Treatment of vitamin D Deficiency in Adults

Clinical Commissioning Group

Aims

- Advice on the diagnosis and management of vitamin D deficiency in adults
- Clinical and cost effective investigation of suspected vitamin D deficiency
- Clinical and cost effective prescribing of vitamin D therapy and choice of supplements
- An appropriate balance between patient lifestyle, self-management and medical treatment

Background

- Vitamin D deficiency and insufficiency is a common problem worldwide
- More than 50% of the adult population have levels classed as insufficient and 16% have severe deficiency
- The awareness that vitamin D deficiency may contribute to the development of osteoporosis and to falls and fractures has resulted in a dramatic increase in requests for serum 25 hydroxyvitamin D (25OHD) tests
- In line with NOS Guidance, high dose vit D supplements should be prescribed for treatment of high risk adults with proven deficiency or those about to be initiated on potent anti-resorptives (e.g. zoledronic acid, denosumab)

Lifestyle Measures – ALL PATIENTS SHOULD BE GIVEN THIS ADVICE

People at high risk of vitamin D deficiency should be advised to supplement their vitamin D levels by:

- Increase UV sunlight exposure (face and forearms) between 9am and 3pm for 30 minutes twice a week from April to October (double the exposure for heavily pigmented skin). Sun safety advice should be given. Further advice is available at: http://www.nhs.uk/Livewell/Summerhealth/Pages/vitamin-D-sunlight.aspx
- Increase dietary vitamin D or over-the-counter Vitamin D supplementation
- Foods containing vitamin D: oily fish, egg yolks, cod liver oil and fresh meat
- Foods fortified with vitamin D: cereals and some dairy products
- NOTE: Increasing the dietary intake of vitamin D alone will not avoid the need for supplementation in patients with vitamin D deficiency

High Risk Groups for deficiency – follow lifestyle advice: NO NEED TO ROUTINELY TEST IF ASYMPTOMATIC

- All pregnant and breastfeeding women, especially teenagers and young women are particularly at risk
- Patients under 5 or aged 65 years and over
- Patients not exposed to much sun, for example those who cover their skin for cultural reasons, who are housebound or confined indoors for long periods
- Ethnic minorities who have darker skin, because their bodies are less able to produce vitamin D
- Obese people (BMI>30)
- Medical risk factors such as renal and hepatic disease, malabsorption
- Other risk factors such as alcoholics, vegetarians or vegans
- Medication - patients taking rifampicin, anticonvulsants or Highly Active Antiretroviral Treatment (HAART)

When and to whom should I refer?

- eGFR<30ml/min; renal stones; hyper or hypocalcaemia; hyperparathyroidism; sarcoidosis, lymphoma, metastatic cancer; active tuberculosis; skeletal deformity, malabsorption e.g. coeliac disease; chronic liver disease, patients who fail to respond to treatment or where symptoms worsen on treatment. Refer to the appropriate specialist
- These conditions are those where calcium level may be (i) adversely affected by treatment or (ii) absorption or (iii) conversion of vitamin D to 25 (OH)D vitamin D is affected therefore referral is required

When should I test for vitamin D deficiency? (Cost approx. £20 per test)

NOTE: GPs unable to order vitamin D tests at GWH. Discuss any cases with consultant chemical pathologist.

- Patients with bone diseases that may be improved with vitamin D treatment or where correcting vitamin D deficiency prior to specific treatment would be appropriate
- Where abnormalities on laboratory investigations are suggestive of vitamin D deficiency e.g. low calcium, low phosphate, isolated or raised ALP or raised PTH
- Musculoskeletal symptoms that could be attributed to vitamin D deficiency or who have symptoms of osteomalacia (proximal myopathy or chronic pain)
- Routine vitamin D testing may be unnecessary in patients with osteoporosis or fragility fracture, who may be co-prescribed vitamin D supplementation with an oral antiresorptive treatment
- Routine monitoring of serum vitamin D is generally unnecessary but may be appropriate in patients with symptomatic vitamin D deficiency, malabsorption and other conditions associated with vitamin D deficiency, and where poor compliance with medication is suspected

Further information
Healthy Start Scheme www.healthystart.nhs.uk National Osteoporosis Society vitamin D and bone health.
http://www.nice.org.uk/guidance/PH56
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Treatment Options (Traffic Light Status GREEN) – PRESCRIBE BY BRAND NAME

<table>
<thead>
<tr>
<th>SERUM 25(OH)D</th>
<th>DEFICIENCY TREATMENT RECOMMENDED (target for replacement ~300,000iu)</th>
<th>INSUFFICIENCY May be inadequate in some people (target for replacement ~150,000iu)</th>
<th>IS SUFFICIENT</th>
<th>POTENTIALLY TOXIC</th>
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</thead>
<tbody>
<tr>
<td>&lt;30nmol/L</td>
<td>Loading doses: Fultium D3 20,000 IU capsules: Dose 2 capsules (40,000 units) once a week for 7 weeks. Fultium D3 3,200 units 1 capsule daily for up to 13 weeks InVita D3 oral solution 25,000 IU/ml (1 ml AMP): Dose 50,000 IU/week (2 ampoules) for 6 weeks (adults with swallowing difficulties) then follow maintenance therapy advice. In order to complete treatment before discharge, vitamin D may be given more frequently to hospital inpatients (up to alternate days), but the total number of doses should not exceed seven (off label).</td>
<td>Treatment recommended in high risk patients &amp; those with previous fragility fracture / osteoporosis. Loading doses: Fultium D3 20,000 IU capsules: Dose 1 capsule (20,000 units) once a week for 7 weeks. Fultium D3 3,200 units 1 capsule daily for up to 6 weeks Invita D3 oral solution 25,000 IU/ml (1 ml amp): Dose 25,000 IU/week (1 ampoules) for 6 weeks (for adults with swallowing difficulties) then follow maintenance therapy advice.</td>
<td>Provide reassurance and give lifestyle advice (see overleaf) on increasing vitamin D intake.</td>
<td>Daily doses in excess of 250 micrograms or 10,000 units are generally required to achieve this. Provided basic investigations are undertaken before treatment &amp; renal disease, liver disease, primary hyperparathyroidism and inflammatory conditions have been excluded, then vitamin D toxicity is very rare. Early symptoms of toxicity include symptoms of hypercalcaemia such as thirst, polyuria and constipation.</td>
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<tr>
<td>30-50nmol/L</td>
<td>Maintenance Therapy For those with documented vitamin D deficiency and where the underlying cause for this cannot be rectified, on-going maintenance therapy is advisable. For patients that are at high risk of vitamin D deficiency, lifestyle advice should be given. If this cannot be adhered to, an on-going maintenance dose should be considered.</td>
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<td>&gt;50nmol/L</td>
<td>Self Care / Purchase 800-2000IU colecalciferol daily can be purchased e.g. from Boots, Holland and Barrett, healthspan.co.uk &amp; llifestylenaturalhealth.co.uk Monthly cost range £1.50 to £5 OR Prescribe oral vitamin D supplementation 800-1600IU daily (+/- calcium)</td>
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<td>&gt;250nmol/L</td>
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PRODUCT INFORMATION

Fultium D3 20,000 unit capsules: The treatment & prevention of vit D deficiency >12 years. Not licensed in pregnancy
Fultium D3 800 unit capsules: Prevention & treatment of vitamin D deficiency & maintenance & in pregnancy & breastfeeding.
Fultium D3 drops 2740 IU/ml Colecalciferol (equivalent to 68.5 micrograms/ml vitamin D3) 3 drops contains 200 IU. N.B. Fultium has been reformulated and no longer contains arachis oil (old formulation stock may still be in circulation) (See SPC for full information) See also UKMI Q8 & 387.4 Which vitamin D preparations are suitable for vegetarian or vegan diet

As manufacturers regularly change the contents of their products it is prudent to check with the company, or seek advice from a pharmacist to ensure that they are still suitable for Muslim and Jewish patients. Fultium D3 is kosher and halal compliant.

Original Author: Dr Zoe Cole, Consultant Rheumatologist, SFT. Adapted with her permission by Medicines Management Team, NHS Wiltshire CCG September 2013 prescribingwiltshire@nhs.net 01380 733881. Amended by J Craine BCAP Interface Pharmacist Feb 2016 Final

Monitoring

- Check serum calcium 1 month after initiating treatment (or if symptoms of hypercalcaemia occur) to check for unmasked primary hyperparathyroidism

General Points

- All patients taking bisphosphonates or antiresorptive drugs should be taking regular calcium supplements (1-1.3g calcium plus colecalciferol 800-2000IU daily) unless the clinician is confident dietary calcium is adequate & vit D is replete.
- Conversion factors: 10 micrograms vitamin D = 400 units vitamin D. To convert 25(OH)D from ng/ml to nmol/L multiply by 2.5 i.e 2.5 nmol/L serum 25OH = 1ng/ml serum 25(OH)D

Pregnancy and Breast Feeding

- The Department of Health recommends that all pregnant and breastfeeding women should take 10 micrograms (400IU) of vitamin D daily to prevent vitamin D deficiency
- Available as Healthy Start (91p for 56 tablets) or free to eligible women under the Healthy Start scheme - www.healthystart.nhs.uk. A suitable alternative to buy over the counter is Pregnacre (£13.23 for 90 tabs)
- Refer pregnant women in whom vitamin D deficiency is suspected to specialist for investigation & management
- Breast milk of women taking pharmacological doses of vitamin D can cause hypercalcaemia if given to an infant and additional monitoring is required
- Breast fed infants may need to receive drops containing vitamin D from one month of age if their mother has not taken vitamin D supplements throughout pregnancy