Link Between Vitamin D and ICU Outcomes Unclear

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We can "stop putting money on vitamin D" to help patients who require critical care, said Todd Rice, MD.

"Results from vitamin D trials have not been uniformly one way, but they have been pretty uniformly disappointing," Rice, from Vanderbilt University Medical Center in Nashville, Tennessee, reported at CHEST 2020.


Todd Rice

Low levels of vitamin D in critically ill COVID-19 patients have been reported in numerous recent studies, and researchers are looking for ways to boost those levels and improve outcomes.

We are seeing "the exact same story" in the critically ill COVID-19 population as we see in the general ICU population, said Rice. "The whole scenario is repeating itself. I'm pessimistic."

Still, vitamin D levels can be elevated so, in theory, "the concept makes sense," he said. There is evidence that, "when given enterally, the levels rise nicely" and vitamin D is absorbed reasonably well." But is that enough?

When patients are admitted to the ICU, some biomarkers in the body are too high and others are too low. Vitamin D is often too low.

So far, though, "supplementing vitamin D in the ICU has not significantly improved outcomes," said Rice.

In the Vitamin D to Improve Outcomes by Leveraging Early Treatment (VIOLET) trial, Rice and his colleagues found no statistical benefit when a 540,0000 IU boost of vitamin D was administered to 2624 critically ill patients, as reported by *Medscape Medical News*.

"Early administration of high-dose enteral vitamin D_3 did not provide an advantage over placebo with respect to 90-day mortality or other nonfatal outcomes among critically ill, vitamin D–deficient patients," the researchers write in their recent report.

In fact, VIOLET ended before enrollment had reached the planned 3000-patient cohort because the statistical analysis clearly did not show benefit. Those enrolled were in the ICU because of, among other things, pneumonia, sepsis, the need for mechanical ventilation or vasopressors, and risk for acute respiratory distress syndrome.

"It doesn't look like vitamin D is going to be the answer to our critical care problems," Rice told *Medscape Medical News*.

Maintenance Dose Needed?

One theory suggests that VIOLET might have failed because a maintenance dose is needed after the initial boost of vitamin D.

In the ongoing VITDALIZE trial, critically ill patients with severe vitamin D deficiency (12 ng/mL or less at admission) receive an initial 540,000 IU dose followed by 4000 IU per day.

The highly anticipated VITDALIZE results are expected in the middle of next year, Rice reported, so "let's wait to see."

"Vitamin D may not have an acute effect," he theorized. "We can raise your levels, but that doesn't give you all the benefits of having a sufficient level for a long period of time."

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