

Early steroids improve outcomes in patients with septic shock

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Some critically ill patients with septic shock need medications called vasopressors to correct dangerously low blood pressure. When high doses of vasopressors are needed or blood pressure isn't responding well,

the steroid hydrocortisone is often used. In this situation, earlier treatment with hydrocortisone reduces the risk of death and other adverse outcomes, reports a study in *SHOCK: Injury, Inflammation, and Sepsis: Laboratory and Clinical Approaches*, Official Journal of the Shock Society.

For critical care specialists, the study provides new evidence on the optimal timing of steroid treatment for patients with vasopressor-dependent septic [shock](#). "If hydrocortisone is to be initiated in patients with septic shock, it should be initiated within at least the first 24 hour after shock onset, and ideally within the first 12 hours," according to the new research by Gretchen L. Sacha, PharmD, and colleagues of the Cleveland Clinic.

New Evidence on Timing of Hydrocortisone for Septic Shock

The study included 1,470 patients with septic shock treated with hydrocortisone at Cleveland Clinic ICUs between 2011 and 2017. All patients required vasopressors to maintain near-normal [blood pressure](#) after fluid resuscitation.

Based on the timing of hydrocortisone therapy, patients were divided into five groups. About 39 percent started hydrocortisone within 0 to 6 hours after shock onset. Other groups started hydrocortisone at 6 to 12 hours (about 16 percent of patients), 12 to 24 hours (18 percent), 24 to 48 hours (13 percent), or after 48 hours (15 percent).

Toward determining the optimal timing of hydrocortisone initiation, time alive and off vasopressors—that is, with blood pressure within the target range—was compared among groups, along with other key outcomes. Patient characteristics varied between groups, including higher sepsis severity scores in patients who started hydrocortisone earlier.

"Despite being more critically ill at baseline, patients who received hydrocortisone earlier had better clinical outcomes when compared to patients who received hydrocortisone later after shock onset," Dr. Sacha and coauthors write. Patients starting steroids earlier not only had more days alive and off vasopressors but also had lower mortality rates. For example, risk of in-hospital death was 48.5 percent for patients initiating hydrocortisone at 0 to 6 hours versus 59.0 percent for those who started treatment after 48 hours.

After adjustment for severity of illness and other factors, earlier hydrocortisone therapy was still associated with increased vasopressor-free days. In this analysis, the odds of death in the ICU were 40 percent lower in patients receiving hydrocortisone within 0 to 6 hours, compared to those who started treatment beyond 48 hours.

Sepsis occurs when the [immune system](#) mounts an overwhelming inflammatory response to infection in the blood or elsewhere in the body. Septic shock is present in patients who develop a sharp drop in blood pressure and other metabolic abnormalities, with a risk of progression to organ failure.

Hydrocortisone is recommended for some patients with vasopressor-dependent septic shock, but there is ongoing debate over how and when it should be used. Some smaller studies have suggested hydrocortisone is more likely to be beneficial when started earlier after shock onset.

The new study, in a relatively large sample of patients, highlights the importance of early hydrocortisone therapy. "Timing of hydrocortisone initiation in patients with [septic shock](#) appears to be crucial and hydrocortisone should be started within the first 12 h after shock onset," Dr. Sacha and coauthors write.

In contrast, starting hydrocortisone after 24 hours does not appear to

have any benefit. The researchers conclude, "Future randomized studies should focus on the timing of hydrocortisone initiation, ensuring initiation within the first 12 hours from shock onset."

More information: Gretchen L. Sacha et al. Evaluation of the Initiation Timing of Hydrocortisone in Adult Patients With Septic Shock, *Shock* (2020). [DOI: 10.1097/SHK.0000000000001651](https://doi.org/10.1097/SHK.0000000000001651)

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