

# Vitamin D (25OHD) Testing and Prescribing Information in Adults September 2016

The Greater Manchester Medicines Management Group (GMMMG) recommends that the *Vitamin D and Bone Health Clinical Guideline for Patient Management (2013)* of the National Osteoporosis Society is followed. The choice of vitamin D products has been decided by NHS Bury CCG.

Good-practice principles:

- Able to justify that the result will affect clinical management
- Aware that the relationship between the patients' symptoms and 25OHD levels are not always consistent given the high prevalence of vitamin D deficiency
- Aware of how to interpret findings

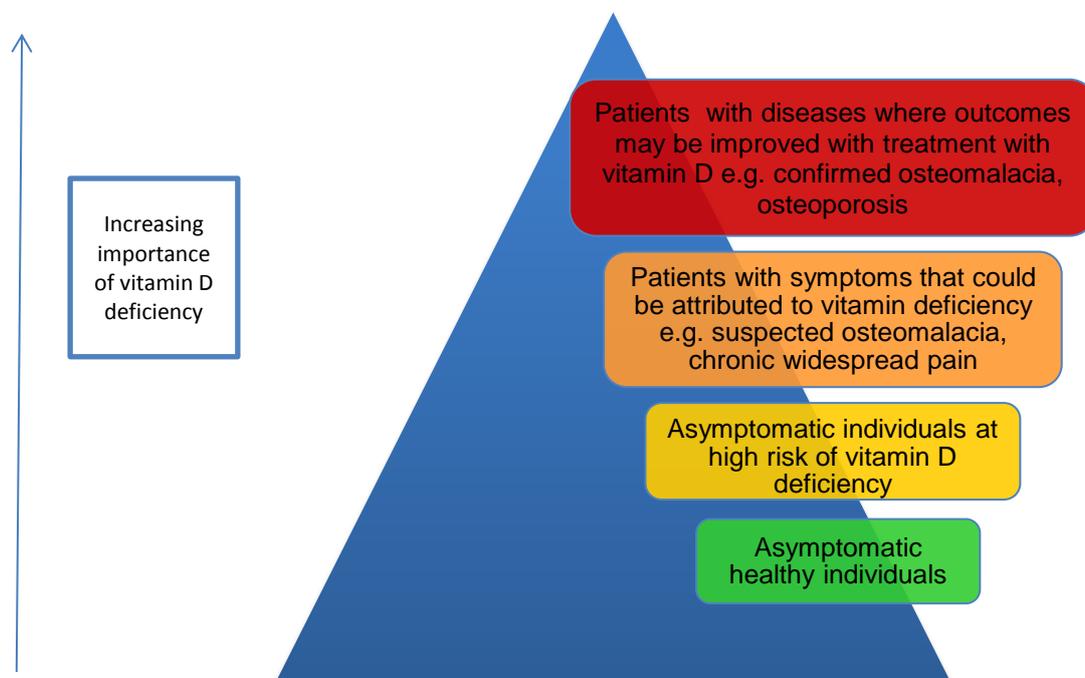


Fig 1: Schematic representation to define broad groups for clinical consideration and decision making (based on a diagram in *Vitamin D and Bone Health: A Practical Clinical Guideline for Patient Management* National Osteoporosis Society 2013)

## 1. WHO TO TEST

### 1.1 Patients with bone diseases e.g. Osteomalacia, Osteoporosis, Paget's disease.

Consider testing patients if they have any of the following symptoms indicative of bone diseases; including bone, joint and muscle pain; hyperalgesia; muscle weakness or waddling gait.

Routine 25OHD testing is usually unnecessary in patients with osteoporosis or fragility fracture, where a decision has been made to co-prescribe vitamin D supplementation with an oral antiresorptive treatment e.g. Alendronic acid.

GMMMG has adopted The National Osteoporosis Society proposal that the following 25OHD thresholds are adopted by UK practitioners in respect to bone health.

### 1.11 Serum 25OHD <30nmol/L is deficient

#### Treatment

Rapid correction of vitamin D deficiency is required, prescribe loading dose (see table below).

Colecalciferol	Dose	Preparation
20,000unit capsules	Two taken weekly for 7 weeks (280,000units)	Fultium D3 20,000unit caps
25,000unit tablets	Two taken weekly for 6 weeks (300,000units)	Stexerol 25,000unit tabs (Vegetarian)
50,000units/ml sugar free solution	One ml taken weekly for 6 weeks (300,000units)	Invita D3 sugar free solution 50,000units/ml (Vegetarian)

- If the patient remains symptomatic **after** completing the loading dose regimen, recheck 25OHD level **after 6 months** and bone profile after 1 month.
- If serum 25OHD level remains <30nmol/L advise patient to purchase OTC preparation in order to maintain adequate 25OHD levels. These are widely available from most supermarkets, health food shops and pharmacies. Advise patients to ensure a daily intake of 400units (10micrograms) of Vitamin D.
- Advise patient on the importance of maintaining a healthy balanced diet. Vitamin D rich food sources include cod liver oil, fish, egg yolk, mushroom, fortified cereals, milk, margarine and yoghurts.
- Advise patient to ensure 2-3 sunlight exposures per week April-Sept in order to achieve adequate Vitamin D levels.

### 1.12 Serum 25OHD of 30–50nmol/L may be inadequate in some people

#### Treatment

- Advise patient to purchase OTC preparation in order to maintain adequate 25OHD levels. These are widely available from most supermarkets, health food shops and pharmacies. Advise patients to ensure a daily intake of 400units (10micrograms) of Vitamin D.
- Advise patient on the importance of maintaining a healthy balanced diet. Vitamin D rich food sources include cod liver oil, fish, egg yolk, mushroom, fortified cereals, milk, margarine and yoghurts.
- Advise patient to ensure 2-3 sunlight exposures per week April-Sept in order to achieve adequate Vitamin D levels.

### **1.13 Serum 25OHD >50nmol/L is sufficient for almost the whole population**

#### Treatment

- Advise patient to purchase OTC preparation in order to maintain adequate 25OHD levels. Advise patients to ensure a daily intake of 400units (10micrograms) of Vitamin D between the end of September and late March/April (Autumn – Winter period). These are widely available from most supermarkets, health food shops and pharmacies.
- Advise patient on the importance of maintaining a healthy balanced diet. Vitamin D rich food sources include cod liver oil, fish, egg yolk, mushroom, fortified cereals, milk, margarine and yoghurts.
- Advise patient to ensure 2-3 sunlight exposures per week April-Sept in order to achieve adequate Vitamin D levels.

## **2. WHO NOT TO TEST**

### **2.1 Patients with musculoskeletal symptoms that could be attributed to vitamin D deficiency**

Symptoms of Vitamin D deficiency are vague and it can be difficult to ascertain whether a low serum 25OHD level is causal or a surrogate marker e.g. of poor nutrition or a lack of outdoor activity.

Only patients suspected of having symptoms caused by bone diseases e.g. osteomalacia, or have chronic widespread pain should be tested for Vitamin D deficiency as part of their clinical and laboratory evaluation.

### **2.2 Asymptomatic individuals at higher risk of vitamin D deficiency**

There are a number of risk factors in asymptomatic individuals that predispose to lower levels of 25OHD. These individuals are more likely to be vitamin D deficient. Risk factors include:

- Dark/pigments skin colour e.g. black, Asian populations
- Routine use of sun protection factor 15 and above as this blocks 99% of vitamin D synthesis.
- Reduced skin exposure e.g. cultural reasons (clothing)
- Autumn – Winter period i.e. end of September to late March/April
- Chronic ill health with prolonged hospital admissions e.g. oncology patients
- Children and adolescents with disabilities which limit the time they spend outside
- Institutionalised individuals
- Photosensitive skin conditions
- Reduced vitamin D intake
- Pregnant and breast-feeding
- Infants that are exclusively breast fed
- Dietary habits – low intake of foods containing vitamin D
- Abnormal vitamin D metabolism, abnormal gut function, malabsorption or short bowel syndrome.
- Chronic liver or renal disease
- Medicines including rifampicin, isoniazid and anti-convulsants e.g. phenytoin and carbamazepine, glucocorticoids and highly active anti-retroviral treatment.
- Genetic variation.

## Treatment

- Advise patient to purchase OTC preparation in order to maintain adequate 25OHD levels. These are widely available from most supermarkets, health food shops and pharmacies. Advise patients to ensure a daily intake of 400units (10micrograms) of Vitamin D.
- Advise patient on the importance of maintaining a healthy balanced diet. Vitamin D rich food sources include cod liver oil, fish, egg yolk, mushroom, fortified cereals, milk, margarine and yoghurts.
- Advise patient to ensure 2-3 sunlight exposures per week April-Sept in order to achieve adequate Vitamin D levels.

### **2.3 Asymptomatic healthy individuals**

During the Spring and Summer period, the majority of the population will have sufficient 25OHD levels through sunlight and diet.

- Current Public Health guidance, based on recommendations of the Scientific Advisory Committee on Nutrition (SACN) recommends all individuals aged 4 years and above should ensure a dietary intake of 400units (10micrograms) of Vitamin D between the end of September and late March/April (Autumn – Winter period)
- Advise patient on the importance of maintaining a healthy balanced diet. Vitamin D rich food sources include cod liver oil, fish, egg yolk, mushroom, fortified cereals, milk, margarine and yoghurts.
- Advise patient to ensure 2-3 sunlight exposures per week April-Sept in order to achieve adequate Vitamin D levels.

## **3. Monitoring**

Routine monitoring of 25OHD levels are not recommended.

However they may be considered if the aim is to:

- Detect those that remain deficient after completing loading dose regimen
- Detect those who become deficient during maintenance therapy
- Detect those patients in whom vitamin D therapy uncovers sub-clinical primary hyperparathyroidism

## **4. Pregnancy**

Women should have adequate Vitamin D stores for their own requirement, for their developing foetus and to build stores for early infancy particularly if they plan to breast-feed.

For routine supplementation, current Department of Health guidance recommends 400units (10micrograms) daily in all pregnant and breast-feeding women.

Advise patient to purchase OTC preparation in order to maintain adequate 25OHD levels. These are widely available from most supermarkets, health food shops and pharmacies. Advise patients to ensure a daily intake of 400units (10micrograms) of Vitamin D.

Women and children who qualify for the Healthy Start scheme can get free supplements containing the recommended amounts of Vitamin D. Patients who qualify for the scheme should not be prescribed vitamins and should be directed to a Healthy Start retailer.

See the Healthy Start website ([www.healthystart.nhs.uk](http://www.healthystart.nhs.uk)) for more information on eligibility and the scheme

#### **4.1 To treat Vitamin D deficiency in pregnancy**

Routine supplementation of 400units (10micrograms) will not correct Vitamin D deficiency. Symptomatic patients should have 25OHD levels tested to detect for deficiency.

##### **4.11 Serum 25OHD <30nmol/L is deficient**

Correction should begin in the 2<sup>nd</sup> or 3<sup>rd</sup> trimester because of the lack of safety or outcome data in first trimester, and because the majority of skeletal growth and development is thought to occur in the 2<sup>nd</sup> or 3<sup>rd</sup> trimester.

Use an oral dose of 2000-4000units per day for up to 11 weeks to provide a cumulative dose of around 150,000units or 300,000units in pregnancies that are in the 2<sup>nd</sup> or 3<sup>rd</sup> trimester.

##### **4.12 Serum 25OHD <15nmol/L is considered very low**

If the Vitamin D level is very low and the woman is in the 3<sup>rd</sup> trimester of her pregnancy, then rapid correction may be required particularly if there are unmodifiable risk factors.

Use doses higher than 4000units/day (maximum 10,000units/day):

e.g. 7,000units/day for 6-7 weeks or 10,000units/day for 4-5 weeks to provide a cumulative dose of around 300,000 units.

Higher doses should only be used with the input of an obstetrician and with monitoring of calcium levels

Products containing vitamin A (such as Cod Liver Oil) should be avoided because this is a known teratogen.

## **5. Infants and young children**

### **5.1 Public Health recommendations for Vitamin D supplementation**

**5.11 Breastfed babies from birth to one year of age** should be given a daily supplement containing 8.5 to 10micrograms (340units – 400units) of Vitamin D, to make sure they get enough.

**5.12 Babies fed infant formula** should not be given a Vitamin D supplement until they are receiving less than 500ml (about a pint) of infant formula a day, because infant formula is fortified with Vitamin D

**5.13 Children aged 1- 4 years old** should be given a daily supplement containing 10micrograms (400units) of Vitamin D

Women and children who qualify for the Healthy Start scheme can get free supplements containing the recommended amounts of Vitamin D. Patients who qualify for the scheme should not be prescribed vitamins and should be directed to a Healthy Start retailer.

See the Healthy Start website ([www.healthystart.nhs.uk](http://www.healthystart.nhs.uk)) for more information on eligibility and the scheme

## **5.2 Products**

Vitamin D supplements or vitamin drops containing Vitamin D (for use by under-five years of age) can be bought at most supermarkets, health food shops and pharmacies.

## **6. General considerations**

- 6.1 Supplements should be taken with food to aid absorption.
- 6.2 Calcium/Vitamin D combinations should not be used as sources of Vitamin D for loading dose regimens, given the resulting high dosing of calcium.
- 6.3 Annual depot Vitamin D therapy given I/M or orally, and the use of either Calcitriol or Alfacalcidol, are not recommended as they have a high risk of being ineffective and toxic.

## **7. References**

- <https://www.nos.org.uk/document.doc?id=1352> (accessed 15/9/16)
- <https://www.gov.uk/government/news/phe-publishes-new-advice-on-vitamin-d> (accessed 15/9/16)
- [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/537616/SACN\\_Vitamin\\_D\\_and\\_Health\\_report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/537616/SACN_Vitamin_D_and_Health_report.pdf) (accessed 15/9/16)
- <https://www.healthystart.nhs.uk/healthy-start-vouchers/healthy-start-vitamins/> (accessed 15/9/16)