Vitamin D: A Powerful Pro-Hormone (R.9)

From adorable infants through to our beloved elderly family, everyone should have his or her vitamin D level checked at least once a year, preferably twice. There is widespread debate in the medical community about "optimal" Vitamin D levels, and as with most nutrients, the answer likely varies for each unique person given their genetics, environment, lifestyle, and existing health challenges. However, clinical research is starting to uncover that significantly elevated Vitamin D might have as much negative consequence as too little.

Generally, I aim to support my clients to maintain their Vitamin D in the 40-60 ng/ml range. Lower levels are associated with a variety of types of immune *deficiency*. However, higher levels can be immuno*suppressive*; this may be useful short-term in the case of autoimmune or other aggressive, inflammatory disease. However, if there is an infectious component of the disease root causes, then Vitamin D will likely need to come down eventually to more moderate levels in order to allow optimal immune functioning to eradicate root causes. We need to remember that Vitamin D is a steroid.

Below are conditions that have been *associated* with serum vitamin D (25-OH) levels as noted in various clinical studies:

< 10 ng/mL	**Notably deficient**
< 15 ng/mL	Risk of rickets
< 20 ng/mL	75% greater risk of colon cancer
< 30 ng/mL	**Suboptimal/Deficient**
	Increased calcium loss from bones, osteoporosis
	Poor wound healing
	Increased muscle pain
	Increased joint and back pain
	Greater risk of depression
	Increased diabetes
	Increased schizophrenia
	Increased migraines
	Increased autoimmune disease (lupus, scleroderma, thyroiditis)
	Increased allergies
	Increased preeclampsia
	Increased inflammation
40–60ng/mL	**Likely Optimal levels, *varying by individual***
< 34 ng/mL	Twice the risk of heart attack
< 36 ng/mL	Increased high blood pressure
< 40 ng/mL	Three times the risk of multiple sclerosis
	Support for Cancer treatment
> 50 ng/mL	50% reduction in breast cancer, decreased risk of all solid cancers
70-80 ng/mL	Slowing of cancer growth in patients with diverse types of cancer

> 100 ng/mL	**Increased risk of toxic symptoms (e.g. hypercalcemia),** especially if not matched with adequate Vitamin K2 and magnesium intake. Vitamin A also required.

Natural Production of Vitamin D

Your skin makes vitamin D from a precursor to cholesterol when it is exposed to a pinking dose of sunlight. How much vitamin D you make depends on your age, your genetics, how much skin is uncovered, and your skin tone. Without sunblock and with arms and legs exposed, your skin will typically make 10,000 to 15,000 units of vitamin D in one pinking sun exposure, on average. (Sunblock with an SPF of more than 15 blocks 100% of vitamin D production in the skin.) Also, the darker your skin, the more sun exposure you need to make enough vitamin D.

Depending on where you live (latitude), you may only get enough radiation from the sun for vitamin D production between May and October (e.g. New England in the US). These populations definitely need supplement support from October through April. Genetic variants can render even those living year-round in sunny Arizona and Florida with rock-bottom levels. Testing is the only way to know your needs for sure. We also have varying levels of Vitamin D receptor sensitivity, so paying attention to your symptoms and overall wellness is also key to understanding when your body needs support.

Vitamin D Supplementation Doses

We each have unique physiology. Some of us can metabolize and retain Vitamin D quite well while others require very large doses to maintain even baseline healthy levels. Make sure you **check your levels after no more than 2-3 months of supplementing** with a given IU level per day. It's also key to make sure your magnesium levels are replete before starting a Vitamin D supplement (look for RBC magnesium to be at least in the upper half of the reference range, ideally in the upper third!).

Normal dosing of vitamin D depends on your blood levels and your medical history. Those with impaired digestion and absorption of fats (and thus fat-soluble vitamins) may also need sublingual forms or higher doses to gain optimal blood levels. Be sure to consult your practitioners for your unique needs.
Treatment doses for blood level ranges I frequently recommend for my clients are as follows:

- < 10 ng/ml: Ramp up to 10,000IU D3 and take daily for 30 days then 4000IU daily. Test in ~8 wks.
- 10-20 ng/ml: Ramp up to 8000IU D3 and take daily for 2 weeks then 4000IU daily. Test in ~8 wks.
- 20-30 ng/ml: Ramp up to 2000IU D3 daily. Test in ~8 wks.
- 30-40 ng/ml: 2,000IU D3 daily.

Note: introducing Vitamin D via a "ramp up" is an important step. This can start with 1000-2000 IU/day and increase by another increment every ~5 days. We ramp doses slowly to allow the body (and its Vitamin D receptors) to adjust gradually. We also recommend avoiding Vitamin D2 fortification in processed foods (this inactive form takes up receptors that we want active Vitamin D to have available to use and thus drive cellular effects!).

The body uses nutrients in a symphony – not a solo. If you are taking a vitamin D supplement, **adequate Calcium, Vitamin A, Vitamin K, and Magnesium intake are also required.** Increasing Vitamin D increases the body's need for all of these nutrients. Particularly for people trying to regain bone density, Vitamin K2 supplementation along with D is vital. Magnesium is required for the body to convert Vitamin D into its final, usable form; it's also a very common nutrient deficiency, especially for those with cardiovascular or blood sugar control (e.g. diabetics). Please don't hesitate to ask if you have questions about the most effective or reliable tests for gauging your sufficiency in these key nutrients or what forms of these nutrients are most bio-available.

While vitamin D toxicity is not as common as many think, it is important to ramp up your dosage incrementally. Often, signs of "toxicity" are actually caused by depletion of one or more of the interdependent nutrients mentioned above. However, individuals with sarcoid, tuberculosis, hyperparathyroidism, lymphoma, and kidney disease should only take Vitamin D with physician's involvement, given increased risk of their blood calcium level becoming too high.

Rechecking Your Vitamin D Level

Again, low Vitamin D is a missed opportunity for your body. But too much of a good thing is not better! It is recommended that you recheck your vitamin D level within 2-3 months after starting supplementation, depending on your medical and health condition. Other potentially useful lab tests for blood/urine calcium, RBC magnesium, and parathyroid hormone level (PTH) may be done during the recheck if calcium level or metabolism or use is a medical concern.

With appreciation to some information adapted from 2009 guidelines from **The Institute of Functional Medicine.**
These are additional references for further reading which might be of interest:

- Chris Kresser well summarizes some appropriate concerns about excess Vitamin D in this blog article: https://chriskresser.com/vitamin-d-more-is-not-better/ .
- If you want a more scientific understanding of Vitamin D, this will perhaps be of interest from the Institute of Medicine: https://www.ncbi.nlm.nih.gov/books/NBK56061/#ch3.s11 .
- An excellent podcast delving into the topic of optimal Vitamin D levels being moderate vs. high for most individuals: https://chrismasterjohnphd.com/2016/11/22/dr-michael-ruscio-and-i-discuss-optimal-vitamin-d-status/?_sf_s=Vitamin+D .
- This clinical write-up explores the topic of the synergistic activity between Vitamins D, A, and K: https://www.ncbi.nlm.nih.gov/pubmed/17145139 .
- Insight into the role of high Vitamin D as immunosuppressive (especially of the innate immune system): https://www.sciencedaily.com/releases/2008/01/080125223302.htm