

## Survival Benefit of Physician-Staffed Helicopter Emergency Medical Services (HEMS) Assistance for Severely Injured Patients

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**Purpose:** In the literature, Helicopter Emergency Medical Services (HEMS) assistance resulted in an increased probability of survival for severely injured patients, especially for those suffering from blunt trauma. However, those studies lack statistical power. The aim of the present study with a longer inclusion period and subsequently a larger cohort size was to determine the effect of physician-staffed HEMS assistance on survival of severely injured patients.

**Methods:** All consecutive severely injured trauma patients (ISS >15) between October 1, 2000 and February 28, 2013 were included. Assistance of physician-staffed HEMS was compared to assistance from the ambulance paramedic (ie, EMS group) crew only. A regression model was constructed for calculating the expected survival and survival benefit.

**Results:** A total of 3543 polytraumatized patients with an ISS >15 were treated at the Emergency Department, of whom 2176 patients remained for analysis; 1495 (69%) were treated by EMS only and 681 (31%) patients received additional prehospital care of HEMS. The model with the best fit and diagnostic properties (H-L coefficient 2.959,  $P = 0.937$ ; area under the curve (AUC) 0.888; positive predictive value [PPV] 71.4%; negative predictive value [NPV] 88.0%) calculated that 36 additional patients survived because of HEMS assistance. This resulted in an average of 5.33 additional lives saved per 100 HEMS dispatches for severely injured patients.

**Conclusion:** The present study indicates an additional 5.33 lives saved per 100 dispatches of the physician-staffed HEMS. Given the excellent statistical power of the current study (>90%), physician-staffed HEMS is confirmed to be an evidence-based valuable addition to the EMS systems in saving lives of severely injured patients.