Identifying functional outcome of patients following neurosurgical treatment for brain tumour

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Overview

This research project aims to identify reliable and valid assessments that can be used by clinicians and allied health practitioners to measure functional outcomes in patients who have had or are undergoing treatment for brain tumour. The research aims to identify an objective assessment that can be easily and quickly administered in a clinic or hospital setting and will assess changes in high level cognition not normally identified by either regular activity of daily living (ADL) assessments or patient reported outcome measures such as heath related quality of life assessments (HRQoL).

The project will:

- complete a literature review of current measures of functional outcomes;
- assess the suitability of using DSDA iPad version to assess and monitor changes in high level cognition using a test retest method (participants ranging from 18 to 91 with at least a class C driving license and cleared by their local driving authority to drive; will be tested initially and then the test will be repeated after 6 weeks; 6 months and then 12 months;
- assess patients receiving treatment for brain tumour using four assessments (clinician rating; self-care assessment; HRQoL assessment; and a driving assessment pre-operatively, 6 week, and 6 month post operatively;
- correlate the results of the driving assessment with other functional measures in current use and assess the driving assessment's utility as a measure in a clinical environment.

Background

Clinicians treating brain tumour are managing the tumour pathology and the potential for cognitive dysfunction from both the underlying disease and its treatment. Therefore many of the generic measures developed to measure cancer patients' outcomes, such as patient reported HRQoL surveys, are insufficient to assess outcome for brain tumour patients.

This study will investigate what other appropriate measures could be used to determine functional outcome following treatment for brain tumour, and investigate outcome assessments that can be easily administered but also provide an objective assessment of higher level function and compare them to commonly used assessment such the Karnofsky Scale; the Modified Barthel Index and a HRQoL measure. DriveSafe DriveAware (DSDA) iPad version, will be investigated as a measure for predicting high-level functional outcome in brain tumour patients. DSDA is a computer based cognitive screening tool that is an objective, evidence-based measure of cognitive fitness to drive. It was developed to predict driving ability for older and/or cognitively impaired patients.

The high-level cognitive skills required to drive are more complex than those required for other daily activities; as a result, an assessment of driving may indicate impairment not revealed by other assessments (other than lengthy neuro-psychological assessment). However, a driving assessment result may alert a clinician to high-level cognitive changes so patients can be referred on for further neuro-psychological testing.

DSDA iPad version has established inter-rater reliability, validity, specificity and sensitivity however the current test retest reliability data is based on the original computer and paper based assessment. The test retest assessment has not been completed for the recently released iPad version.

This test retest reliability is important for the brain tumour study to ensure the pre-operative, post-operative and follow up scores obtained on the DSDA are reliable and valid comparison of cognitive function over time. The test retest data from a normal population will determine whether changes in scores/ratings are due to changes in cognition or alternatively due to a learning effect when repeating the test.

Ethics

Ethics approval was granted for this project by the Macquarie University Human Ethics Committee in 2017.