

TASK: S-5 CUSTOMIZED WHEELCHAIR SEATING FOR POPULATIONS WITH CHANGING NEEDS

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Rationale

Statistics show that traumatic brain injuries incurred each year number around two million. Outcomes can vary from death or prolonged coma to only mild deficits that have minimal impact on the patient and this family. The likelihood or extent of the impairment is difficult to predict soon after the injury. However, it is during this time that clinicians and seating specialists are expected to make a recommendation regarding the equipment for seating and mobility.

There are few guidelines that assist clinicians to determine when the best time is to provide seating intervention and how aggressive to make the intervention considering the likelihood of improvement. There is no information about the natural history of recovery as it relates to wheelchair seating intervention. As well, there are no measures of outcomes related to seating intervention for this population.

Goals

To provide clinical guidelines for seating and mobility intervention for persons with closed head injuries (CHI) over the natural history of the condition for a two-year post injury period.

Methods Summary

An instrument was developed to measure the complexity of seating and mobility intervention. It measured the correlation between recovery and the seating technology needs of an individual who has suffered a CHI. A draft of the tool was used to establish both content validity and interrater reliability. The instrument proved very complex and interrater reliability was not acceptable. The tool was redesigned and the process repeated until the tool could be administered successfully by any one of three therapists assigned to the project.

Items for documentation included

- make and model of wheelchair and seating system (this included a system to indicate the complexity of each component of the system so measures over time would indicate improved motor skill as indicated by less complex seating and mobility scores),
- functional skills,
- sitting posture while in their wheelchair,
- physical motor status (tone, strength, structure, reflexes),
- anthropometrics, and
- comfort/satisfaction survey (subject and clinician).

Outcomes Summary

A seating technology assessment tool (STAT) was developed in collaboration with a physical and occupational therapist from the RERC staff and the UPMC Rehabilitation Hospital. It records the types and numbers of seating system components that an individual required to maintain an upright posture while sitting against gravity. It uses an ordinal rating system in which the components were ranked from the most to the least amount of support provided. The STAT is divided into technology and subject related data. The subject data includes information gathered regarding the individual's posture, reflex and functional information skills. The technology data is broken down into those relating to the seat and back components. Preliminary validation was performed with two physical therapists and one occupational therapist. The revised tool was administered initially to three subjects and follow up was done with one of the subjects that remained a wheelchair user. The two other subjects improved in function and became ambulatory.

Problem Encounters

Final data collection took place over a nine-month period, which was insufficient to establish a relationship between natural recovery and seating technology. Critical time was missed during the acute recovery phase, as clients were not recruited until they entered the rehabilitation phase of their recovery. As well, several specific items such as degree of tilt of the chair had to be added to the data collection tool, as they were specifically indicative of how well and how long a client could sit upright, which in turn was an indication of the return of sitting tolerance.

Recommended Future Research

Further refinement and validation of the tool needs to be performed. The tool should then be used with a larger sample of subjects as part of a clinical outcome study.

Publications

Documentation in the form of a case study is in process and will be submitted for publication.