Upper limb weakness following stroke has a negative impact on daily living and quality of life but the evidence for interventions is limited

Improving upper limb function after stroke

In this article...

- Evidence for interventions to improve upper limb function following a stroke
- Recommendations for practice

Upper limb weakness following a stroke affects patients’ abilities to undertake activities of daily living and has a negative impact on rehabilitation treatment.

Nurses have a role in providing therapy to patients and will need to apply expert clinical judgement and reasoning to assess and identify the effects of individual treatment techniques for patients with upper limb weakness.

This Cochrane overview of 40 systematic reviews explored which interventions improve upper limb recovery and function (Pollock et al, 2014).

Study characteristics
The overview examined 18 individual interventions and the dose and setting of interventions. The primary outcome of interest included upper limb function following stroke such as measures examining active function, dexterity, object manipulation and reach-to-grasp, grip or pinch. The secondary outcomes included measures of motor impairment, active movement and coordination and performance of activities of daily living (ADLs) and extended ADLs.

The 40 reviews included 503 studies (18,078 participants). Thirty-four of the 40 reviews included only participants with stroke, while six reviews included mixed populations of participants (neurological conditions and mixed neurological and non-neurological populations).

Summary of key evidence
The reviewers extracted pooled data from 31 reviews comprising RCTs and quasi-RCT, exploring 127 comparisons. The other nine reviews included non-randomised trials and other designs, as well as RCTs. The reviewers developed a qualitative synthesis of the data from these reviews as pooled data, or data was not available in the reviews.

Results
Overall, the majority of evidence included in the original systematic reviews was of low quality and does not support any change in current practice. Some moderate-quality evidence suggests that constraint-induced movement therapy, mental practice, mirror therapy, interventions for sensory impairment, virtual reality and a relatively high dose of repetitive task practice may be effective for this patient group.

This overview highlights that there is an urgent need to generate high-quality evidence related to the effectiveness of interventions to improve upper limb function following stroke. Identifying the most effective upper limb rehabilitation interventions is a recognised priority for stroke research. This research will need to establish the dose of interventions, as this has implications for clinical practice and will influence how future rehabilitation services and research are designed.

Best-practice recommendations
Clinical decisions about rehabilitative treatments require expert clinical reasoning and judgment if the range of evidence is to be interpreted and applied effectively.

There are many diverse interventions aimed at improving upper limb function after stroke. The clinical application of the evidence about these interventions will depend on the individual patient or setting, or both.

Research evidence is available for several interventions not yet widely used in clinical practice; including brain stimulation techniques (tDCS and repetitive pulse transcranial magnetic stimulation) and robotic devices. High-quality evidence suggests that tDCS does not provide a benefit, or harm, to ADL outcomes. Overall, current evidence does not support the introduction of these emerging interventions until further research explores the implication for practice.

Currently, evidence is insufficient to support a change in clinical practice for interventions that are used routinely in clinical practice.

Denise Blanchard is senior lecturer, School of Nursing and Midwifery, University of Western Sydney

References