

Vitamins: the Department of Health recommendations

Who needs vitamin supplements?

Judy More reviews why supplementation is necessary and why the new Healthy Start supplements will fill previous gaps

Judy More BSc RD RNutr

Freelance Paediatric Dietitian, London

The author has been working with the Department of Health on the Healthy Start vitamins project

ABSTRACT

Supplementation for breast-fed babies should begin at six months, or from one month if the mother's vitamin status during pregnancy is doubtful, and should continue for five years. Any teenager or woman who could become pregnant should receive 400 µg folic acid daily. Pregnant and breast-feeding women, anyone over 65 years of age and anyone who is housebound should be advised to take vitamin D supplements. The two new Healthy Start vitamin formulations offer low-cost vitamin D and folic acid supplementation, free to those so entitled.

RDAs (recommended daily amounts) are for adults and should not be used for children. RNIs (reference nutrient intakes for different ages) are the appropriate guide.

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Key words:

vitamins; folic acid; Healthy Start

Key points

- Recommend vitamin A and D supplements for children under five years of age
- For breast-fed babies this should begin at six months, or from one month if the mother's vitamin status during pregnancy is doubtful
- Supplementation for babies drinking infant formula should begin after six months when formula intake falls to below 500 ml daily
- Recommend 400 µg folic acid daily for any teenager or woman who could become pregnant
- Recommend vitamin D supplements for pregnant and breast-feeding women, anyone over 65 years and anyone who is housebound
- Recommended daily amounts (RDAs) are for adults. Use reference nutrient intakes (RNIs) for children
- *Healthy Start* vitamin preparations offer low-cost vitamin D and folic acid supplementation
- Primary Care Trusts and Health Boards are responsible for offering *Healthy Start* vitamin supplements free to those so entitled



Healthy Start Vitamins for Women are recommended for pregnant and breast-feeding women

The Department of Health recommends certain vitamin supplements for children under five years of age, pregnant and breast-feeding women, elderly men and women and anyone who is housebound, even when a healthy, balanced diet is followed. Why are these vitamins not provided in a healthy balanced diet?

Vitamin D

Summer sunshine, not food, is the main source of vitamin D in the UK. Outside in summer sunlight, vitamin D is synthesised in skin exposed to the ultraviolet (UV) rays. Most people obtain sufficient vitamin D in this way. However, certain groups who

need more vitamin D to ensure good absorption of calcium from food for rapidly growing and consistently healthy bones may not get enough vitamin D from skin synthesis or from food¹. These groups are:

- children under five years of age
- pregnant and breast-feeding women
- anyone who is housebound
- anyone over 65 years of age, when skin synthesis diminishes significantly².

Good sources of vitamin D include oily fish such as sardines, kippers, salmon, pilchards and trout. Meat and eggs contain a little vitamin D. Other foods contain negligible amounts, with the exception of margarine and some breakfast cereals which are fortified with vitamin D.

“The Department of Health recommends certain vitamin supplements for certain groups, including the under-fives, pregnant and breast-feeding women, even when a healthy, balanced diet is followed”

In the UK, UV light is strong enough for the skin to make vitamin D only during the summer months, i.e. April to September. Enough vitamin D must be synthesised during this period to last through winter. Although definitive figures for the necessary length of time to be spent outdoors are not available for the UK, sunbathing is not necessary. It could suffice to spend about 15 to 30 minutes outside on a few days each week in the summer between 10 am and 3 pm, with some skin exposed, such as hands and face and arms.

For some ethnic groups there is an increased risk of vitamin D deficiency, as pigmented skin is less efficient at producing vitamin D. These people need to spend longer outside in the sunshine, and those who wear concealing clothing are less likely to synthesise adequately.

National surveys show that significant numbers of people in the UK have low plasma vitamin D levels, that is:

- 2% of UK children aged 1½ to 4½ years³
- 20% to 34% of Asian children aged 2 years⁴
- 10% to 11% of teenage girls⁵
- 13% to 28% of women of childbearing age⁶
- housebound, and elderly over 65 years of age⁷.

Studies have shown low vitamin D levels among Asian women in the UK, particularly among those who cover most of their skin for cultural reasons⁸. Babies born to mothers who have inadequate plasma vitamin D levels will have very low vitamin D stores themselves. Their mother's breast milk will also contain little vitamin D. Infants of these mothers can suffer hypocalcaemic tetany or go on to develop rickets⁹. Where there is any doubt about a mother's vitamin status during pregnancy, infants should begin vitamin D supplementation from one month of age¹⁰. Several Primary Care Trusts in England have reported increasing rates of rickets, particularly among infants and children of Asian, African, Afro-Caribbean and Middle Eastern ethnic origins^{8,11-14}.

There are vitamin D receptors in most tissues in the body, and we are not fully aware of all the implications of low vitamin D levels. Iron deficiency anaemia is associated with low vitamin D plasma levels among Asian children living in the UK⁸. Inadequate vitamin D status is associated with poor bone health at any age, and there is also emerging evidence of links to certain cancers².

Folic acid

Folic acid is found as folate in various foods, including green leafy vegetables, oranges and some fortified breakfast cereals. However, folate content decreases with cooking and with long storage times and, even with a very good diet, pregnant women are unlikely to ingest the amounts of folate necessary to reduce the risk of

neural tube defects in their babies. Research has shown that a daily supplement of 400 µg of folic acid before conception and during the first three months of pregnancy significantly reduces this risk, and health departments continue to recommend this supplement for any woman who may become pregnant.

What are the recommendations for these vitamins?

For infants and children

The UK health departments recommend a daily dose of vitamins A and D for:

- breast-fed infants from six months (or from one month if there is any doubt about the mother's vitamin status during pregnancy)
- formula-fed infants who are over six months of age and taking less than 500 ml infant formula per day
- children under five years of age¹⁰.

This recommendation is particularly important for children who are picky or fussy eaters, those of Asian, African, Afro-Caribbean or Middle-Eastern origin and those living in northern areas of the UK¹⁰.

For women

UK health departments recommend:

- 10 µg of vitamin D each day for pregnant and breast-feeding women¹
- 400 µg of folic acid daily for women who may become pregnant and until the 12th week of pregnancy¹⁵.

Why recommend vitamin A for young children?

Children, particularly those under five years of age, have high requirements for this vitamin, which is necessary for normal growth and development as well as being part of the immune system. Vitamin A is also essential for vision, but it is only in cases of very severe deficiency, occurring in some developing countries, that blindness is a consequence.

Good food sources of vitamin A include liver, milk products and brightly coloured fruit and vegetables. With the exception of milk products,

these are foods which many children aged under five years are often quite fussy about, and national surveys in the UK have shown that one in two children under five years of age does not have enough vitamin A in the diet³. Therefore, UK health departments continue to recommend a supplement for children aged under five years because of their rapid growth and development at this age.

Toxicity from high doses of vitamin A supplements is possible, and care should be observed with doses. Two different supplements both containing vitamin A should never be taken together. Pregnant women are advised not to take supplements containing vitamin A (as retinol) because of the teratogenic risk.

For those over 65 years

UK health departments recommend:

- 10 µg of vitamin D each day for men and women over 65 years¹.

Other nutrients

A healthy balanced diet including a variety of foods will provide all other necessary nutrients. However, large sections of the UK population do not eat well and may be deficient in one or more nutrients. Those on restricted diets, particularly vegans, need supplementation.

Choosing an appropriate supplement

Today the vitamin and mineral supplements market is huge business. There is a wide range sold in supermarkets, pharmacies, health-food stores and over the internet. With a healthy balanced diet, supplements are not necessary, except for the groups discussed above. However, over £400 million is spent annually on dietary supplements. Many people mistakenly believe that the more they take the better, not realising that very high doses of some supplements can cause harm. Recently European laws introduced safe upper limits on some nutrients, to offer some protection to customers.

Parents tend to choose supplements by looking to see if they contain 100% of the RDA for each nutrient, not realising that 100% RDA, even on a children's supplement, is a suitable amount for an adult and in some cases will be a very high dose for a baby or child. Vitamin A is an example of this.

What are RDAs and RNIs on vitamin supplement labels?

All supplement labels are required to display the RDA, even products for children for whom they have no relevance. The RDA of a nutrient is the amount which is recommended to be eaten on average every day. It applies to the whole population in general and is set by a European committee. The figure indicates a suitable amount for adults, not babies and young children.

The RNI is the amount that is recommended for different age groups in the UK¹. There are several age-group bands, as children require

Table 1: Recommended daily amounts (RDAs) and reference nutrient intakes (RNIs)

Active ingredient	100% RDA	RNIs for differing age groups						
		7-12 months	1-3 years	4-6 years	Adults	Pregnant women	Breast-feeding women	Over 65 years
Vit. A	800 µg	350 µg	400 µg	400 µg	M 700 µg W 600 µg	700 µg	950 µg	600 µg
Vit. C	60 mg	25 mg	30 mg	30 mg	40 mg	50 mg	70 mg	40 mg
Vit. D	5 µg	7 µg	7 µg	–	–	10 µg	10 µg	10 µg
Folic acid	200 µg	25 µg	30 µg	30 µg	200 µg, (+400 µg as supplement for women who may become pregnant)	300 µg, (+400 µg as supplement until 12th week of pregnancy)	260 µg, (+400 µg as supplement if another pregnancy is possible)	200 µg

Vit. = vitamin; M = men; W = women *For women who may become pregnant **Up to 12th week of pregnancy.

Table 2: Healthy Start vitamin supplements

Details	Healthy Start vitamin drops for children	Healthy Start vitamins for women
Active ingredients	233 µg vitamin A 20 mg vitamin C 7.5 µg vitamin D	70 mg vitamin C 10 µg vitamin D 400 µg folic acid
Daily dose	5 drops	1 tablet
Cost per pack of 8 weeks' supply from NHS PCTs	£1.70*	65p*
Availability	From PCTs	From PCTs and retail pharmacies

PCTs = Primary Care Trusts * Free to beneficiaries of the Healthy Start scheme.

differing amounts of nutrients as they grow. The age-group bands are quite narrow: 0 to 3 months, 4 to 6 months, 7 to 9 months, 10 to 12 months, 1 to 3 years, 4 to 6 years, 7 to 10 years, 11 to 14 years, 15 to 18 years, 19 to 50 years and 50+ years. For certain nutrients there are different RNIs for pregnancy, breast-feeding and the elderly.

Table 1 shows some of the differences between the RDAs and RNIs for some nutrients. In the case of vitamin A, 100% RDA (800 µg) is more than double the RNI for young children, which is 350 µg. Vitamin A is fat soluble and accumulates in the body, and children do not need such large daily doses over a long period. Parents should be advised not to choose a supplement with 100% RDA vitamin A for very young children. Conversely, the European RDA for vitamin D is set at only 5 µg, whereas the RNI for infants and children up to three years of age is 7 µg. For pregnant and breast-feeding women and the elderly over 65 years of age, the RNI is 10 µg. In this case 100% RDA vitamin D will not be adequate for infants, young children, pregnant or breast-feeding women, housebound people or the elderly aged over 65 years.

Which supplements to recommend to clients?

There is a wide variety of supplements available, but the Department of Health has introduced the *Healthy Start* vitamins (Table 2) because there have been no suitable low-cost supplements on the market that supported their recommendations for women and young children. Vitamin C was added to both *Healthy Start* supplements, as families in lower-income groups tend to have less vitamin C in their diets^{3,5,6}. These supplements are provided free to beneficiaries of the Healthy Start scheme, i.e. qualifying pregnant women, new mothers and children (see article on Healthy Start on p.21).

The role vitamin C plays in enhancing the absorption of iron is particularly important in young children. Poor iron status is common among UK toddlers, with about 12% of toddlers in the UK having iron deficiency anaemia³.

For infants and young children who are eating well

A supplement containing vitamins A and D is recommended. *Healthy Start Children's Vitamin Drops* (containing vitamins A, C and D) offer the best value for money, but can be obtained only via

Primary Care Trust and Health Board premises. Other supplements with these three nutrients are available for young children, but they all contain much higher amounts of vitamin A and lower amounts of vitamin D and are therefore less suitable. They contain, in addition to A, C and D, vitamins B and/or E, which are not necessary for those eating well and which increase the cost. Preparations with 100% RDA for all nutrients,

Healthy Start Children's Vitamin Drops (containing vitamins A, C and D) can be obtained via Primary Care Trust and Health Board premises

particularly vitamin A, should not be recommended. *Dalavit* (LPC) notably contains very high amounts of vitamin A, as it was developed for preterm babies; it is not suitable for term infants or young children. *Abidec* (Chefaro) contains peanut oil, which some parents are reluctant to give to their children because of the possible risk of an allergic reaction, however small.

For young children who are not eating a balanced diet

Some children are particularly fussy, picky eaters and eat quite restricted diets. They will need a supplement with a variety of both vitamins and minerals, as a poor diet is unlikely to be low in just a few nutrients. Avoid those supplements with 100% RDA for all nutrients, especially vitamin A. There are some preparations which do include the RNIs for children on the label, offering better guidance to appropriate amounts.

For pregnant women

There are several products on the market that contain only folic acid. *Healthy Start Vitamins for Women* is the only product offering the RNI of vitamin D (i.e. 10 µg) for pregnancy, together with 400 µg folic acid.

There are other supplements specifically marketed for pregnant women, containing a wide variety of nutrients and no vitamin A as retinol. This wide variety of nutrients makes the preparations relatively expensive, but they may be useful for women who can afford them and who do not, or are unable to, eat a balanced diet.

Pregnant teenage girls

Teenage girls have not finished growing and will not have reached their peak bone mass. A pregnancy will impose additional nutrient requirements. Under Healthy Start, all pregnant teenagers aged under 18 years, regardless of their financial circumstances, are entitled to free *Healthy Start Vitamins for Women*, together with one £2.80 Healthy Start voucher each week to help buy milk and fresh fruit and vegetables. As national surveys show that teenagers' diets are often low in several nutrients⁵, an additional supplement with a wide range of nutrients including minerals, but excluding vitamin A as retinol, may also be advisable.

For breast-feeding women

There are no supplements specifically targeting this group of women. Those who are eating well only require 10 µg vitamin D daily, and additional folic acid if they may become pregnant again. *Healthy Start Vitamins for Women* will provide this.

For those who are not eating a balanced diet, a supplement with a wide variety of nutrients would be useful. However, most preparations provide only the RDA of 5 µg vitamin D, which is lower than that recommended for breast-feeding. None provides folic acid with vitamin D in the amounts recommended for a breast-feeding woman who might become pregnant again.

Vegetarians

A balanced vegetarian diet, with plenty of pulses and nuts in place of meat and fish, can provide sufficient nutrients. The recommendations above would apply to these vegetarians. However, there is some doubt as to whether those who do not eat fish will obtain sufficient omega 3 fatty acids. In general, vegetarian mothers have lower levels of both docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) in both plasma and breast milk.

Vegans

A vegan diet is not recommended for young children, as it does not provide all the nutrients for rapid growth at this age. A paediatric dietitian should assess any young vegan children, to advise on appropriate supplementation. Pregnant and breast-feeding vegan mothers should also be assessed and will need extra vitamin B₁₂ in addition to vitamin D, as it is difficult to eat sufficient quantities in a vegan diet to ensure adequate amounts in breast-milk¹⁶.

Housebound people and those over 65 years of age

Supplements with only 10 µg vitamin D are not widely available. An increased dose of 7 drops per day of *Healthy Start Children's Vitamin Drops* (instead of the 5-drop dose recommended for children) would provide the housebound and elderly with a cheap source of 10 µg vitamin D. The amounts of vitamins A and C included are not high enough to be of concern. The *Healthy Start Vitamins for Women* would not be advisable, because the high dose of folic acid could mask anaemia due to vitamin B₁₂ deficiency¹⁷.

Availability of the Healthy Start vitamin supplements

It is the responsibility of all Primary Care Trusts and Health Boards to make the *Healthy Start* vitamin supplements available to *Healthy Start* beneficiaries, who are entitled to them free of charge. Trusts may also sell these supplements to other clients if they choose to do so. Healthcare professionals should be able to advise their clients on the availability of both supplements.

Healthy Start Vitamins for Women have a two-year shelf life; retail pharmacies are able to sell them and will do so if there is sufficient demand. *Healthy Start Children's Vitamin Drops* have a shorter shelf life of only nine months; retail pharmacies will not be stocking these because of the likelihood of stock going out of date. The *Healthy Start* website will give up-to-date information on the availability of both products¹⁸.



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News from BDNG (British Dermatological Nursing Group)

Dermatology has been in the news in the NHS in recent months. There has been much discussion about service realignment and reduction. The idea of much of dermatology services being delivered in primary care is starting to become a reality, and Dermatology Departments within secondary care are now under threat.

While the British Dermatological Nursing Group (BDNG) fully supports equitable access for all patients with a skin condition and the development of local dermatology services in the community, the Group has concerns that this piecemeal service will not have sufficient expertise. BDNG is concerned that dermatology services will be delivered by practitioners who perhaps do not have the relevant skills and knowledge to deliver a quality patient-centred service.

The majority of dermatology nurses working in primary care have gained the skills and knowledge to effectively manage and support patients living with skin conditions through working with experts, both nursing and medical, in the secondary care setting. If Dermatology Departments close, these learning and teaching facilities will be lost. Dermatology is an art, not a science. It is not simply learned by reading a textbook or attending a course. We need to build up our experience as well as our skills to treat and support our patients effectively.

The BDNG would be very interested in hearing your views on the changes to the provision of dermatology services, particularly if they affect you personally. Please forward your views to susan.maguire@bad.org.uk

In the past year or so, the BDNG has established a Primary Care Subgroup to meet the needs of members working in the community. To join this subgroup is free for existing or new members. Members of the subgroup meet throughout the year to exchange ideas.

Membership of the BDNG costs only £25 per year. Membership benefits include:

- Quarterly *Dermatological Nursing* journal
- Reduced registration fees for annual conference
- Travel and Research Awards
- Access to the members' only section of the website
- Advice and guidance from a local regional representative

More information about joining the BDNG can be found at www.bdng.org.uk

This year's conference

This year's BDNG will be held in Birmingham on 10-13 July 2007. The BDNG will be offering a wide range of educational modules for both novice and experienced dermatology nurses. Put a note in your diary and come along to learn more about the speciality of dermatology nursing. More information about our conference can be found on our website. We look forward to seeing you there.



Susan Maguire

BDNG Professional Officer

susan.maguire@bad.org.uk www.bdng.org.uk