

High doses of vitamin D for critically ill patients yield minimal benefit

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A major study conducted by the National Heart, Lung and Blood Institute's Prevention and Early Treatment of Acute Lung Injury (PETAL) Network into whether high doses of vitamin D can improve health outcomes for critically ill patients has concluded that such supplements do not reduce mortality or improve other non-fatal outcomes.

The results of the Vitamin D to Improve Outcomes by Leveraging Early Treatment (VIOLET) study, which included contributions from over 200 researchers at 44 [academic medical centers](#), are published in the online issue of the *New England Journal of Medicine*. The lead author of the article is Adit Ginde, MD, MPH, professor and vice chair of the Department of Emergency Medicine at the University of Colorado School of Medicine.

For this study, Ginde and Daniel Talmor, MD, MPH, chair of the Department of Anesthesia, Critical Care & Pain Medicine at Beth Israel Deaconess Medical Center in Boston, served as co-chairs of the protocol committee for the National Heart, Lung and Blood Institute (NHLBI) PETAL Network.

"The VIOLET study did not show benefit from vitamin D supplementation in this population of critically ill patients" said Ginde. "However, the study gives us a model to intervene in the earliest stage of critical illness, which will yield improved care and better health for our patients in the future."

In this case, the researchers sought to determine whether vitamin D supplementation could reduce morbidity and mortality in critically ill patients. A deficiency of vitamin D is a common risk factor for worse outcomes in critically ill patients. While vitamin D is most known for strong bone formation, it also helps to fight infections, is a potent anti-inflammatory agent, and is essential for lung development and function.

"We wanted to study whether rapidly correcting vitamin D deficiency could improve outcomes for patients with critical illness," Talmor said. "Previous studies suggested that this treatment might reduce mortality, so we wanted to definitively show whether high doses of vitamin D could reduce all-cause, all-location 90-day mortality in those critically ill patients."

In this study, the NHLBI PETAL Network conducted a controlled study of patients who needed admission into intensive care units. Among those cases, patients had pneumonia, sepsis, shock, respiratory failure, and other critical conditions.

"This is the kind of important question that the PETAL network was designed to answer efficiently," said James Kiley, Ph.D., director of the Division of Lung Diseases at the NHLBI. "This trial could not have been performed without the successful collaboration between emergency medicine and [critical care](#) that the PETAL network facilitated."

From April 2017 through July 2018, 2,624 patients at 44 hospitals consented to participate in the study. Of those, 1,360 screened as vitamin D

deficient and ultimately 1,078 were included in the final analysis. About half received vitamin D and half received a placebo, and the vitamin D group achieved rapid correction of vitamin D deficiency in the blood. Patients were followed for 90 days, and researchers found no difference in mortality rates, hospital length of stay, or time on mechanical ventilation between the two groups.

"While we hoped that vitamin D supplementation might prove beneficial to critically ill patients, our large study does not support early testing for or treatment of [vitamin D](#) deficiency in those patients," Ginde said.

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