



Vitamin D can help your body control inflammation and prevent “cytokine storms” that are believed to be an important contributor to COVID-19 deaths. (puhhha/Shutterstock)

MIND & BODY PREMIUM

The Effects of Vitamin D and COVID-Related Outcomes

An overwhelming volume of research makes it clear that this hormone produced in our skin can save lives

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Do you know your vitamin D level? If not, getting your blood tested—and optimizing your levels—is one of the simplest and most straightforward steps you can take to improve your health, including in relation to COVID-19. [Vitamin D](#), as an [immunomodulator](#), is a perfect candidate for countering the immune dysregulation that’s common with COVID-19.

As early as November 2020, it was known that there were striking differences in

vitamin D status among people who had asymptomatic COVID-19 and those who became severely ill and required intensive care unit (ICU) care. [In one study](#), 32.96 percent of those with asymptomatic cases were vitamin D deficient, compared to 96.82 percent of those who were admitted to the ICU for a severe case.

COVID-19 patients who were deficient in this inexpensive and widely available vitamin had a higher inflammatory response and a greater fatality rate. The Indian study authors recommended [“mass administration of vitamin D supplements to populations at risk for COVID-19,”](#) in a study published in [Scientific Reports](#), but this hasn't happened, at least not in the United States.

As of April 21, the date the U.S. National Institutes of Health (NIH) last updated its COVID-19 treatment guidelines/vitamin D page, the agency stated, [“There are insufficient data to recommend either for or against the use of vitamin D for the prevention or treatment of COVID-19.”](#) As you'll see in the paragraphs that follow, however, the evidence for its use is beyond overwhelming.

Vitamin D Therapy Reduces COVID's Inflammatory Storm

[Vitamin D](#) has [multiple actions on the immune system](#), including enhancing the production of antimicrobial peptides by immune cells, reducing damaging pro-inflammatory cytokines, and promoting the expression of anti-inflammatory cytokines. Cytokines are a group of proteins that your body uses to control inflammation.

If you have an infection, your body will release cytokines to help combat inflammation, but sometimes, it releases more than it should. If the cytokine release spirals out of control, the resulting “cytokine storm” becomes dangerous and is closely tied to [sepsis](#), which [may be an important contributor to the death of COVID-19 patients](#).

Many COVID-19 therapeutics are focused on viral elimination instead of modulating the hyperinflammation often seen in the disease. In fact, uncontrolled immune response has been suggested as a factor in disease severity, making

immunomodulation “an attractive potential treatment strategy,” wrote researchers from Singapore in a [study](#) published in [Nutrition](#).

In [one study](#) published in Scientific Reports in May, researchers investigated the effects of Pulse D therapy—daily high-dose supplementation (60,000 IUs) of vitamin D—for eight to 10 days, in addition to standard therapy, for COVID-19 patients [deficient in vitamin D](#). Vitamin D levels increased significantly in the vitamin D group—from 16 ng/ml to 89 ng/ml—while inflammatory markers significantly decreased, without any side effects.

“Vit.D acts as a smart switch to decrease the Th1 response and pro-inflammatory cytokines while enhancing the production of anti-inflammatory cytokines in cases of immune dysregulation. It is pertinent to note that SARS-CoV-2 virus activates Th1 response and suppresses Th2 response,” they wrote.

They concluded that Pulse D therapy could be safely added to COVID-19 treatment protocols for improved outcomes.

Vitamin D₃ Reduces COVID-19 Deaths, ICU Admissions

[Another group of researchers](#) in Spain gave vitamin D₃ (calcifediol) to patients admitted to the COVID-19 wards of Barcelona’s Hospital del Mar. About half the patients received vitamin D₃ in the amount of 21,280 IU on day one plus 10,640 IU on days 3, 7, 15, and 30. Those that received vitamin D fared significantly better, with only 4.5 percent requiring ICU admission compared to 21 percent in the no-vitamin D group.

[Vitamin D treatment](#) also significantly reduced mortality, with 4.7 percent of the vitamin D group dying at admission, compared to 15.9 percent in the non-vitamin D group.

“In patients hospitalized with COVID-19, calcifediol treatment significantly reduced ICU admission and mortality,” the researchers wrote in the [Journal of Clinical Endocrinology & Metabolism](#). In response to the findings, [British MP David Davis](#)

tweeted:

“This is a very important study on vitamin D and Covid-19. Its findings are incredibly clear. An 80 percent reduction in need for ICU and a 60 percent reduction in deaths, simply by giving a very cheap and very safe therapy – calcifediol, or activated vitamin D ... The findings of this large and well-conducted study should result in this therapy being administered to every COVID patient in every hospital in the temperate latitudes.”

At one point, the [United Kingdom’s National Health Service](#) was offering free vitamin D supplements to people at high risk from COVID-19, but they [also state](#), like the U.S. NIH, “there is currently not enough evidence to support [taking vitamin D](#) to prevent or treat COVID-19.”

While their guidance does urge Britons to take a vitamin D supplement between October and March “to keep your bones and muscles healthy,” it only recommends a dose of 400 IUs a day, which is easily 20 times lower than what most people require for general health and optimal immune function.

Dose matters when it comes to COVID-19 recovery. In a [randomized clinical trial in Saudi Arabia](#), researchers compared daily supplementation with either 5,000 IUs or 1,000 IUs oral vitamin D3 among patients with suboptimal vitamin D levels hospitalized for mild to moderate COVID-19. Those in the 5,000 IUs group had a significantly shorter time to recovery for cough and loss of the sense of taste compared to the 1,000 IUs group.

According to the researchers, “The use of 5000 IU vitamin D3 as an adjuvant therapy for COVID-19 patients with suboptimal vitamin D status, even for a short duration, is recommended.”

Hospitalized With COVID-19? Ask for Vitamin D

The evidence continues to grow that treatment with vitamin D leads to significantly better outcomes for people hospitalized with COVID-19. In another example from

Spain, hospitalized COVID-19 patients who received vitamin D₃ had a mortality rate of 5 percent, compared to 20 percent for those who did not. The [researchers explained](#):

“The protective effect of calcifediol [activated vitamin D] remained significant after adjustment for multiple confounder factors related to severity disease even after selecting those subjects who were older (≥ 65 years) and had worse oxygen saturation levels at admission (< 96 percent).”

Similarly, 76 consecutive patients hospitalized with COVID-19 at [Reina Sofia University Hospital in Córdoba](#), Spain, were randomized to receive either standard care or standard care plus vitamin D₃ to rapidly increase vitamin D levels.

Of 50 treated with vitamin D, only one person was admitted to the ICU. Of 26 who were not treated with vitamin D, 13 (50 percent) required admission to the hospital. [Researchers noted](#), “Calcifediol seems to be able to reduce the severity of the disease.”

Further: “Of the patients treated with calcifediol, none died, and all were discharged, without complications. The 13 patients not treated with calcifediol, who were not admitted to the ICU, were discharged. Of the 13 patients admitted to the ICU, two died and the remaining 11 were discharged.”

In a [previous review](#), the researchers explained that vitamin D has favorable effects during [both the early viraemic phase of COVID-19 as well as the later hyperinflammatory phase](#), including for acute respiratory distress syndrome (ARDS), a lung condition that’s common in severe COVID-19 cases, which causes low blood oxygen and fluid buildup in the lungs.

“Based on many preclinical studies and observational data in humans, ARDS may be aggravated by vitamin D deficiency and tapered down by activation of the vitamin D receptor,” they wrote in [a study published in The Journal of Steroid Biochemistry and Molecular Biology](#) “Based on a pilot study, oral calcifediol may be the most promising approach.”

Even [regular “booster” doses](#) of vitamin D, regardless of baseline levels, appear to

be effective in [reducing the risk of mortality](#) in people admitted to the hospital with COVID-19, particularly for the elderly.

“This inexpensive and widely available treatment could have positive implications for the management of COVID-19 worldwide, particularly in developing nations,” [researchers from the United Kingdom noted](#).

Low Vitamin D Levels May Increase Death Risk

A [systematic review and meta-analysis](#) published in the Journal of Endocrinological Investigation included 13 studies involving 2,933 COVID-19 patients. Vitamin D was a clear winner, with use in COVID-19 patients significantly associated with reduced ICU admission and mortality, along with a reduced risk of adverse outcomes, particularly when given after COVID-19 diagnosis.

When it comes to data to support the use of vitamin D for COVID-19, 87 studies have been performed by 784 scientists. [The results show](#):

- 53 percent improvement in 28 treatment trials
- 56 percent improvement in 59 sufficiency studies
- 63 percent improvement in 16 treatment mortality results

A number of clinical trials are also [underway](#), looking further into the use of vitamin D for COVID-19, including one by [Harvard Medical School researchers](#) investigating whether taking daily vitamin D reduces COVID-19 disease severity in those newly diagnosed as well as reducing the risk of infection in household contacts.

‘A Simple and Inexpensive Measure’

Some positive advances have already occurred that could make this potentially lifesaving strategy more widely used. [The French National Academy of Medicine](#) issued a statement in May 2020, referring to the use of vitamin D as a “simple and inexpensive measure that is reimbursed by the French National Health Insurance” and detailing the importance of vitamin D for COVID-19.

For COVID-19 patients over 60, they recommend vitamin D testing and if deficiency is found, a bolus dose of 50,000 to 100,000 IU. For anyone under the age of 60 who receives a positive COVID-19 test, they advise taking 800 IUs to 1,000 IUs of vitamin D per day. [A vitamin D review paper](#) published in the journal *Nutrients* in April 2020 recommends higher amounts, however, stating:

“To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D₃ for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d.

“The goal should be to raise 25(OH)D concentrations above 40-60 ng/mL (100-150 nmol/L). For treatment of people who become infected with COVID-19, higher vitamin D₃ doses might be useful.”

The best way to know how much vitamin D you need is to have your levels tested. Data from GrassrootsHealth’s D*Action studies suggest the optimal level for health and disease prevention is between 60 ng/mL and 80 ng/mL, while the cutoff for sufficiency appears to be around 40 ng/mL. In Europe, the measurements you’re looking for are 150 to 200 nmol/L and 100 nmol/L, respectively.

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