

ROTHERHAM BOROUGH COUNCIL – REPORT TO MEMBERS

1. Meeting:	Cabinet Member for Health and Wellbeing
2. Date:	12 March, 2012
3. Title:	Vitamin D
4. Directorate:	Public Health

5. Summary:

There is a perceived increase in the Vitamin D deficiency rates in Rotherham. Local investigation has been undertaken by acute and primary care colleagues. A suggested prevention project plan has been developed to address the rates of vitamin D deficiency across target communities in Rotherham.

6. Recommendations:

The cabinet are asked to

- Note that vitamin D supplementation is a public health priority
- Promote and maximise take up of Healthy Start scheme
- Review information and decide whether to proceed with the project to extend the Healthy Start scheme
- Agree ongoing financial investment in vitamin supplementation from the Public Health Budget

7. Proposals and Details:

Vitamin D sufficiency is important in *all stages of life*, and has widespread benefits. Its main role is in regulation of bone mineralisation and density. Insufficiency during pregnancy and childhood can lead to reduced bone growth and mineralisation which are the hallmarks of rickets, as well as increased rates of infant mortality through low birth weight. In adult life, work has implicated the important roles of vitamin d in reducing the risk of developing a number of cancers, heart disease and diabetes mellitus. In the elderly, low vitamin D levels are linked to the development of osteomalacia and subsequent higher risk of traumatic and pathological fractures. There are many risk factors for Vitamin D deficiency, these are listed in the table in Appendix 2.

It is estimated that 15% of adults may be Vitamin D insufficient in the UK, this rises to 94% for some UK Asian families ([Drug and Therapeutics Bulletin](#), 2006). Bradford have found that 33% of children were deficient. Research carried out in Bradford between 2000 and 2004 found that of 885 children aged 0 -15 years who were referred for a vitamin D blood test, 89% (790) had 'deficient' or 'depleted' levels (Bradford JSNA, November 2010).

Bradford and Airedale Example

The Bradford and Airedale population is at particular risk from vitamin D deficiency because of higher than average levels of deprivation, a large South Asian population, its northern latitude and lack of useable sunlight in winter months. To help address this, Bradford and Airedale Primary Care Trust provides Healthy Start vitamin drops containing vitamin D free of charge to all 0 – 2 years olds at risk of deficiency. It has also recently secured funding to roll out Healthy Start vitamins to all pregnant women in the district, starting from January 2011 (Bradford JSNA, November 2010).

In Rotherham there has been no local data collated routinely, however concerns have been raised by practitioners identifying the need for further investigation and action to be undertaken. Vitamin D deficiency rates have been sought from Rotherham Hospital Laboratories in February 2012. We have found that over a 15 month period 625 babies children and young people were tested for vitamin D deficiency, with 53% found to be significantly or mildly deficient. Further information is available in appendix 3.

Level	Commentary: Vitamin status	All	Under 1's	1-4 years	5- 10 years	10- 17 years
<25 nmol/L	Significant vitamin D deficiency. Vitamin D replacement required	14.4%	16.6%	11.2%	10.9%	20.1%
25-50 nmol/L	Mild vitamin D deficiency. Consider vitamin D replacement	38.4%	20.0%	32.0%	44.0%	44.3%
>150 nmol/L	Maybe undesirable/toxic	2.4%	13.3%	2.2%	1.0%	0.0%

Prevention of vitamin D deficiency can be developed by education on dietary advice and safe sun exposure. People are required to have a daily dose of 400 IU (10 micrograms), those at higher risk require higher doses e.g. 800 IU (20 micrograms). Vitamin D can be sourced mainly from sunlight (90%), but this varies by latitude, season, time of day and skin type. For the six months between October and April 90% of the UK lies above the latitude that permits exposure to the UVB that is necessary for Vitamin D synthesis. During these months people are reliant on exogenous sources i.e. from diet or supplementation.

A small amount of vitamin can be found in some foods (oily fish and eggs), therefore fortification and supplementation are other ways to gain more vitamin D. Limited foods are fortified with Vitamin D including some milk, cereals and infant formula, but relatively large amounts of these foods are required to meet recommendations. Further information is available in appendix 2.

NHS Rotherham's Pharmacy team have developed a clear pathway to help diagnose and treat people with Vitamin D deficiency. Recently the Chief Medical Officer wrote to all Directors of Public Health recommending that action is taken, see appendix 5. It is recommended that we increase the education drive on vitamin D deficiency and further promote the Healthy Start scheme to maximise takeup of the scheme to address deficiency rates in pregnant women, new mothers and children under 5. We plan to further extend the Healthy Start scheme to the target communities to reduce the potential levels of vitamin D deficiency in children and pregnant women/new mothers. Maximising take up will be supported by the clarification of the promotional role of our universal health services (Health Visiting and Maternity) including the clarification of where Healthy Start vitamins are available. There will also be further information provided to GPs to help them encourage families to collect their Healthy Start vitamins.

There will be an increased media promotion on vitamin D deficiency and the need for supplementation. This media activity will be in a range of languages and will be provided across different organisations.

8. Finance:

Public Health currently purchase Healthy Start vitamins for Healthy Start beneficiaries. The funding is reclaimed from the Department of Health. Vitamins are provided in pots with 56 tablets (women) or a 2 month supply of children's drops.

The costs of extending the Healthy Start Scheme to South Asian and Afro Caribbean women and children are as follows;

To supplement a woman for 82 weeks (30 weeks of pregnancy plus 52 weeks after birth) = $82/8 = 10.25$ (round up to 11 bottles) = £9.02
Cost per year £4.92

To supplement a child from 6 months of age to 4 years i.e.182 weeks. $182/8 = 22.75$
 (22 bottles) = £35.42
 Cost per year £9.66

The annual costs are as follows;

Number of BME children by children's centre	Children 0-5 by children's centres area	Cost per year for children's vitamins	Cost per mothers vitamins	TOTAL cost for all Healthy Start vitamins
Arnold	70	£676.20	£344.40	£1020.60
Valley	356	£3438.96	£1751.52	£5190.48
Rotherham Central	309	£2984.94	£1520.28	£4505.22
Coleridge	228	£2202.48	£1121.76	£3324.24
TOTAL COST	963	£9302.58	£4737.96	£14,040.54

There will be a reduction in the costs, as some target families will be eligible for their vitamins via the Healthy Start scheme. It is estimated that 80% of families eligible for the scheme are receiving vouchers for vitamins. Wherever possible, these vouchers should be sought to ensure that NHS Rotherham do not pay for vitamins which are funded through the national scheme. It is perceived that up to two thirds of target families will be eligible for Healthy Start vouchers and vitamins. The first aim of the process will be to maximise uptake in our target communities before providing them with the vitamins as part of the targeted scheme (see pathway in appendix 4).

It is proposed that we would require £5,000 to purchase and distribute additional vitamins to the four target children's centres in 2012.

9. Risks and Uncertainties:

Risk	Mitigation
1. Vitamins not taken or seen as important or confusion over need for vitamins	<ul style="list-style-type: none"> Local promotion of the importance of vitamin supplementation alongside a healthy lifestyle, including leaflets, training multi agency staff.
2. Targeted scheme provides vitamins for those on/eligible for the Healthy Start Scheme	<ul style="list-style-type: none"> Communications plan (see appendix 2). Effective and timely implementation of action plan – visible action.
3. Duplicate provision to those on Healthy Start scheme	<ul style="list-style-type: none"> Scheme to dovetail and not duplicate Healthy Start scheme to avoid paying for vitamins that are funded nationally. Clear pathway developed (see appendix 4) By ensuring people get vitamins from local children's centre and using vouchers issued by Health professional, duplication should be avoided

4. Lack of funding for the continuation of the targeted scheme	<ul style="list-style-type: none"> • Funding for scheme should cost less than £5000 to fully implement. • Vitamins to be ordered regularly to stop stock going out of date and reduce the wastage levels. • Continued monitoring of hospital admissions to demonstrate long term impact.
5. Vitamins not taken	<ul style="list-style-type: none"> • Families have the importance of taking vitamins explained to them during their 1.1 appointments.
6. Increase health inequalities	<ul style="list-style-type: none"> • Healthy Start is a means tested benefit therefore needy families are eligible for the scheme. Vitamin D promotion will intend to increase the uptake of vitamins as part of the Healthy Start scheme, which is only 1.9% children and 7.9% women.

10. Policy and Performance Agenda Implications:

Maternal and child nutrition

Healthy eating

Healthy Start

Breastfeeding

Sun safety

Paediatrics / General Practitioners / Maternity / Health Visiting

Children's Centres

11. Background Papers and Consultation:

NICE maternal and child nutrition (March 2008) PH11

Paper to Commissioning Executive/ Pharmacy Board – January 2010

References:

NICE, Maternal and child nutrition PH11, March 2008.

<http://www.patient.co.uk/printer.asp?doc=40001117>

[Drug and Therapeutics Bulletin](#), April 2006 44: 25-29. Primary vitamin D deficiency in adults. (Requires a subscription)

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Appendix 1

Risk Factors for Vitamin D deficiency

Inadequate UV light exposure	Poor dietary intake	Metabolic risk
<ul style="list-style-type: none"> Northern latitude Air pollution Occlusive garments Habitual sunscreen use Pigmented skin Institutionalised/ housebound Poor mobility i.e. wheelchair dependency 	<ul style="list-style-type: none"> Fish Free diet Malabsorption including short bowel and cholestatic jaundice Cholestyramine use 	<ul style="list-style-type: none"> Reduced synthesis :elderly Increased breakdown Drugs (rifampicin, anticonvulsants, HAART, glucocorticoids) Reduced stores: liver disease Multiple short interval pregnancies Reduced hydroxylation: liver and/or kidney disease obesity

Breastfed infants may also require supplementation due to the diet of mother in pregnancy and the amount of vitamin D in breastmilk.

Clinical features/ symptoms of Vitamin D deficiency

Symptom, sign, biochemistry	Children	Adult
Seizures	√	√
Tetany	√	√
Hypocalcaemia	√	√
Irritability	√	
Leg bowing	√	
Knock knees	√	
Impaired linear growth	√	
Delayed walking	√	
Limb girdle pain	√	√
Muscle pain	√	√
Proximal myopathy	√	√
Impaired innate antimycobacterial immunity	√	√

Appendix 2

Sunlight

Mankind derives >90% of its vitamin D from ultraviolet B light exposure¹. The amount of sun exposure required to produce a set amount of vitamin D varies with latitude, season, time of day and skin type.

For adults in the UK exposure of the hands, face and arms for 20-30 minutes (this increases to 3-10x this for dark pigmented skin) on most days during the summer months (April to September) is estimated will provide sufficient exposure to the ultraviolet B wavelengths (UVB) to achieve healthy Vitamin D levels.

Sunscreens with SPF 15 or greater are essential to prevent skin damage with longer sun exposure but will reduce Vitamin D synthesis by 99%. Advising to omit sunscreen for short, incidental sun exposures would be reasonable. Deliberate exposure to sunlight between 11:00 and 15:00 in the summer months is not advised.

For the six months between October and April 90% of the UK lies above the latitude that permits exposure to the UVB that is necessary for Vitamin D synthesis. During these months people are reliant on exogenous sources i.e. from diet (see below) or supplementation.

Diet

Less than 10% of Vitamin D is acquired through diet. It is a micronutrient and as such the naturally occurring amounts in food is small. Only a relatively small number of foods such as oily fish (for example mackerel, salmon and sardines) and eggs naturally contain vitamin D, and these amounts are small. The amount in most vegetable sources is negligible. At the present time, sufficient intake via exogenous sources can only be guaranteed by supplementation.

If adequate sunlight exposure to generate sufficient endogenous colecalciferol is not possible, then a vitamin D supplement is recommended

All infants and children from 6 months to 5 years should receive a supplement unless they are drinking 500ml or more of formula milk each day (as formula milk is supplemented).

NICE Recommendations for health professionals include:

- Provide women with information and advice on the benefits of taking a vitamin D supplement (10 micrograms [μg] per day) during pregnancy and while breastfeeding.
- Provide Healthy Start vitamin supplements (folic acid and vitamin C and D) for eligible pregnant women.

NICE (2008)

NICE recommend that during the booking appointment at the beginning of pregnancy, midwives should offer every woman information and advice on the benefits of taking a vitamin D supplement during pregnancy and while breastfeeding. NICE also recommend health professionals take particular care to check that women at greatest risk of deficiency are following the advice during

pregnancy and while breastfeeding. This includes women from ethnic minority groups (particularly of African, South Asian or African-Caribbean origin) and women who do not get much sun (for example, women who cover their skin when outside or who spend large amounts of time indoors).

CMO Letter, (February, 2012)

Appendix 3

Rotherham Vitamin D deficiency rates – November 2010 – January 2011

Vitamin D prevalence (number):

	Commentary: Vitamin status	All	Under 1's	1-4 years	5- 10 years	10- 17 years
<25 nmol/L	Significant vitamin D deficiency. Vitamin D replacement required	90	10	20	21	39
25-50 nmol/L	Mild vitamin D deficiency. Consider vitamin D replacement	240	12	57	85	86
<u>>50 nmol/L</u>	Maybe adequate	173				
>75 nmol/L	Adequate	107				
>150 nmol/L	Maybe undesirable/toxic	15	8	4	2	0
		625	60	178	193	194

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>50 nmol/L	Maybe adequate	27.7%				
>75 nmol/L	Adequate	17.1%				
>150 nmol/L	Maybe undesirable/toxic	2.4%	13.3%	2.2%	1.0%	0.0%

Appendix 4

Targeted Healthy Start Vitamins Pathway:

All families provided with information on the importance of taking vitamin supplements, families eligible for the Healthy Start scheme are support to take up the scheme, families not eligible are put forwards to the Target Healthy Start Scheme. This can be assessed in two meetings.

