

Prescribing and Clinical Effectiveness Bulletin

Volume 6; Number 6

May 2012

VITAMIN D DEFICIENCY IN AT-RISK GROUPS: PART 1 PREVENTION

Key Points

- Up to 25% of the UK population have low levels of vitamin D in their blood, This can result in long-term health problems including rickets in children and osteoporosis and fractures in adults.
- People at risk of vitamin D deficiency include all pregnant and breastfeeding women, all infants and young children under 5 and all older people aged 65 and over. People who have low or no exposure to the sun and those who have darker skin are also at risk.
- Health care professionals need to ensure that those identified as being at risk get enough vitamin D either by increasing their exposure to sunlight, increasing dietary intake of vitamin D or through vitamin D supplementation.
- Most people maintain adequate levels of vitamin D in their body as a result of normal summer sunshine exposure. Between early April to late October exposure of the face and forearms to sunlight (between 9am and 3pm) for 30 minutes twice per week is sufficient to replenish Vitamin D levels in light skinned subjects, although this may be doubled in those with heavily pigmented skin.
- Dietary intake of vitamin D can be enhanced by increasing consumption of foods rich in vitamin D such as oily fish, egg yolks, cod liver oil and fresh meat.
- The DoH recommends that certain at risk groups should take vitamin D supplements. These are: (1) all pregnant and breast feeding women; (2) infants and young children aged 6 months to 5 years; (3) people aged 65 years and over and (4) people who are not exposed to much sun.
- *Healthy Start* is a voucher based scheme that enables eligible families to access free milk, fruit and vegetables and infant formula milk; free vitamin supplements known as *Healthy Start* vitamins are also available in exchange for coupons sent to beneficiaries every eight weeks. These coupons can be exchanged for *Healthy Start* women's vitamin tablets and/or *Healthy Start* children's vitamin drops at designated outlets across the county (see table).
- For people at risk who do not qualify for the *Healthy Start* scheme, *Healthy Start* vitamins are available to purchase from some of the *Healthy Start* outlets (see table). A range of vitamin preparations containing vitamin D and *suitable for the prevention of deficiency* are also available to purchase from community pharmacies and health food stores.
- PACEF do not recommend the *prescribing* of vitamin D supplements for the *prevention of vitamin D deficiency* in those at risk. Eligible patients should be signposted to the *Healthy Start* scheme; all others should be advised

- either to purchase Healthy Start products from participating outlets (see table) or from their local community pharmacy or healthfood store.
- Existing guidance around the prescribing of calcium and vitamin D for the prevention of hip fracture, non-vertebral fracture and falls remains unchanged.

Introduction

The Chief Medical Officers of England, Scotland, Northern Ireland and Wales issued a joint letter on the 2nd February entitled *Vitamin D – Advice on Supplements for At Risk Groups*. This letter emphasized the findings of the National Diet and Nutrition Survey that revealed that up to 25% of people in the UK have low levels of vitamin D in their blood (defined by the Dept of Health as a plasma concentration of 25-hydroxyvitamin D of below 25nmol/l (10ng/ml)). Vitamin D occurs naturally in the body following exposure to UVB sunlight. Most people maintain adequate levels of vitamin D in their body as a result of normal summer sunshine exposure. For certain at risk groups sunlight exposure may not provide adequate levels of vitamin D leading to deficiency. Vitamin D deficiency impairs the absorption of dietary calcium and phosphorus which can result in bone problems in children (like rickets) and osteoporosis and fractures in adults.

In the first part of this two part *PACE Bulletin* we address issues related to the prevention of vitamin D deficiency in those identified as being at risk. The *Bulletin* defines those at risk, the lifestyle changes necessary to ensure that adequate vitamin D is maintained naturally in the body and the role of vitamin D supplementation. Further information is provided on the *Healthy Start* scheme, those that are eligible and how to apply. In part 2 of this feature to be published in June 2012, we will consider the treatment of vitamin D deficiency in those with diagnosed insufficiency or deficiency.

Who is at risk of vitamin D deficiency?

- All pregnant and breastfeeding women, especially teenagers and young women.
- Infants and young children under 5 years of age.
- Older people aged 65 years and over.
- People who have low or no exposure to the sun (e.g. those who cover their skin for cultural reasons; the housebound or those confined indoors for long periods).
- People who have darker skin (e.g. people of African, African-Caribbean and South Asian origin) whose bodies cannot make as much vitamin D.
- People who suffer from medical conditions that alter how the body handles vitamin D (e.g. Crohn's disease, coeliac disease and certain liver and kidney diseases).
- People taking certain medicines (e.g. carbamazepine, phenytoin, primidone, barbiturates and some anti-HIV medicines).

Health care professionals need to ensure that those identified as being at risk get enough vitamin D either by increasing their exposure to sunlight, increasing dietary intake of vitamin D or informing them how they can access vitamin D supplements.

Lifestyle and dietary change

People considered at risk of vitamin D deficiency should be advised to supplement their vitamin D levels by:

1. Increasing UV sunlight exposure

Between early April to late October exposure of the face and forearms to sunlight (between 9am and 3pm) for 30 minutes twice per week is sufficient to replenish Vitamin D levels in light skinned subjects, although this may be doubled in those with heavily pigmented skin. Advice from the British Association of Dermatologists (BAD) states that *regularly* going outside for a matter of minutes around the middle of the day without sunscreen should be enough. The time to make sufficient vitamin D is typically short and less than the amount of time needed for the skin to redden and burn. Existing advice around the importance of sunscreen use to prevent redness and burning following extended exposure to the sun remains in place.

2. Increasing dietary intake of vitamin D

Intake of vitamin D can be enhanced by increasing consumption of foods rich in vitamin D such as oily fish, egg yolks, cod liver oil and fresh meat. The recommended intake of oily fish should be one portion (100-150g per portion) 2-3 times a week. Types of oily fish include trout, salmon, mackerel, herring, sardines, anchovies, pilchards and fresh tuna. Because of concerns of heavy metal contamination of the marine food chain, it is recommended that these amounts should not be exceeded in pregnancy or in women who may conceive.

Some foods are fortified with vitamin D (e.g. certain breakfast cereals, some dairy products and some low fat spreads). However, it is difficult to get sufficient vitamin D from diet alone.

3. Vitamin D supplementation

What does the Dept of Health recommend?

The DoH recommends that certain at risk groups should take vitamin D supplements. These are:

- **All pregnant and breast feeding women** should take a daily supplement containing **10 microgram of vitamin D**; this is to ensure that the mother's requirements for vitamin D are met and to build adequate foetal stores for early infancy.
- **Infants and young children aged 6 months to 5 years** should take a daily supplement containing vitamin D in the form of vitamin drops. The daily requirement of vitamin D for this age group is **7-8.5 microgram per day**. Infants bottle fed on infant formula (which is fortified) will not need vitamin drops until they are receiving less than 500ml of infant formula a day. Breastfed infants may need vitamin drops containing vitamin D from one month of age if their mother has not taken vitamin D supplements throughout pregnancy. The 2005 Infant Feeding Survey revealed that the majority of women do not take vitamin D supplements during pregnancy.
- **People aged 65 years and over and people who are not exposed to much sun** should also take a daily supplement containing **10 micrograms of vitamin D**.

Pregnant and breast feeding women; infants and young children

What is *Healthy Start*?

Healthy Start is a voucher based scheme that enables eligible families to access milk, fresh or frozen fruit, fresh or frozen vegetables and infant formula milk; free vitamin supplements known as *Healthy Start* vitamins are also available in exchange for green vitamin coupons sent to beneficiaries every eight weeks. The contents of *Healthy Start* women's vitamin tablets and children's vitamin drops are tabulated below:

Product	Constituents (per tablet or volume)	Licensed status	Price and pack size
<i>Healthy Start</i> women's vitamin tablets	Per tablet: 400 IU (10 microgram) vitamin D3 70mg vitamin C 400 microgram folic acid	Nutritional supplement	£0.91 (56 tablets)
<i>Healthy Start</i> children's vitamin drops	Per 5 drops 300 IU (7.5 microgram) vitamin D3 700 IU (233 microgram) vitamin A 20mg vitamin C	Licensed product	£1.80 (10ml)

Who is eligible for *Healthy Start*?

Women who are at least 10 weeks pregnant or have a child under 4 years old are eligible for *Healthy Start* if their family is in receipt of:

- Income Support **or**
- Income-based Jobseekers Allowance **or**
- Income-related Employment and Support Allowance **or**
- Child Tax Credit (not Working Tax credit unless receiving Working Tax Credit run-on) **and** an annual family income of £16,190 or less in 2011/12.

Also women under the age of 18 and pregnant qualify for *Healthy Start* even if they do not receive any of the benefits or tax credits listed above. An Application Form for *Healthy Start* vouchers is provided at the back of the *Healthy Start* leaflet available from Health Clinics and Children's Centres (listed in the Appendix below). Application Forms can also be obtained by calling 0845 6076823 or visiting www.healthystart.nhs.uk.

Healthy Start vitamins are available from a wide range of outlets across the county (see Appendix). Once an individual has successfully completed and submitted an application form and has started to receive green vitamin coupons in the post, they will be able to present coupons to any of these outlets to pick up vitamins both for themselves and for their child or children. Vitamin coupons are sent to beneficiaries every eight weeks and can be used to access eight week's supply of the relevant preparation(s). It is a PCT statutory responsibility to ensure that *Healthy Start* vitamins are available to women and children eligible under the scheme.

What if you are pregnant or have a child, but do not qualify for *Healthy Start* vitamins?

Healthy Start vitamins are available to purchase from some of the *Healthy Start* outlets (see below). They are not available on prescription nor can they be purchased from community pharmacies in Lincolnshire. However, a range of alternative

preparations suitable for the prevention of vitamin D deficiency can also be purchased from community pharmacies or health food stores. Two examples are quoted below, although a wider range of products are available.

Products suitable for pregnant and breastfeeding women

Product	Constituents (per tablet)	Licensed status	Price and pack size
Pregnacare tablets	400 IU (10 microgram) vitamin D3 plus a variety of other constituents including vitamins B1, B2, B3, B12, C (70mg), E and K, folic acid (400 microgram) and iron (17mg)	Nutritional supplement	£5.35 (30 tablets)

Products suitable for children

Product	Constituents (per volume)	Licensed status	Price and pack size
Abidec drops	Per 0.6ml 400 IU (10 microgram) vitamin D3 1,333 IU of vitamin A (as palmitate) 0.4mg thiamine hydrochloride (Vitamin B1) 0.8mg riboflavin (vitamin B2) 0.8mg pyridoxine hydrochloride (vitamin B6) 8mg nicotinamide 40mg ascorbic acid (vitamin C)	Licensed product	£2.20 (50ml)

NB The recommended daily intake of vitamin A in children up to 5 years is 2000IU (600microgram) per day. Taking into account additional dietary intake, this can make prolonged daily intake of Abidec problematic in terms of the increased risk of vitamin A toxicity (Abidec contains 1,333IU of vitamin A per 0.6ml). This risk is even more apparent with Dalivit oral drops which contain 5000 IU of vitamin A per 0.6ml. Healthy Start children's vitamin drops remain the preferred option for this age group. Abidec drops provide a suitable alternative, but should not usually be used long-term.

PACEF Recommendation

PACEF do not recommend the *prescribing* of vitamin D supplements for the *prevention* of vitamin D deficiency in those at risk. Pregnant and breast feeding women or those with a child under 4 years should be encouraged to apply for *Healthy Start* where eligible. All others will need to purchase appropriate vitamin D supplementation either from their local *Healthy Start* stockist (where available; see below) or from a community pharmacy or health food store. People aged 65 years and over and people who are not exposed to much sun, should be encouraged to maximise vitamin D intake through diet and exposure to sunlight (where possible). All vitamin D supplements required should be purchased by the patient and not prescribed. PACEF will be issuing further advice on prescribing of vitamin D for the *treatment* of insufficiency or deficiency in June 2012. Existing guidance around the prescribing of calcium and vitamin D for the prevention of hip fracture, non-vertebral fracture and falls remains in force and is reprinted below.

PACEF Advice on Calcium and Vitamin D Supplementation

(1) There is strong evidence to suggest that elderly people living in institutionalised care are likely to benefit from calcium and vitamin D supplementation. The best evidence is around daily doses of 1200mg of calcium and 800i.u. of vitamin D. Evidence suggests that this can significantly reduce the risk of hip fracture, non-vertebral fracture and falls. It is strongly recommended that all ambulatory patients over the age of 65 currently resident in sheltered accommodation or care homes should be prescribed calcium and vitamin D. Prescribers are encouraged to review all patients in care homes and sheltered accommodation to ensure that calcium and vitamin D supplementation is prescribed for the ambulatory over 65s unless there are compelling reasons not to do so.

(2) Calcium and vitamin D should be prescribed for people on or commencing systemic corticosteroid therapy at any dose for 3 months or longer.

(3) All women on treatment for the primary or secondary prevention of osteoporotic fragility fractures should be prescribed calcium and vitamin D unless dietary intake is considered to be adequate.

(4) Only calcium and vitamin D formulations containing an evidence based dose of each component should be prescribed (i.e. at least 1000mg of calcium and 800i.u. of vitamin D daily). First line preferred products are Accrete D3 tablets, Adcal-D3 Chewable tablets, Adcal D3 caplets, Calceos Chewable tablets and Natecal D3 Chewable tablets (see cost comparison below).

<u>Product</u>	<u>Dose</u>	<u>Price (28 days)</u>	<u>Flavour</u>
Accrete D3 tablets (calcium 600mg/vit D 400i.u.)	1 tablet twice daily	£3.36	
Adcal –D3 Chewable tablets (calcium 600mg/ vit D 400i.u.)	1 tablet twice daily	£3.65	Lemon or Fruit
Adcal D3 caplets (calcium 300mg/vit D 200i.u.)	2 tablets twice daily	£3.65	
Adcal-D3 Dissolve Effervescent tablets (calcium 600mg/vit D 400i.u.)	1 tablet twice daily	£4.99	Lemon
Cacit D3 Effervescent granules (calcium 500mg/ vit D 440i.u.)	2 sachets daily	£7.58	Lemon
Calceos Chewable tabs (Calcium 500mg/ vit D 400i.u.)	1 tablet twice daily	£3.38	Lemon
Calcichew D3 Forte Chewable tablets (calcium 500mg, Vit D 400i.u.)	1 tablet twice daily	£3.96	Lemon
Calcichew D3 500mg/400iu caplets (calcium 500mg, Vit D 400i.u.)	1 tablet twice daily	£4.16	
Calfovite D3 Sachets (calcium 1200mg/Vit D3 800i.u.)	1 sachet daily	£4.04	Lemon
Natecal D3 chewable tablets (calcium 600mg/vit D 400i.u.)	1 tablet twice daily	£3.39	Aniseed/peppermint
Sandocal + D 1200 effervescent tablets (calcium 1200mg/vit D 800iu)	1 tablet daily	£4.04	Orange

Prices are compiled from *MIMS*, March 2012. Appropriate first line options are highlighted in bold.

Acknowledgements

Many thanks to Susan Ferguson, Deputy Head of Prescribing and Medicines Management, Cathy Johnson, Interface Lead Pharmacist, Lynne McNiven, Assistant Director of Public Health, and Elizabeth Bunney, Healthcare Coordinator, for their help in the preparation of this edition of the *Bulletin*.

Stephen Gibson
Head of Prescribing and Medicines Management
NHS Lincolnshire

May 2012

Appendix

Healthy Start Outlets

Healthy Start vitamins are available free of charge for eligible patients from the following Children's Centres and Health Clinics. The patient must have registered with the *Healthy Start* scheme and be able to provide the necessary vitamin coupon. *Healthy Start* vitamins are not available free of charge for ineligible patients; they are currently available to purchase from some of these outlets (marked with a # on the table).

Outlet	Telephone Number
Alford Children's Centre	01507 463218
Billinghay Children's Centre	01526 869248
Boston Health Clinic #	01205 360880
Boston Carlton Road Children's Centre	01205 319899
Boston Norfolk Lodge Children's Centre	01205 319899
Boston Phoenix Health Shop	07500915561
Bourne Health Clinic #	01778 394185
Bourne Children's Centre	01778 395895
Gainsborough Health Clinic	01427 810801
Gainsborough Phoenix Health Shop	01427 616494
Grantham Belton Lane Children's Centre	01476 584640
Grantham Swingbridge Children's Centre	01476 590034
Grantham Health Clinic #	01476 590805
Holbeach Health Clinic #	01406 422658
Holbeach Children's Centre	01406 426064
Horncastle Health Clinic #	01507 543300
Lincoln Birchwood Health Clinic	01522 691711
Lincoln Birchwood Children's Centre	01522 689991
Lincoln Central Children's Centre	01522 569511
Lincoln North Children's Centre	01522 544801
Lincoln Phoenix Health Shop	01522 514403
Long Sutton Health Centre	01406 350214
Louth Children's Centre	01507 607099
Mablethorpe Children's Centre	01507 479412
Market Deeping Health Clinic #	01778 579000
Market Deeping Children's Centre	01778 382574
Market Rasen Children's Centre	01673 844703
North Hykeham (Ling Moor) Children's Centre	01522 694093
North Hykeham Health Clinic #	01522 682823
Skegness Children's Centre	01754 899426
Sleaford Riversdale Health Clinic	01529 304310
Spalding Children's Centre	01775 767475
Spalding, Johnson Community Hospital #	01775 652000
Spilsby Grace Swan Health Clinic #	01790 752374
Stamford Health Clinic #	01780 762906
Stamford Children's Centre	01780 764072
Sutterton Children's Centre	01205 461509
Sutton Bridge Health Clinic #	01406 350214
Sutton Bridge Children's Centre	01406 359327

Tattershall Children's Centre	01526 343858
Wainfleet Children's Centre	01754 880500
Welton Children's Centre	01673 862767