Management of Vitamin D Deficiency and Insufficiency in Adults

(excludes pregnancy, end stage kidney disease and melanoma)

NHS
York and Scarborough
Medicines Commissioning Committee

Who to test (£19 per test)

- Patients with diseases that may be improved with treatment e.g. confirmed osteomalacia, osteoporosis (see below when not to test this group)
- Patients with musculoskeletal symptoms that could be attributed to deficiency e.g. suspected osteomalacia,chronic widespread pain with other features of osteomalacia (e.g. proximal muscle weakness).
- Patients starting treatment with a potent antiresportive agent for bone disease where correction of vitamin D may be necessary (zolendronic acid , denosumab, teriparatide)
- All newly diagnosed melanoma patients are tested by the specialist centre at baseline (local guidance)

Do not test:

- Patients with osteoporosis or fragility fracture where the decision has been taken to prescribe calcium/ vitamin D 800 units daily + an oral bisphosphonate - testing not usually needed
- Asymptomatic individuals at risk of deficiency as per DH advice (*see references)
- When the results of testing will not affect clinical management
- Universal population screening of asymptomatic healthy individuals is not recommended.

Treatment of vitamin D deficiency

- See flowchart (page 2)

Additional Notes

- Symptoms of deficiency
  - The main manifestation of severe vitamin D deficiency is osteomalacia in adults and rickets in children
  - Less severe vitamin D deficiency may lead to secondary hyperparathyroidism, bone loss, muscle weakness, falls and fragility fractures in older people
- In patients with Primary hyperparathyroidism the low vitamin D level can be a compensatory change. Check serum calcium and in patients with high serum calcium and normal or high parathyroid hormone, discuss their case with an endocrinologist before initiating treatment
- For advice in pregnancy see https://www.sps.nhs.uk/articles/which-oral-vitamin-d-dosing-regimens-correct-deficiency-in-pregnancy/
- Calcium/vitamin D combinations not to be used as sources of vitamin D for rapid correction as this would result in inappropriately high doses of calcium. Some drug treatments represent an additional risk factor for lowering vitamin D levels, these include; some anticonvulsants, corticosteroids, rifampicin and antiretrovirals. Vitamin D supplements (+/- calcium) should be considered for these patients.
- For others at risk where calcium and vitamin D supplements may be appropriate, see the DH correspondence “Vitamin D – advise on supplements for at risk groups”.
- See netFormulary for advice on treatment in melanoma

Recommendations to patients

- Regular but sensible exposure to sunlight - 20-30 minutes around midday on the face and forearms 2-3 times a week during the months of April-October. Exposure may need to be longer in darker skinned people.
- Dietary source: principally found in oily fish / fish oils – 2-3 portions a week. Also in egg yolk and some breakfast cereals.

Choice of formulation

- **Oral :** Vitamin D3 (colecalciferol) is recommended 1st choice but is generally not suitable for vegans and may not be suitable for vegetarians. Vitamin D2 (ergocalciferol) is generally suitable for vegans but individual brands should be checked. Note ergocalciferol is less effective than colecalciferol. Colecalciferol 400 units = ergocalciferol 10 micrograms
- **Injection :** Ergocalciferol 300,000 units/mL intramuscular injection is available. It should only be considered for patients with severe malabsorption and will need discussion with a specialist. Drawbacks include an unpredictable bioavailability and slower onset of repletion. Use of single doses of 300,000 IU or higher is not recommended
- **Combination calcium and vitamin D products :** these may be prescribed for insufficiency if additional calcium is required, but do not use for deficiency .
- Please refer to the medal rankings or online formulary for further detail on both vitamin D supplement preparations and calcium with vitamin D choices. Prescribing support software will also guide prescribers to current 1st line preparation.
- May not be suitable for use in pregnancy consult individual summary of product characteristics or seek specialist advice.

References and further reading:

- Vitamin D and Bone Health: A Practical Clinical Guideline for Patient Management v2. The Royal Osteoporosis Society
- *CMO letter : vitamin D – advice on supplements for at risk groups
- Diagnosis and Management of Vitamin D Deficiency. BMJ 2010;340:142
- UK Medicines information (UKMi). What Dose of Vitamin D. October 2010
- CMO letter to GPs. Vitamin D – vitamin D supplements for at risk groups
- National Osteoporosis Society. Vitamin D and Bone Health. April 2013
- East & South East England Specialist Pharmacy Service. Vitamin D Deficiency and insufficiency; using appropriate products. April 2012

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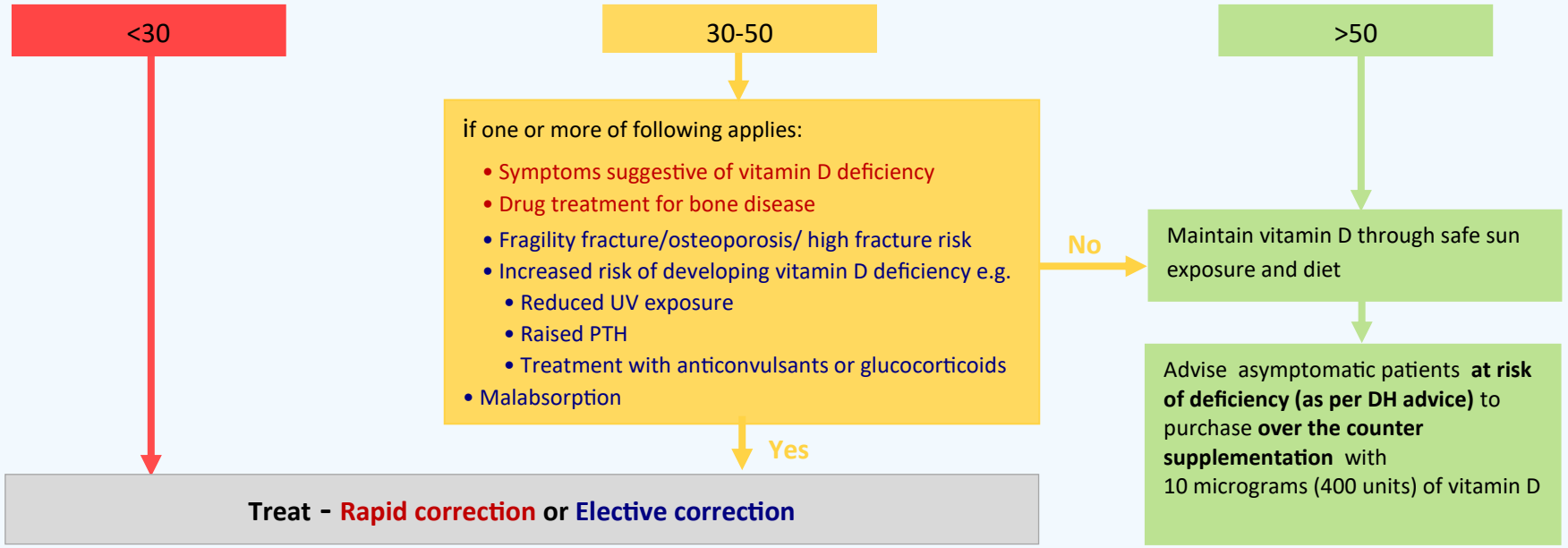
Serum 25-OHD concentrations (nmol/L)



Treating Vitamin D deficiency

Rapid correction if:

- Symptoms of vitamin D deficiency
- About to start treatment with potent antiresorptive agent (zoledronate or denosumab or teriparatide)

Prescribe approximately 300,000 IU vitamin D3 (or D2) orally in divided doses over 6-10 weeks

4 weeks after loading, advise patient to commence **over the counter** maintenance therapy of vitamin D, as per elective correction

Elective correction in all other instances

Commence **over the counter** therapy of 800-2,000 IU vitamin D3 daily or intermittently at higher equivalent dose

- When co-prescribing vitamin D supplements (+/- calcium) with an oral bisphosphonate for osteoporosis, maintenance therapy may be started without the use of loading doses of vitamin D.

Follow up

- **Routine follow up monitoring is generally unnecessary but may be appropriate in patients with:**
  - symptomatic vitamin D deficiency or
  - malabsorption or
  - where poor compliance with medication is suspected.
  - in patients taking antiresorptive therapy who have extremely low levels at baseline assessment
  - repeat testing of 25(OH)D may be indicated prior to sequential doses of potent antiresorptives
- If indicated check serum 25-hydroxyvitamin D (25-OHD) levels after at least 3 and preferably 6 months of treatment with high-dose vitamin D.

Serum Calcium level

- Check adjusted serum calcium levels within one month of completing high-dose vitamin D treatment.

  This is in case primary hyperparathyroidism has been unmasked as low vitamin D level can be a compensatory change. If serum calcium is high and parathyroid hormone is high or normal, discuss their case with an endocrinologist.

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