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Effect of Intensity of Care on Death within 1-year Following Traumatic Brain Injury

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ABSTRACT BODY: Purpose: 1) To evaluate the effect of age on intensity of care provided to traumatically brain-injured (TBI) adults; 2) To determine the influence of intensity of care on death within one year post-injury controlling for injury severity, gender and comorbidity. Methods: Retrospective cohort study using the National Study on the Costs and Outcomes of Trauma (NSCOT) data. Risk ratio and Poisson regression analyses were performed using data weighted according to the population of eligible patients. 1776 patients aged 25-84 with TBI were treated in trauma centers located in 14 states. Measurements included injury severity (motor component of Glasgow Coma Scale (GCS), Injury Severity Score, pupillary reactivity, midline shift); intensity of care (use of intracranial pressure monitor, jugular bulb catheter, pulmonary artery (pa) catheter, intubation, mannitol, barbiturate coma, or decompressive craniotomy, critical care consultation, the number of specialty consultations, presence of a do not resuscitate order, and withdrawal of therapy); and death within 1 year. Results: Controlling for injury related factors, gender and comorbidity, as age increased, the overall likelihood of receiving various interventions decreased. After controlling for injury severity, gender and comorbidity, factors associated with increased risk of death within 1-year were: being aged 65-74 (RR 1.44 95% CI 1.17-1.77), aged 75-84 (RR 2.03, 95% CI 1.59, 2.59), mannitol use (RR 1.26, 95% CI 1.06, 1.50), pa catheter use (RR 1.52 95% CI 1.21, 1.90), intubation (RR 2.26 95% CI 1.67, 3.05), the presence of a do not resuscitate order (RR 2.5, 95% CI 1.86, 3.36) and withdrawal of therapy (RR 1.65, 95% CI 1.29, 2.12). In contrast, controlling for other factors, decreased risk of death was associated with a higher number of specialty care consultations (surgical consults RR 0.77, 95% CI 0.62, 0.95; other consults RR 0.41, 95% CI 0.25, 0.69) and the number of non-neurosurgical procedures performed (RR 0.96; 95% CI 0.92, 0.99), and obtaining critical care consultation services (RR 0.84, 95%CI 0.71, 1.0). Conclusions: There is a lower intensity of care provided to older adults with TBI. While the specific contributions of specialists to patient management is unknown, their consultation was associated with decreased risk of death within a year post-injury. It is important that care providers have an increased awareness of the potential contribution of multidisciplinary clinical decision making to patient outcomes in TBI patients.

Financial Disclosure (List all funders who provided support for this research) : Supported in part, by R49/CCR316840, 5 K12 RR023265-03 and the John A. Hartford Foundation.