

# Shortage of drug to treat low blood pressure from septic shock associated with increased deaths

21 March 2017

Patients with septic shock admitted to hospitals affected by the 2011 shortage of the drug norepinephrine had a higher risk of in-hospital death, according to a study published online by *JAMA*. The study is being released to coincide with its presentation at the 37th International Symposium on Intensive Care and Emergency Medicine.

Drug shortages are an increasing problem, but their effect on patient care and outcomes has rarely been reported. In February 2011, the U.S. Food and Drug Administration (FDA) announced a severe nationwide shortage of norepinephrine caused by production interruptions at three drug manufacturers that persisted until February 2012.

Norepinephrine is recommended as the first-line vasopressor (a drug that constricts [narrows] blood vessels, increasing blood pressure) for treatment of hypotension (abnormally low [blood pressure](#)) due to [septic shock](#).

Hannah Wunsch, M.D., M.Sc., of Sunnybrook Health Sciences Centre, Toronto, and colleagues assessed changes to patient care and outcomes associated with the 2011 shortage of norepinephrine. The study included 26 U.S. hospitals with a baseline rate of norepinephrine use of at least 60 percent for [patients](#) with [septic shock](#). The study group included adults with septic shock admitted to study hospitals between July 2008 and June 2013 (n = 27,835). Hospital-level norepinephrine shortage was defined as any quarterly (3-month) interval in 2011 during which the [hospital](#) rate of norepinephrine use decreased by more than 20 percent from baseline.

Among the patients with septic shock in hospitals that demonstrated at least one quarter of norepinephrine shortage in 2011, norepinephrine

use declined from 77 percent of patients before the shortage to a low of 56 percent in the second quarter of 2011; phenylephrine was the most frequently used alternative vasopressor during this time.

Compared with hospital admission with septic shock during quarters of normal use, hospital admission during quarters of shortage was associated with an increased rate of in-hospital mortality (9,283 of 25,874 patients [35.9 percent] vs 777 of 1,961 patients [39.6 percent], respectively; absolute risk increase = 3.7 percent).

The authors write that several factors may explain the observed associations between norepinephrine shortage and increased patient mortality, including that other specific vasopressors selected to replace norepinephrine may result in worse outcomes for patients with septic shock, and that observable decreases in [norepinephrine](#) use in the setting of shortage may be a marker of related unmeasured factors that affected patient outcomes, such as the absence of a dedicated shortage pharmacist to optimize distribution of limited supplies, delayed administration of vasopressors, or lack of clinician familiarity with dosing of alternative vasopressor agents.

**More information:** *JAMA*, [DOI: 10.1001/jama.2017.2841](#)

Provided by The JAMA Network Journals

APA citation: Shortage of drug to treat low blood pressure from septic shock associated with increased deaths (2017, March 21) retrieved 22 October 2021 from <https://medicalxpress.com/news/2017-03-shortage-drug-blood-pressure-septic.html>

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