County Durham and Tees Valley Primary Care Management of Vitamin D Deficiency

County Durham & Tees Valley Area Prescribing Committee

DO NOT ROUTINELY TEST FOR VITAMIN D DEFICIENCY

ONLY TEST IF:

- Confirmed osteomalacia, osteoporosis, symptomatic hypocalcaemia
- High risk patient group with suggestive symptoms e.g. suspected osteomalacia or rickets, severe widespread muscle ache, proximal muscle weakness
- All patients prior to starting parenteral anti-resorptive treatment
- Isolated raised ALP (with normal liver function, including gGT)
- Malabsorption e,g, post-gastric bypass surgery

DO NOT TEST:

- Asymptomatic patients
- Fibromyalgia
- Non-specific aches and pains (with normal bone chemistry)

Test for vitamin D deficiency by measuring serum 25-hydroxyvitamin D (nmol/L)

To aid diagnosis and rule out other concerns consider arranging:

Bone profile (calcium, phosphate, ALP), renal, liver and thyroid function tests, parathyroid hormone (PTH) level, FBC including haemoglobin and ferritin levels (to identify other possible vitamin deficiencies)

Serum 25 (OH) D levels = ADEQUATE

see page 2 for reference ranges

Do not prescribe Vitamin D

Advise on safe sun exposure, dietary sources and use of OTC supplements if appropriate e.g. 400 units (10mcg) daily.

If the patient has MSK symptoms (such as muscle pain or weakness) despite adequate serum 25(OH)D levels, consider an alternative diagnosis.

No ←

Serum 25 (OH) D levels = INSUFFICIENT

see page 2 for reference ranges

Does the patient have any of the following?

- Fragility fracture, documented osteoporosis, or high fracture risk
- Prescribed an anti-resorptive drug for bone disease e.g. bisphosophonate
- Symptomatic i.e. has symptoms suggestive of vitamin D deficiency
- At increased risk of developing vitamin D deficiency in the future:
  - Limited sun exposure: cover up for cultural reasons (e.g. Muslim women) OR for health reasons (e.g. skin photosensitivity or a history of skin cancer)
  - Spend very little time outdoors (e.g. housebound or institutionalised) OR with dark skin (e.g. African, African-Caribbean, or Asian or Middle-Eastern ethnic origin)
- Prescribed anti-epileptics or oral corticosteroids, or is on long term treatment with other drugs known to cause vitamin D deficiency, e.g. colestyramine
- Has a malabsorption disorder (e.g. Crohn's disease) or other condition known to cause vitamin D deficiency such as chronic kidney disease

Yes (insufficient AND symptomatic) →

Yes (NOT symptomatic) →

Serum 25 (OH) D levels = DEFICIENT

see page 2 for reference ranges

Treat for deficiency (loading dose)

See overleaf for prescribing information

Check adequacy of calcium intake

Where hypercalcaemia is a concern contact secondary care for advice

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Self-care for insufficiency (maintenance dose)

Pharmacies, health food shops and supermarkets sell various products in various strengths.

Referrals: eGFR <30ml/min, failure to respond to treatment, doubt about diagnosis, atypical biochemistry, persistent focal bone pain; concurrent hypercalcaemia, investigation of unclear underlying cause.

Secondary care requests to test/ treat outside of this guidance – discuss rationale with requesting clinician.

Repeat vitamin D_3 testing is generally NOT required, but additional tests may be requested by specialists for patients receiving anti-resorptive drug.

N.B. treatment for hypoparathyroidism is life-long. Discontinuation for other patient groups should only be considered if significant changes made to lifestyle e.g. regular exposure to sunlight, consumption of oily fish or bariatric surgery reversal. If answer is NO continue.

Vitamin D Reference Ranges and Treatment Information

Please note: reference ranges for deficiency and insufficiency are the same across all hospital trusts (County Durham & Darlington, North Tees & Hartlepool and South Tees)

Deficient	<30nmol/L
Insufficient	30 – 50nmol/L
Adequate	>50nmol/L

<table>
<tr><th></th><th>Dose and regimen</th><th>Considerations</th></tr>
<tr><td rowspan="2">Deficient</td><td>Adults (including pregnancy):
Prescribe 300,000 units colecalciferol (vitamin D_3) orally, divided over 6-7 weeks
• Colecalciferol 20,000 units/ capsules
○ 2 capsules weekly for 7 weeks
○ 14 capsules total course
If patient is unable to tolerate capsules:
• Colecalciferol 25,000 units/ml oral solution
○ 2ml weekly for 6 weeks
○ 12ml total course</td><td rowspan="3">Do not use loading dose if patient if hypercalcaemic or asymptomatic – start with regular maintenance dose (N.B. investigate cause of hypercalcaemia)

If about to start treatment with potent antiresorptive agent e.g. zoledronate, denosumab, higher vitamin D_3 doses will be required and managed in secondary care.

Check adjusted serum calcium after completing the loading regimen in case primary hypoparathyroidism has been unmasked.</td></tr>
<tr><td>Children: (N.B. these doses are unlicensed
0-1 month: 2,000 units daily for 12 weeks
1-6 months: 3,000 units daily for 8 weeks
6 months – 12 years: 6,000 units daily for 8 weeks
12 – 18 years: 10,000 units daily for 8 weeks</td></tr>
<tr><td>Insufficient <u>AND</u> symptomatic (maintenance)</td><td>Treat as detailed above for deficiency.</td></tr>
<tr><td>Insufficient <u>NOT</u> symptomatic (maintenance)</td><td>SELF-CARE, RECOMMEND PATIENT TO PURCHASE LONG-TERM UNLESS RISK FACTORS IMPROVE

Maintenance dose of 800units (20mcg) colecalciferol daily; for average Caucasian with intact fat soluble vitamin absorption; other groups may require higher dose e.g. up to 2000 units (50mcg) for some patients.</td><td>Medicines containing supplementary calcium should ONLY be prescribed if dietary calcium intake insufficient or unwilling to increase intake; do not initiate calcium or if taking supplement DEPRESCRIBE if sufficient calcium in diet.</td></tr>
<tr><td>Adequate</td><td colspan="2">Provide reassurance and lifestyle advice (see below).</td></tr>
</table>

Lifestyle advice

In the UK, during spring and summer, the majority of the population will get enough vitamin D through sunlight on the skin and a healthy balanced diet, however during autumn and winter everyone will need to rely on dietary sources of vitamin D. Since it is difficult for people to meet the recommendation of 400units (10mcg) from consuming foods naturally containing or fortified with vitamin D, Public Health England advises that everyone should consider taking a daily supplement containing 400units (10mcg) of vitamin D during the autumn and winter months, from October to March. NHS Choices provides information on vitamin D for patients.

Groups at high risk of vitamin D deficiency should consider taking a daily supplement containing 400units (10mcg) of vitamin D throughout the year.

People should buy vitamin D supplements*. Vitamin D supplements are widely available from pharmacies, health food shops and supermarkets. Eligible patients can obtain vitamin D supplements through the Healthy Start scheme.

**Exceptions: maintenance vitamin D_3 for patients with osteoporosis, chronic hypoparathyroidism or prescribed cinacalcet.*