

The role of epinephrine infusion on mortality in critically ill patients A meta-analysis of randomized controlled trials.

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Introduction Epinephrine is frequently used as inotropic agent in critically ill patients requiring hemodynamic support, especially in patients with low cardiac output. However, data from observational trials suggest that epinephrine use is associated with a worse outcome as compared with other vasoactive drugs.

Methods We performed a systematic literature review and meta-analysis of RCTs to investigate the effect of epinephrine administration on outcome of critically ill patients. Two independent investigators searched PubMed, EMBASE and Cochrane central register. Inclusion criteria were: administration of epinephrine as intravenous continuous infusion, patients admitted to an ICU or undergoing major surgery, and randomized controlled trials. Exclusion criteria were: epinephrine administration as repeated boluses (e.g. during cardiopulmonary resuscitation), administration of epinephrine as local infiltration, non-human studies, lack of data for outcome of interest, study published as abstract only, and overlapping population. We calculated individual and pooled risk ratio (RR) for dichotomous outcomes with 95% confidence intervals (CI). We computed mean difference (MD) or standardized mean difference (SMD) with corresponding 95% CI for continuous variables. The primary outcome was mortality at the longest follow-up available. Secondary outcomes included receipt of renal-replacement therapy (RRT), myocardial ischemia, arrhythmias, and length of ICU stay.

Results A total of 1,754 studies were assessed at a title/abstract level, with a total of 13 studies (1,323 patients) finally included in the meta-analysis. We found no difference in all-cause mortality at the longest follow-up available (198/612 [32.4%] in the epinephrine group versus 222/711 [31.2%] in the control group, RR = 0.95; 95% CI 0.82 to 1.10; p = 0.46, I² = 0%). No differences in the need for RRT, incidence of myocardial ischemia, incidence of arrhythmias, and length of ICU stay were observed.

Conclusions Continuous intravenous administration of epinephrine as inotropic/vasopressor agent is not associated with a worse outcome in critically ill patients.

