TIMELINESS OF POST-ACUTE BRAIN INJURY REHABILITATION AFTER TBI IMPROVES OUTCOME

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Approximately 5.3 million Americans are living with disabilities as a result of traumatic brain injury (TBI). These disabilities can affect their ability to fulfill the basic activities of daily living, return to work, or lead productive lives without assistance. Comprehensive brain injury rehabilitation has demonstrated significant improvement in the functional outcomes of patients with severe TBI.

While improving access to rehabilitative services is an important first step in optimizing outcomes for patients with severe TBI, it appears that timeliness of admission to Post-Acute Brain Injury Rehabilitation (PABIR) services influences the effectiveness of rehabilitation as well.

Post-Acute Brain Injury Rehabilitation (PABIR) is rehabilitation offered to brain injured persons after they are medically stabilized and no longer require hospitalization.

Within days after injury, the brain begins the process of repairing itself and this process continues for several months. Research shows that patients achieve the best outcomes when they receive guidance in a rehabilitative setting during this time.

Animal research studies show that rehabilitation treatment started within days or weeks of injury results in greater benefits than treatment started after one month. This effect has also been shown among people who have suffered TBIs. Early rehabilitation after TBI makes use of the body's natural repair process that kicks in after an injury and can guide the patient toward the best outcomes.

Clinicians at Pate Rehabilitation conducted a study of 359 patients who sustained severe TBIs and were admitted to post-acute brain injury rehabilitation within one year of injury in order to examine the influence of time since injury on the likelihood of significant functional improvement after PABIR.

The sample comprised 271 men and 88 women who received interdisciplinary brain injury rehabilitation, including physiatry, nursing, neuropsychology,

physical therapy, occupational therapy, speech therapy, and case management. Other specialty services were included as appropriate for the individual patient such as biofeedback, animal assisted therapy, and residential services. After the patients were admitted and evaluated, their treatment teams met within four days to create treatment plans that included all services needed for each individual patient. Treatment teams continued to meet regularly to monitor their patients' progress.

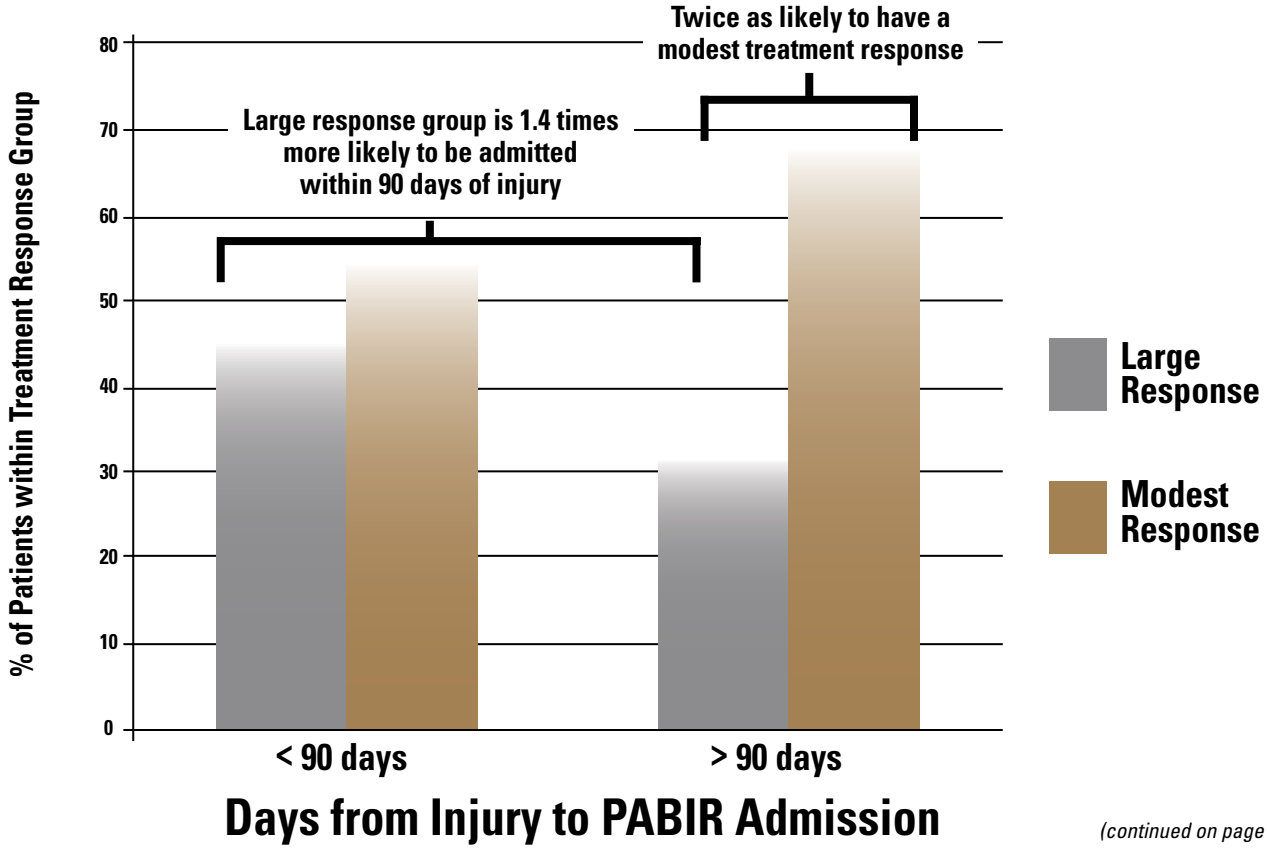
For patients with severe TBI, small increases in functional abilities can have a huge impact on quality of life and can decrease the burden on caregivers. For this study, improvement in patients who required maximal assistance at admission who later required only minimal assistance were considered to be 'functionally important/meaningful' since the patient needed much less assistance from others.

At discharge, patients were grouped as either 'large response' or 'modest response' based on their teams' functional ratings. The 'large response' group included those who improved from severe impairment/maximal assistance range to a level of at least minimal assistance or supervision. The 'modest response' group included those whose ratings continued to suggest moderate to severe functional impairments were present and continued assistance was needed for most activities of daily living.

PABIR within 90 days of injury results in 19 fewer days of treatment and greater functional gains.

As brain injury professionals have observed when working with people with TBI, the difference in the degree of treatment response was associated with how soon PABIR started after injury. In fact, people admitted to rehabilitation within 90 days of injury averaged 19 fewer days in rehabilitation and made significantly greater functional improvement than people who started PABIR more than 90 days after injury. Furthermore, people who received PABIR and demonstrated a large treatment response were 1.4 times more likely to be admitted within 90 days of

Effect of Prompt PABIR on Treatment Response



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Neuroplasticity = changes in brain structure and pathways due to changes in behavior and environment.

injury. Additionally, those whose PABIR admission occurred more than 90 days after injury were twice as likely to demonstrate a smaller treatment response. These data underscore the importance of prompt admission to post-acute rehabilitation after injury.

Data from this study suggest that quicker admission to PABIR improves odds of functional recovery. It is possible that time without guided rehabilitation after a brain injury may be counterproductive, as the person does not receive the structured environment necessary to promote healthy neuroplasticity and/or assistance in developing individualized strategies to compensate for functional deficits at a critical stage in recovery. It is also possible that delays in PABIR admission after TBI may result in physical and/or cognitive deconditioning, which could reduce functional recovery. More research is needed to know exactly how PABIR positively influences outcomes and why early intervention is critical.

In conclusion, this study shows that prompt admission to post-acute brain injury rehabilitation after a TBI is associated with greater response to treatment and ultimately better functional abilities upon discharge. These results should be considered when planning for continued care after a person with a brain injury reaches medical stability at an acute care facility. The results may also assist insurance companies and other third-party payers in creating policies that maximize functional improvements after TBI and are more cost-efficient in the long run. ●

Earlier admission to a comprehensive brain injury rehabilitation program increases the likelihood of meaningful functional improvement.