

### **What is vitamin D?**

Vitamin D is essential for development and maintenance of healthy bones and muscles, and general good health. Vitamin D regulates calcium levels in the blood, which is essential for the structure of our bones.

### **Where do we get vitamin D from?**

The main source of vitamin D (90%) is made in the skin with the help of sunlight (UVB rays). Unlike other vitamins, only a small amount (10%) comes from the food we eat, even if we have a healthy diet. UVB sunlight is available in the UK approximately between 11 am – 3pm from April to September.

### **What causes vitamin D deficiency?**

Low levels of vitamin D (vitamin D deficiency) in the body is caused mainly by the lack of adequate sunlight in UK. This is compounded by the often cloudy weather and long winter. Adults and children with pigmented skin and those who cover up their body with traditional clothes or attire are also more prone to vitamin D deficiency. Infants born to vitamin D deficient mothers have very low body stores of vitamin D at birth. While breast milk is the best food for babies, it provides virtually no vitamin D and hence these babies will remain vitamin D deficient. Rarely, low calcium diets can also trigger vitamin D deficiency. Adults that are housebound or have limited mobility e.g. wheelchair bound are also at risk of vitamin D deficiency.

### **What happens if you don't have enough vitamin D?**

Vitamin D deficiency is very common. Most people have no symptoms, or only vague ones such as tiredness or aches. Severe vitamin D deficiency can cause soft bones, known as rickets in children and osteomalacia in adults. Symptoms include bone pains (often in the legs), weak muscles and bowing of the leg bones in children. Very rarely in severe vitamin D deficiency when calcium is also very low, symptoms of muscle spasms (cramps) and seizures can happen.

Long term vitamin D deficiency increases the risk of developing weak bones (osteoporosis). More recently, vitamin D deficiency has been linked to several health problems such as cancer, tuberculosis, diabetes and heart disease.

### **How is vitamin D deficiency diagnosed?**

If there are symptoms of deficiency and risk factors for deficiency, a blood test will be done to check the vitamin D level. Vitamin D deficiency is diagnosed if the level is low (<30nmol/L in adults and children).

### **What is the treatment for vitamin D deficiency?**

The treatment is to take vitamin D supplements. They are available as tablets, capsules, liquid, or injection.

Treatment is usually given by mouth once daily for 1-2 months, followed by a lower dose that is taken every day to prevent the deficiency coming back. It can be taken at any time of the day without food. The dose will be recommended by your doctor and the supplements can be bought from a shop or the doctor may issue a prescription. Buying supplements is more convenient than waiting for a doctor's appointment and waiting at the chemist, and is likely to be cheaper than a prescription charge. A repeat blood test is sometimes needed after 6 months to a year to ensure the level is normal.

Occasionally, extra calcium may be needed if the calcium level is low but you will be advised by your doctor.

After treatment of the deficiency, the doctor may recommend a lower maintenance dose that is taken every day to prevent the deficiency coming back. The maintenance dose will not be prescribed but can be bought from a chemist or health food shop.

### **Are there any side-effects from vitamin D treatment?**

It is very unusual to get side-effects from vitamin D if taken in the prescribed dose. In the event of taking too much, symptoms are due to raised calcium levels in blood and these include nausea, vomiting, increased thirst, passing a lot of urine and headache. If these symptoms are noted, please report to the GP or hospital doctor immediately so that blood tests can be arranged.

### How can the risk of vitamin D deficiency in the future be reduced?

After a treatment course with vitamin D supplements, it is very important to maintain an adequate vitamin D level in the blood by taking the lower dose of vitamin D supplement advised. Following are some other helpful steps to avoid deficiency in the future:

- 1) As sunlight is the main source of vitamin D, it is advisable to have adequate sunlight exposure when possible. In order to maximise the benefit of sunlight, please ensure :
  - ✓ Expose bare face, arms or legs (exposure through glass window is not adequate) to sunlight at least 2-3 times per week in the summer months (April to September in UK)
  - ✓ Best between 11am and 3pm
  - ✓ Each episode should last 10 -15 minutes e.g. out in the garden, walking to the shops or school
  - ✓ People with pigmented skin absorb less sunlight and therefore need to spend more time (at least 25-30 minutes) in the sun.
  - ✓ Avoid sunscreen application during the above times of sunlight exposure as sunscreen may block the making of vitamin D in the skin. Ensure adequate sun protection measures are followed after this time to avoid sunburn. Additional sun exposure without sunscreen has no added benefit on vitamin D synthesis.
  
- 2) Diet is a poor source of vitamin D. Vitamin D can be found in oily fish (tuna, salmon, and mackerel), eggs and fortified food like some breakfast cereals. A diet rich in calcium is also important for health; sources of calcium include milk, yogurt and cheese.

### Does vitamin D deficiency affect other family members?

If one family member has low vitamin D, it is highly likely that the rest of the family have the same problem. It is essential that the whole family has adequate sunlight exposure as mentioned above and discuss with your local pharmacist about a suitable supplement.

## VITAMIN D DEFICIENCY

### PATIENT INFORMATION LEAFLET

