Computer therapy compared with usual care for people with long-standing aphasia poststroke: a pilot randomized controlled trial


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to assess the feasibility of conducting a randomised controlled trial to assess the effectiveness of self-managed computer-based treatment for long-standing aphasia after stroke. The authors concluded that their results indicated that the computer therapy was feasible and could be cost-effective, and it would be practical to recruit sufficient participants for a larger trial. There were issues with the reporting and methods, but the authors' conclusions appear to be appropriate for their objective.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the feasibility of conducting a randomised controlled trial to assess the effectiveness of computer-based self-managed treatment for people with long-standing aphasia after stroke, particularly those with word-finding difficulties.

Interventions
The intervention was an independent computer program in addition to, and compared with, standard care. The program, called StepbyStep, was created by a research speech and language therapist. Support was provided by a trained volunteer, for most patients (13 out of 17). StepbyStep consisted of over 13,000 language exercises, and photographs could be added for personally relevant words. Participants were asked to work through the computer exercises, for at least 20 minutes, three days a week, for five months. Standard care consisted of communication support groups and everyday language activities.

Location/setting
UK/community.

Methods
Analytical approach:
A simple decision-analytic model was used to estimate the cost-effectiveness of the intervention, over a lifetime, using data from a trial. The authors stated that the perspective was that of the UK NHS and Personal Social Services.

Effectiveness data:
A pilot single-blind, stratified randomised controlled trial was conducted. Patients with aphasia were allocated to either the intervention (17 patients), or usual care (17 patients). Stratification was based on severity of aphasia and time since stroke. Five months of intervention were followed by three months without intervention to investigate treatment maintenance. The key clinical outcome was the change in word retrieval ability. Participants had to name 48 words from the Object and Action Naming Battery, at five and eight months from baseline. The primary feasibility outcomes were the recruitment rate, completion rates, and statistical variability.

Monetary benefit and utility valuations:
A utility increment was applied to patients who experienced a good response to the intervention. The utility values were derived using a pictorial version of the EQ-5D questionnaire, which was adapted for patients with aphasia.
Measure of benefit:
The measure of benefit was the quality-adjusted life-year (QALY).

Cost data:
The costs included the intervention and other health care resource use. Health care resource use was derived from patient and caregiver diaries. The values were derived using standard cost sources. The currency was UK £.

Analysis of uncertainty:
Variability in data was presented as the 95% confidence interval for the key clinical outcome.

Results
The average percentage of words named correctly was lower in the intervention group, than in the control group, at every time point. For the intention-to-treat analysis, the intervention was associated with a mean improvement, compared with control, in change from baseline in percentage of words named correctly of 19.8 percentage points (95% CI 4.4 to 35.2) at five months, and 11.3 points (95% CI -7.4 to 29.9) at eight months.

The model estimated that the lifetime costs were £18,687 for standard care, and £19,124 for the intervention. The associated QALYs were 3.07 for standard care, and 3.22 for the intervention; a gain of 0.14 QALYs with the intervention.

The incremental cost-effectiveness ratio was £3,058.21 per QALY gained.

Authors' conclusions
The authors concluded that their results indicated that self-managed computer therapy was feasible and could be cost-effective, and it would be practical to recruit sufficient participants for a larger trial.

CRD commentary
Interventions:
The intervention appears to have been appropriate, and the most appropriate comparator - standard care - was analysed. A description of the key elements of the intervention and its comparator was supplied. There was no discussion of any other relevant alternatives.

Effectiveness/benefits:
The key clinical and feasibility outcomes from the trial were clearly reported, but the modelling was not as clear, making the synthesis of the data uncertain. The utility valuation was undertaken within the trial. The standard EQ-5D questionnaire was reformatted to make it more accessible for people with aphasia, but this adapted version was not validated. The authors pointed out that validation would be necessary if it was used to calculate the QALYs in a larger trial. The derivation of the utilities, in this manner, makes the estimates highly uncertain.

Costs:
The costs were not clearly reported. Little information on the specific costs, and their sources, was reported. In particular, it was unclear how the cost of the intervention was derived; what resource items were included; and how these items were valued. The authors did not report any discounting, and any assumptions on future resource use and costs, to calculate the lifetime costs, were unclear.

Analysis and results:
The trial methods were clearly reported, including its limitations. Patients were appropriately randomised, using a web-based stratified randomisation system. The reporting of the economic modelling was less comprehensive, and important details were omitted. Given the small sample, and the uncertainty in the data, some analysis of uncertainty was necessary, despite the aim of the study; no such analysis was conducted. The authors acknowledged that their results were subject to uncertainties in the quality of life gain, the relapse rate, and the changes over time in patients who were not treated, so it is unclear why they made no attempt to explore this uncertainty.

Concluding remarks:
There were issues with the reporting and methods used, especially for the cost-effectiveness model, but the authors
conclusions appear to be appropriate for the scope of their analysis.

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