

# Vitamin D deficiency

*This pro-hormone impacts health*

BY GREGORY PLOTNIKOFF, MD, MTS, FACP

Allina Health tested 13,500 employees for vitamin D status in 2014. Following Endocrine Society guidelines, 60 percent of Allina employees were low (<30 ng/ml), 30 percent were very low (<20 ng/ml), and 6 percent were profoundly low (<10 ng/ml).

In February 2020, researchers worldwide began publishing data connecting low vitamin D status with COVID-19 severity, including mortality. By early July 2020, six endocrinological medical societies, the French National Academy of Medicine and numerous editorials in peer-reviewed medical journals had called for increased awareness of vitamin D status and, if indicated, vitamin D supplementation, as a low-cost, low-risk resilience factor for potentially reducing COVID-19 morbidity and mortality.

In April 2021, Oireachtas, the Irish Senate, affirmed these COVID medical concerns and stated with urgency: “Every adult in Ireland should start taking vitamin D supplements due to alarming levels of deficiency in the State.” It outlined additional measures needed to protect the elderly, minorities and frontline healthcare workers from their increased risk of vitamin D deficiency.

In 2021, physician competency includes knowledge that vitamin D is actually not a vitamin but a seco-steroid hormone derived from cholesterol. Vitamin D receptors are found in nearly every tissue, including T and B cells, bone marrow, brain, lung, heart and endothelium.

Vitamin D binding results in up- or down-regulation of numerous genes that go beyond the regulation of calcium and phosphate metabolism. For example, vita-

min D regulates both innate and adaptive immunity, antimicrobial peptide production (cathelicidin and defensins), inflammatory status (Th1 suppression), coagulation and lung surfactant synthesis, as well as the renin-angiotensin system (lung permeability), including ACE2 receptor status.

Vitamin D deficiency is a well-documented risk factor for ICU admission, ARDS, ECMO utilization and ICU mortality in addition to all-cause mortality. CDC NHANES data demonstrates that those at greatest risk for vitamin D deficiency are the very same people at highest risk for

COVID-19 hospitalization and mortality: the elderly, obese, persons of color and those with diabetes and hypertension.

In 2021, are you low? How do you know? Are any of your patients low? How do you know? **MM**

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