



The effect of a quantitative resuscitation strategy on mortality in patients with sepsis: A meta-analysis

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Permanent Link: <http://hdl.handle.net/1805/5048>

Link:

Keywords: [sepsis](#) ; [septic shock](#) ; [mortality](#) ; [resuscitation](#) ; [meta-analysis](#)

Date: 2008-10

Cite As:

Jones, A. E., Brown, M. D., Trzeciak, S., Shapiro, N. I., Garrett, J. S., Heffner, A. C., & Kline, J. A. (2008). The effect of a quantitative resuscitation strategy on mortality in patients with sepsis: a meta-analysis. *Critical care medicine*, 36(10), 2734.

Abstract:

Objective Quantitative resuscitation consists of structured cardiovascular intervention targeting predefined hemodynamic end points. We sought to measure the treatment effect of quantitative resuscitation on mortality from sepsis. **Data Sources** We conducted a systematic review of the Cochrane Library, MEDLINE, EMBASE, CINAHL, conference proceedings, clinical practice guidelines, and other sources using a comprehensive strategy. **Study Selection** We identified randomized control trials comparing quantitative resuscitation with standard resuscitation in adult patients who were diagnosed with sepsis using standard criteria. The primary outcome variable was mortality. **Data Abstraction** Three authors independently extracted data and assessed study quality using standardized instruments; consensus was reached by conference. Preplanned subgroup analysis required studies to be categorized based on early (at the time of diagnosis) vs. late resuscitation implementation. We used the chi-square test and I² to assess for statistical heterogeneity ($p < 0.10$, $I^2 > 25\%$). The primary analysis was based on the random effects model to produce pooled odds ratios with 95% confidence intervals. **Results** The search yielded 29 potential publications; nine studies were included in the final analysis, providing a sample of 1001 patients. The combined results

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demonstrate a decrease in mortality (odds ratio 0.64, 95% confidence interval 0.43–0.96); however, there was statistically significant heterogeneity ($p = 0.07$, $I^2 = 45\%$). Among the early quantitative resuscitation studies ($n = 6$) there was minimal heterogeneity ($p = 0.40$, $I^2 = 2.4\%$) and a significant decrease in mortality (odds ratio 0.50, 95% confidence interval 0.37–0.69). The late quantitative resuscitation studies ($n = 3$) demonstrated no significant effect on mortality (odds ratio 1.16, 95% confidence interval 0.60–2.22). Conclusion This meta-analysis found that applying an early quantitative resuscitation strategy to patients with sepsis imparts a significant reduction in mortality.

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