Vitamin D review

Use of vitamin D in clinical practice.
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The recent discovery—from a meta-analysis of 18 randomized controlled trials—that supplemental cholecalciferol (vitamin D) significantly reduces all-cause mortality emphasizes the medical, ethical, and legal implications of promptly diagnosing and adequately treating vitamin D deficiency. Not only are such deficiencies common, and probably the rule, vitamin D deficiency is implicated in most of the diseases of civilization. Vitamin D's final metabolic product is a potent, pleiotropic, repair and maintenance, seco-steroid hormone that targets more than 200 human genes in a wide variety of tissues, meaning it has as many mechanisms of action as genes it targets. One of the most important genes vitamin D up-regulates is for cathelicidin, a naturally occurring broad-spectrum antibiotic. Natural vitamin D levels, those found in humans living in a sun-rich environment, are between 40-70 ng per ml, levels obtained by few modern humans. Assessing serum 25-hydroxy-vitamin D (25(OH)D) is the only way to make the diagnosis and to assure treatment is adequate and safe. Three treatment modalities exist for vitamin D deficiency: sunlight, artificial ultraviolet B (UVB) radiation, and vitamin D3 supplementation. Treatment of vitamin D deficiency in otherwise healthy patients with 2,000-7,000 IU vitamin D per day should be sufficient to maintain year-round 25(OH)D levels between 40-70 ng per mL. In those with serious illnesses associated with vitamin D deficiency, such as cancer, heart disease, multiple sclerosis, diabetes, autism, and a host of other illnesses, doses should be sufficient to maintain year-round 25(OH)D levels between 55-70 ng per mL. Vitamin D-deficient patients with serious illness should not only be supplemented more aggressively than the well, they should have more frequent monitoring of serum 25(OH)D and serum calcium. Vitamin D should always be adjuvant treatment in patients with serious illnesses and never replace standard treatment. Theoretically, pharmacological doses of vitamin D (2,000 IU per kg per day for three days) may produce enough of the naturally occurring antibiotic cathelicidin to cure common viral respiratory infections, such as influenza and the common cold, but such a theory awaits further science.