The efficacy of stroke rehabilitation: a qualitative review
Foley N C, Teasell R W, Bhogal S K, Doherty T, Speechley M R

CRD summary
This review assessed the effect of in-patient stroke rehabilitation compared with conventional care. The authors concluded that mortality and discharge outcome were not improved by stroke rehabilitation, yet functional outcomes improved and hospital length of stay was reduced. The method used to combine the studies was questionable given the degree of ‘variability among the studies. The authors’ conclusions must be interpreted with caution.

Authors’ objectives
To assess the effectiveness of specialised in-patient stroke rehabilitation compared with conventional care.

Searching
MEDLINE (from 1970 to 2002), and EMBASE, MANTIS, Pascal and SciSearch (from 1995 to 2002) were search; the search terms were listed. The bibliographies of selected studies were checked. Unpublished literature was not included in the review.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies of in-patient stroke rehabilitation compared with conventional care appear to have been eligible for inclusion, although inclusion criteria for the comparator were not stated specifically. Conventional care was based in a general medical ward in the majority of studies; one study used home care by a specialist as its comparator.

Participants included in the review
The authors did not explicitly state an eligible participant group for inclusion. The included studies were of stroke patients.

Outcomes assessed in the review
Studies that assessed functional outcomes, mortality, length of hospital stay, and/or discharge outcome (patients admitted home or to a long-term care facility) were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed the studies for inclusion. Any disagreements were resolved through consultation.

Assessment of study quality
The PEDro scoring system was used to assess the quality of the included studies (see Other Publications of Related Interest). Ten criteria were applied, all requiring yes or no answers. Each of the following criteria were given equal weighting of one point: randomisation; allocation concealment; comparison of the baseline characteristics; blinding of the patient, therapist and assessor; adequate follow-up (were all randomised patients accounted for at the end of the study?); intention-to-treat analysis; and statistical comparisons between groups with point estimates and variability measures. Studies receiving a PEDro score of 4 or less were excluded from the review. Two reviewers independently assessed the studies for quality and any disagreements were resolved by a third reviewer.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data
extraction. A dichotomous outcome measure was used to summarise the results of each trial.

**Methods of synthesis**

How were the studies combined?
The studies were combined through 'vote counting', by reporting the number of studies showing in-patient stroke rehabilitation to be effective and the number of studies showing no significant differences between the treatment and control groups. Study quality was used to weight the studies in the event of conflicting results. The studies were also discussed in a narrative synthesis.

How were differences between studies investigated?
Differences between the studies were briefly discussed under the grouping of outcome, and were evident from the tables. The authors did not formally investigate differences between the studies.

**Results of the review**

Twelve RCTs (21 publications), consisting of 2,813 patients, were included in the review.

Two studies received a PEDro score of 8, three scored 7, three scored 6, and four scored 5.

Functional outcomes.

Seven of the 12 studies investigating functional outcome found in-patient stroke rehabilitation beneficial in comparison with conventional care. Five studies failed to show a beneficial effect.

Mortality.

Three of the 12 studies assessing mortality found in-patient stroke rehabilitation to be beneficial in reducing mortality in comparison with conventional care. Nine studies failed to show a beneficial effect.

Length of hospital stay.

Five of the 8 studies found length of stay to be reduced in patients receiving stroke rehabilitation in comparison with conventional care. Three studies did not show a beneficial effect.

Discharge outcome.

Three of the 11 studies investigating discharge outcome found that, compared with conventional care, patients were more likely to have a good outcome (defined as an increase in the number of patients returning home after hospitalisation, or a decrease in the number of patients admitted to a long-term care facility) having received stroke rehabilitation. Eight studies failed to show a significant difference between the treatment groups.

**Authors' conclusions**

Based on the available evidence, mortality and discharge outcome are not improved by specialised in-patient stroke rehabilitation. The majority of studies suggested that functional outcomes are improved and hospital length of stay is reduced with specialised in-patient stroke rehabilitation.

**CRD commentary**

The review question was reasonably well-defined, although specific details of the intervention were lacking and the patient group was not specified. The literature search involved several potentially relevant databases, although no attempt to search for unpublished literature was made and the potential for publication bias was not investigated. Since it was unclear whether the authors included non-English language papers, it is therefore possible that some studies were missed. The study selection and quality assessment processes were carried out in duplicate, thus minimising the possibility of selection bias and reviewer error. It was unclear by what process the data were extracted.
Although poor-quality studies were excluded from the review, combining studies through the method of vote counting may not have been appropriate because of the variation in conventional care settings, severity of patient condition, period of follow-up, outcome measures, and methods by which the study results were presented (e.g. subgroup analyses). The authors noted that the studies provided limited descriptions of in-patient stroke rehabilitation, which may explain the heterogeneity of the findings with respect to provider skills, facilities and intensity of care. The authors' conclusions must, therefore, be interpreted with caution.

**Implications of the review for practice and research**

*Practice:* The authors did not state any implications for practice.

*Research:* The authors stated that future research could benefit from including more homogeneous samples of stroke patients in order to differentiate between the benefits of rehabilitation in different severity groups.

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**Bibliographic details**


**Other publications of related interest**


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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.