

Neurological rehabilitation and the management of spasticity

Valerie L Stevenson

Diane Playford

Abstract

Neurorehabilitation is often thought of as a stand-alone process occurring in a defined unit. However, patients with neurological conditions make up a large proportion of general medical admissions and GP consultations. They often present with an upper motor neurone syndrome that requires careful management of their weakness, disordered motor control, spasticity and bladder/bowel dysfunction. Spasticity management can be particularly challenging, but rewarding if physical and pharmacological measures are used appropriately and in a timely manner. This review attempts to explain the process of rehabilitation and how this can improve the care of neurological patients in all settings. Through the basic principles of rehabilitation – assessment, goal-setting, intervention and evaluation – function can be optimized while preventing complications and minimizing distress to patients, families and carers.

Keywords Bladder; bowel; goal-setting; neurorehabilitation; rehabilitation; spasticity; upper motor neurone syndrome

Neurorehabilitation in context

Neurological conditions are common: 17% of general practitioner (GP) consultations are for neurological symptoms, and 19% of hospital admissions are with a neurological problem requiring treatment from a neurologist or neurosurgeon, typically long-term conditions such as stroke, multiple sclerosis (MS) and Parkinson's disease.

People with long-term neurological conditions express concerns that acute care is not tailored to their needs, their expertise in their condition is ignored, and basic care needs are not met (e.g. if they cannot access a shower in hospital). Rehabilitation should be central to healthcare at all times, with as much attention given to a patient's functional activities, social roles

Valerie L Stevenson MD MRCP MB BS is a Consultant Neurologist at The National Hospital for Neurology and Neurosurgery, UCLH Trust, Queen Square, London, and Honorary Senior Lecturer at UCL Institute of Neurology, London, UK. She leads the Multidisciplinary Spasticity Management Team within Neurorehabilitation Services. Competing interests: advisory board member for Bayer Healthcare (2013).

Diane Playford MD FRCP is Reader in Neurological Rehabilitation at UCL Institute of Neurology and Honorary Consultant Neurologist at the National Hospital for Neurology and Neurosurgery, UCLH Trust, London, UK. Competing interests: none declared.

Key points

- The World Health Organization International Classification of Function provides a framework for patient assessment and determining potential interventions
- Goal-setting allows clinicians to work with patients to target interventions to the patients' perceived needs
- Spasticity management should aim to optimize function and prevent complications rather than simply reduce tone
- Bladder and bowel dysfunction are common in neurological disorders, but careful assessment can lead to effective management regimens

and distress as to diagnosing and treating disease. Rehabilitation processes should run parallel to neurological care at all times and in all settings.¹ This introduction focuses on the rehabilitation approach and identifies simple interventions that can in acute settings improve the care of people with long-term neurological conditions and prevent complications.

What is rehabilitation?

A rehabilitation service comprises a multidisciplinary team who work towards common goals for each patient. They involve and educate the patient and family, and aim to resolve common problems faced by their patients. Rehabilitation is an iterative, active, educational problem-solving process with the following components:

- **Assessment** – identification of the nature and extent of the patient's problems and the factors relevant to their resolution. This is best done by a multidisciplinary team using the shared language and framework of the World Health Organization's International Classification of Function (ICF).²
- **Treatment planning** – usually through patient-centred goals that focus on participation.
- **Intervention** – treatments that can be medication-based, physical (occupational therapy, physiotherapy, speech and language therapy), psychological or surgical, and are targeted at pathology, impairment, function or the environment, and care that maintains the patient's quality of life.
- **Evaluation** – to check on the effects of any intervention.

Rehabilitation should maximize the patient's participation in their social setting and minimize distress for the patient and their carers.

Assessment

Definitions of the ICF are shown in [Table 1](#). The relationship between impairments, activities and participation is not linear and is moderated by personal factors such as education, family beliefs and environmental factors ([Figure 1](#)). The latter can be physical (no hoists or shower chairs preventing access to bathrooms in hospital) or social, including legislation such as the

Definitions in the World Health Organization International Classification of Function

Body functions

- Physiological functions of body systems (including psychological functions)

Body structures

- Anatomical parts of the body such as organs, limbs and their components

Impairments

- Problems in body function or structure

Activity

- The execution of a task or action by an individual

Activity limitations

- Difficulties an individual may have in executing activities

Participation

- Involvement in a life situation

Participation restrictions

- Problems an individual may experience in involvement in life situations

Table 1

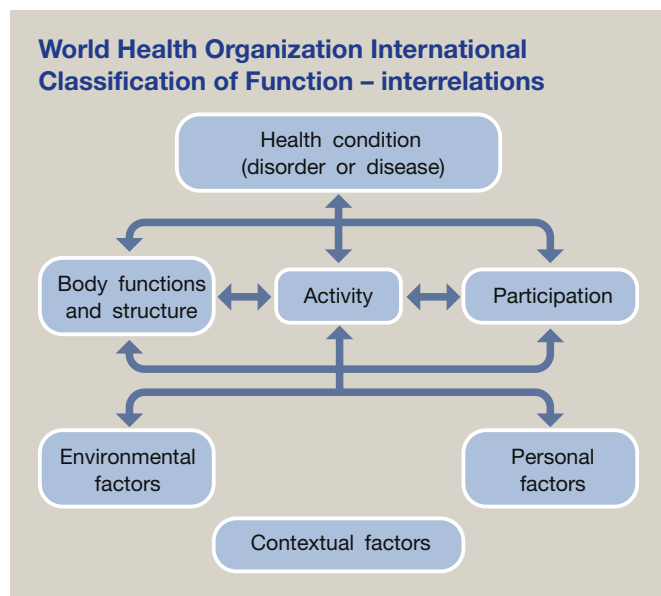


Figure 1

Equality Act or the attitudes of others (e.g. people with disability being labelled as ‘bed-blockers’). This formulation of the patient’s functioning allows one to consider how their difficulties should be tackled.

Table 2 illustrates the typical problems and diagnostic formulation for a patient with MS who previously walked short distances with a frame and was independent for self-care and has been admitted with a urinary tract infection (UTI). It highlights issues and allows goals to be set so the patient can work towards successful treatment of the UTI, optimization of bladder management and a return to usual function.

Assessment is best carried out by a multidisciplinary team. Nurses may be in a better position than doctors to notice pressure sores. Cognitive impairment that is not immediately apparent on

bedside examination may be identified when a patient fails to learn a new technique in physiotherapy or performs poorly in a simple task in the kitchen. Ideally, the multidisciplinary team should comprise the patient and their family, a doctor, a physiotherapist, an occupational therapist, a speech therapist, a nurse and a psychologist, but on acute wards the nurse and doctor often form the core team and should recognize when assessment by a physiotherapist or occupational therapist will be helpful.

Once the multidisciplinary team has assessed the patient, it is worth considering any relevant risks. For example, a patient who has difficulty moving around in bed is at risk of pressure sores, and, if unable to do stretching exercises or stand, can develop contractures that will hinder their return home. To prevent this, a goal-oriented programme is put in place.

Goal-setting

A goal is described in terms of ‘will be’ at some specified time in the future. It is a desired state that requires both action and effort. Typically, goals are ‘SMART’, i.e. Specific, Measureable, Achievable, Relevant, Timely. Goals require a process of discussion and negotiation in which the patient and staff determine the key priorities for that individual, and agree the performance level to be attained by the patient for defined activities within a specified time frame.³ Goals should be distinguished from staff actions, such as prescribing antibiotics. There is no consistent evidence that goal-setting improves people’s functional abilities after rehabilitation or how hard they try with therapeutic interventions during rehabilitation, but there is a growing view that the process of goal-setting is important in that it builds self-efficacy.

For the patient described above with MS, a UTI and lower limb spasticity who is in hospital, a generic long-term goal might read:

To go home on Monday 9th

- having learnt how to do intermittent self-catheterization
- able to walk short distances indoors with a frame
- using a wheelchair outdoors
- able to wash and dress myself with set-up from my partner.

Short-term goals might read:

- To complete my stretching programme twice daily with support from the physiotherapist.

Or

- To maintain my current level of function by standing twice daily for 30 minutes to manage my tone.

A more personalized goal in which all the above issues, and some others, would be addressed might be: To go home on Monday 9th confident I can return to my job as a teacher, be able to get around home and school by walking and using a wheelchair for longer distances, and manage each session teaching without having to go the bathroom.

Interventions

Interventions are treatments involving all the means at one’s disposal. They can target pathology (treating the UTI with antibiotics); impairments (increasing the dosage of baclofen to manage muscle tone); activities and participation (practice with sitting, transfers, walking and dressing, going to work, attending a place of worship, going out with friends and family); and the

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