VITAMIN D GUIDANCE

GUIDELINE FOR THE DIAGNOSIS AND MANAGEMENT OF VITAMIN D DEFICIENCY IN ADULT PATIENTS

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INTRODUCTION

This guideline is intended for use in primary and secondary care (in and out-patient settings). It contains an algorithm for the diagnosis and management of vitamin D deficiency in adults. In addition, it gives recommendations on adequate vitamin D supplementation and management for specific population groups.

The guildeline is based on current published evidence and local expert guidance. At present, there is insufficient evidence for clear recommendations in some areas of practice. It is our aim to provide safe advice for clinicians in areas where clinical uncertainty remains. The guideline should be used in conjunction with condition specific guidance where appropriate.

WHO SHOULD BE TESTED?

Vitamin D testing indicated

Adults with symptoms and indications

1. Bone diseases with improved outcomes with vitamin D treatment
   - confirmed osteomalacia
   - confirmed osteoporosis
2. MSK symptoms suspected to be attributed to osteomalacia
3. Specific drug therapy requiring correction of vitamin D deficiency (e.g. zolendronate, denosumab, teriparatide)
4. Patients with MS/Parkinson's Disease/taking anti-epileptic drugs and active epilepsy

Vitamin D testing not necessary

Adults at risk of vitamin D deficiency - treat with OTC supplement

1. Aged ≥65 yrs
2. Lack of sun exposure
   - those who cover their skin
   - housebound individuals
   - those confined indoors for long periods
3. People with darker skin

OTC = over-the-counter

Vitamin D supplement is recommended in the following groups

Adult groups at risk of vitamin D deficiency:

- Pregnant and breastfeeding women
- People ≥65 yrs and care home residents
- People with low or no exposure to the sun, e.g. those who cover their skin, housebound, confined indoors for long periods
- People with darker skin, e.g. people of African, African-Caribbean or South Asian origin

Recommendations: to take a daily supplement containing 10 micrograms (400 IU) of vitamin D.

IU (international unit) = units for prescribing purposes

The natural ways of increasing vitamin D levels

During Spring and Summer, main source of vitamin D for majority of people is sunlight on their skin with the face and arms exposed without suncream. Vitamin D is found in a small number of foods. Most people will need vitamin D supplements during Autumn and Winter months.

April to September
Sunlight sufficient for most people in UK
Diet: oily fish, egg yolks, red meat, fortified foods/cereals

October to March
Sunlight insufficient for most people in UK
Consider vitamin D supplement 10 micrograms (400 IU) daily
Diet: oily fish, egg yolks, red meat, fortified foods/cereals

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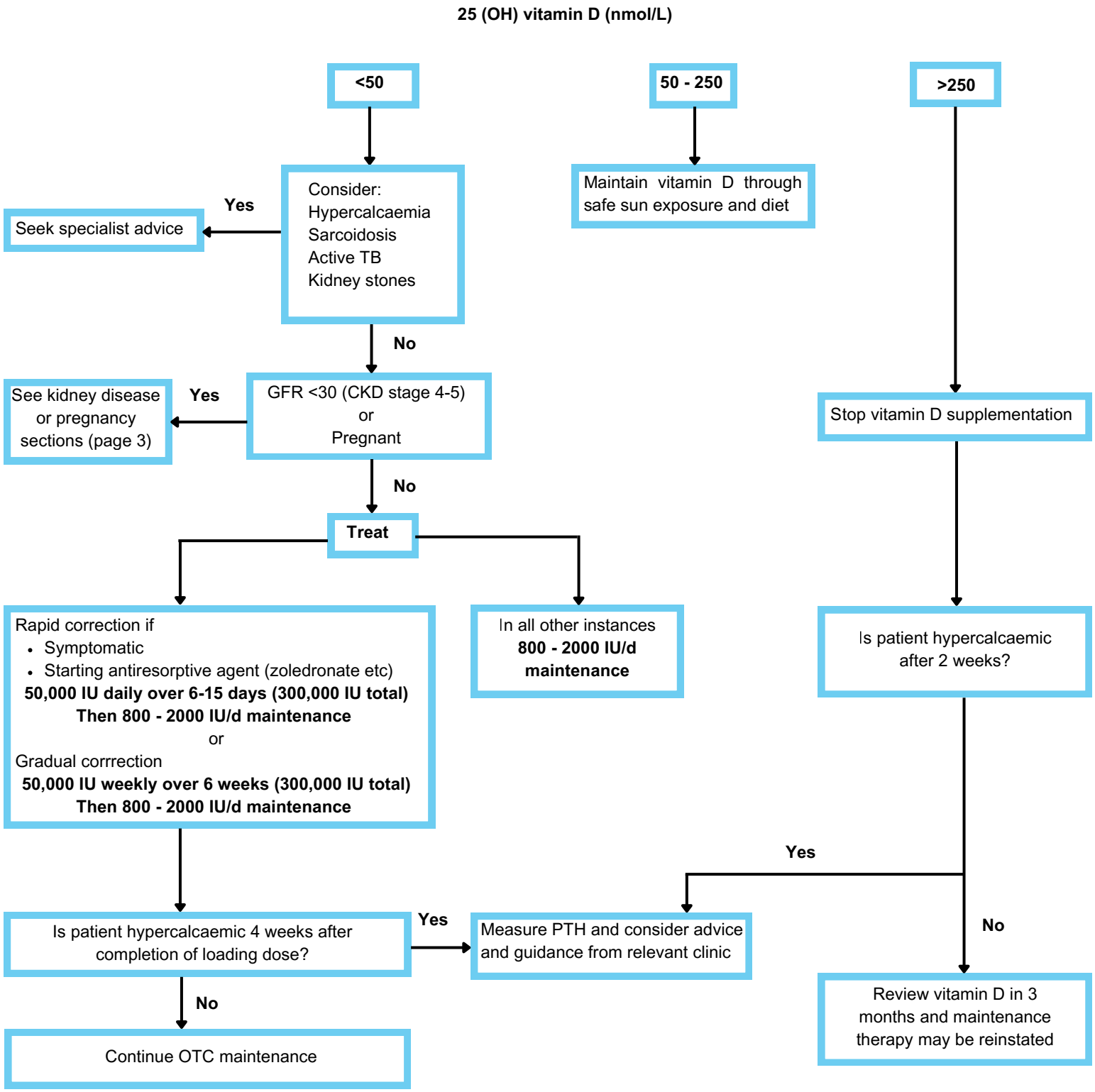
HOW TO TREAT AND FOLLOW UP?



Dose equivalence: vitamin D 400 IU = 10 µg
OTC = over-the-counter

Vitamin D requests will be rejected if tested within **6 months** of previous unless specifically agreed with the laboratory

SPECIFIC POPULATION GROUPS

Vitamin D in pregnancy and breast feeding women

Pregnancy: Vitamin D deficiency is very common in the North East London population. Pregnant women are a high risk group for vitamin D deficiency. Severe deficiency in pregnant mothers can result in neonatal hypocalcaemic fits. Additionally, rickets is a rare but potentially serious manifestation of vitamin D deficiency in childhood. It is therefore advisable to try to prevent vitamin D deficiency in mothers by advising vitamin D supplementation in pregnancy and during lactation.

At BHRUT, pregnant women are advised to take 400 IU (10 micrograms) daily of vitamin D according to 2021 NICE Guideline for Antenatal Care. This advice is reinforced by a sticker on the front of the patient's antenatal notes. Some women will be entitled to free Healthy Start vitamins which contain the correct dose of vitamin D (as well as vitamin C and folate). We recommend that the woman takes supermarket own-brand pregnancy vitamins because these contain the correct dose of vitamin D (400 IU/10µg) and are usually less expensive than other preparations. It is especially important for women who are at a higher risk of deficiency to take vitamin D supplementation in pregnancy e.g. those who are overweight, dark-skinned or who regularly cover the majority of the skin, or who mostly stay indoors. Enquiry should be made as to whether the woman is taking vitamin D supplementation and this should be recorded in the patient's notes.

Preparations of vitamin D which also contain vitamin A (e.g. vitamins capsules) should not be prescribed during pregnancy as excessive vitamin A is associated with foetal CNS malformations. Healthy Start vitamins or licensed colecalciferol preparations are recommended.

Breast feeding: Women that are exclusively breast-feeding their infants are advised to take a 400 IU (10 micrograms) daily dose for the first 6 months of the baby's life. If a mother has been advised to take vitamin D supplementation because of diagnosed vitamin D deficiency, they should be advised to continue this throughout the period of pregnancy and lactation. Pregnant women identified as vitamin D deficient (<50nmol/L) should be managed in the same way as other adult patients (algorithm page 2) except high dose treatment (300,000 IU) should be given over a period of 30 days.

Vitamin D in housebound individuals and those in care homes

Individuals in care homes and other long stay facilities and the house bound may be at greater risk of vitamin D deficiency. The department of health recommends intake of 400 IU daily in people over 65 years.

Calcium and vitamin D is cheap and safe. Combined calcium and vitamin D supplementation is associated with an improvement in mortality which is not associated with vitamin D supplementation alone. So in housebound patients with previous fall and fragility fracture, calcium and vitamin D in combined supplementation will be appropriate.

Vitamin D in individuals with kidney disease

In chronic kidney disease (CKD) there is decreased activation of vitamin D in the kidney, along with decreased gut calcium absorption and increased phosphate retention. As estimated glomeruler filtration rate (eGFR) declines, these processes may trigger secondary hyperparathyroidism with development of CKD Mineral Bone Disease (MBD), leading to bone resorption, pathological fractures, and metastatic calcification, which increases the risk of cardiovascular disease.

Since the risk of hypercalcaemia and acute or chronic renal failure in patients with CKD is higher, vitamin D replacement and maintenance regimes should be used more cautiously. Calcium should be reviewed regularly (with routine CKD blood tests every 6 months for CKD stage 3) and vitamin D should be reviewed annually.

Patients with CKD stages 4 or 5 in whom vitamin D deficiency is demonstrated should be referred to the Advice and Guidance Nephrology Clinic. MBD in patients with CKD stages 3-5 is best managed in liaison with Secondary Care.

Vitamin D in neurological conditions

Low vitamin D levels have been linked with an increased risk of developing multiple sclerosis (MS), and with more frequent relapses and increased disability in those with established disease. Individuals with MS are recommended to take regular vitamin D after assessment of their serum levels at the time of diagnosis and/or when experiencing significant clinical changes, as per clinical judgement, to establish whether replacement therapy or supplementation-only doses are required.

There is well known association between antiepileptic drugs (AED) use and abnormalities in bone metabolism, leading to low mineral density and vitamin D deficiency; individuals with epilepsy have also independent risks of bone disease, including reduced exposure to sunlight (housebound/ institutionalised), frequent falls and lower physical activity levels in those with active disease. Testing vitamin D level is considered appropriate before initiating AED and at any time in individuals with active or refractory disease, to establish whether replacement therapy or supplementation-only doses are required.

In Parkinson's Disease (PD), the propensity to fall and the increased risk of osteoporosis converge, resulting in a high fracture risk. Vitamin D testing should be considered to optimise vitamin D and calcium intake in individuals with PD.

References

[1] Royal Osteoporosis Society: vitamin D and bone health: a practical clinical guideline for patient management. April 2020.
[2] NICE CKS Vitamin D deficiency in adults 2022
[3] Public health guideline PH56: Vitamin D: supplement use in specific population groups 2017.
[4] NICE NG247: Maternal and child nutrition: nutrition and weight management in pregnancy, and nutrition and inchildren up to 5 years. 2025.
[5] NICE NG201 Antenatal care 2021.
[6] UK DHSC Vitamin D and care homes guidance 2021.
[7] NICE NG203: Chronic Kidney Disease: assessment and management 2021.
[8] NICE BNF: Multiple sclerosis
[9] Thouvenot E et al. High-dose vitamin D in clinically isolated syndrome typical of multiple sclerosis. The D-Lay MS randomised clincial trial. 2025 JAMA 2025; 1413-1422

Vitamin D in children

Please refer to BHRUT guildeline:

Vitamin D deficiency in children and young people: investigations and mangement in secondary care.

Acknowledgement

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TREATMENT OPTIONS

All patients

Patients should be advised to purchase maintenance vitamin D supplements unless they meet one of the specific vitamin D exception criteria in the NHS England Guidance: Conditions for which over the counter items should not be routinely prescribed in primary care. Note that maintenance or preventative supplementation is not an exception for vitamin D prescribing.

Safety considerations

High doses of vitamin D can be toxic (resulting in hypercalcaemia and renal failure). This is most likely to occur if high doses (used as initial treatment loading doses) are taken over a longer than recommended period of time, or if alfacalcidol or calcitriol are given in error.

There is a risk of hypercalcaemia developing in the presence of undiagnosed sarcoidosis or primary hyperparathyroidism in patients taking vitamin D.

Caution is advised when administering vitamin D supplements concurrently with other products containing vitamin D, such as calcium and vitamin D combination formulations or other vitamin supplements, to avoid excessive intake.

Preferred Vitamin D products for primary care

Vitamin D should be prescribed by brand only to ensure patients receive licensed, regulated formulations and to support cost-effective NEL formulary choices. Treatment/loading courses must be issued as one-off acute prescriptions and not added to repeat prescribing.

Recommended vitamin D3 (colecalciferol) preparations

Vitamin D3 preparations	Dosing regimen	Suitable for				
		N	S	V	H	K
InVita D3® capsules 50,000 IU (Licensed POM)	50,000 IU daily over 6-15 days or 50,000 IU weekly over 6 weeks (300,000 IU total) with food	Y	Y	N	Y	Y
Colextra-D3® capsules 20,000 IU (Licensed POM)	40,000 IU weekly over 7 weeks (280,000 IU total) with food	Y	Y	Y	Y	Y
Hux-D3® capsules 20,000 IU (Unlicensed)	40,000 IU weekly over 7 weeks (280,000 IU total) with food	Y	Y	Y	Y	Y
InVita D3® single dose unit oral solution 25,000 IU/mL for patients with established swallowing difficulties (Licensed POM)	50,000 IU daily over 6-15 days or 50,000 IU weekly over 6 weeks (300,000 IU total) with food	Y	Y	Y	Y	Y
Ergocalciferol IM injection 300 000 IU/mL	300,000 units injection every 3 - 6 months	Y	Y	Y	Y	U
Valupak® Vitamin D3 1000 IU tablet	1000 - 2000 IU daily with food	Y	Y	Y	Y	Y

Key: N = nut allergy, S = soya allergy, V = vegetarian diet, H = halal diet, K = kosher diet, Y = Yes, N = No, U = unknown

*Note: Manufacturers may change the formulation of their products or the suppliers of the excipients and cannot guarantee products may come into contact with allergens during the manufacturing process. The current status of the nut or soya content of the product should therefore be obtained from the manufacturer. Halal or kosher certification is dependent on information supplied by product manufacturers and may be subject to change. It is recommended that individuals verify information on each product with the manufacturers, it would remain the patient's decision as to whether the ingredients are acceptable under their dietary guidelines.

Vegan diet

There are no licensed vitamin D3 products suitable for vegans. Colecalciferol is derived from lanolin (wool fat). Therefore, vitamin D3 products may not be suitable for those observing a strict vegan diet. The colecalciferol in InVita D3 oral solution comes from live sheep's wool. The sheep are not slaughtered in the process.