Evidence-based systematic review: effects of intensity of treatment and constraint-induced language therapy for individuals with stroke-induced aphasia
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CRD summary
The authors concluded that the modest effects of more intensive treatment and constraint-induced language therapy for patients with stroke-induced aphasia found in this review should be treated as preliminary. Very limited evidence from clinically diverse and generally small non-randomised studies means that the authors' conclusions should be interpreted with caution.

Authors' objectives
To evaluate the effects of treatment intensity and constraint-induced language therapy (CILT) on language impairment and communication activity participation in patients with stroke-induced aphasia.

Searching
PubMed, CINAHL, PsycINFO, PsycARTICLES, CSA Linguistics and Language Behaviour Abstracts, Combined Health Information Database, Health Source: Nursing, ScienceDirect, NeLH, REHABDATA, Science Citation Index, Social Science Citation Index, SUMSearch, TRIP Database and the Cochrane Database of Systematic Reviews were searched. ASA journals, University of Pittsburgh Clinical Aphasiology Conference Proceedings, National Institutes of Health (NIH) abstracts and Google scholar were searched from 1990 to 2006. Only studies published in English in peer-reviewed journals were eligible. Some details of the search strategy were reported. Reference lists of relevant articles were screened.

Study selection
Studies of any design that evaluated CILT or compared higher versus lower intensity treatment for adults (aged 18 years or more) with stroke-induced aphasia were eligible for inclusion. Studies were excluded if they used pharmacological treatment as the control intervention.

In most studies, between 24 and 30 hours of treatment was provided; some provided over 100 hours. Studies used different treatment schedules and treatments. Patients had acute or chronic aphasia; time since stroke onset ranged from 11.2 to 90 months among chronic aphasia patients. Where reported, patients ranged from 18 to 82 years of age. Most patients in intensity studies were non fluent and, where reported, 40% had more severe aphasia and 30% had global aphasia. Most patients (60%) in CILT studies were non fluent and, where reported, most had mild to moderate severe aphasia; 19% had severe aphasia and 30% had global aphasia. Studies assessed a variety of outcome measures. Outcome measures were classified as language impairment or communication activity/participation using the World Health Organisation (2001) International Classification of Functioning, Disability and Health: ICF criteria.

Two reviewers independently screened identified abstracts. The final selection of included studies was made by a panel of the authors.

Assessment of study quality
Pairs of reviewers independently assessed validity using criteria based on study design, blinding, sample, comparability of group or participants, treatment fidelity, outcome measures, significance and precision of findings and, for controlled trials, intention-to-treat analysis. The maximum possible score was 9 for controlled trials and 8 for non-controlled trials.

Data extraction
Where possible, for each group study, group means and standard deviations were extracted or estimated from presented statistics and Cohen's d effect sizes were estimated for each outcome measure. Weighed effect sizes were calculated for one single-participants study.
The authors did not state how many reviewers performed the data extraction.

**Methods of synthesis**
The studies were combined in a narrative synthesis.

**Results of the review**
Ten studies were included (n appeared to be 141): one randomised controlled trial (n=17); four controlled trials (n=66); three case series (n=47); one case study (n=6); and one single-subject study (n=5). Sample size ranged from five to 28.

All studies described patients or used comparable treatment groups and all used valid outcome measures. Two studies reported blinded assessment of outcome, two reported treatment fidelity and three used intention-to-treat analysis.

**Treatment intensity (five studies, n=68):**
For chronic aphasia, all eight effect sizes from four group studies reported greater effects of higher intensity treatment on language impairment. The single-participant study reported mixed effects. Results of treatment intensity on communication activity/participants were mixed for chronic aphasia.

For acute aphasia, effect sizes from one study (n=17) favoured more intensive treatment. Effects for maintenance of treatment effects in patients with chronic aphasia were mixed in one single-subject study.

**CILT (five studies, n=70):**
For chronic aphasia, nine of 16 effect sizes from five group studies were large and reported greater effects of higher intensity treatment on language impairment.

For chronic aphasia, eight of 11 effect sizes from three studies reported greater effects of CILT compared to control on language impairment.

Both studies that assessed maintenance reported that the effects of CILT in chronic aphasia were maintained (at one month and six months respectively).

**Authors' conclusions**
The modest effects of more intensive treatment and constraint-induced language therapy for patients with stroke-induced aphasia found in this review should be treated as preliminary findings.

**CRD commentary**
The review questions were clearly stated. Inclusion criteria were defined for intervention, participants and outcome; criteria for study design were broad. Many relevant sources were searched, but no attempts were made to minimise publication and language biases. Methods were used to minimise reviewer errors and bias in the selection of studies and assessment of validity, but it was unclear whether similar steps were taken in data extraction. Study validity was assessed and results were reported. In view of the diversity among studies, a narrative synthesis was appropriate. However, results were reported as the number of positive effect sizes based on multiple outcome measures from individual studies. Studies were generally poor quality with small sample sizes; evidence from studies of higher quality design was not highlighted in the synthesis. Very limited evidence from clinically diverse and generally small non-randomised studies means that the authors’ conclusions should be interpreted with caution.

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

**Practice:** The authors stated that review findings should be interpreted cautiously and patients characteristics, circumstances and preferences taken into account when deciding optimal treatment for individual patients.

**Research:** The authors stated that higher quality randomised studies were required to evaluate the effectiveness and cost-effectiveness of difference intensities of CILT and compare alternative aphasia treatments. Studies were also required to differentiate the effects of CILT from high-intensity treatment effects.
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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.