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## Long-term functional outcome following severe childhood traumatic brain injury: results of the prospective longitudinal follow-up of the TGE cohort

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**Introduction:** The aims of this study were to study functional outcome over 24 months following childhood severe traumatic brain injury (TBI); and to determine how initial functional status predicts 7-year intellectual and academic outcomes.

**Patients and Methods:** Children (0–15y) consecutively admitted in a single trauma center, following severe accidental TBI, were included in a prospective longitudinal study (TGE cohort). At 3, 12, 24 months, and 7 years, disability, functional, intellectual, and educational outcomes were assessed (paediatric Glasgow Outcome Scale; GOS-Ped, Paediatric Injury Functional Outcome Scale; PIFOS; Wechsler scales; mainstream school vs special education).

**Results:** 65 children survived (66% males; mean age at injury 8.1y [SD=4.6]; lowest Glasgow Coma Scale 6.1 [1.8]; length of coma 6.6d [4.8]). GOS-Peds indicated severe impairments at 1 month (vegetative state: 8%, good recovery: 6.5%), with significant improvement over time (25% 'good recovery' by 24mo). Functional impairments were severe initially, improved by 3 and 12 months ( $p<0.0005$ ), without subsequent significant progress. At each time-point, PIFOS score was highly correlated to TBI severity (length of coma [ $p<0.0004$ ] and to GOS-Ped scores ( $p<0.0001$ )). 12-month PIFOS score was highly correlated to full-scale IQ at 12, 24 months ( $p<0.0001$ ) and 7 years ( $p<0.004$ ), and significantly predicted the type of education ( $p<0.0001$  at 12 and 24mo;  $p<0.002$  at 7y).

**Conclusion:** Functional status at 1 and 2 years significantly predicts long-term intellectual and educational outcomes. Systematic personalised long-term follow-up should be organised, with increased attention for those with persistent functional impairment 12-months post-injury.