

Checklist for planning and critiquing vitamin D studies:

- ❑ **Did the study subjects receive at least 4,000-10,000 IU per day?** If not, then the study likely used inadequate dosage to produce optimal physiologic effects.
- ❑ **Is the duration of the study at least 6-9 months?** If not, then body stores of vitamin D were likely not replaced in time for clinical effect to occur. Daily supplementation with vitamin D requires 120 days (4 months) to reach plateau of serum 25-OH-vitamin D levels; therefore, the replenishment or "induction" phase of any clinical trial must have a duration of at least 4 months or—alternatively—use supranormal doses of vitamin D3 in order to more rapidly achieve optimal serum levels and tissue saturation.
- ❑ **Did the study use vitamin D3 (cholecalciferol) rather than fungally-derived ergocalciferol?** Ergocalciferol is not a human nutrient, and it is more toxic and less effective than is cholecalciferol.
- ❑ **Was the product validated for potency?** If not, then the intervention may have failed due to an erroneously produced or falsely labeled product.
- ❑ **Were serum 25-OH-vitamin D levels measured?** If not, the product potency and nutrient absorption were not ensured.
- ❑ **Did serum 25-OH-vitamin D levels enter the optimal range at least 2-6 months before the end of the study?** If not, then the patients may have been vitamin D deficient for the entire duration of the study.
- ❑ **Were the patients deficient at the start of the study and then robustly replaced with vitamin D?** If not, then "deficiency→deficiency" is not a competent study design and intervention, nor is "replete→replete." The appropriate intervention is to change deficiency to repletion.
- ❑ **Vitamin D supplementation should be stopped for roughly 20-30 days before serum testing because 25-hydroxyvitamin D3 (calcidiol) has a half-life of 15 days.** The goal with serum testing of 25-OH-vitamin D levels is to assess tissue saturation, not acute absorption. Testing vitamin D serum levels within a few days of vitamin D supplementation is more likely to reflect absorption and hepatic conversion rather than providing the more important and more accurate assessment of vitamin D tissue stores.