

# Nephroceuticals

## FAQs on Vitamin D

*Q: How do you measure vitamin D? What is considered deficient?*

A: Body stores of vitamin D are measured by blood levels of 25-hydroxy-vitamin D (25(OH)-vitamin D). Levels over 30ng/ml are considered sufficient (but may require maintenance doses of vitamin D to sustain these levels); 15-30ng/ml are considered insufficient (and require supplementation); and under 15ng/ml is considered deficient (and also require supplementation).

*Q: Is nutritional (25-hydroxy Vitamin D) deficiency/insufficiency really a problem?*

A: Worldwide, it is estimated that 1 billion people are vitamin D deficient or insufficient<sup>1</sup>. In CKD, prevalence rates range from 70% to over 90%<sup>2,3,4</sup>. Given the wide variety of tissues that have vitamin D receptors and the potential health complications linked to vitamin D, maintaining adequate vitamin D levels is an important part in the overall care of people with CKD.

*Q: I give my patients activated vitamin D (Rocaltrol, Hectorol, Zemplar, etc). Isn't that sufficient?*

A: There are many tissues in the body that have their own 1-alpha hydroxylase that is able to activate vitamin D. Nutritional vitamin D (like cholecalciferol) is required to generate activated vitamin D which acts locally to produce tissue-specific effects. Activated vitamin D when administered as a medication has a much shorter half life and is present in much smaller amounts – insufficient to fuel the extra-renal 1-alpha hydroxylase. This is reinforced in the KDOQI guidelines, which say “[c]alcitriol or another 1a-hydroxylated vitamin D sterol *should not be used to treat vitamin D deficiency.*”

*Q: Is 1000IU daily really enough? I think you need more.*

There is evidence that 800-1000 IU daily of cholecalciferol is sufficient to increase 25-hydroxyvitamin D levels and to maintain those levels in CKD<sup>5</sup> and ESRD<sup>6</sup>. In addition,

successful trials looking at outcomes such as fracture prevention and fall prevention (muscle strength) also used doses of about 1000 IU/day<sup>7,8</sup>. If additional vitamin D is necessary, separate supplementation can be given **in addition** to ProRenal<sup>®</sup> vitamins.

*Q: Is it safe to give active Vitamin D and nutritional Vitamin D?*

A: There are studies in patients with ESRD on hemodialysis showing that combined treatment with low and high dose cholecalciferol with activated vitamin D (alphacalcidol or calcitriol) was safe, with hypercalcemia occurring very rarely<sup>9,10</sup>. However, continued monitoring of calcium and phosphorus would be prudent to avoid complications.

*Q: Why are you using cholecalciferol instead of ergocalciferol?*

A: There is a substantial amount of evidence showing the superiority of cholecalciferol over ergocalciferol. Cholecalciferol leads to greater rises in 25-hydroxy vitamin D levels<sup>11</sup> and maintains those levels better over time<sup>12</sup>. In addition, all successful fracture prevention trials used cholecalciferol<sup>13</sup>. There are specific reasons why cholecalciferol may be more efficacious, including higher affinities for the 25-hydroxylase enzyme, higher affinity for vitamin D receptors and vitamin D binding proteins, and differences in deactivation compared to ergocalciferol<sup>14</sup>. Because of these reasons, a number of experts in the field of Vitamin D recommend using cholecalciferol over ergocalciferol<sup>1,14</sup>.

## References:

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