OPTIMIZING LENGTH OF STAY IN POST-ACUTE NEUROREHABILITATION TO ENHANCE FUNCTIONAL AND PSYCHOSOCIAL OUTCOMES

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BACKGROUND

Length of stay (LOS) is a pivotal factor influencing patient recovery in post-acute neurorehabilitation. Shorter admissions may reduce costs and improve efficiency, but they risk limiting comprehensive psychosocial recovery and community reintegration. Conversely, prolonged LOS can provide additional therapeutic opportunities but may result in diminishing returns and higher healthcare costs. Prior literature highlights variability in outcomes by LOS, yet consensus on the optimal duration to balance functional and psychosocial gains is limited. Use of validated outcome measures such as the Mayo-Portland Adaptability Inventory (MPAI-4) for psychosocial functioning and participation[1] and the CMS Section GG Functional Abilities and Goals for mobility and self-care[2] is increasingly recommended to capture the multidimensional nature of recovery. Establishing evidence-based LOS benchmarks is essential for guiding individualized treatment planning, improving patient outcomes, and informing payer policies in rehabilitation settings.[3-4]

OBJECTIVE

To examine whether length of stay (LOS), diagnosis, and discharge location are associated with differential improvements in functional and psychosocial outcomes, as measured by the Mayo-Portland Adaptability Inventory (MPAI) and CMS Section GG Functional Abilities and Goals.

METHODS

Setting: The study was conducted at Nexus Neurorecovery Center in Conroe, Texas, a specialized post-acute neurorehabilitation facility offering interdisciplinary care for patients with traumatic brain injury, acquired brain injury, cerebrovascular accidents, and spinal cord injuries.

Design: This is a retrospective observational cohort study of consecutive admissions between November 2024 and July 2025. Patients were grouped into four LOS categories (<30, 31–60, 61–90, >90 days). Institutional Review Board exemption was obtained, and all data were de-identified prior to analysis.

Participants: Forty-five patients (mean age 54.2 ± 12.6 years; 64% male). Diagnoses: cerebrovascular accident (CVA) (n=24), traumatic brain injury (TBI) (n=11), spinal cord injury (SCI) (n=6), acquired brain injury (ABI) (n=2), and other neurological conditions (n=2).

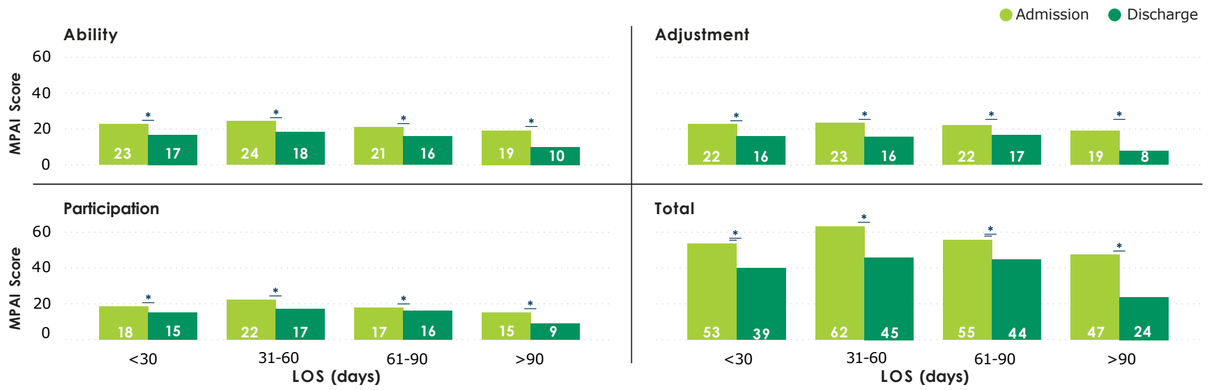
Interventions: All patients received individualized interdisciplinary rehabilitation, including physical therapy, occupational therapy, speech-language pathology, neuropsychology, recreational therapy, and coordinated discharge planning.

Main outcome measures:

- **MPAI:** Ability, Adjustment, Participation, and Total scores, assessed from admission to discharge.
- **CMS Section GG:** Admission-to-discharge functional abilities in self-care and mobility.

RESULTS AND CONCLUSIONS

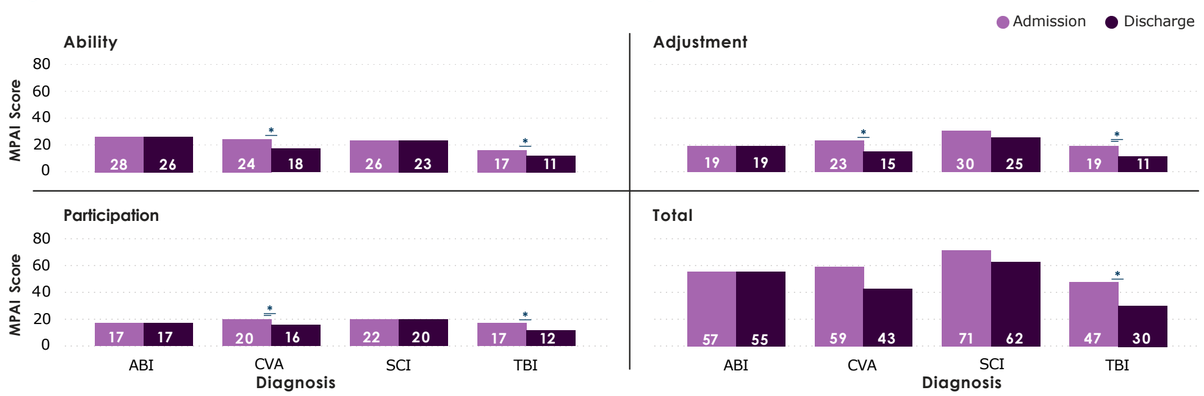
Figure 1: Functional and Psychosocial Outcomes by LOS



MPAI subscale and total scores improved significantly across all LOS categories (all $p<0.05$). The 31–60 day group showed the most consistent and balanced gains across domains ($p<0.001$). Short stays (<30 days) produced smaller psychosocial benefits, while longer stays (61–90 and >90 days) showed selective or diminishing improvements.

Conclusion: These findings support 31–60 days as the most clinically effective LOS window for maximizing outcomes.

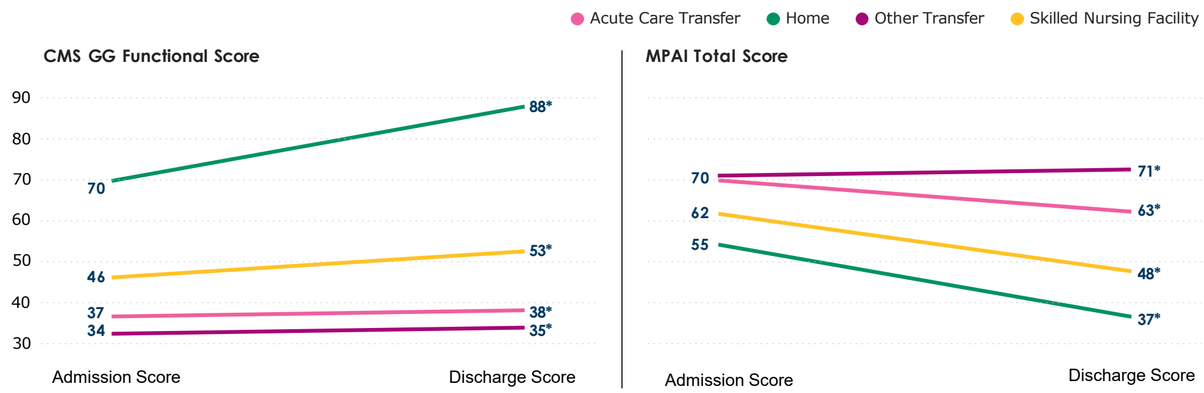
Figure 2: MPAI Subscale and Total Score Improvements by Diagnosis



CVA (n=31) and TBI (n=10) groups showed significant admission-to-discharge improvements across all domains (all $p<0.05$). CVA demonstrated broad and consistent gains, while TBI showed the largest relative change in Adjustment. ABI and SCI groups (too small) were not analyzed for significance.

Conclusion: Diagnosis-specific trajectories indicate CVA yields broad-based gains, while TBI patients may benefit most from targeted adjustment-focused interventions.

Figure 3: Discharge outcomes by location



GG Scores improved across all discharge locations, with the largest gains observed in patients discharged home. MPAI Total Scores decreased significantly in all groups ($p<0.05$), with home discharge showing the strongest functional and psychosocial recovery.

Conclusion: Discharge to home was associated with optimal outcomes, highlighting the importance of transition planning and community supports.

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DISCLOSURES: The authors report no relevant financial or non-financial conflicts of interest

FUNDING: This study was supported by Nexus Health Systems Hope Foundation