Physiotherapy after stroke: more is better?
Langhorne P, Wagenaar R, Partridge C

Authors' objectives
To determine whether more intensive physiotherapy produces greater benefit in reducing disability after stroke.

Searching
Searches were made, up to February 1995, of MEDLINE (using an expanded strategy), the Ottawa Stroke Trials Registry of 21 core neurology and stroke journals, the bibliographies of relevant articles and reviews and the proceedings of recent conferences in stroke, neurology and geriatric medicine. Published and unpublished studies were sought.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) of physiotherapy after stroke were included. Excluded were trials comparing organisationally-different stroke services and trials comparing different physiotherapy techniques.

Specific interventions included in the review
Interventions of physiotherapy after stroke where a physiotherapy intervention was provided at a greater intensity (more minutes/day of rehabilitation) than the contemporary 'normal practice'.

Participants included in the review
Patients who had a stroke were included. The time since stroke ranged from 8 days to 5 years and patients included both inpatients in general and rehabilitation wards and outpatients.

Outcomes assessed in the review
The following outcomes were assessed: case fatality, impairment evaluated using motor scores and disability evaluated using activities of daily living scores. Outcomes were collected within four months of the stroke as well as at the end of the scheduled follow-up period.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
Dichotomous outcomes were calculated as odds ratios (OR) with 95% confidence intervals (CI) of an adverse event in the treatment group compared to the control group. Outcomes of continuous data were analysed as the difference in mean scores with 95% confidence limits between intervention and control and by using the inverse chi-squared method of Fisher. A standard activities of daily living (ADL) score and standard motor score was calculated. The scores from different trials were converted to a standard score and a standard ADL score and standard motor score was calculated.
Trials with no standard deviation reported were ascribed the average value of similar trials. Outcomes for continuous data were summed for all trials as the weighted mean difference.

How were differences between studies investigated?
Sensitivity analysis included separate analysis of trials that were confounded by the control and intervention patients being managed in different settings and limiting the analysis to trials that used blinded outcomes.

Results of the review
Seven RCTs were included (597 patients): 5 RCTs were unconfounded and 2 RCTs were confounded.

The trials were heterogeneous in terms of the aims and objectives of the intervention, the physiotherapy techniques employed, patient selection, rehabilitation setting and timing of intervention. Methodological problems found included the lack of clear definition of physiotherapy interventions and the frequent use of a mixture of physiotherapy and occupational therapy, use of different disability and impairment scores and incomplete data in two trials.

Intensity of physiotherapy: control groups received 20 to 40 minutes per day of formal physiotherapy; intervention patients received modest increase in therapy input (usually 1.5 to 2 times the control level).

Death or deterioration by the end of follow-up: OR = 0.54 (95%CI: 0.34, 0.85; P < 0.01).

Impairment score: at randomisation and at 12 months (P > 0.05); at 3 months (P < 0.05).

Disability score: at randomisation and at 12 months (P > 0.05); at 3 months (P < 0.05).

The standard motor and ADL scores: at initial assessment (P < 0.05); at final review (P > 0.05).

Results were similar after exclusion of 2 trials which were confounded by the experimental groups being managed in different settings and after limiting the analysis to those trials using blinded outcomes.

Authors' conclusions
There is inadequate information to allow informed decisions about the best level of physiotherapy input after stroke. There is a trend towards a transient improvement in ADL and impairment scores and possibly a reduction in the combined outcomes of death or deterioration, but large randomised trials will be required to resolve these issues adequately.

CRD commentary
The literature search should have revealed most relevant studies though it is not clear if the search was limited to studies in a specific language. Sensitivity analysis was carried out by investigating the effect of confounding by site and by blinded outcome assessment.

Discussion includes mention of methodological problems found in the primary studies that limit the conclusion of the review.

Inclusion criteria specified RCTs but one trial includes some patients apparently allocated on a non-random basis. No details of the methods used to select studies for inclusion or to extract data are reported. There is no assessment of validity of the included studies and no statistical assessment of heterogeneity among trials.

Given the methodological problems with the primary studies which are discussed by the authors, the conclusion that inadequate information exists to allow informed decisions is justified.

Bibliographic details
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Record Status
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.