

Indian Children need Higher Vitamin D Supplementation

The recent Indian Academy of Pediatrics (IAP) guidelines on prevention and treatment of vitamin D and calcium deficiency make an interesting read [1]. The committee has done well to formulate guidelines by deriving information from western recommendations and scant Indian data. However, we wish to point out that the proposed recommendations for vitamin D supplementation do not adequately address the issue of prevention of vitamin D deficiency in Indian children. The doses of vitamin D recommended in the western guidelines are based on their local data. Such data are virtually non-existent in our country [2]. Extrapolation of western data for Indian guidelines is inappropriate for several reasons. After a similar oral dosing, Indians do not achieve the same serum vitamin D concentrations as their western counterparts; an observation similar to their reduced ability for cutaneous vitamin D synthesis [2]. Although the reasons for variations in response to oral vitamin D are unknown at present, it is suggested that differences in vitamin D binding and degradation, and single nucleotide polymorphisms located in or near genes involved in synthesis, transport, activation, or degradation of vitamin D may influence serum vitamin D concentrations [2]. Evidently, there is a need to acquire data on efficacy and safety of graded supplementation doses of vitamin D (400, 1000, 2000, 4000 IU/day) in Indian children [3]. Based on their recent data, the US Endocrine Society has suggested daily vitamin D intakes of 400-1000 IU and 600-1000 IU in children <1 year and >1-18 years of age, respectively [3]. Similar higher intakes are recommended for Central European children. Furthermore, in view of the recently discovered statistical error in the estimation of the recommended dietary allowance (RDA) for vitamin D, the guidelines by the US Institute of Medicine on vitamin D supplementation are likely to change in near future to almost 3-times the current RDA [4]. Recent studies in Indian children suggest that oral doses of up to 2000 IU/day are barely able to maintain vitamin D sufficiency [3]. In both these studies, the apparently high doses of vitamin D were given for durations of 6-12 months, and were reported safe [3]. In another study, a dose of 60,000 IU (monthly or two-monthly) achieved vitamin D sufficient status in only 47% girls at the end of one year [5]. In this context, the currently recommended doses of 400 and 600 IU/day may be inadequate to maintain vitamin D sufficiency for musculoskeletal health in Indian children. For non-skeletal benefits, even higher doses are required for

which the evidence at present is not robust as the committee has rightly observed.

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AUTHORS' REPLY

To determine vitamin D requirements, dose response studies with various doses are essential. There is very little data on dose response to vitamin D in the Indian context. However, several studies have reported that if vitamin D is given together with calcium, and the compliance is adhered to, there is a significant increase in vitamin D concentrations [1].

The action of vitamin D on bone is mainly through the absorption of calcium. One of the major problems in the Indian children is poor intake of calcium and low calcium-to-phosphorous ratio. As this is very specific to Indian circumstances, the guidelines have stressed that adequate intake of calcium at all age groups is critical. We have considered data pertinent to the Indian situation while drafting the guidelines. Another set of recent Global guidelines specifically meant for children has Indian representation, and they also considered Indian data [2].

While many reasons have been suggested for low vitamin D concentrations in Indians, lack of exposure to sunlight (the main source of vitamin D in Indians) is likely to be a major contributor. Thus, for the prevention of vitamin D deficiency in Indians, the ICMR report on recommended daily intake (RDI) for Indians states that