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What do acute stroke physiotherapists do to treat postural control and mobility? An exploration of the content of therapy in the UK

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Objective: To investigate the content of acute stroke physiotherapy to treat postural control and mobility problems.

Design: Stroke physiotherapists recorded the interventions used to treat postural control and mobility during treatment sessions. They recorded five sessions for at least five patients each. Descriptive statistics assessed the frequency with which the interventions were used.

Setting: Hospital-based acute stroke care.

Subjects: Thirty-six acute stroke physiotherapists recorded 2374 interventions in 364 treatment sessions for 76 patients.

Main measures: The Stroke Physiotherapy Intervention Recording Tool.

Results: Facilitation techniques were the most frequently used interventions ($n=1258$, 53%) with exercise ($n=115$, 5%), teaching others how to help the patient ($n=99$, 4%) and provision of equipment ($n=63$, 3%) the least frequently used.

Conclusions: Acute stroke physiotherapists primarily use therapist-led 'hands-on' interventions to treat postural control and mobility problems. Interventions to promote activity or practice outside the treatment session are infrequently used.

Introduction

The recently published UK National Stroke Strategy¹ recommends that all stroke patients should have prompt access to an acute stroke unit and spend the majority of their time in hospital in a stroke unit with high-quality specialist stroke care. It is not clear exactly what aspects of specialist care are the beneficial 'active

ingredients'² but they appear to be strongly associated with processes of care that are implemented more frequently on stroke units such as multidisciplinary team working, physiological and neurological monitoring, rapid treatment of stroke and associated complications, early access to assessment, mobilization and therapists for rehabilitation, and palliative care.

It is acknowledged that allied health professionals, including physiotherapists, have specific contributions to make in delivering these aspects of care.¹ Consequently there has been a rapid expansion of the roles of physiotherapists in acute stroke care. Although the content of stroke physiotherapy during rehabilitation has been

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reported previously,³ there has been no attempt to describe therapy in the acute setting. The aim of this study was therefore to describe the content of stroke physiotherapy in the acute setting in the UK. Given the emphasis on early mobilization to regain mobility, we focused on one particular aspect of stroke physiotherapy: the treatment of postural control and/or mobility.

Method

A convenience sample of physiotherapists based in acute settings who treated people with stroke at least once a week in National Health Service trusts in Greater Manchester, Nottingham, Bristol, Wales and Northern Ireland recorded the content of their treatment sessions for at least five patients for five consecutive treatment sessions using the Stroke Physiotherapy Intervention Recording Tool.⁴ This is a standardized published checklist of the interventions used by stroke physiotherapists to treat postural control and mobility problems after stroke which has been described in detail previously.^{4,5} Interventions are grouped into nine categories: facilitation of components and whole activities, practising components and whole activities, arranging independent practice, mobilizations, exercise, teaching carers or professionals to assist patients, providing and using equipment, and 'other'. 'Mobilizations' refer to techniques that aim to mobilize specific body segments, joints or muscles to reduce muscle tone.⁴ For the purpose of this paper, these techniques will be termed 'specific mobilizations' to differentiate them from 'early mobilization' techniques. 'Early mobilization' involves interventions to enable patients to get out of bed as soon as possible, facilitating active participation in mobility activities (such as bed mobility, transferring from one seat to another and walking), prevent complications such as loss of joint range and cardiovascular deconditioning and disuse atrophy, while encouraging the patient to move their limbs.⁶

The Stroke Physiotherapy Intervention Recording Tool (SPIRIT) includes definitions and descriptions of the interventions, the internal and external validity of which had been established previously.⁴ On finishing their treatment

session, physiotherapists use these definitions and descriptions to identify the interventions they have used and record them using a 'tick box' format. Treatment sessions for any patients were recorded so long as their treatment was primarily for a postural control or mobility problem (defined as limited sitting balance, standing balance or walking); patients of any age, severity of stroke, stage of recovery and with any combination of comorbidity and stroke-related impairments were included. Details of the patients' stroke and the stage of care were also recorded (defined in Appendix 1).

The process of recruitment varied according to the resources and networks available in the different locations. In England and Northern Ireland, the network of neurological physiotherapists who had taken part in other studies led by the authors were contacted and other trusts were recruited by word of mouth and through personal contacts. In Wales, stroke physiotherapists were contacted through the physiotherapy managers' network. The authors were advised by the local research ethics committee that ethical approval was not required as it merely involved physiotherapists documenting their practice. Permission was obtained from relevant departmental managers to conduct the survey as necessary.

Descriptive statistics were used to describe the patients and frequency with which interventions were used.

Results

Thirty-six physiotherapists in 16 hospitals recorded 364 treatment sessions for 76 patients and used 2374 interventions. The patients' mean age was 75 years (SD 12 years), median time since stroke was 1 week (interquartile range (IQR) 1,4). Thirty-three (43%) patients had a right hemiplegia, 38 (51%) had a left hemiplegia and side of hemiplegia was unrecorded in 4 (5%) of patients. Forty-seven (62%) were being treated in an acute stroke unit, 21 (28%) in a general acute ward and 8 (11%) in an acute care of the elderly ward. Not surprisingly, most patients ($n=42$, 55%) in the acute setting were in the 'acute' stage of treatment but approximately a third ($n=28$, 37%) were in the 'rehabilitation' stage and a small number

(*n* = 3, 4%) were ‘pre-discharge’ (stage of treatment was unrecorded for 3 patients (4%)). The definitions of the stages of care are found in Appendix 1.

The frequency with which the physiotherapy interventions were used are shown in Table 1. The most frequently used interventions involved facilitation techniques (*n* = 1258, 53%). Facilitation of whole activities was used 663 times (28%) and facilitation of the components of activities were used 595 times (25%). The next most commonly used intervention was practising, both whole activities (*n* = 254, 11%) and the components of activities (*n* = 234, 10%) followed by arranging independent practice (*n* = 202, 9%). The most frequently facilitated activities were dynamic sitting, static sitting, sit-to-stand and dynamic standing, movement of the arm and walking. Sit-to-stand and strengthening exercises were the most frequent activities involved in independent practice.

The least frequently used interventions involved providing or using equipment (*n* = 63, 3%), teaching carers or professionals (*n* = 99, 4%) and exercise (*n* = 115, 5%). Interventions involving outdoor mobility, falls routines, stairs, wheelchairs skills or treadmills were rarely used. Stretching and strengthening exercises were the most frequently used exercise interventions; cardiovascular and resisted exercises were rarely used. Positioning was the activity most commonly taught to carers or professionals. Trunk mobilizations were the commonly used ‘specific’ mobilization intervention.

Table 1 Comparing the frequency with which interventions were used in the acute and rehabilitation setting

Intervention	Frequency with which the intervention was used (<i>n</i> = 2374)
Facilitating whole activities	663 (28%)
Facilitating components of activities	595 (25%)
Practising whole activities	254 (11%)
Practising components of activities	234 (10%)
Arranging independent practice	202 (9%)
Specific mobilizations	152 (6%)
Exercises	115 (5%)
Teaching carers and other health care professionals	99 (4%)
Providing and using equipment	63 (3%)

Discussion

The results of this study show that acute stroke physiotherapy to treat postural control and mobility problems in the UK focuses on therapist-led, ‘hands-on’ interventions, primarily using facilitation techniques. Facilitation involves the performance of ‘normal movement patterns’ with the therapist guiding/leading the movements while providing stability to allow selective movement in the limbs and the patient is physically passive or active-assisted.⁴ This is the first study to report the content of acute stroke physiotherapy, therefore comparison with previous reports is not possible. However the results are broadly in line with previous reports of the content of physiotherapy for hospitalized patients with stroke.^{5,7}

The main aim of acute stroke physiotherapy is said to be to promote early mobilization^{1,2,6,8} which has been defined as ‘assisting the patient to be upright and out of bed (sitting or standing as able) within 24 hours of stroke’.^{9,10} Guidelines based on expert opinion have described the types of interventions this would include: getting the patient out of bed as soon as possible, facilitating active participation in mobility activities (such as bed mobility, transferring from one seat to another and walking depending on the patients level of ability), preventing complications such as loss of joint range and cardiovascular deconditioning and disuse atrophy, and encouraging the patient to move their limbs.⁶ The results of the present study show that acute stroke physiotherapists do, to some extent, focus on the activities associated with early mobilization, but they tend to use facilitation techniques more often than practising functional tasks, and tend to facilitate or practice the components of activities rather than whole activities. Also they rarely use the interventions, such as arranging independent practice, teaching others how to help the patients, or providing equipment, which would enable patients to be more active outside the treatment sessions. This is despite evidence that such equipment can enable safe mobilization¹¹⁻¹³ and of the benefits of intensive task-oriented, context-specific practice of functional tasks and exercise to strengthen paretic muscles.¹⁴⁻¹⁶ To achieve the aim of early

mobilization, acute physiotherapists need to use a wider range of interventions and develop further strategies that provide patients with more opportunities to practise functional tasks both within, and outside, treatment sessions.

Future research needs to explore the feasibility and efficacy of implementing such interventions to promote early mobilization in the UK. It is known that UK stroke patients receive less therapy and are less active than those in other European countries,¹⁷ so implementing early mobilization and intensive practice strategies has the potential to produce greater benefits in the UK than other countries where patients are currently more active. However differences in the organization of stroke care^{17,18} and low staffing levels¹ may require the development of new service delivery models before it is feasible to implement such interventions in the UK. It would also require a paradigm shift in UK stroke physiotherapists' clinical reasoning. The principles of early mobilization contradict those of the Bobath Concept^{19,20} which is the treatment approach on which most stroke physiotherapists in the UK base their practice.⁷ This emphasizes the importance of normal movement and facilitating postural alignment with varying, but often negative, views on the role of independent practice and use of equipment.²⁰⁻²⁴

This study has several limitations. A convenience sample of physiotherapists was recruited and the number of acute stroke physiotherapists was relatively small so there is the risk of bias. Moreover, although we included participants from across the UK, we were not able to recruit physiotherapists from Scotland and the north-east and south-east of England, which are some of the most populous areas. It is possible that the physiotherapists from the non-surveyed areas practised differently. Nevertheless, the participants in this study provided stroke care for a population of approximately 12 million people and include a typical skill mix, so we feel the results are fairly representative and generalizable to the UK. This study focused on the treatment for postural control and mobility problems after stroke. It is possible that this does not reflect the full scope of acute stroke physiotherapy; other aspects of physiotherapy such as respiratory care or the upper limb may also feature significantly.

Further studies involving observational designs or Delphi techniques would address these issues.

Clinical message

- UK acute stroke physiotherapists most frequently use therapist-led 'hands-on' facilitation techniques to treat postural control and mobility problems. They rarely use interventions to promote independent activity outside the treatment session. This is inconsistent with the aim of early mobilization.

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Appendix 1 – Definition of stages of physiotherapy, and the physiotherapists' perception of their treatment approach

Stages of physiotherapy

These stages are to be defined by the physiotherapist for each individual patient. They refer to the stage of physiotherapy, *not* the time since stroke or the treatment facility. So a patient could be in the assessment stage weeks or months after a stroke (e.g. if they have just been transferred to the rehabilitation unit, or if their condition has been fluctuating because they are medically unstable or very unwell). Equally they could be in the rehabilitation stage while still on an acute unit.

- **Acute/assessment phase:** A period when the physiotherapist/stroke team are primarily gathering information about the patient – identifying impairments and disability, assessing the social and personal context and environment, monitoring response to treatment, etc. In most cases this would be a short-lived stage – a few days – usually following admission, either to an acute ward following the stroke, or transfer to a rehab unit.
- **Rehabilitation phase:** During this phase, the main aim for the patient is to undergo treatment to maximize movement-related ability/function. The physiotherapist aims to achieve this by delivering interventions that aim to reduce impairments and disability.
- **Pre-discharge phase:** The patient is being prepared for discharge from the inpatient facility. A discharge destination has been identified and physiotherapy is geared towards enabling the patient to manage safely and as independently as possible within that environment. A discharge date may or may not have been set.