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Article: Time to Treatment and Mortality during Mandated Emergency Care for Sepsis.

Reference: Time to Treatment and Mortality during Mandated Emergency Care for Sepsis.Seymour CW, Gesten F, Prescott HC, Friedrich ME, Iwashyna TJ, Phillips GS, Lemeshow S, Osborn T, Terry KM, Levy MM. N Engl J Med. 2017 May 21. doi: 10.1056/NEJMoa1703058. [Epub ahead of print] PubMed PMID: 28528569.

Question
Does rapid treatment of sepsis improve patient outcomes, specifically in hospital mortality?

Study Design

Multicenter (185 hospitals) retrospective study. Data were obtained from the New York State Department of Health (NYSDOH) database from April 1, 2014, to June 30, 2016. This was following a state requirement in 2013 for hospitals to utilize evidence-informed sepsis protocols.

Method

Sepsis protocols were required to include 3 hour and 6 hour care bundle goals. The 3 hour care bundle goal included blood cultures before antibiotics, lactate level, and broad-spectrum antibiotics. Patients with hypotension or lactate levels greater than 4 mmol/L were required to receive a 30 ml/kg fluid bolus within 6 hours. Patients with persistent hypotension were to receive vasopressors within 6 hours. Additionally, patients were to receive a repeat lactate level within 6 hours. This study included patients that received the sepsis protocol within six hours of hospital arrival and received 3 hour care goals within 12 hours of protocol initiation. On review 98% of patients in the database were confirmed to have sepsis.

Results

The primary outcome of the study was in-hospital mortality. Of the 111,816 patients in the study, 18% were deemed ineligible. Patients who received 3 hour care goals within 3 hours were deemed to have similar characteristics of patients who did not. For each hour patients did not receive the 3 hour care bundle there was an increased mortality risk with odds ratio of 1.04 per hour. For each hour patients did not receive broad-spectrum antibiotics there was also an increased risk of mortality with an odds ratio of 1.04 per hour. Patients who received the 3 hour care bundle late had a 14% increased odds of in-hospital mortality. There was no association with mortality and the time to initiation of fluid bolus in patients who were eligible, if administered within 12 hours.

Discussion

This study suggests that early treatment of severe sepsis and septic shock may be associated with improved mortality. This was not a randomized controlled trial and further study is necessary. Authors were concerned that results concerning fluid administration could be confounded by the tendency for sicker patients to receive fluids earlier and to eventually also expire. The authors were also concerned that results regarding antibiotic administration could be confounded by regional differences in resistance patterns and the appropriateness of broad-spectrum antibiotics.