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**TEMPORAL TRENDS IN HOSPITAL MORTALITY AND
EARLY FUNCTIONAL OUTCOMES ASSOCIATED WITH
SEVERE TRAUMATIC BRAIN INJURIES IN CHILDREN,
PENNSYLVANIA 1998–2007**

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10.1136/ip.2010.029215.652

Introduction US paediatric traumatic brain injury (TBI) hospitalisations have been decreasing due mostly to increased admission criteria. Severe TBI (STBI) has not followed this trend. For children (≤ 17) we wanted to quantify trends in hospital mortality and early functional independence measures (FIM) outcomes for STBI in a mature state-wide trauma system.

Methods Trauma registry data were obtained from all Pennsylvania trauma centres from 1998–2007. We included patients with a discharge diagnosis of STBI and Abbreviated Injury Scale Head-neck ≥ 4 . Temporal trends for hospital mortality proportion and discharge FIM (patients ≥ 2) were assessed using multivariate logistic regression adjusted for age, co-morbidities, injury mechanisms, transport, vital signs, severity, hospital stay and trauma centre level.

Results There were 4813 patients meeting the criteria. Annual number of discharges increased (390 in 1998 to 553 in 2007) while the admission rate also increased (13.26 to 19.85/100 000 persons). Most were male and mean age was 9.1 years. Leading mechanisms of injury were motor vehicles, followed by falls and other transport events. Inpatient mortality decreased significantly from 21.3% to 8.9% (mortality trend $\beta = -0.096$, 95%CI -0.058 to -0.135 , $p < 0.001$) and discharge functional status scores improved.

Conclusions Trends for paediatric STBI served by Pennsylvania's mature trauma system showed increases in rates but substantial reductions in inpatient mortality and significant improvements in functional outcome at discharge. While positive from a clinical perspective, these findings imply that child safety programs that use fatal outcomes as evaluation endpoints need to be very cautious about attributing mortality reductions to interventions.