

Redesigning neurorehabilitation services for children with acquired brain injury

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This commentary is on the original article by Keetley et al. To view this paper visit

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Growing evidence suggests immediate and long-term impacts of acquired brain injury (ABI) on the developing brains of children.¹ Varying levels of impairment in the physical, cognitive, communication, emotional, and behavioral domains impede skill acquisition and affect these children's capacity to engage in meaningful and valued occupations such as self-care, and academic or leisure activities.

The innovative paediatric neurorehabilitation service model described in the study by Keetley et al.² is a much-needed example of how redesigned rehabilitation delivery in acute care enables both early detection of rehabilitation needs (86% of children referred to the dedicated multidisciplinary team required some type of rehabilitation) and timely referral to post-acute rehabilitation. Adult ABI clinical practice guidelines have long advocated for dedicated multidisciplinary teams in acute care units and they are implemented in many facilities. However, clinicians struggle when having to assess patients' rehabilitation potential as their decisions impact who is given access to limited post-acute rehabilitation services.

Our recent analysis of the concept of rehabilitation potential of adults with ABI³ suggested that '... rehabilitation potential consists of a clinician's prediction of a patient's expected improvement with rehabilitation intervention'. Predicting how a patient will improve with rehabilitation is an arduous task for clinicians working with adult patients with ABI. However, clinicians' uncertainty in such predictions is even greater for children due to: (1) considerable

variations in children's functioning at different developmental stages; (2) the full impact of ABI observable only years after the initial insult; and (3) the limited number of high-quality prediction studies to support decision-making.^{4,5}

In traditional adult rehabilitation service models, patients' rehabilitation potential is often a criterion for admission to post-acute rehabilitation programs. However, findings from our concept analysis suggest that one should not view patients dichotomously as having or not having rehabilitation potential. Instead, one must view rehabilitation potential as falling along a continuum and recognize it as changing over time. This principle applies to adults with ABI, but in our opinion, even more so to children with ABI. Their body functions, their capacity to engage in valued occupations, as well as their physical and social environments will evolve as they grow older and progress through important life transitions. Hence, we believe the question should not so much be *which* child should access rehabilitation, but rather *how* rehabilitation should be delivered; considering each child's rehabilitation potential at multiple points in time throughout their lives and how interventions should be tailored as the child matures, especially during important transition periods.

Keetley et al.'s innovative model provides clinicians the opportunity to do exactly that. Indeed, in this model, the multidisciplinary team is involved in the initial assessment and provides on-site intensive therapy daily, as well as outreach therapy (i.e. outpatient appointments and home or school visits) once the patient is discharged from the trauma center. The authors also mention the development of a multidisciplinary follow-up clinic to further meet long-term needs. Therefore, clinicians working in such an integrated rehabilitation service delivery model, where continuity of care is embedded into their services, can tailor their interventions to the evolving needs and evolving rehabilitation potential of children.

Lastly, Keetley et al. revealed important benefits attached to the implementation of their innovative model of care in a major trauma center; the average length of stay significantly decreased from 41 days to 10.6 days after implementation.² Although this study does not provide other important indicators of effectiveness (e.g. improvement of children outcome pre- vs post-implementation), it provides emerging evidence of organizational and economic benefits to integrated rehabilitation service models and thus should appeal to health care policymakers and managers.

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