia).
- **Routine monitoring of 25OH vitamin D levels is not required or recommended.**

FAQs not covered by this guideline

Here are the things we are frequently asked on courses which are not yet covered by the national guidelines.

Which preparations are available to prevent deficiency?

For children:

- Healthy start vitamins if eligible (300IU per 5 drops). Abidec (400IU per 0.6ml) on FP10 or OTC £3.96 for 25ml (N.B. contains peanut oil).
- Dalivit (400IU per 0.6ml) on FP10 or OTC approx. £7 for 50ml.

For pregnant/breast-feeding women:

- **Should not take a standard multivitamin because they contain vitamin A (harmful to fetus).** Healthy start if eligible (400IU). Pregnacare or similar pregnancy multivitamins from chemist (not FP10) – check 400IU. OTC colecalciferol 400IU (£2 to £3.30 for a 3m supply).
- Generic colecalciferol on FP10 (currently Pro-D3 400IU caps are best buy for NHS).

For vulnerable adults and the elderly:

- OTC vitamin D (as above – 400IU).
- FP10 generic colecalciferol (currently Pro-D3 400IU caps are best buy for NHS).

The majority of patients should be encouraged to take responsibility for this part of their nutrition but clearly as GPs we will make judgments that for concordance or social-economic reasons FP10 is preferable – follow local guidelines for now if you have them.

Which adults need referral?

When you decide to refer will depend on your own expertise, local guidelines and availability of treatment in your local area. These guidelines recommend referral of adults with (NHS North Central London 2012):

- Focal bony pain.
- Skeletal deformity.
- Atypical clinical presentation.
- Unexplained weight loss.
- Renal stones.
- Secondary causes e.g. renal/liver disease, sarcoid, parathyroid disorders, TB, lymphoma or metastatic cancer.

They suggest discussing the following cases before starting treatment:

- Pregnant and breast feeding women.
- Failure to respond to course of treatment.
- History of renal stones.
- Atypical biochemistry.

Interpreting results and treatment for children

Remember, if a pregnant woman or child is found to be deficient, think about levels in the rest of the family. This guidance is taken from BMJ (BMJ 2010;340:b5664) and the NHS North Central London guidelines – refer to local guidance if available.

- Refer to specialists any child:
 - aged < 1y
 - with bone deformity
 - with short stature
 - with 25-OHD <25nmol/L.

For those with 25-OHD <25nmol/L start treatment whilst waiting for specialist appointment:

- Age 1–6m: colecalciferol 3000IU daily for 8–12w
- Age 6m – 12y: colecalciferol 6000 IU daily for 8–12w
- Age 12–18y: colecalciferol 10 000 IU daily for 8–12w
- Calcium supplements: 50mg/kg/day advisable in growing children.

Possible preparations for children include ProD3 Forte Liquid 3000IU/ml.