Dorset NHS

PAN-DORSET GUIDELINE FOR THE MANAGEMENT OF VITAMIN D DEFICIENCY & INSUFFICIENCY IN ADULTS

Introduction
Vitamin D deficiency is common.
Up to 40% of the local population could be deemed deficient or insufficient. (See table below)

- The average UK adult daily diet provides only approximately 3 microgram of vitamin D.
- Over 90% of the body's vitamin D is produced from sunlight exposure, with approximately 3 sunlight exposures per week considered sufficient to achieve adequate vitamin D levels in the summer.
- Vitamin D levels can vary by ~40% from mid-winter to mid-summer, with a three-month lag between depletion and replenishment due to its fat solubility.
- Food sources which contain Vitamin D are described here.

Conversion factors:
10micrograms vitamin D = 400units vitamin D.
To convert 25(OH)D from ng/ml to nmol/L multiply by 2.5 i.e. 2.5nmol/L serum 25OH = 1ng/ml serum 25(OH)D

Vitamin D supplementation

SACN Vitamin D guidelines 2016 recommended vitamin D supplementation to the following groups at risk of vitamin D deficiency:

DOSE : 800 IU per day vitamin D is recommended for the UK population, including pregnant and lactating women and population groups at increased risk of deficiency.

- All pregnant and breast-feeding women, especially teenagers and young women
- Those aged 65 and over.
- People with reduced sun exposure
- People with darker skin, for example of African, African-Caribbean & South Asian origin.

In these groups, supplementation is suggested **without measurement of vitamin D levels**.

Advise patients to buy an appropriate over the counter (OTC) preparation. Low cost Vitamin D options are readily available to purchase OTC and healthcare professionals should refrain from prescribing vitamin D maintenance preparations. Please also refer to the NHSE Consultation recommendations: Conditions for which Over The Counter items should not be routinely prescribed in primary care to ensure patients purchase their own supplies, where appropriate. **This includes patients with Long Term Conditions. PHE guidance does not distinguish between the general public and 'at risk' patients and therefore vitamin D products are not exempted from the OTC guidance.**

Multivitamin preparations are NOT suitable for the treatment of vitamin D deficiency as this may lead to vitamin A toxicity. See NHS Choices for information about vitamin D dietary sources and buying supplements. http://www.nhs.uk/Conditions/vitamins-minerals/Pages/Vitamin-D.aspx

When to test for Vitamin D deficiency?

Vitamin D levels do NOT need to be measured routinely. Consider measuring vitamin D in patients presenting with:

- Persistent musculoskeletal weakness, myalgia & arthralgia.
- Hypocalcaemia.
- Management of primary hyperparathyroidism
- Unexplained osteoporosis or osteoporosis refractory to treatment
- Mal-absorption syndromes
- Patients taking enzyme-inducing anti-convulsants – including off-label use for non-seizure indications e.g. carbamazepine for trigeminal neuralgia?
- Melanoma patients
- Before treatment with IV bisphosphonates and denosumab

Where in doubt, refer to specialist for advice and guidance

Written by: Dr T Richardson on behalf of the Osteoporosis Working Group
Approved by: Dorset Medicines Advisory Group approved June 2020
To be reviewed May 2022 or before, in light of new information

Interpretation of vitamin D levels

Blood level	Status
<30 nmol/L	Deficient
30-50 nmol/L	Insufficient
>50 nmol/L	Adequate / replete

Loading Doses in deficiency & treatment of other exceptional circumstances

Circumstance	Dosing	Alternatively
25-hydroxyvitamin D **< 30nmol/L**	20,000 IU weekly for 6 weeks	3,200 IU daily for 6 weeks
Rapid replacement before IV bisphosphonate administration and treatment with Denosumab	20,000 IU weekly for 6 weeks	3,200 IU daily for 6 weeks
Very symptomatic e.g. myalgia	20,000 IU weekly for 6 weeks	3,200 IU daily for 6 weeks

Maintenance should be continued at 800 IU per day unless there is a predisposing condition to vitamin D deficiency in which case higher doses may need to be considered.

After loading/treatment, patients should receive maintenance dose Vitamin D, (with or without calcium)
If the person's calcium intake is adequate, (>700 mg/day) (calcium calculator here), recommend 800 IU per dayof vitamin D (without calcium).

If calcium intake is inadequate: A dose of **up to** 800 IU of vitamin D with approx. 1000mg of elemental calcium daily is recommended. (e.g. AdCal D3 1 tablet BD)

Monitoring

- For patients with osteoporosis NICE recommends re-checking vitamin D levels within 3–6 months of a loading dose (no sooner as it takes at least 3 months for the vitamin D level to stabilize). Repeat testing is on a case-by case basis based on the recommendations of the secondary care team managing the patient.
- For patients with osteoporosis The National Osteoporosis Society recommends routine monitoring is unnecessary unless the patient has a malabsorption syndrome, is on treatment with s/c denosumab, remains symptomatic, there is a likelihood of poor adherence or hypercalcemia occurs, and to check for unmasked primary hyperparathyroidism
- There is not clear guidance on how often to test vitamin D levels in patients on maintenance therapy with malabsorption syndromes but it seems reasonable to test vitamin D levels periodically, 3-6 monthly, and adjust the time frame depending on the patient's last level.

Treatment of At-risk groups:

Consider the need for referral or seeking specialist advice.

- **Refer to an appropriate specialist (using clinical judgement to decide on the urgency) if** a serious underlying condition, such as cancer or a malabsorption disorder (for example Crohn's disease), is suspected. See the sections on Causes and Differential diagnosis.
- **Refer or seek specialist advice (depending on clinical judgement) if the person:**
    - Has a fragility fracture, documented osteoporosis, or high fracture risk, or is being treated with an antiresorptive drug for bone disease.
    - Has raised parathyroid hormone levels.
    - Is taking an antiepileptic drug or an oral corticosteroid, or is on long-term treatment with other drugs known to cause vitamin D deficiency, such as colestyramine.
    - Has a malabsorption disorder (for example Crohn's disease) or other condition known to cause vitamin D deficiency, such as chronic kidney disease.
    - Has a co-existing condition associated with increased sensitivity to vitamin D (such as sarcoidosis, tuberculosis, lymphoma, or primary hyperparathyroidism).
    - Is a pregnant woman.
    - Has an unexplained deficiency.

NOTE: *As guidelines are developed and approved across Dorset to support Vitamin D supplementation in these At-Risk Groups, links within this document will be provided.*

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