



Jacqui Lowdon
Paediatric
Dietitian, Team
Leader Critical
Care, Therapy &
Dietetics, RMCH

Presently team leader for Critical Care and Burns, Jacqui previously specialised in gastroenterology and cystic fibrosis. Although her career to date has focused on the acute sector, Jacqui has a great interest in paediatric public health.

For full article references please email info@networkhealthgroup.co.uk

VITAMIN D: UPDATE ON GUIDELINES AND RECOMMENDATIONS

In July this year, Public Health England (PHE) published new recommendations¹ for Reference Nutrient Intakes (RNIs) of vitamin D for everyone in the UK.

This advice is based on the recommendations of the Scientific Advisory Committee on Nutrition (SACN) following its review of the evidence on vitamin D and health,² which advises a change to the previous advice.

The Committee on Medical Aspects of Food and Nutrition (COMA)³ had previously stated that dietary intake of vitamin D for most of the UK population (four to 64 years of age) was unnecessary due to vitamin D being synthesised in the skin on exposure to sunlight. RNIs only existed for groups considered to be at high risk of deficiency and were based on the amount required to prevent osteomalacia in adults and rickets in children. However, with public health advice now recommending to stay out of sunlight and wear protective sunscreen, it is no longer possible for most of the UK population to meet requirements. Most people receive very little vitamin D from their diet, as there are only a few naturally occurring foods that contain a significant amount of vitamin D and, in the UK, there are only a few foods fortified with small amounts of vitamin D.

WHAT ARE THE NEW RECOMMENDATIONS?

It is now recommended that the UK population aged one year and above have a vitamin D supplement throughout the year. This includes population groups at high risk of vitamin D deficiency (see Table 1 overleaf) and pregnant and lactating women.

The new recommendations are 400IU (10ug)/day for adults and 340-400IU/day for infants. PHE have advised that the general population should take a daily supplement of 10ug of vitamin D in autumn and winter, as it is difficult for people to meet the 10ug recommendation from consuming foods naturally containing or fortified with vitamin D. Throughout the remainder of the year, the majority of the population obtain enough vitamin D through sunlight on the skin and a healthy, balanced diet.

For those who have little or no exposure to sunlight, e.g. in institutions such as care homes, or who always cover their skin when outside, they will require a supplement throughout the year. Ethnic minority groups with dark skin, e.g. African, Afro-Caribbean and South Asian backgrounds, may not get enough vitamin D from sunlight in the summer and, therefore, should also consider taking a supplement all year round.

Children aged one to four years should have a daily 10ug vitamin D supplement. PHE recommends that babies are exclusively breastfed until around six months of age and as a precaution, all babies under one year of age should have 8.5 to 10ug vitamin D/day. Children who have more than 500ml of infant formula a day do not need any additional vitamin D as formula is already fortified.

These new RNIs have been recommended to ensure that the majority can achieve and maintain an adequate level of vitamin D throughout the year, for musculoskeletal health only. They do

Most people receive very little vitamin D from their diet, as there are only a few naturally occurring foods that contain a significant amount of vitamin D

Table 1: Groups at high risk of vitamin D deficiency⁴

Groups with increased requirements
Pregnant and breastfeeding women
Infants
Twin and multiple pregnancies
Adolescents
Obese individuals
Reduced sun exposure
Those living in northern latitudes, especially above 50 degrees
Seasonal - winter and spring
Individuals with darker skin, e.g. African, Asian, Afro-Caribbean
Immobility, e.g. people with cerebral palsy, institutionalised individuals
Wearing concealing clothes
Excess use of sun block
Limited diet
Vegetarians and vegans
Prolonged breastfeeding, even if the mother is vitamin D sufficient
Malabsorption
Exclusion diets, e.g. milk allergy
Renal disease
Liver disease
Effects of certain drugs, e.g. anti-TB, anticonvulsants

not take into account the ever-expanding list of other health claims for vitamin D.^{5,6} No RNIs have been set for children under four years of age, only safe intakes.

However, this advice differs from that of the Department of Health and the Chief Medical Officers⁷ recommended dose of 7-8.5ug (approx 300IU) for all children from six months to five years of age. This is the dose that the NHS 'Healthy Start' vitamin drops provide. The British Paediatric and Adolescent Bone Group⁸ recommends that exclusively breastfed infants receive vitamin D supplements from soon after birth.

WHAT IS THE OPTIMUM SERUM VITAMIN D LEVEL?

Scientific debate about optimal vitamin D status still continues. The Institute of Medicine (IOM)⁹ defines vitamin D status by serum 25-hydroxyvitamin D (25(OH) D), with 50nmol/l meeting the requirements of 97.5% of the population.

The British Paediatric and Adolescent Bone Group (BPABG)⁸ defines vitamin D deficiency as a serum level <25nmol/l, insufficiency 25-50nmol/l and sufficiency >50nmol/l. These levels are thought to protect only musculoskeletal health.

The Global Consensus Recommendations on Prevention and Management of Nutritional Rickets¹⁰ classifies deficiency as <30nmol/l, insufficiency as 30-50nmol/l and sufficiency as >50nmol/l.

Durup et al¹¹ found that serum levels of 50-60nmol/l provided the lowest all-cause mortality risk. This is alarming in view of the fact that around 30-40% of the UK population have been found to have a plasma 25(OH)D concentration of <25nmol/l in winter.¹²

SO, HOW MUCH VITAMIN D DO WE ACTUALLY NEED?

Even with the new guidelines in place, the required vitamin D intake for optimal health also still poses scientific debate. There has been some recent new research investigating vitamin D requirements in some of the higher risk groups, which questions the present guidelines and recommendations.

A multicentre randomised controlled trial¹³ has concluded that maternal vitamin D supplementation with 6,400IU/day safely provides the nursing infant with an adequate amount of vitamin D. This makes the amount currently recommended (400IU/day) irrelevant. At the start of the study, the researchers prescribed 2,400IU/day of vitamin D to a group of lactating mothers. However, the ethics committee had to stop the study and increase the amount being given, as many infants in this group had 25(OH)

D levels < 20 ng/ml. If the mother takes 6,400IU/day, the authors recommend that the infants do not need to supplement with vitamin D. Giving 6,400IU to breastfeeding mothers has the same results on the infants 25(OH)D as when the infants take 400IU/day, but with the advantage that if the mothers take it instead of just the infants, both will benefit from maintaining vitamin D sufficiency.

Adolescents are another population group at high risk of low vitamin D status, yet the evidence base for establishing vitamin D requirements remains weak. A recent dose-response, double-blind, randomised placebo-controlled trial¹⁴ has demonstrated that vitamin D intakes between 10 and ~30µg/d are required by Caucasian adolescents during winter to maintain serum 25(OH)D concentrations >25-50nmol/L, depending on the serum 25(OH)D threshold chosen. During the study, the response of 25(OH)D reached a plateau at 46nmol/l; therefore, there is uncertainty in estimating the vitamin D intake required to maintain 25(OH)D concentrations >50nmol/l in 97.5% of adolescents, but it did exceed 30µg/d. The results of this study would, therefore, question the adequacy of PHE recommendation of 10µg/day.

CONCLUSION

It is well recognised that vitamin D is essential for musculoskeletal health and there is now emerging evidence as to its many other health benefits. In the UK, with up to 30-40% of the population having low plasma levels during winter months, vitamin D deficiency and insufficiency is a common public health issue, but one that is preventable. In view of this, the UK government have recently reviewed their recommendations for RNIs of vitamin D for everyone. For some at risk groups, these guidelines may not arguably be at optimal doses, in view of recent research findings. However, as it is difficult to achieve the recommended nutritional intake from natural dietary sources alone and impossible to recommend the amount of sunlight exposure to achieve and maintain optimal vitamin D levels, healthcare professionals need to be aware of the new guidelines. We need to be advising our client groups of the new recommendations for vitamin D supplementation and safe intakes.



Fruiti Vits™

It's all in the taste

Fruiti Vits™ is a vitamin, mineral and trace element supplement specifically designed for children aged 3-10 years on restrictive therapeutic diets.



A great tasting
orange flavour

Soluble - dissolves easily

Low volume - 1 sachet made up in a minimum of 60ml water

All in one - A single 6g sachet meets micronutrient* Reference Nutrient Intakes (RNIs).¹

Contains 15µg of Vitamin D and 804mg of **Calcium** per sachet.

Only 0.5g of carbohydrate per sachet (suitable for the Ketogenic diet)

For further product information or samples, please contact either your local Vitaflo representative, or call the **Nutritional Services Helpline** on: **+44 (0) 151 702 4937** or e-mail vitaflo@vitaflo.co.uk



Innovation in Nutrition

A Nestlé Health Science Company

* Reg. Trademarks of Société des Produits Nestlé S.A.

Fruitivits is a Food for Special Medical Purposes

* excludes sodium, potassium and chloride.

REFERENCE:

¹ Department of Health (1991) Dietary Reference Values for Food Energy and Nutrients for the United Kingdom. Report of the Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. HMSO, London.

NHD1216