Effectiveness of Neurobehavioural Rehabilitation for Young People and Adults with Traumatic Brain Injury and Challenging Behaviour

Traumatic brain injury (TBI) can happen to anyone at any time. Very young children, young men and older people are particularly at risk. TBI is often caused by road traffic accidents, falls, violence and sport. It has been described as the ‘silent epidemic’; a conservative estimate is 295 new cases per 100,000 in the UK which equates to approximately 180,000 people each year presenting with head injury at hospital. Improved medical services mean more people survive but the long term effects can be devastating. These include a wide range of physical, cognitive, sensory, functional and emotional impairments, disabilities and handicaps which can be long-term. Despite high prevalence and the proven effectiveness of neurorehabilitation, brain injury has been regarded as a ‘Cinderella’ condition for many years with neurorehabilitation, brain injury has been regarded primarily a product of physical damage to the brain, but recognises this is further shaped by the environment. This can help sustain challenging behaviour, which can be unwittingly maintained by those people charged with the care of a person with a brain injury. This clinical population is not popular with rehabilitation professionals because of their irritating, threatening, and embarrassing behaviour, as well as their general lack of motivation. Consequently, patients with brain injuries may be avoided by staff and carers, and become socially isolated. Unfortunately, while challenging behaviour may be primarily attributable to damaged neural systems, it can be reinforced by environments in which there are limited opportunities for appropriate social behaviour. Under conditions in which people are habitually ignored for long periods, it is possible their only social contact is with staff intervene when managing challenging behaviour. This can inadvertently reinforce and maintain it.

Whilst the environment can unwittingly maintain NBD and social handicap, it can also be manipulated to benefit rehabilitation. Neurobehavioural rehabilitation services attempt to reduce NBD and social handicap by creating an environment in which people are re-taught skills which they have lost through brain injury, which are then maintained and encouraged in the context of everyday behaviour. Treatment interventions work primarily to reverse contingencies that previously maintained challenging behaviour, first by requiring staff to interact with patients who may previously have been ignored, and second, by ensuring social reinforcement is directed at desirable, rather than challenging behaviour. In this way, interventions based on operant learning theory create enriched environments that change the behaviour of people working with challenging brain-injured patients and encourage development of a positive social climate that promotes therapeutic relationships. Provision of these interventions within a highly structured environment encourages new learning, skill acquisition, and promotion of independence, giving patients more choice, control, and freedom as they progress.
The multidisciplinary team

In addition to challenging behaviour, patients admitted to neurobehavioural services invariably have a range of complex needs that are potentially amenable to rehabilitation. For this reason, a wide range of clinical specialists is drawn together to form a multidisciplinary team who work with the patients including neurology, neuropsychiatry, neuropsychology, nursing, occupational therapy, physiotherapy, speech and language therapy, education and dietetics. Following a period of assessment, individual programmes are implemented whose goals are to reduce challenging behaviour to enable patients to benefit from the clinical specialties they had been unable to access previously. All members of the multidisciplinary teams implement these programmes: role blurring and effective communication ensure they are delivered all the time, not just in formal therapy sessions.

Evidence base

Because neurobehavioural rehabilitation was completely new, a great deal of research regarding its effectiveness has been undertaken. In NBC, a diverse research programme that underpins clinical effectiveness and seeks to find new innovative ways of helping patients has been a characteristic of the service since it opened, much of which is conducted in partnership with universities and other academic centres of excellence. In 1985 the first study that examined outcomes achieved by the initial 24 service users to pass through the NBIC programme was published. Results demonstrated that more than two thirds of this very challenging group had benefited, and a fifth continued to make further gains after discharge.

A very recent review paper has been published which confirms the evidence base and efficacy of the different types of interventions used in neurobehavioural services to help patients manage challenging behaviour. Other studies have demonstrated functional and fiscal benefits of neurobehavioural rehabilitation, including savings to be made in providing care in the medium-to-long term.

Assessing individual outcome: SASNOS

A range of bespoke behaviour rating scales and other outcome measures conceptualised for use with people with ABI have been designed by clinicians within NBIC. Most recently, a four year project carried out in collaboration with Swansea University has resulted in publication of the ‘St Andrew’s-Swansea Neurobehavioural Outcomes Scale’ (SASNOS). This new measure fills a gap in the market by providing a global measure of symptoms of NBD and social handicap that has known, robust psychometric properties. Patients are rated by clinical teams on 49 items which measure five major domains of NBD, each of which has 2-3 sub-domains. Standardised scores are computed so domains can be compared. Initial ratings can be used as a baseline to track progress in rehabilitation. They can also be compared with those of neurologically healthy people to help clinicians with setting goals.

Figure 1 illustrates how SASNOS was used to reflect an individual patient’s (KJ) response to neurobehavioural rehabilitation. The standardised score plot of symptoms of NBD observed and rated by members of the clinical team during the first two weeks of admission suggested that social handicap was underpinned by difficulties in interpersonal relationships, cognitive function and sexual inhibition and aggression. This plot assisted clinicians to determine KJ’s strengths-weaknesses profile, determine the priority of his rehabilitation goals, and design neurobehavioural rehabilitation interventions. A second set of ratings made at discharge show the substantial improvement in these target areas, with symptoms for most sub-domains being rated at levels comparable with the neurologically healthy population.

Figure 1: Change in SASNOS ratings in response to participation in neurobehavioural rehabilitation.

Conclusion

Finally, it has been independently acknowledged in the literature that it is a mistake to believe that people with acquired brain injury and challenging behaviour can be effectively managed in non-specialist services. Opinion and evidence indicates that admission to specialised neurobehavioural rehabilitation units is required in such cases, and in addition to the clinical benefits this provides the most cost-effective solution. Use of appropriate outcome measures will help determine individual response to rehabilitation, and assist commissioners to benchmark services against one another. SASNOS is free to download and use from the St Andrew’s Healthcare website at www.stah.org/services/braininjury/sasnos.aspx.

REFERENCES