

## **Guidelines for the Treatment of Vitamin D Deficiency and Insufficiency in Adults**

This document clarifies NHS Northamptonshire's position on the management of vitamin D deficiency and prescribing of vitamin D preparations in primary care.

This is an interim statement pending the findings of the Scientific Advisory Committee on Nutrition, which is currently reviewing the evidence base for vitamin D deficiency and treatment. The findings of this review could influence future prescribing policy, and is due to report in 2014. This Northamptonshire position statement on Vitamin D has been developed using the following key guidance:

- Consensus Vitamin D Position Statement. Cancer Research UK, British Association of Dermatologists, Diabetes UK, the Multiple Sclerosis Society, the National Heart Forum, the National Osteoporosis Society and the Primary Care Dermatology Society. December 2010 [1]
- Update on Vitamin D. Position Statement by the Scientific Advisory Committee on Nutrition 2007 [2]
- Diagnosis and management of vitamin D. *BMJ* 2010; 340: 142-147.

### **1. Testing for Vitamin D Deficiency**

Populations at high risk of vitamin D deficiency include those listed in the CMO letter (see section 3) [UK CMO CAS Letter Vitamin D 02022012.pdf](#)

Additional high risk patients where vitamin D measurement should be considered include those with the following -

- intestinal malabsorption, for example coeliac disease, Crohn's disease, gastrectomy
- liver or renal disease
- taking medications including anticonvulsants, cholestyramine, rifampicin, glucocorticoids, antiretrovirals, IV bisphosphonates
- osteoporosis
- falls

Vitamin D deficiency should be considered and checked in any patient with the following symptoms, and particularly in those at high risk of deficiency (above) -

- one or more of the following clinical features: Insidious onset of widespread or localised bone pain and tenderness (especially lower back and hip pain, but may include rib, thigh or foot pain)
- proximal muscle weakness i.e. in quadriceps and glutei. This may cause difficulty rising from a chair and/ or a waddling gait
- swelling, tenderness and redness at pseudo-fracture sites

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- fractures, typically femoral neck, scapula, pubic rami, ribs or vertebrae
- non-specific myalgia especially with a raised Creatine Kinase (CK)

**AND**

Other causes for symptoms have been excluded, for example myeloma, rheumatoid arthritis, polymyalgia rheumatica and hypothyroidism.

**2. Should Vitamin D be prescribed on the NHS or purchased over-the-counter?**

**2.1 For deficiency (< 25nmol/l) – vitamin D should be prescribed**

- Prescribing of high dose vitamin D should be offered only to individuals with vitamin D deficiency i.e. levels <25nmol/l.
- High dose vitamin D for treatment of vitamin D deficiency can be initiated in primary care.
- Prescribing for deficiency in primary care should be for **Fultium-D3 800IU capsules, 4 daily for 84 days (12 weeks)**.
- Any secondary care prescribing will be for D3-50 50,000 IU tablets, one oral daily for 6 days – *sourced from Maudsley (special)*. Alternatively Colecalciferol 300,000 units IM injection, one monthly for 3 months will be used for patients unable to take or absorb oral replacement

**2.2 For maintenance following treatment of deficiency – vitamin D should be prescribed**

- Once patients have been treated, maintenance will be required. Patients with previous deficiency are at high risk of becoming deficient again without maintenance treatment. Suitable products can be selected from the flowchart at appendix 1 depending on the patient's calcium intake and can be prescribed on FP10.

**2.3 For “insufficiency” (25-50nmol/l) – vitamin D should be purchased OTC**

- People with vitamin D insufficiency (25-50nmol/l) should be advised to purchase these products OTC. Suitable products can be selected from the flowchart at appendix 1 depending on the patient's calcium intake and should be purchased over-the-counter. A variety of other vitamin D supplements, such as Sunvit D3, are also available from pharmacies and health food shops.

**2.4 For people identified as “at risk” by the Chief Medical Officers (CMO) – vitamin D can be supplied free of charge under the “Healthy Start” scheme (see below) or purchased OTC.**

### **3. CMO Advice on supplements for “at risk” groups**

The Chief Medical Officers of England, Scotland, Wales and Northern Ireland wrote to healthcare professionals in February 2012 highlighting the issue of vitamin D deficiency and identifying “at risk” groups.

See [UK CMO CAS Letter Vitamin D 02022012.pdf](#)

The following groups of people are identified as at risk of vitamin D deficiency by the CMO -

- All pregnant and breastfeeding women, especially teenagers and young women.
- Infants and young children under 5 years of age.
- Older people aged 65 years and over.
- People who have low or no exposure to the sun, for example those who cover their skin for cultural reasons, who are housebound or confined indoors for long periods.
- People who have darker skin, for example people of African, African-Caribbean and South Asian origin, because their bodies are not able to make as much vitamin D.

All UK Health Departments recommend:

- **All** pregnant and breastfeeding women should take a daily supplement containing 10 micrograms of vitamin D, to ensure the mother’s requirements for vitamin D are met and to build adequate fetal stores for early infancy.
- **All** infants and young children aged 6 months to 5 years should take a daily supplement containing vitamin D in the form of vitamin drops, to help them meet the requirement set for this age group of 7-8.5 micrograms of vitamin D per day. However, those infants who are fed infant formula will not need vitamin drops until they are receiving less than 500ml of infant formula a day, as these products are fortified with vitamin D. Breastfed 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.
- People aged 65 years and over and people who are not exposed to much sun should also take a daily supplement containing 10 micrograms of vitamin D.

### **4. Healthy Start vitamin supplements**

Women and children from families who are eligible for the Government’s Healthy Start scheme can get free vitamin supplements which include vitamin D, in the form of tablets for women and drops for children.

Health professionals should familiarise themselves with local distribution arrangements for Healthy Start vitamins.

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Outlets supplying Healthy Start vitamins can be identified by inserting the appropriate postcode via this link -

<http://www.nhs.uk/ServiceDirectories/Pages/ServiceSearchAdditional.aspx?ServiceType=HealthyStartVitamins>

It is important that women and families who may be eligible for Healthy Start know how they can apply for the scheme, and are made aware of how they can obtain vitamins locally.

Women qualify for Healthy Start from the 10<sup>th</sup> week of pregnancy or if they have a child under four years old, **and** if she or her family receive:

- Income Support, or
- Income-based Jobseeker's Allowance, or
- Income-related Employment and Support Allowance, or
- Child Tax Credit (but not Working Tax Credit unless the family is receiving Working Tax Credit run-on only) **and** has an annual family income of £16,190 or less.

Women who are under 18 and pregnant also qualify, even if they do not get any of the above benefits or tax credits. Further information can be found on the Healthy Start website at [www.healthystart.nhs.uk](http://www.healthystart.nhs.uk)

## **5. Patient lifestyle advice and information**

For those at higher risk of Vitamin D deficiency it is important to know that small changes in lifestyle can significantly reduce the risk of ill health.

Exposure to the sun is a physiologically apt way of improving vitamin D levels. This should be balanced against the risks of excessive exposure however the time required in the sun to make sufficient vitamin D is generally short and less than the time needed for skin to burn, sun exposure should be adjusted on an individual basis and safe practices adopted. As a general rule in the UK exposing the face and arms to the sun for about 15 minutes around midday three times a week from March to September should be beneficial. During the winter months the sun does not produce enough Ultraviolet B radiation to cause any significant production of vitamin D in the skin.

There are several sources of additional support for individuals wishing to make lifestyle changes in order to improve Vitamin D intake:

### **General sources of information**

*The NHS Choices website* includes information on dietary sources of Vitamin D and government recommendations for at risk groups and can be found at:

<http://www.nhs.uk/conditions/vitamins-minerals/pages/vitamin-d.aspx>

## **Local support and information**

### **Health Trainers**

Health Trainers provide a free and confidential service made up of local people who are trained to offer one to one support to help people to reach a personal goal to improve your health and wellbeing. They can work with individuals to develop their own personal health plan to maximise opportunities for vitamin D intake.

Referrals to Health Trainers can be made by phone- 0800 085 1988

Email: [health.trainers@nhft.nhs.uk](mailto:health.trainers@nhft.nhs.uk)

or via the website page:

<http://www.nht.nhs.uk/main.cfm?type=HEALTHTRAINERS>

### **Accessible outdoor spaces in Northamptonshire**

Information on accessible outdoor spaces such as country parks, organized walking and cycling activities and accessing outdoor sport and leisure opportunities can be found at a number of sources:

Walks and cycle routes:

<http://www.northamptonshire.gov.uk/en/councilservices/transport/walking/pages/default.aspx>

Country parks:

<http://www.northamptonshire.gov.uk/en/councilservices/Leisure/countryside/Pages/default.aspx>

Links to Borough Council leisure activities web pages for local walks, parks and children's play areas:

<http://www.northamptonshire.gov.uk/en/contact/Pages/districts.aspx>

There are also some patient information sheets on cycling and Nordic walking on GP Pathfinder under Healthy Lifestyles.

The National Osteoporosis Sunlight Campaign can be found at

<http://www.nos.org.uk/page.aspx?pid=535>

A variety of patient information leaflets are available including -

<http://www.nhs.uk/conditions/vitamins-minerals/pages/vitamin-d.aspx>

<http://www.patient.co.uk/health/Vitamin-D-Deficiency.htm>

[http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_127421.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_127421.pdf)

**Supporting Information:**

- Vitamin D regulates calcium and phosphate absorption and metabolism and is essential for healthy bones and muscle development. Low levels of Vitamin D are associated with rickets in children, osteomalacia and osteoporosis in adults. A BMJ article (2010) highlighted the problem of vitamin D insufficiency in the UK population and there has been concern this is becoming a significant public health problem.
- Older people, darker-skinned people, those who wear whole-body coverings, people living in institutions, skin cancer patients, those who avoid the sun and pregnant and breastfeeding women are at risk of low vitamin D levels.
- The costs associated with vitamin D products are substantial and continue to increase. This is due, in part, to the limited number of licensed preparations available and continuing supply issues surrounding the vitamin D preparations. For this reason this guidance on prescribing has been developed.
- There is currently no standard definition of an 'optimal level' of vitamin D and there are no national guidelines available. The possible evidence suggesting vitamin D might protect against chronic diseases such as cancer, heart disease and multiple sclerosis is currently inconclusive.
- Raising the level of vitamin D defined as 'deficient' or 'sufficient' to higher values is inappropriate at present, unless clear evidence of health benefits emerge without health risks.
- Sun exposure is the main source of vitamin D and those at risk of deficiency should be advised of little and often exposure. This should be balanced with the risks of excessive exposure, however, the time required in the sun to make sufficient vitamin D is generally short and less than the time needed for skin to burn. This should be adjusted on an individual basis and safe practices adopted.
- Vitamin D supplements, fortified fat spreads and dietary sources such as oily fish (including salmon, trout and sardines) can be useful for helping to maintain sufficient levels of vitamin D in those at risk of deficiency. Dietary modifications alone cannot correct a deficiency.
- Unlike vitamin D produced in the skin, there is the potential that vitamin D from supplements and fortificants could build up to toxic levels and there is not enough evidence about the possible risks of raised vitamin D blood levels in the general population over a long period of time.
- Overall, current evidence does not support routine, widespread use of vitamin D supplements or food fortification. Alfacalcidol or calcitriol should not be used for routine treatment of vitamin D deficiency as they carry a higher risk of toxicity and require close monitoring.

- **The Scientific Advisory Committee on Nutrition (SACN) is currently reviewing the evidence base to support Vitamin D testing and prescribing policy and is due to report in 2014**  
**Draft Terms of Reference -**

To review the Dietary Reference Values for vitamin D intake and make recommendations.

*This will require a risk assessment of the vitamin D status of the UK population and consideration of the:*

- Biochemical indicators of vitamin D status and the validity of the threshold concentrations/ranges used to assess risk of deficiency and excess;
- Association between vitamin D status and various health outcomes at different life stages and in different population groups and the effects of biological modifiers;
- Contribution of cutaneous vitamin D synthesis to vitamin D status in the United Kingdom taking account of the effects of modifiers of skin exposure to sunlight; the risks of skin damage and other adverse health outcomes associated with sunlight exposure;
- Potential adverse effects of high vitamin D intakes;
- Relative contributions made by dietary vitamin D intake (from natural food sources, fortified foods and supplements) and cutaneous vitamin D synthesis to the vitamin D status of the UK population.

#### **References:**

1. Consensus Vitamin D Position Statement. Cancer Research UK, British Association of Dermatologists, Diabetes UK, the Multiple Sclerosis Society, the National Heart Forum, the National Osteoporosis Society and the Primary Care Dermatology Society. December 2010. Available from:

<http://info.cancerresearchuk.org/news/archive/cancernews/2010-12-16-Joint-position-statement-issued-to-provide-vitamin-D-clarity->

2. Update on Vitamin D. Position Statement by the Scientific Advisory Committee on Nutrition 2007.

3. Pearce SHS, Cheetham TD. Diagnosis and management of vitamin D. *BMJ* 2010; 340: 142-147.

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High risk for vitamin D deficiency or symptoms of low vitamin D or low calcium

- Toxicity not seen at serum vitamin D levels < 250nmol/l and not usually a problem until >500nmol/l
- Caution if hy renal calculi, renal impairment (CKD 3 or 4), or parathyroid disorders - refer for secondary care advice

Check serum vitamin D levels, ALP and calcium

Vitamin D level < 25nmol/l  
= Deficient

Vitamin D level 25 – 50 nmol/l  
= Insufficient

Vitamin D level 50 – 75 nmol/l  
= adequate

Vitamin D level > 75 nmol/l  
= Replete

**Prescribe on NHS**

**Oral Colecalciferol or IM ergocalciferol replacement therapy**

D3-50 (50,000 units) tablets, one oral daily for 6 days. *NGH – sourced from Maudsley (special) secondary care*

Fultium-D3 800 units capsules, 4 oral daily for 84 days (12 weeks)  
*Primary care patients*

Ergocalciferol 300,000 units IM injection, one monthly for 3 months  
*Patients unable to take or absorb oral replacement*

Health promotion advice

No change required

**PURCHASE OTC**

**Prescribe on NHS**

**Low calcium intake** (<500mg/day; <1/2 pint milk/day)  
Colecalciferol 800 units + 1000-1200mg calcium daily

- Calceos, 2 tablets daily (1000 mg Ca) [£3.58/month]
- Adcal D3, 2 tablets daily (1200mg Ca) [£3.65/month]
- Adcal D3, 4 caplets daily (1200mg Ca) – if struggling to chew or suck other preparations [£3.65/month]
- Adcal D3 dissolvable tablet 2 daily (1200mg Ca) if swallow problems or via NG/PEG [£4.99/month]

**Maintenance after deficiency**  
(prescribe on NHS) or treatment of insufficiency (purchase OTC) Vitamin D replacement – estimate calcium intake

**Medium calcium intake** (500-1000mg/day; ½-1 pint milk/day) – Colecalciferol 800 units + 500mg calcium daily

- Calcichew 1 tablet daily (500mg Ca) [£2.61/month]  
**plus**  
Fultium D3 (colecalciferol 800 units) 1 capsule daily [POM] or any OTC 10mcg/day D3 supplement] eg Sunvit D3 or Pro D3

**Adequate calcium intake** (≥ 1000mg/day; > 1 pint milk/day) – Colecalciferol 800I units daily

- Fultium-D3 (colecalciferol 800 units) x 1 capsule daily [POM] or any OTC 10mcg/day D3 supplement eg Sunvit D3 or Pro D3

- Provide health promotion advice
- Repeat serum vitamin D level 6 months after starting maintenance therapy to ensure adequate replacement (vit D level >50nmol/l).
- If unable to take or absorb oral vitamin D use ergocalciferol 300,000 units IM injection 6-12 monthly maintenance
- Continue maintenance - no further monitoring required unless clinical situation changes.
- If still vitamin D deficient refer for secondary care advice

\* OTC Costs approximate per 28 days (retail pack size may be larger), as per MIMS (March 12)