

# 1. Information on Vitamin D for all

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Vitamin D is produced in a person's skin when it is exposed to the sun or can be taken in from a few foodstuffs or from supplements. It's the building substance for a very important, powerful hormone called Calcitriol. Vitamin D can be stored in the body for some months; these stores shouldn't run low.

It has been known for more than 100 years that vitamin D is important for healthy bones and muscles. Rickets, a disease causing deformation of bones in children, was virtually abolished when cod liver oil, which contains vitamin D, was found to cure and prevent it. Until recently experts thought that it was only necessary for people to have brief casual exposure of hands and face to the sun to obtain sufficient vitamin D. Now we know this is wrong. Regular exposure of larger areas of skin is necessary to obtain enough vitamin D and this is difficult to obtain in the British Isles because we have such cloudy weather in summer.

In the last 10-15 years we have also learnt that higher blood concentrations of vitamin D are very important not just for bones but also for other reasons: to fight off infections, colds and flu, to heal wounds and maybe also to reduce risks of some cancers, diabetes and heart disease. (1 - 3) Vitamin D is particularly important in pregnancy for the baby, as it may prevent pregnancy complications, infections in the baby and later the development of MS and diabetes. (4 - 6)

According to this new understanding many of us in the UK are deficient in vitamin D. This is because we live and work indoors and spend too little time outdoors in the summer. We could get enough vitamin D if we spent about 30 minutes daily, around midday, outdoors in the sun, with our arms and legs exposed, without sunscreen, all summer. But this is not generally possible in the British climate.

Only when our shadows are shorter than our body length, is the sun high enough to produce the UVB that makes vitamin D. People who have a dark skin type need 3 or 4 times longer in the sun to make the same amount of vitamin D. But, it is important to take care to avoid being sunburnt which carries a risk of skin cancer. We do get some vitamin D from our food but to get enough from food would mean eating oily fish at every meal, since other foods contain very little. The simplest way to keep your vitamin D levels up is, therefore, to take a supplement. The nice thing about this vitamin is that it's stored in the body so, if you prefer, it can be taken weekly (all 7 daily doses together) or monthly (all 30 daily doses together) which keeps your stores topped up.

Several studies have shown that the majority of people living in Scotland are short of vitamin D and that one in three of us is severely deficient. (7 - 10) Various institutions and groups of scientists have called for action to increase vitamin D intakes generally. (11 - 16)

We would advise most healthy adults, and teenagers [over 12 years old], to take 1,000 - 2,000 IU each day (25-50 micrograms). We would advise a larger dose, 2000 - 4000 IU daily, for people with dark skin types, those who are overweight or over 60 years and for all adults living in Scotland. The US Institute of Medicine has just declared that a daily dose of up to 4000 IU (= 100 mcg) is safe for adults. Babies usually need 400 IU (= 10 mcg). Clearly what you need depends on your size, so adults need more than babies and the overweight need more than thin people. We would advise pregnant women to take 2000 IU daily, as recommended by the Canadian Paediatric Society (6) .

A lot of people feel better when taking vitamin D. People commonly notice:

- fewer colds and bouts of 'flu'
- better repair of pulled or injured muscles and wounds
- less aches and pains
- better muscle strength
- less tiredness
- fewer feelings of depression
- a lifting of "low spirits" or the "blues" falling away.

It may take a while before your body stores of vitamin D increase enough for you to feel the benefits. It can take 3 to 6 months for you to feel an improvement though it could be sooner. If you have been very deficient, and are given treatment with high doses of vitamin D, you should feel the benefit earlier.

### **Special health circumstances**

There are a few exceptional circumstances in the taking of a vitamin D supplement that should be discussed with your doctor. These are some uncommon conditions where vitamin D can lead to excessive calcium in the blood, including sarcoidosis and primary hyperparathyroidism. If you or any relative has had these conditions, or any other calcium related disorder, for instance kidney stones, then you should discuss the question of vitamin D supplementation with your doctor before starting. If you do take vitamin D without knowing that you have a condition like this you may develop symptoms of high blood calcium. If you develop abdominal pains, undue thirst, vomiting, weakness or feel unwell in any way after starting supplementation then you should see your doctor urgently and suggest your blood is checked for calcium.

### **Make sure you continue to take the supplements or you'll become deficient within weeks.**

Most people do not need any special tests whilst taking vitamin D supplements. If you have a specific problem your doctor may suggest a blood test to see whether your body stores have been topped up adequately. Adequate serum 25-hydroxyvitamin D levels are about 75-150 nmol/l (= to 30-60 ng/ml). Levels up to at least 400 nmol/l are safe.

### **Where to get vitamin D**

Below are some suggestions of where to get vitamin D without any added calcium and without other unnecessary vitamins. Calcium tends to cause tummy ache and constipation while other unneeded vitamins can have adverse effects. Many shops sell vitamin D supplements, it isn't usually expensive - shop around or try the internet.

Some trusted sources are:

[www.vitdco.com](http://www.vitdco.com) -(UK) -micro tabs, good info, 500 IU, 1,000 IU, 2,000 IU, 5,000 IU.

[www.bio-tech-pharm.com](http://www.bio-tech-pharm.com) -(US) -1,000 IU, 5,000 IU, 50,000 IU.

[www.sunvitd3.co.uk](http://www.sunvitd3.co.uk) - [www.naturesremedy.co.uk](http://www.naturesremedy.co.uk) - [www.healthspan.co.uk](http://www.healthspan.co.uk)

Holland and Barrett or Boots the Chemist

## 2. Vitamin D in cancer treatment - Information for patients:

### Healthy vitamin D stores help your immune system

Vitamin D is involved in many cell mechanisms concerning maintenance and repair of tissue. It supports the immune processes that defend the body against infection and the growth of malignant cells.

In your body's battle against serious disease, it can be very important to have your immune system in the best possible working condition and this is thought to be improved if your vitamin D stores are optimal. People with cancer often have low levels of vitamin D and so it makes sense to check these and correct them where necessary. This gives you the best chance of keeping well and fighting the disease.

We would advise supplementation with vitamin D straight away after diagnosis, unless the calcium level is abnormally high. Once the vitamin D test is re-checked after some months, the dose of vitamin D supplement might need adjustment. The target blood level should be about 150 nmol/litre [see below].

There is no proof yet that this approach does improve responses to treatment for cancer but it will definitely help your immune system and in addition, will make you feel better generally if you did have some deficiency, which is very commonly the case.

#### VITAMIN D STATUS THRESHOLDS

- **Severe deficiency <25 nmol/l**
- **Deficiency 25-50 nmol/l**
- **Insufficiency 50-75 nmol/l**
- **Replete 75-150 nmol/l**
- **Toxicity >400 nmol/l**

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Information leaflet for people resident in the UK

## Thanks

My thanks to Professor Barbara Boucher for help and advice in compiling this advice for patients.

***"It is the view of most experts in this area, that the probability-and-severity-weighed-benefit of population wide supplementation to a serum 25(OH)D of 80 nmol/L or above, would substantially outweigh the probability-and-severity-weighed risks involved."***  
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