

## Investigating the “Weekend Effect” in a Serial Prospective Cohort of 29,465 Trauma Patients

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**Purpose:** There is increasing evidence supporting an association between hospital admission during the weekend and a higher risk of death compared with weekday admission. Our primary aim was to explore the association between weekend admission with trauma and the 30-day mortality, and to examine which patient and care-related factors influence this association. The secondary aim was to investigate if early consultant/attending clinician input after admission influenced the risk of 30-day mortality, independent of day of admission.

**Methods:** We performed an outcomes study of all trauma admissions to our Level I trauma center between June 2001 and December 2013 using data collected prospectively. Univariate and multivariate Cox proportional hazards models were used to compare the risk of 30-day mortality for weekend (Friday 18:00 to Monday 7:59) versus weekday admission (Monday 8:00 to Friday 17:59) and the association reported as hazard ratios (HRs). The association between early consultant/attending clinician input irrespective of day of admission and 30-day mortality was determined using multivariate models.

**Results:** For trauma admissions overall, there was no significant association between weekend compared to weekday admission and risk of 30-day mortality (HR 1.04, 95% confidence interval [CI] 0.96 to 1.12). Subgroup analysis demonstrated similar findings for polytrauma admissions (HR 1.07, 95% CI 0.87 to 1.31) and orthopaedic trauma admissions (HR 0.97, 95% CI 0.89 to 1.07). For hip fracture admissions, there was a significantly higher risk of 30-day mortality for patients admitted over the weekend (HR 1.19, 95% CI 1.04 to 1.36). For all cohorts, independent of weekend admission, there was a significant association between early consultant/attending clinician input and decreased risk of 30-day mortality. The corresponding HRs were: 0.799 (95% CI 0.640 to 0.998;  $P = 0.048$ ) for polytrauma admissions, 0.822 (95% CI 0.720 to 0.938;  $P = 0.004$ ) for orthopaedic trauma admissions, and 0.230 (95% CI 0.150 to 0.353;  $P < 0.0001$ ) for hip fracture admissions.

**Conclusion:** With the exception of hip fracture patients there was no increased risk of 30-day mortality for trauma patients admitted at the weekend, suggesting the association is condition-specific. With respect to hip fractures, there is a need to minimize the time between admission and surgery. Early consultant input independently reduces mortality risk and is a key marker of care for trauma patients.