



## Metabolic Medicine

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## Treatment of Vitamin D Deficiency Guidance for Endocrine Clinics

Vitamin D deficiency is very common in Leicester and we are seeing patients with this problem more and more commonly. It is also estimated that as many as 70-80% of population could be vitamin D insufficient, and that this could increase the risk of a large number of other conditions such as diabetes and heart disease.

We are participating in multi-specialty initiatives to derive Leicestershire-wide guidelines – in the meantime we propose that patients who have been under our care should be treated as follows.

### Definitions:

Vitamin D normal range is now appropriately described on the Chemical Pathology reports:

- <15 nmol/L = Severe Vitamin D Deficiency (< 6 ng/mL)
- <30 nmol/L = Vitamin D Deficiency (6-12ng/mL)
- <50 nmol/L = Vitamin D insufficiency (<20 ng/mL)
- >50 nmol/L = Satisfactory Vitamin D levels (>20 ng/mL)
- >75 nmol/L = Optimal Vitamin D levels (>30 ng/mL)

### Treatment:

(adapted from *BMJ* 2010;340:b5664 doi: 10.1136/bmj.b5664)

#### Vitamin D levels 25 nmol/L or above (10 ng/mL) (and perhaps for lower levels without symptoms)

- oral replacement and prophylaxis are appropriate – using colecalciferol (+- calcium) preparations
- Over the counter – **Colecalciferol: 25µg - 50µg daily (1000-2000 IU daily)**
- On prescription – only lower doses of vitamin D with calcium are available
  - e.g. AdCal D3 or Calcichew D3 Forte – 2 tablets daily
  - This may *not* be sufficient to restore Vitamin D levels to normal in many patients
  - Calcium is not required for therapeutic effect and may be unpalatable

#### Vitamin D levels below 25 nmol/L (10 ng/mL) (where rapid correction of deficiency is required)

- Higher doses of vitamin D are required to correct the deficiency and maintain normal levels.
- There are no high dose preparations of colecalciferol (D3) in BNF – and many of the higher dose preparations of ergocalciferol (D2) in BNF are difficult to obtain at present (this is a national problem).
- Higher doses of both colecalciferol and ergocalciferol can be ordered from specialist pharmaceutical suppliers – we now have a supply in UHL pharma and will use where indicated

Therefore pragmatically we recommend the following:

- **On prescription: in hospital pharmacy:** (NB<sup>1</sup> vegetarians may wish to avoid gelatin; NB<sup>2</sup> nut allergy)
  - **Colecalciferol 20,000 IU (Dekristol) – 1 tab daily for 1 month** (contains peanut oil and gelatin)
  - **Colecalciferol 3000 IU/ml – 3mL (9000 IU) daily for 2 months** (contains peanut oil)
- **On prescription: in the community:**
  - **IM injection of ergocalciferol 300,000 units (7.5mg) [but intermittent availability]**
  - First 2 injections 3 months apart, followed by regular 6 monthly injections
- **Over the counter / internet purchase:**
  - **Colecalciferol: 10,000 IU daily for 2 months**

Alternatives when supplies become available are:

- 300,000 IU (15 capsule of 20,000 IU colecalciferol) as a single oral dose.
- Monthly replacement with colecalciferol 40,000 IU orally or ergocalciferol 50,000 IU (1.25mg) orally

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## Vitamin D preparations available without prescription Over-the-Counter and On-Line

- There have been longstanding problems with availability of appropriate higher dose preparations of vitamin D for prescription in the UK for the treatment of deficiency.
- Most products which are available for prescription also contain calcium (which is not always needed and which can be unpalatable for some patients) and contain only relatively low doses of vitamin D.
- Some patients also wish to avoid gelatin which is used in some available tablets.
- Other preparations are available without prescription – and if you pay prescription charges may actually work out cheaper than the usual monthly prescription charge as well as being more convenient:

**Boots:** [www.boots.com](http://www.boots.com)

**Boots Pharmaceuticals Vitamin D 25µg (1000 IU) (£5.10 for 90 tablets)**

<http://www.boots.com/en/Boots-Pharmaceuticals-Vitamin-D-25µg-90-Tablets-1127509>

Label states: "Suitable for vegetarians"

**Holland & Barrett:** [www.hollandandbarrett.com](http://www.hollandandbarrett.com) [33 Horsefair Street]

Contain colecalciferol alone. There are two strengths – you need 25µg

**Vitamin D3 25µg (1000 IU) [Sunvite] (£7-59 for 100 tabs).**

[http://www.hollandandbarrett.com/pages/product\\_detail.asp?pid=826&prodid=886](http://www.hollandandbarrett.com/pages/product_detail.asp?pid=826&prodid=886)

They do also contain gelatin and the manufacturers are unable to say whether this is of beef or vegetable origin (label states NOT porcine).

**Nature's Remedy:** [www.naturesremedy.co.uk](http://www.naturesremedy.co.uk)

a) Vitamin D3 1000 IU capsules (£14-99 for 250 capsules)

[http://www.naturesremedy.co.uk/140/shop\\_productarticle.cfm?shopBoardId=116&articleId=364&BoardId=44764&BoardType=11&fromTab=140](http://www.naturesremedy.co.uk/140/shop_productarticle.cfm?shopBoardId=116&articleId=364&BoardId=44764&BoardType=11&fromTab=140)

b) Vitamin D3 5000 IU tablets (£14-99 for 60 tabs)

[http://www.naturesremedy.co.uk/140/shop\\_productarticle.cfm?shopBoardId=116&articleId=358&BoardId=44347&BoardType=11&fromTab=140](http://www.naturesremedy.co.uk/140/shop_productarticle.cfm?shopBoardId=116&articleId=358&BoardId=44347&BoardType=11&fromTab=140)

All said to be suitable for vegetarians [and b) for vegans]

**Just Vitamins:**

<http://www.justvitamins.co.uk/Products/Vitamin-D-400iu-1121.aspx?gclid=CIOq1suVjJwCFUQA4wodxQiiXg>

400 IU ergocalciferol (£4-75 for 180 tabs/£6-12 for 360 tabs) - said to be suitable for vegans.

NB Most of the multivitamin preparations that are available from supermarkets and other retailers only contain 200 IU (5 µg) vitamin D

### Dosage

adapted from *BMJ* 2010;340:b5664 doi: 10.1136/bmj.b5664)

**Colecalciferol** (Vitamin D3) is the preparation of choice – it is the natural vitamin in humans.

**Treatment of Deficiency: (Vitamin D <25nmol/L)** where symptoms need a quick response:

- 250 µg (10,000 IU) (ie two 5000 IU tablet or ten 25 µg / 1000 IU tablets) daily for 2 months \*
- Then check Vitamin D level and begin maintenance therapy to prevent repeat of deficiency
- **Maintenance:** 25 – 50 µg (1000 - 2000 IU) colecalciferol daily (one or two 1000 IU tablets)

**Initial treatment of insufficiency: (Vitamin D 25-50nmol/L) or slower treatment of deficiency**

- 25 – 50 µg (1000 - 2000 IU) daily (one or two 25 µg /1000 IU tablets)
- Higher doses may be needed in some people if Vitamin D levels remain low

**Prevention of deficiency and insufficiency:**

- 800 – 1000 IU daily (as above for maintenance, or by prescription Adcal D3, 2 tabs daily)
- (From sunlight: 20-30 mins sunlight exposure at midday to face and arms, 2-3x per week for pale skin – up to 10 times this for dark skin)

\* this would be 2 packs of 5000 IU tablets

