

CONSULTATION RESPONSE

BY ALLIANCE FOR NATURAL HEALTH INTERNATIONAL

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RE Draft Vitamin D and Health report, Scientific Advisory Committee on Nutrition (SACN)

23 September 2015

We welcome the SACN's recognition that sunlight alone is not sufficient to maintain serum 25(OH)D concentrations at or above 25 nmol/L during winter. We also note the SACN's recognition that, on average, around 20% people in the UK have circulating levels below this level, this proportion rising considerably among particular at risk groups, most notably up to 79% of pregnant women (as summarised in paragraph 779 of SACN draft report).

These serious deficiencies occur in full knowledge that the consumption of vitamins D2 and D3 in the diet (conventional foods, fortified foods and food supplements) represent, at least during the winter months, the only means for elevating circulating levels.

Making matters worse still, the level of 25 nmol/L is arbitrary and is widely accepted, including by the US Institute of Medicine, as at least half of the optimum level. The SACN, while considering the recent US Institute of Medicine (IOM) review of the Dietary reference Intake, has discounted the IOM's key public health policy interpretation, which points to a circulating (serum) level of 50 nmol/L 25 (OH) D.¹

Accordingly, it is our view that the SACN has cherry-picked data and arguments to support a public health recommendation, without considering the implications of alternate scenarios, which should include raising the Reference Nutrient Intake (RNI) for vitamin D above the proposed 10 µg/d for the UK population aged 4 years and over.

We summarise below our main concerns with the existing draft, that we implore the SACN to take into account prior to finalisation of its recommendations. These concerns are so serious as to completely disqualify the proposed 10 µg/d which remains unchanged since the COMA recommendation of 1991.

Missing data

The following key positive systematic reviews, meta-analyses or studies are entirely missing from the SACN report, despite the SACN's remit to include all available data since its previous review published in 2007:

¹ Institute of Medicine, Food and Nutrition Board. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: National Academy Press, 2010.

Hypocalcemia due to hypoparathyroidism

Systematic review and meta-analysis: The authors concluded that there was a reduced incidence of hypocalcemia.

Pisaniello D, et al. Which therapy to prevent post-thyroidectomy hypocalcemia? *G Chir.* 2005; 26(10): 357-61.

Roh JL, Park CI. Routine oral calcium and vitamin D supplements for prevention of hypocalcemia after total thyroidectomy. *Am J Surg.* 2006 Nov;192(5): 675-8.

Psoriasis

Systematic review and meta-analysis: vitamin D as effective as topical corticosteroids or overall evidence of benefit.

Mason AR, et al. Topical treatments for chronic plaque psoriasis. *Cochrane Database Syst Rev.* 2009 Apr 15;(2):CD005028.
doi: 10.1002/14651858.CD005028.pub2.

Meeuwis KA, et al. Genital psoriasis: A systematic literature review on this hidden skin disease. *Acta Derm Venereol.* 2011 Jan;91(1):5-11. doi: 10.2340/00015555-0988.

Naldi L, Rzany B. Psoriasis (chronic plaque). *BMJ Clin Evid.* 2009 Jan 9;2009. pii: 1706.

Ashcroft DM, et al. Systematic review of comparative efficacy and tolerability of calcipotriol in treating chronic plaque psoriasis. *BMJ.* 2000 Apr 8;320(7240):963-7.

Fall prevention

Meta-analysis: Vitamin D more effective at preventing falling.

Richy F, Dukas L, Schacht E. Differential effects of D-hormone analogs and native vitamin D on the risk of falls: a comparative meta-analysis. *Calcif Tissue Int.* 2008 Feb; 82(2): 102-7. doi: 10.1007/s00223-008-9102-0. Epub 2008 Feb 1.

Osteoporosis (general)

Systematic review: Found that vitamin D was effective in osteoporosis treatment in combination with calcium.

Vallecillo G, Díez A, Carbonell J, González Macías J. Treatment of osteoporosis with calcium and vitamin D. *Med Clin (Barc).* 2000 Jun 10;115(2):46-51.

Autoimmune diseases

Systematic review and meta-analysis: Potential for benefit for autoimmune diabetes.

Li X, Liao L, Yan X, Huang G, Lin J, Lei M, Wang X, Zhou Z. Protective effects of 1-alpha-hydroxyvitamin D3 on residual beta-cell function in patients with adult-onset latent autoimmune diabetes (LADA). *Diabetes Metab Res Rev.* 2009 Jul;25(5):411-6. doi: 10.1002/dmrr.977.

Bone density (paediatric)

Systematic review: Monotherapy with vitamin D (alfacalcidol) was effective for

secondary osteoporosis in children, but the combination with risedronate was even more effective in improving BMD.

Iwasaki T, Takei K, Nakamura S, Hosoda N, Yokota Y, Ishii M. Secondary osteoporosis in long-term bedridden patients with cerebral palsy. *Pediatr Int*. 2008 Jun;50(3):269-75. doi: 10.1111/j.1442-200X.2008.02571.x.

Bone diseases (kidney disease or kidney transplant)

Systematic review: Treatment with a bisphosphonate, vitamin D sterol, or calcitonin after kidney transplant may prevent bone disease.

Palmer SC, McGregor DO, Macaskill P, Craig JC, Elder GJ, Strippoli GF. Meta-analysis: vitamin D compounds in chronic kidney disease. *Ann Intern Med*. 2007 Dec 18;147(12):840-53.

Palmer SC, Strippoli GF, McGregor DO. Interventions for preventing bone disease in kidney transplant recipients: a systematic review of randomized controlled trials. *Am J Kidney Dis*. 2005 Apr;45(4):638-49.

Cancer prevention (breast, colorectal, prostate, other)

Meta-analysis: Incidence of cancer was reduced only when used in combination with calcium.

Chung M, Lee J, Terasawa T, Lau J, Trikalinos TA. Vitamin D with or without calcium supplementation for prevention of cancer and fractures: an updated meta-analysis for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2011 Dec 20;155(12):827-38. doi: 10.7326/0003-4819-155-12-201112200-00005.

Corticosteroid induced osteoporosis

Meta-analysis: Vitamin D analogs studied. Prevented bone loss in corticosteroid and non-corticosteroid users.

Richy F, Ethgen O, Bruyere O, Reginster JY. Efficacy of alphacalcidol and calcitriol in primary and corticosteroid-induced osteoporosis: a meta-analysis of their effects on bone mineral density and fracture rate. *Osteoporos Int*. 2004 Apr;15(4):301-10. Epub 2004 Jan 22.

Skin condition

Systematic review: Calcipotriol may be effective for skin diseases other than psoriasis.

Holm EA, Jemec GB. The therapeutic potential of calcipotriol in diseases other than psoriasis. *Int J Dermatol*. 2002 Jan;41(1):38-43.

2. Vitamin D intake studies

The Institute of Medicine and other authorities have established that comparing vitamin D intake estimates from foods and food supplements to serum 25(OH)D concentrations is problematic.¹ Among the reasons for this is that comparisons are made on group means as opposed to individuals, while skin colour, age, the amount and quality of sun exposure and genetic polymorphisms affecting vitamin D binding protein (VBP) and vitamin D receptor (VDR) affect serum 25(OH)D status. Furthermore, caution has to be taken with regard to older data that may not fully take

into account increased adiposity of contemporary populations, a another factor that decreases vitamin D status.

3. Vitamin D polymorphisms

The SACN review considers over 20 studies that include the effects on polymorphisms affecting the vitamin D binding protein (DBP) or vitamin D receptor genes. However, it also ignores their impact suggesting, contrary to the findings of several of the studies, that “The functional relevance of these polymorphisms is not clear” (paragraphs 70 and 740).

4. Effects of increased body weight and use of sunscreens

These factors have not been adequately considered in terms of the public health recommendation and RNI proposal of 10 µg/d.

5. Ignoring expert evidence

The SACN has ignored expert evidence. Such evidence is crucially important given the limitations of randomised controlled trials, especially for vitamin D, given complications and confounding linked to factors such as UVB sunlight exposure (and use of sunscreens), ethnicity, dietary intake (food sources) and genetic polymorphisms. In such circumstances, observational evidence and the decades of clinical experience offers invaluable information about the pharmacokinetics of vitamin D supplementation, alongside benefits (and risks). Such expert evidence, recognised even by scientists at the US FDA and College of Pharmacy and Nutrition, University of Saskatchewan, Canada, suggests that optimal serum 25(OH)D are at least three times greater than that proposed by the SACN.²

6. Differences between vitamin D2 and D3

The SACN has not provided different intake thresholds for vitamin D2 and vitamin D3 despite recognising a substantial body of evidence suggesting that vitamin D2 has an inferior capacity to raise serum levels as compared with vitamin D3.

7. Cancer

The SACN does not recognise generalised relationships between vitamin D status and certain cancers despite copious evidence to the contrary.³

8. Difference levels have not been given for different racial groups

² Calvo MS, Whiting SJ. Public Health Strategies to Overcome Barriers to Optimal Vitamin D Status in Populations with Special Needs. *J. Nutr.* 2006; 136(4): 1135-1139.

³ Garland CF, Garland FC, Gorham ED, Lipkin M, Newmark H, Mohr SB, Holick MF. The role of vitamin D in cancer prevention. *Am J Public Health.* 2006; 96(2): 252-61.

No variation in dark-skinned individuals despite extensive evidence levels of circulating 25(OH)D are around half that of whites given similar UVB exposure.^{4, 5, 6}

9. Overlapping risk and benefits

There should be recognition that the highest intake among these populations most in need of a given nutrient may overlap with those most susceptible to the mildest adverse effect. These relationships are likely common with many if not most micronutrients, as well as to conventional foods (e.g. wheat, dairy, soya, nuts).⁷

10. Conclusions

It is apparent that in order to continue to justify a 10 µl/d limit for adults, the SACN has chosen to ignore a rash of data showing the both benefits at intake levels (notably from supplements) well above this level (over 25 times greater).

The SACN considers as adequate a serum 25(OH)D level of 25nmol/L which is *half* that considered adequate by the US Institute of Medicine of 50nmol/L (=20ng/mL). Institute of Medicine, Food and Nutrition Board. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: National Academy Press, 2010.

It has failed to provide sufficient flexibility to deal with the requirements of individuals that might be outside the norms in relation to factors such as genetic polymorphisms (vitamin D receptor or binding protein) or adiposity.

There is insufficient evidence provided that intakes of 10 µl/d can lead to serum 25(OH)D levels of 25nmol/L in at risk individuals in a given population, let alone twice this level.

Please do not hesitate to contact us should you require further information.

⁴ Aloia JF, Mikhail M, Pagan CD, Arunachalam A, Yeh JK, Flaster E. Biochemical and hormonal variables in black and white women matched for age and weight. *J Lab Clin Med.* 1998 Nov; 132(5): 383-9.

⁵ Nesby-O'Dell S, Scanlon KS, Cogswell ME, Gillespie C, Hollis BW, Looker AC, Allen C, Dougherty C, Gunter EW, Bowman BA. Hypovitaminosis D prevalence and determinants among African American and white women of reproductive age: third National Health and Nutrition Examination Survey, 1988-1994. *Am J Clin Nutr.* 2002 Jul; 76(1):187-92.

⁶ Looker AC, Dawson-Hughes B, Calvo MS, Gunter EW, Sahyoun NR. Serum 25-hydroxyvitamin D status of adolescents and adults in two seasonal subpopulations from NHANES III. *Bone.* 2002 May; 30(5):771-7.

⁷ Verkerk RH. The paradox of overlapping micronutrient risks and benefits obligates risk/benefit analysis. *Toxicology.* 2010 Nov 28;278(1):27-38. doi: 10.1016/j.tox.2010.02.011. Review.

Signed:

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