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## Clinical paper

# The effect of prehospital critical care on survival following out-of-hospital cardiac arrest: A prospective observational study

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## Abstract

**Aim:** To examine the effect of prehospital critical care on survival following OHCA, compared to routine advanced life support (ALS) care.

**Methods:** We undertook a prospective multi-centre cohort study including two ambulance services and six prehospital critical care services in the United Kingdom (UK), between September 2016 and October 2017. Inclusion criteria were adult patients with non-traumatic OHCA treated by either prehospital critical care teams or ALS paramedics. Patients who received prehospital critical care were matched to those receiving ALS using propensity score matching. Primary outcome was survival to hospital discharge; secondary outcome was survival to hospital admission.

**Results:** The primary analysis included 658 patients with OHCA receiving prehospital critical care and 1847 patients receiving ALS care. Rates of survival to hospital discharge (primary outcome) were 11.9% in both groups; rates of survival to hospital admission (secondary outcome) were 34.4% and 27.7% in the prehospital critical care and ALS group, respectively. The corresponding odds ratios for survival to hospital discharge and survival to hospital admission with prehospital critical care were 1.06 (95% confidence interval 0.75–1.49) and 1.39 (95% confidence interval 1.10–1.75), respectively. Results were consistent across subgroups and sensitivity analyses.

**Conclusions:** Despite a positive association with the secondary outcome of survival to hospital admission, prehospital critical care was not associated with increased rates of survival to hospital discharge following OHCA.

**Keywords:** Out-of-hospital cardiac arrest, Prehospital care, Critical care, Emergency medical services