

ESTABLISHING BENEFIT FROM VITAMIN D SUPPLEMENTATION – ADHERENCE TO DEFINED CRITERIA AND TARGETING OF HIGH-RISK GROUPS ESSENTIAL?-20A122

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Introduction

Vitamin D deficiency is the commonest nutritional deficiency globally, however optimal dosage regimens remain uncertain (1). It is estimated that approximately one billion people worldwide have vitamin D deficiency, and vitamin D insufficiency affects nearly 50% (2). As evident in Table 1 there is a lack of consensus regarding daily requirements of vitamin D as well as recommended vitamin D levels. This poster highlights a review of intervention studies and proposes a more targeted approach to prospective vitamin D intervention research in the future.

Outcome of Intervention Studies

Almost all major studies of vitamin D therapy have recruited patients unselected for baseline vitamin status.

Bollard et al carried out a systematic review and metaanalysis regarding the effects of vitamin D on MSK health. There was no effect on total fracture, hip fracture or falls(3).

Pittas et al investigated in pre-diabetic patients whether supplementation lower the risk of developing diabetes. There was no significant reduction in risk of diabetes. (4)

Sallid et al, analysed the effect of high-dose vitamin D on CV risk factors. There was a significant decrease in LDL but also in HDL and TC:HDL ratios didn't vary significantly. (5) CAPS (Clinical Trial of Vitamin D3 to Reduce Cancer Risk in Postmenopausal Women) and VITAL(Vitamin D and Omega-3 trial) didn't show any significant reduction in cancer incidence. (6,7)

Toxicity and Adverse Effects of Vitamin D/Calcium

Some of discrepancy around Vitamin D levels are around concerns of toxicity when supplementing/replacing it. Table 2 highlights potential adverse effects from studies. Tebben et al suggest that the prevalence of toxicity is unknown. (12)

A 16 year retrospective study deduced it was quite rare with four patients developing toxicity one of whom was normocalcemic.(13)

Suggested approach to prospective vitamin D intervention research

Heaney proposed basal nutrient status should be measured, used as inclusion for entry and recorded in report.(14)

Baseline Vit D should be measured, sufficient dose to influence plasma levels should be given with confirmation of same by repeat plasma levels.

Targeting patients with Vit D deficiency/insufficiency will enhance ability to identify benefit of replacement therapy.

Dyer et al have postulated targeting specific older populations e.g. LTC facilities.(15)

Studies of Vit D effects on MS and IBD have been elusive despite well described association of these diseases with Vit D deficiency

Table 1

Organisation	Age	RDA	Serum vit d target(nmol/L)	UL
Institute of medicine	51-70	600IU	50	4000IU
Endocrine Institute	51-70	1500-2000IU	75	10000IU
Scientific Advisory Committee on Nutrition	51-70	10ug	25	n/a

Table 2

Study	Adverse Event	Potential Mechanism of Harm	Study population	Dosage(IU)
Dawson-Hughes et al (11)	Higher % of falls in those receiving high dose vitD	Needs further investigation	M/F >70, home dwelling with low trauma fall in past year	24000IU vit D3 vs 60000 IU vit D3.
Sanders et al(10)	Annual high dose cholecalciferol-15% more falls, 26%more #s.	Up-regulation of Cyp24 with large single bolus	Women >70 in southern Victoria, Aus with RF for fracture.	Cholecalciferol 500000 vs placebo
Smith et al (9)	Increased hip/femur # with bolus vs control group.	Increased falls following improved mobility/analgesia with normalisation of vit D..	M+F>75yo from Gp registers	300000 ergocalciferol(vit D2) annually over 3 years.
Malihi et al (8)	Increased risk of hypercalcemia (borderline) from long term vit d supplementation	Enhanced intestinal calcium absorption and bone mineralisation.	Meta-analyses (15 studies)	Vit D2 for one year(1 study), rest gave vit D3.

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