



**Paper for information: Vitamin D correspondence
Rufus Greenbaum**

Agenda Item: AOB

Professor Alan A Jackson
Chairman of the Scientific Advisory Committee on Nutrition
c/o SACN Secretariat, Food Standards Agency
Aviation House, 125 Kingsway
London, WC2B 6NH

Date: December 9, 2009

Copy: SACN Secretariat, *for circulation to every member of the Committee*

Dear Professor Jackson,

Lack of sunlight in UK causes Cancer, Diabetes and Multiple Sclerosis

This deficiency cannot easily be corrected by diet, so I am writing to you as Chairman of the Scientific Advisory Committee on Nutrition to ask you to urgently revise your advice on Vitamin D.

The reason for addressing this request to you is that UK doctors, nurses, pharmacists and other healthcare practitioners all seem to base their advice on Vitamin D on the statements of the Scientific Advisory Committee on Nutrition, *which therefore have a profound effect on public health policy in the UK.*

Would you please discuss this letter at your next public meeting on January 13, 2010.

This letter relates to:

1. Recommendations for a reference level of 25 hydroxy-vitamin D
2. Recommendations for Safe Upper Intake Levels of Vitamin D
3. Recommendations for the general adult public about supplementation
4. Recommendations for women who are pregnant or wish to become pregnant
5. Recommendations for supplementation for new-born children
6. Recommendations of the EU CPME policy document:
“Vitamin D nutritional policy in Europe” (CPME 2009/179 Final EN)

Attached is a statement by 16 scientists in USA. To quote parts of their statement:

“We are aware of substantial scientific evidence supporting the role of vitamin D in the prevention of cancer.”

“...higher vitamin D levels are also associated with lower risk of Type 1 diabetes in children and of Multiple Sclerosis.”

“...higher vitamin D levels are associated with lower incidence and severity of influenza and other infectious diseases.”

Professor Cedric Garland, Professor at the University of California, San Diego, Department of Family & Preventive Medicine, Moores Cancer Center, has stated:

“By following the recommendations (of the 16 scientists) it is estimated that we could have an ANNUAL 67-70% reduction in the incidence of Breast Cancer, Type 1 Diabetes, Multiple Sclerosis and Colon Cancer within only 5 years !”

This statement is so significant that I implore you to take urgent action.

Current Status of 25(OH)D

In 2009 the Annals of Epidemiology published a paper by Dr Cedric Garland et al:
Vitamin D for Cancer prevention: Global Perspective.

Their Conclusions were: *It is projected that raising the minimum year-around serum 25(OH)D level to 40 to 60 ng/mL (100–150 nmol/L) would prevent approximately 58,000 new cases of breast cancer and 49,000 new cases of colorectal cancer each year, and three fourths of deaths from these diseases in the United States and Canada, based on observational studies combined with a randomized trial. Such intakes also are expected to reduce case-fatality rates of patients who have breast, colorectal, or prostate cancer by half. There are no unreasonable risks from intake of 2000 IU per day of vitamin D3, or from a population serum 25(OH)D level of 40 to 60 ng/mL. The time has arrived for nationally coordinated action to substantially increase intake of vitamin D and calcium.*

The Standing Committee of European Doctors (www.cmpe.eu) state that:

“ the overall 25(OH)D status around the world is estimated at a mean level of 21 ng/mL, based on a compilation of all published literature – implying that approximately 50% of the population is deficient and in some cases severely deficient.

In 2007 the American Journal of Clinical Nutrition published a report by Elina Hypponen & Chris Powers: *Hypovitaminosis D in British adults at age 45 y: nationwide cohort study of dietary and lifestyle predictors* in which they measured 25(OH)D in 7437 people from the 1958 British birth cohort when they were 45 years old.

Their conclusion was: *“Prevalence of hypovitaminosis D in the general population was alarmingly high during the winter and spring, which warrants action at a population level rather than at a risk group level.”*

In a private communication to me Dr David Grimes of Blackburn Hospital, which is an area of the UK that receives low levels of sunlight and UVB, has reported on 1,073 cases that were referred to him over 2 years and where he routinely measured the 25(OH)D.

- 460 were below 10 ng/mL, implying bone pains
- 815 were below 20 ng/mL, implying health disadvantages
- 162 were between 20 ng/mL and 30 ng/mL
- 96 were above 30 ng/mL
- 32 were above 40 ng/mL

This means that only 3% of his patients (32/1073) had 25(OH)D levels above the minimum levels of 40 ng/mL set by the 16 scientists in the USA.

687 of his patients were of ethnic origin, typically from Bangladesh or Pakistan. This means that they have a darker skin, which needs more sunlight than people with lighter skins to create the same amount of 25(OH)D. They also tend to wear clothes that covers their skin more than his English patients, with the result that they have received less sunlight.

Dr David Grimes has written a book: **Vitamin D and cholesterol – The importance of the sun**
I have given a copy of this book to the Secretariat of SACN at Aviation House and I recommend it to every member of SACN

1. Reference Level of 25-hydroxy-vitamin D

Professor Cedric Garland & Carole Baggerley have published a chart at www.grassrootshealth.org which shows:

Disease Incidence Prevention by Serum 25 (OH)D Level

This shows a common baseline of 25 ng/mL, plus the serum levels at which the chance of the incidence of various illnesses is improved when the 25(OH)D level is increased above that baseline.

They quote studies which suggest that:

- All cancers would be reduced by 35% if 25(OH)D was at 40 ng/mL
- Breast Cancer would be reduced by 83% if 25(OH)D was at 52 ng/mL
- Ovarian Cancer would be reduced by 17% if 25(OH)D was at 48 ng/mL
- Colon Cancer would be reduced by 60% if 25(OH)D was at 44 ng/mL
- Non-Hodgkins Lymphoma would be reduced by 18% if 25(OH)D was at 39 ng/mL
- Type-1 Diabetes would be reduced by 66% if 25(OH)D was at 53 ng/mL
- All Fractures would be reduced by 50% if 25(OH)D was at 45 ng/mL
- Women would have 72% less falls if 25(OH)D was at 32 ng/mL
- Multiple Sclerosis would be reduced by 54% if 25(OH)D was at 55 ng/mL
- Heart Attacks in men would be reduced by 30% if 25(OH)D was at 35 ng/mL
- Kidney Cancer would be reduced by 49% if 25(OH)D was at 48 ng/mL
- Endometrial Cancer would be reduced by 37% if 25(OH)D was at 51 ng/mL

Based on the recommendations of the 16 USA scientists I suggest that SACN establishes a minimum reference level of 40 ng/mL, with a recommended target level of 60 ng/mL

“By following the recommendations (of the 16 scientists) it is estimated that we could have an ANNUAL 67-70% reduction in the incidence of Breast Cancer, Type 1 Diabetes, Multiple Sclerosis and Colon Cancer within only 5 years !”

This significance of these recommendations is so significant that I implore you to take urgent action.

2. Safe Upper Intake Levels of Vitamin D3

The 16 scientists in the USA state that:

“New evidence indicates that the intake (of vitamin D3) should be 2,000 IU per day. Intake of 2000 IU/day is the current upper limit of the (USA) National Academy of Sciences, Institute of Medicine, Food and Nutrition Board. New evidence also indicates that the upper limit should be raised substantially.”

Hathcock et al report on 23 studies that show no toxicity below 200 ng/mL or 30,000 IU per day.

Robert Heaney, Michael Holick & Reinhold Vieth each state that they have never seen toxicity below 30,000 IU per day

- *and recommend that a new **Safe Upper Intake Level** is set at 10,000 IU per day.*

In 1999 the American Journal of Clinical Nutrition published a paper by Reinhold Veith with the title: *Vitamin D supplementation, 25-hydroxyvitamin D concentrations, and safety*. He reviews the whole subject of sunlight and vitamin D and cites many studies of the effects of vitamin D supplementation. He states:

“If there is published evidence of toxicity in adults from an intake of 250µg (10,000 IU) per day, and that is verified by the 25(OH)D concentration, then I have yet to find it.”

If SACN recommends a **Safe Upper Intake Level** of 250µg (10,000 IU) per day then UK healthcare professionals will be enabled to make an informed choice up to that level without fear of criticism, accusations of malpractice or litigation.

I consider that it is very important for SACN to raise the **Safe Upper Intake Level** to enable doctors, nurses, dieticians and healthcare professionals to prescribe higher doses of vitamin D3, even for test purposes.

*I request that SACN urgently recommends a temporary **Safe Upper Intake Level** of vitamin D3 of 250µg (10,000 IU) per day, with a regular public update of any news about toxicity.*

3. Recommendations for the general adult public about supplementation

The 16 scientists in the USA recommend that every adult should take 2,000 IU per day.

This is likely to raise the mean 25(OH)D levels by 20-40 ng/mL, depending on the weight of the person and the colour of their skin

Based on the information published at www.grassrootshealth.org this would have a dramatic effect on the public health of the UK.

Dr James Dowd has suggested that the amount should be adjusted based on the existing 25(OH)D level and the weight of the person and the colour of their skin.

SACN could provide guidance for both healthcare professionals and the general public about the quantity and type of supplementation with vitamin D3 required to achieve the recommended target levels of 25(OH)D.

4. **Recommendations for women who are pregnant or wish to become pregnant**

Dr Bruce Hollis has been studying 25(OH)D levels in pregnant women for many years and has published many papers.

In October 2009 he gave a presentation at the conference of the Vitamin D Society in Bruges, Belgium in which he said:

“I’m telling every pregnant mother I see to take 4,000 IU and every nursing mother to take 6,400 IU of vitamin D3 a day,” said Dr Hollis. “I think it is medical malpractice for obstetricians not to know what the vitamin D level of their patients is. This study will put them on notice.”

Dr David Grimes of Blackburn Hospital has written a book: *Vitamin D and cholesterol – the importance of the sun*. Chapter 58 is: *The Maternal Factor and Non-Genetic Inheritance*. He suggests that women who wish to become pregnant would benefit by boosting their 25(OH)D level before conceiving. He claims that they are more likely to produce healthier babies and have an easier delivery.

SACN may wish to invite Dr David Grimes to present his data and his opinions to them.

I suggest that SACN advise all UK doctors to follow the advice of Dr Hollis to test the 25(OH)D level of every pregnant woman.

Based on the advice of Dr Cedric Garland, my personal suggestion is UK doctors are advised to prescribe sufficient Vitamin D3 supplements to achieve a new target level of 60 ng/mL as early as possible in the pregnancy.

This is likely to have a significant effect on the long-term health of every child born in the UK.

5. Recommendations for supplementation for new-born children

In 2001 The Lancet published a paper by Dr Elina Hypponen et al in which they studied the supplementation of vitamin D3 in Finland over the years 1966 to 1997 and reported on the incidence of Type-1 Diabetes.

They reported that: *“in 1964 the recommended dose had been reduced from 4,000-5,000 IU per day to 2,000 IU per day, and in 1975 it was further reduced to 1,000 IU. In 1992 the dose was reduced again to 400 IU.”*

In December 2008, Dr Frank Garland gave a presentation about vitamin D and Diabetes at a conference at the University of California at San Diego.
(Video recording available at www.ucsd.tv)

He quoted the data from Elina Hypponen and matched it with the increase in Type-1 Diabetes in Finland from 1966-1997.

*In particular he showed how the rate of **increase** of Type-1 Diabetes matched the **reduction** in the recommended dose of Vitamin D.*

Dr Frank Garland is one of the scientists who has signed the Call to Action

SACN is requested to suggest that the 25(OH) of new-born babies should be tested and the dose of Vitamin D3 adjusted accordingly.

In the absence of a test, the recommended dose of Vitamin D3 for mothers and new-born babies should be increased significantly

The data from Finland suggests that there may be significant long-term health benefits for all children in the UK by increasing the recommended dose to at least 2,000 IU and preferably 5,000 IU per day.

Dr Oliver Gillie has published a book: **Sunlight, Vitamin D & Health** which contains a chapter by Dr Elina Hypponen: **Vitamin D insufficiency in the UK and diabetes**

Dr Elina Hypponen works at University College Hospital in London and SACN may wish to invite her, and Dr Oliver Gillie, to give evidence to them.

**6. Recommendations of the EU CPME policy document:
“Vitamin D nutritional policy in Europe” (CPME 2009/179 Final EN)**

At the Board Meeting of the Standing Committee of European Doctors (www.cpme.eu) in Winchester on October 24, 2009, CPME adopted the following policy document:

“Vitamin D nutritional policy in Europe” (CPME 2009/179 Final EN)

SACN is invited to review and comment on this document

Conclusions

Professor Cedric Garland, Professor at the University of California, San Diego, Department of Family & Preventive Medicine, Moores Cancer Center, has stated:

“By following the recommendations (of the 16 scientists) it is estimated that we could have an ANNUAL 67-70% reduction in the incidence of Breast Cancer, Type 1 Diabetes, Multiple Sclerosis and Colon Cancer within only 5 years !”

This statement is so significant that I implore you to take urgent action.

In February 2009 the American Annals of Epidemiology published a paper by Sharif Mohr:
A Brief History of Vitamin D and cancer Prevention

His conclusions were:

The history of the role of vitamin D in human health is rich and much of that history is yet to be written not only by scientists, but by policy makers with the vision and leadership necessary to bridge the gap between research and policy.

I invite you and the Scientific Advisory Committee on Nutrition to have the vision and to take the leadership necessary to make a significant difference to the public health of the whole United Kingdom.

In addition, the cost-benefit to the United Kingdom economy would be so significant that it would save the National Health Service billions of pounds.

Yours sincerely

Rufus A Greenbaum



PS: I have given a copy of the book by Dr David Grimes:

Vitamin D and Cholesterol, the importance of the sun
to the secretariat of the Scientific Advisory Committee on Nutrition at Aviation House

I have also delivered a CD-ROM containing over 70 relevant documents

Mr Rufus A Greenbaum
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11 January 2010

Dear Mr Greenbaum,

Re: Your letter dated 9 December 2009

Thank you for your letter, dated 9 December 2009, which called on the Scientific Advisory Committee on Nutrition to revise its current advice on Vitamin D. Thank you also for the material that accompanied your letter, including David Grimes' book and the documents on CD-Rom.

The Scientific Advisory Committee on Nutrition (SACN) is an advisory Committee of independent experts that provides advice to Health Departments and the Food Standards Agency (FSA), as well as other Government Agencies and Departments. Our remit includes matters concerning nutrient content of individual foods, advice on diet and the nutritional status of people in the UK.

In your letter you raise a number of issues relating to reference levels for serum vitamin D and recommendations on vitamin D supplementation. The Committee has taken note of your concerns and wishes to assure that it is aware of the issues that have been raised in your letter.

The Committee last considered the evidence on vitamin D and health in its 2007 position statement entitled 'Update on Vitamin D'. The position statement concluded that the evidence was insufficient to amend the existing advice on vitamin D requirements and it reiterated the Dietary Reference Values (DRVs) for vitamin D as first set in 1991 by COMA, the Committee on Medical Aspects of Food Policy (DoH, 1991) (please see table below).

Dietary Reference Values for Vitamin D ($\mu\text{g}/\text{d}$)

Age	Reference Nutrient Intake (RNI)
0 - 6 months	8.5
7months - 3 years	7
4 - 64 years	0*
65+ years	10
Pregnancy	10
Lactation	10
*Certain at risk groups may require dietary vitamin D	

The Committee is aware that a significant proportion of the UK population have low vitamin D status which increases their risk of vitamin D deficiency, and that this is of

particular concern for all pregnant and breastfeeding women, infants, older people, black and ethnic minority groups and those at risk of inadequate sunlight exposure.

Current government policy on vitamin D is therefore to recommend dietary supplements of vitamin D to certain population subgroups at risk of deficiency, including:

10µg vitamin D per day for all pregnant and breast-feeding women; to ensure their own requirement for vitamin D is met and to build adequate fetal stores for early infancy;

7-8.5µg per day for children up to the age of five years; although the rates of deficiency in children are relatively low, as shown by the National Diet and Nutrition Survey (NDNS), this could be attributed to the great proportion of infants on infant formula which is fortified with vitamin D. As a precautionary measure, Health Departments recommend supplementation for all children under 5 years to safeguard infant health when it is difficult to be certain that the diet provides a reliable source;

10µg vitamin D per day for people aged over 65 years or confined indoors, particularly vulnerable groups who for cultural reasons may have limited exposure to sunlight or wear concealing clothing

In its “Update on vitamin D” the Committee recommended that a clear public health strategy and guidance on vitamin D supplementation is implemented to overcome poor understanding and advice among health professionals and at risk groups of the population. This advice has been taken up by UK Health Departments which continue to raise awareness of the importance of vitamin D amongst at risk groups and health professionals, through its mainstream communications, and by building on current promotional activity on Healthy Start vitamins for women and children, which contain vitamin D.

The Committee is aware of accumulating evidence that suggests vitamin D may be important for health outcomes other than the growth and development of bones, including osteoporosis, several forms of cancer, multiple sclerosis, type I diabetes, cardiovascular disease and tuberculosis. Based on our review for ‘Update on vitamin D’, we concluded that research of association with chronic disease is inconclusive at present and that there is no clear relationship between biochemical measures of vitamin D status and clinical outcomes.

In evaluating the scientific evidence on vitamin D (and other nutritional risk assessments) the Committee applies the SACN Framework for evaluation of evidence, http://www.sacn.gov.uk/framework_for_evaluation_of_evidence.html. In nutritional risk assessments SACN consider all types of scientific evidence. However, the SACN framework places less emphasis on observational data, as it cannot provide strong evidence to confirm the existence of a cause and effect relationship. In contrast, data provided by randomised, controlled trials (RCTs) can provide much stronger evidence of a cause and effect relationship. The Committee’s approach to reviewing scientific evidence is broadly consistent with the approach used by other organizations including the NHS Centre for Review and Dissemination who use a study design hierarchy to rank levels of evidence with experimental studies such as RCTs at level 1 (the highest level), Quasi-experimental studies (without randomisation) at level 2, controlled observational studies including cohort and case-control studies at level 3 and observational studies without control groups at level 4.

To increase the evidence base for future risk assessments by the Committee the Agency has funded three research projects within its **N05 research programme** (N05062/63 & 64) which consider the respective contribution that sunlight exposure and diet make to vitamin D status. The outcomes of these projects were considered at an Agency organised workshop in November 2009. This workshop was also attended by several SACN members. The workshop proceeding will be published in the British Journal of Nutrition later this year. The Agency also funds a further two projects which examine the link between vitamin D status and health (N05079 & 81).

In addition, the Agency's National Diet and Nutrition Survey (NDNS) regularly assesses the vitamin D status of the UK population. In November 2009 the Agency also held a two day workshop to determine which analytical method should be used in the NDNS, to obtain more reliable data on the vitamin D status of the UK population.

The Committee wishes to assure you that newly emerging research will be monitored for evidence that may contribute to future nutritional risk assessments on vitamin D. A reconsideration of the available evidence will be in the Committee's future work programme.

The Committee notes your request to discuss your letter at our next meeting, which will take place on 24 February 2009. I will bring your letter to the attention of members. The issues you raise will certainly be considered in detail by a working group when the Committee initiates a nutritional risk assessment on vitamin D.

Based on the current evidence, SACN has recommended that a clear public health strategy and guidance on vitamin D supplementation is implemented to overcome poor understanding and advice among health professionals and at risk groups of the population.

The Committee wishes to assure you that this remains a live item on our work programme.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'A. A. Jackson', with a horizontal line underneath.

Professor Alan A Jackson
Chair of the Scientific Advisory
Committee on Nutrition (SACN)

References

Department of Health (1991) Dietary Reference Values for Food Energy and Nutrients for the United Kingdom no. 41. London: HMSO.

Scientific Advisory Committee on Nutrition (2007) Update on Vitamin D. London: TSO