

TREATMENT OF VITAMIN D DEFICIENCY

1. INTRODUCTION / RATIONALE

- Guideline for treating vitamin D deficiency in adults with eGFR >30 and low or normal serum calcium.
- This guideline represents the views of the Gloucestershire Hospitals NHS Foundation Trust Osteoporosis Guidelines Group. They were arrived at after consideration of the available evidence and the development of consensus.
- The guideline aims to ensure equity and best practice within the context of resources currently available to the NHS locally.
- This guideline does not override the responsibility of healthcare professionals to make appropriate decisions in the circumstances of the individual patient in consultation with the patient and/or carer.
- This guideline provides recommendations on the treatment of established vitamin D deficiency/insufficiency in adults with eGFR >30 and low or normal serum calcium. For recommendations on vitamin D supplementation please see Department of Health guidance. For recommendations on treating vitamin D deficiency in patients with stage 4 or 5 CKD (eGFR <30) please see NICE guidance.

2. DEFINITIONS

Word/Term	Descriptor
Colecalciferol	Vitamin D3
Ergocalciferol	Vitamin D2

3. ROLES AND RESPONSIBILITIES

Post/Group	Details
Osteoporosis Guidelines Group	Responsible for ensuring guidelines remain up to date with clinical evidence/national consensus
Prescribers	Responsible for following this guideline

4. POPULATION TO BE TREATED

This guideline is only for use in adults with eGFR >30 and low or normal serum calcium.

Vitamin D deficiency is very common and associated with many diseases.

Vitamin D 'insufficiency' occurs in >50% of the adult UK population. The incidence is much higher in the elderly and occurs in >90% of care home residents.

Supplementation should be considered for the following high risk groups:

- History of fragility fracture, or known osteoporosis (>50yrs)
- Fallers over 65 years of age
- Patients starting potent bone specific parenteral therapies such as Zoledronic Acid, Teriparatide, or Denosumab.
- Patients on enzyme inducing anti-epileptic drugs (NICE CG20)
- Intestinal malabsorption
- Patients treated with oral glucocorticoids
- People over 80 years old – especially if housebound
- Care home residents

Patients with the above risk factors from ethnic minorities are at additional risk.

5. ASSESSING VITAMIN D STATUS

Vitamin D status is most reliably determined by assay of serum 25-hydroxyvitamin D (25-OHD).

Interpretation of serum 25-OHD concentration:

<30nmol/l - Deficiency
30-50nmol/l - Insufficient
>50nmol/l - Adequate

6. DIETARY ADVICE

Diet is a poor source of vitamin D.

7. SUN ADVICE

Sun exposure is the main source of vitamin D, but excessive sun exposure is the main cause of skin cancer, including melanoma, the fastest rising type of cancer in the UK. Enjoying the sun safely, while taking care not to burn, can help to provide the benefits of vitamin D without unduly raising the risk of skin cancer.

It is impractical to offer a one-size-fits-all recommendation for the amount of sun exposure that people need to make sufficient vitamin D, because this varies according to a number of environmental, physical and personal factors.

The time required to make sufficient vitamin D is typically short and less than the amount of time needed for skin to redden and burn. Regularly going outside for a matter of minutes around the middle of the day without sunscreen should be enough. When it comes to sun exposure, little and often is best, and the more skin that is exposed, the greater the chance of making sufficient vitamin D before burning. However, people should get to know their own skin to understand how long they can spend outside before risking sunburn under different conditions.

8. WHO SHOULD BE TESTED FOR VITAMIN D DEFICIENCY?

- Patients with bone diseases that may be improved with Vitamin D replacement e.g. osteomalacia, Paget's
- Before commencing potent anti-resorptive therapy (e.g. Zoledronic acid or Denosumab)
- Patients with musculoskeletal symptoms that might be attributable to Vitamin D deficiency e.g. myopathy, chronic widespread pain
- Patients with melanoma (NICE CG14)

There is no need to routinely test for vitamin D deficiency in the following groups:

- **Asymptomatic individuals at higher risk of Vitamin D deficiency – these patients should be commenced on maintenance Vitamin D therapy**
- **Osteoporosis or fragility fracture where a decision has been made to prescribe an oral bisphosphonate; in this situation a Vitamin D preparation (with or without Calcium) should be routinely co-prescribed**
- **Asymptomatic healthy individuals**

9. VITAMIN D REPLACEMENT

Oral dosing with Colecalciferol (D3) has been shown to be the preferred method, aiming to replace approximately 600,000 IU per annum.

Serum calcium levels should be checked one month after starting Vitamin D loading or maintenance therapy in case subclinical primary hyperparathyroidism has been unmasked.

9.1 Ergocalciferol (D2 [plant]):

Inconsistent data regarding persistence and bioactivity and so not recommended unless animal source of vitamin D is unacceptable (see vegan section below).

9.2 Intramuscular Vitamin D:

This has an unpredictable and slow systemic uptake. It is only recommended for patients with small bowel resections, who are unable to take or non-compliant with oral therapy.

10. VITAMIN D PREPARATIONS OF CHOICE

		Suitable for vegetarians	Suitable in peanut/soya allergy
INJECTION	Colecalciferol (300,000 units/1ml) injection	Yes	Check product info
ORAL	<u>High dose</u> Hux-D3® (Colecalciferol 20,000 unit) capsules	Yes	Yes
	<u>Low dose</u> Stexerol-D3® (Colecalciferol 1,000 unit) tablets	Yes	Yes

10.1 Miscellaneous (if above preparations not suitable):

Vegan preparations:

Colecalciferol is derived from sheep wool and therefore not suitable for vegans. Ergocalciferol is derived from yeast and is therefore suitable for vegans, provided it is not encapsulated in animal gelatine.

		Suitable for vegetarians	Suitable in peanut/soya allergy
ORAL	Calcium & Ergocalciferol (Calcium 97mg/Ergocalciferol 400units) tablets	Yes	Check product info
	Uvestrol D (Ergocalciferol 30,000units/20ml) liquid – available from IDIS	Yes	Yes

Preparations for patients with swallowing difficulties:

		Suitable for vegetarians	Suitable in peanut/soya allergy
ORAL	Hux-D3 (Colecalciferol 20,000 unit) capsules The capsule contents may be squeezed out or the capsule may be chewed by patients with swallowing difficulty	Yes	Yes
	InVita D3 (Colecalciferol 25,000 units/1ml) oral solution	Yes	Yes
	Stexerol-D3 (Colecalciferol 1,000 unit) tablets The tablets can be crushed (unlicensed)	Yes	Yes

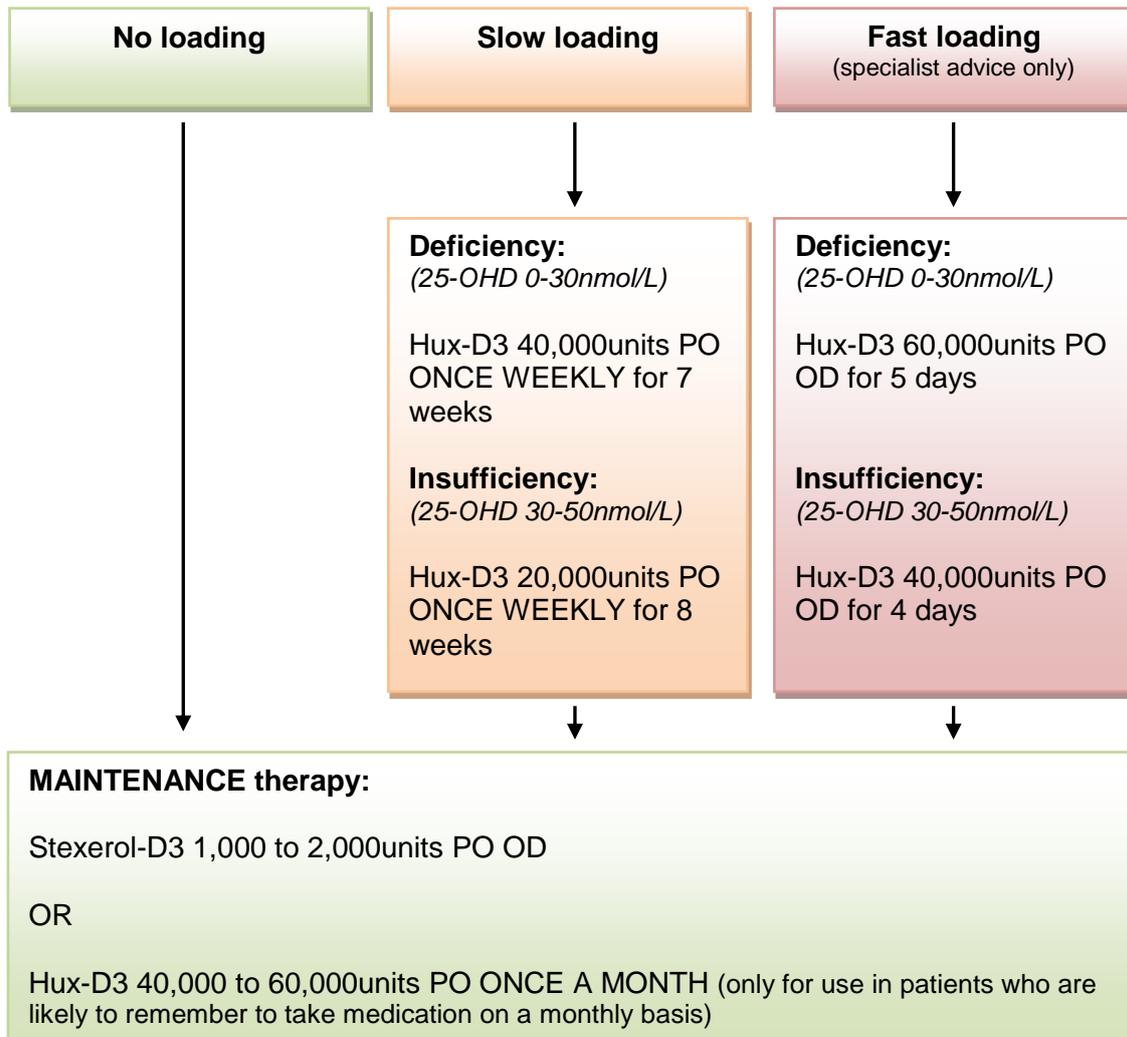
11. PRESCRIBING ADVICE

There are 3 potential regimens to correct vitamin D deficiency:

Maintenance therapy – where correction of Vitamin D deficiency is less urgent, or when co-prescribing supplements with an oral anti-resorptive agent, maintenance therapy can be started without the use of loading doses. This is suitable for the majority of people in the community.

Slow loading over 7-8 weeks (**followed by maintenance therapy**) - where more rapid correction is needed e.g. in symptomatic disease or prior to commencing treatment with a potent anti-resorptive agent as an out-patient.

Fast loading over 4-5 days (**followed by maintenance therapy**) – generally for hospital in-patients where quick loading prior to IV bisphosphonate or Denosumab administration is deemed appropriate. This regimen is recommended only on the advice of a hospital bone health specialist.



OR A SUITABLE ALTERNATIVE (see preparations listed above – section 10)