



**Pan Mersey**  
Area Prescribing Committee

## Treatment of Vitamin D Deficiency in Adults

*NB: See alternative pathway for Children*

### Symptomatic patients

- Do not routinely test for vitamin D deficiency.<sup>1</sup>
- Only test for vitamin D deficiency (measure serum 25-hydroxyvitamin D (25(OH)D levels), if a person presents with the following symptoms, especially if they are at **higher risk** of deficiency:<sup>1,2</sup>
  - Symptoms of osteomalacia, such as: Bone discomfort or pain (often throbbing) in lower back, pelvis, and lower extremities, symmetric lower back pain or chronic widespread pain. Muscle aches and weakness which may be marked and most noticeable in the quadriceps and glutei, resulting in difficulty in rising from a seating position, or a waddling gait. Impaired physical function or fragility fracture.
- NHS England noted that Vitamin D maintenance or preventative treatment is not an exception to self-care and being exempt from paying a prescription charge does not automatically warrant an exception to this guidance.<sup>7</sup>

**Higher risk** of vitamin D deficiency includes:<sup>1,2</sup>

- Limited sun exposure, e.g. people who: cover up their skin for cultural reasons or for health reasons (people with skin photosensitivity or a history of skin cancer), spend very little time outdoors (those who are housebound or institutionalised).
- People with dark skin (e.g. those of African, African-Caribbean and Asian or Middle-Eastern ethnic origin).
- Those who have an adverse effect or symptom of a more complex illness (such as a malabsorption syndrome) or are taking certain drugs (such as epileptic patients on long-term treatment<sup>3</sup> or oral corticosteroids) that may increase the risk of vitamin D deficiency.
- All patients initiated on anti-resorptives (e.g. zoledronic acid, denosumab or oral bisphosphonates) who need to maintain Vitamin D levels at > 50nmol/l.

Consider the following investigations:

- |                            |               |        |             |       |
|----------------------------|---------------|--------|-------------|-------|
| - (25 – hydroxy) Vitamin D | - LFT profile | -FBC   | - Phosphate | - PTH |
| - Calcium                  | - TFTs        | - U&Es | - ESR       | - CRP |

Also continue to treat any underlying co-morbidity that may be associated with an abnormal result identified by the above blood tests. Any results can be used from the last 3-6months.<sup>1</sup>

#### **Deficiency<sup>12</sup>** **0-25 nmol/L**

Prescribe up to a total of 300,000 units over 6-8 weeks \*  
Suitable products (appendix 1)  
Then advise to purchase OTC unless at higher risk\*\*

#### **Insufficiency<sup>12</sup>** **26-50 nmol/L**

Advise to purchase OTC 800units/day without the use of loading doses.<sup>1\*\*</sup>  
Suitable products (appendix 1)

#### **Sufficient<sup>12</sup>** **> 50 nmol/L**

Consider other causes of symptoms, in the absence of bone loss.  
Do NOT prescribe any Vitamin D product\*\*

- Check calcium levels within 4 weeks of completing treatment dose of Vitamin D
- Deficiency - Re-check vitamin D levels after 4 months
- If still symptomatic at 4 months discuss diet, medicine concordance or intolerance to oral supplementation and consider referral to secondary care for specialist advice.

After treatment – Maintenance dose see below or if treating osteoporosis prescribe a calcium and Vitamin D product to maintain vitamin D level above 50nmol/L

**Maintenance dose:**

Routine monitoring is unnecessary for people on long term maintenance doses of vitamin D, if patient is asymptomatic and compliant with supplements.<sup>1</sup> If the vitamin D level is >50nmol/L then patients will normally be advised to self-care unless they are in the **higher risk** categories mentioned above when prescribing a maintenance dose may be considered such as:

- Deficiency - Once treatment is complete 20,000units/month (or 800units/day which could also be part of calcium and Vitamin D product if appropriate).
- Insufficiency - consider 800units/day,<sup>1</sup>
- Sufficient - patients can purchase over the counter colecalciferol at a dose of 10microgram (400units) daily if they wish to do so.

**Special groups**

- Pregnant/lactating women - there are no data to support routine testing for health or cost effectiveness, measure vitamin D levels if patients present with hypocalcaemia or are symptomatic and treat with 20,000units weekly for 4-6 weeks.<sup>4</sup>
- For renal failure patients (eGFR <30ml/min) – the ability to activate vitamin D decreases and patients may require vitamin D metabolites. This is likely if renal impairment is severe or if PTH remains elevated after supplementation. Advice from secondary care (renal or metabolic bone physicians) should be sought.<sup>5</sup>
- Malabsorption syndromes<sup>1</sup> (such as coeliac disease, cystic fibrosis, Crohn's disease) or chronic liver disease may impair absorption of dietary vitamin D making patients require much higher doses of up to 2000-4000units/day, (or ergocalciferol up to 40,000units/day<sup>6</sup>).

**Note:**

\* Secondary care specialist may recommend a treatment dose (off-label) of colecalciferol 20,000units daily for 15 days (total 300,000units) and then 20,000units/month as maintenance with GP to recheck levels after 6 months.

\*\*Review all patients dietary intake of calcium to aim >700mg/day.<sup>1</sup> Use online calculator to check intake:

<http://www.cgem.ed.ac.uk/research/rheumatological/calcium-calculator/>

- People with inadequate calcium intake (less than 700mg/day or less than 1000mg/day in osteoporosis) or confirmed hypocalcaemia, should be advised on dietary measures to correct this. See the British Dietetic Association (BDA) factsheet on calcium (available at [www.bda.uk.com](http://www.bda.uk.com)) for information on how daily calcium intake can be achieved.<sup>1</sup>
- People unable or unwilling to increase their dietary calcium<sup>1</sup> can purchase a combined calcium and vitamin D preparation (or have prescribed if they are in one of the high risk categories mentioned above).

**Maintenance for Care Home/Housebound patients:** Prescribing may be considered for individual patients where the clinician considers that their ability to self-manage is compromised as a consequence of medical, mental health or significant social vulnerability to the extent that their health and/or wellbeing could be adversely affected if reliant on self-care.<sup>7</sup> Ambulatory patients at high risk of falls consider colecalciferol 20,000units/month.<sup>8</sup> Also people should be taken outside as often as possible to maximise the exposure to the sun during April to October and increase foods rich in vitamin D in the diet all year round.

**Asymptomatic patients** that are at high risk of vitamin D deficiency should be advised to:<sup>1,2</sup>

- Increase their exposure to sunlight (face and arms) between 9am-3pm for 30 minutes twice a week from April-October. Sun safety advice should be given.
- Increase the intake of food groups that are high in vitamin D, such as oily fish (such as salmon, mackerel, and sardines), egg yolk, meat, offal, milk and mushrooms.
- Purchase a vitamin D supplement over the counter (colecalciferol 10micrograms/400units 1 capsule daily).<sup>9</sup>

**Appendix 1:**<sup>10</sup>**Deficiency treatment regimen 0-25nmol/L**

Product	Strength	Deficiency Treatment Regime 0-25 nmol/L
Capsules	50,000 units	1/week for 6 weeks
	40,000 units	1/week for 7 weeks
	20,000 units	2/week for 7 weeks
Tablets	25,000units	2/week for 6 weeks
Liquid	50,000 units/1ml	1x1ml/week for 6 weeks
	25,000 units/1ml	2x1ml/week for 6 weeks
	25,000 units/2.5ml	2x2.5ml/week for 6 weeks

**Insufficiency 26-50nmol/L maintenance dose**

Capsules (x30)	800units
Tablets (x30)	800units

- **In Primary Care** - Do NOT add initial deficiency treatment course to repeat medication, add a treatment stop date (to ensure dose is changed to maintenance dose or stopped.)
- For information on vegetarian, Halal or Kosher products see Pan Mersey guideline – dietary choices  
<https://www.panmerseyapc.nhs.uk/media/2165/dietarychoices.pdf>

**References:**

1. NICE CKS. Vitamin D deficiency in adults - treatment and prevention. Last revised in November 2016  
<https://cks.nice.org.uk/vitamin-d-deficiency-in-adults-treatment-and-prevention>
2. NICE evidence [PH56] Vitamin D: supplement use in specific population groups. Updated 2017
3. Epilepsy NICE CKS. <https://cks.nice.org.uk/epilepsy#!scenario:2>
4. Royal College of Obstetricians & Gynaecologists. Vitamin D in Pregnancy. June 2014  
[https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin\\_d\\_sip43\\_june14.pdf](https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin_d_sip43_june14.pdf)
5. Chronic kidney disease in adults: assessment and management. CG182. <https://www.nice.org.uk/guidance/CG182>
6. BNF 74, Sept 2017. Ergocalciferol
7. NHS England. Conditions for which over the counter items should not routinely be prescribed in primary care: Guidance for CCGs. Published 29 March 2018. Gateway Approval Number 07851. Available at  
<https://www.england.nhs.uk/wp-content/uploads/2018/03/otc-guidance-for-ccgs.pdf>
8. Vitamin D: Daily vs. Monthly Use in Children and Elderly—What Is Going On? Nutrients. 24 June 2017  
[www.mdpi.com/2072-6643/9/7/652/pdf](http://www.mdpi.com/2072-6643/9/7/652/pdf)
9. OTC directory 2017/18. Fultium daily D3 capsules £3.99 (30)
10. Drug tariff ([www.nhsbsa.nhs.uk](http://www.nhsbsa.nhs.uk)) accessed December 2017.
11. NHS Choices. Vitamins and Minerals <http://www.nhs.uk/Conditions/vitamins-minerals/Pages/Vitamin-D.aspx>  
<https://www.nhs.uk/Conditions/vitamins-minerals/Pages/Calcium.aspx>
12. Vitamin D and health. Scientific Advisory Committee on Nutrition 2016  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/537616/SACN\\_Vitamin\\_D\\_and\\_Health\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537616/SACN_Vitamin_D_and_Health_report.pdf)
13. Products Summary of Product Characteristics on ([www.medicines.org.uk](http://www.medicines.org.uk)) accessed 5/12/17.
14. MHRA drug safety update. April 2009 <https://www.gov.uk/drug-safety-update/antiepileptics-adverse-effects-on-bone>