

VITAMIN D: CLINICAL RELEVANCE, ANALYTICAL ISSUES.

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“Vitamin D” (VTD) is a lipophilic pro-hormone that can be found in two forms. Indeed, vitamin D3 (cholecalciferol), the “natural” form, can be synthesized after sun exposure of the skin or found in some (rare) foods whereas vitamin D2 (ergocalciferol) is the form found in different plants. In some countries the two forms can be found in pharmacological supplements whereas vitamin D3 is preponderant in some others. The role of VTD in maintaining bone health has been known for decades. Recently, however, observational studies, and more and more interventional studies, have raised the importance of a significant VTD supplementation for not-only skeletal benefits. For example, VTD has been found to play an important role in preventing cancers, risk of falls in the elderly, blood pressure, cardiovascular diseases, diabetes, infections and even total mortality. Everybody agrees now to use serum 25(OH)-vitamin D (25(OH)D) as the correct functional indicator of VTD status and to use a cut-off target instead of health-based reference range. However, the opinion of the experts is not unanimous on the value of this cut-off (20 ng/mL or for the majority of them, 30 ng/mL). According to these cut-offs values, VTD deficiency is very common in our populations. The recently published studies are clearly now in favour of a systematic vitamin D supplementation in some categories of patients at high risk to be deficient. Thus, renal insufficient patients, dark-skinned or veiled subjects, individuals ≥ 65 years old and institutionalized subjects should be systematically treated. Some other categories of patients would benefit from a 25(OH)D determination in order to adapt their dose, or monitor their 25(OH)D level. This mainly concerns patients at risk of osteoporosis, pregnant or lactating women, transplanted patients or patients suffering from chronic kidney disease, obese individuals, patients suffering from diabetes, primary hyperparathyroidism, hypertension or auto-immune diseases, patients with bone/muscle pain or under corticosteroid treatment. From our point of view, newborns, children and teenagers should also benefit from a systematic supplementation. Generally, a daily dose of 800 IU of vitamin D3 is recommended. However, this dosage can be largely increased (up to 5000 IU/day) in some particular situations. However, one should not forget that all these cut-off values have been established with the DiaSorin RIA kit. Their extrapolation to other techniques remains questionable. From an analytical point of view, 25(OH)D determination is a difficult task. Amongst others, we have recently highlighted different problems, like a lack of 25(OH)D2 recognition for some kits or a clear overestimation in the highest range of the values with others. Unfortunately, these analytical problems have led to different hazardous or irrelevant clinical decision. Nevertheless, according to the UK-DEQAS proficiency testing, the largest trial to date, the discrepancies observed between the different techniques are not (globally) so bad. This should, of course, be interpreted in the light of other situations where cut-offs values have been established, whatever the assay used (growth hormone or parathormone, for example).

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