Controlling hypertension immediately post stroke: a cost utility analysis of a pilot randomised controlled trial

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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
This study assessed the costs and outcomes of therapeutically reducing blood pressure in hospitalised hypertensive patients, with acute cerebral infarction or haemorrhage. Anti-hypertensive therapy might be effective and cost-effective, at three months from the hospital perspective, but further research was needed to confirm this and to establish the long-term benefits. There were a few limitations to the study, but the authors acknowledged them and their conclusions appear to be appropriate for the available evidence.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
This study assessed the costs and outcomes of therapeutically reducing blood pressure in hospitalised hypertensive patients with acute cerebral infarction or haemorrhage.

Interventions
Therapeutically reducing blood pressure with labetalol or lisinopril was compared with no therapeutic reduction in blood pressure. The drug therapies or placebo were administered within 36 hours of a stroke.

Location/setting
UK/secondary and tertiary care.

Methods
Analytical approach:
The economic evaluation was based on a single clinical study, with a three-month follow-up. The authors stated that the perspective was that of the acute-care hospital.

Effectiveness data:
The authors performed a randomised double-blind placebo-controlled trial to estimate the effectiveness data. This trial recorded data on 171 patients, with 112 of them receiving active medication and the remaining 59 receiving placebo. Patients were followed up at 14 days and at three months. The main clinical effectiveness estimates were the patient survival, deaths, and severe disability.

Monetary benefit and utility valuations:
Modified Rankin scale (mRS) scores were collected from patients upon inclusion in the trial. The utilities were mapped to these mRS scores, using the time trade-off approach.

Measure of benefit:
The measures of benefit were the number of patients surviving and the quality-adjusted life-years (QALYs) gained. In a secondary analysis, the benefit measure was the number of patients who died or were severely disabled, defined as a mRS score of less than four.

Cost data:
The unit costs were from the National Schedule of Reference Costs and they were adjusted for the patient’s length of
stay. The charges for the active drugs were considered and were from the British National Formulary. All costs were reported in 2006 UK pounds sterling (£).

Analysis of uncertainty:
The uncertainty was investigated in a non-parametric bootstrap analysis, with 1,000 replications. This produced confidence intervals around the incremental costs and outcomes, and generated a cost-effectiveness acceptability curve.

Results
No significant differences were found in the costs and outcomes, for the first 14 days of treatment. At three months, for all outcome measures, the active treatment dominated placebo, as it was less expensive and more effective.

The sensitivity analysis estimated a 96.5% likelihood of the incremental cost per QALY gained being below £30,000 for the drug therapy. The likelihood that treatment was cost-effective was never below 92%, at any threshold.

Authors’ conclusions
Antihypertensive therapy for hypertensive patients immediately after a stroke might be effective and cost-effective, compared with placebo, from the hospital perspective at three months. Further research was needed to confirm these findings and establish the long-term benefits.

CRD commentary
Interventions:
The interventions were described, but it was unclear if the usual practice was included. These interventions might be applicable to other settings.

Effectiveness/benefits:
The effectiveness data were from a randomised controlled trial, which appears to have been of good quality. The authors acknowledged that recruitment to the trial was not sufficient to power the study to provide significant findings and this might have affected the results. The benefit measures appear to have been appropriate, but the methods used to estimate them were not fully explained.

Costs:
The perspective was clearly stated and it appears that all the major cost categories were included. The cost sources appear to have been of good quality, but the reporting was not clear and few unit costs were given.

Analysis and results:
The results were clearly reported and were assessed for uncertainty. The authors reported that there were difficulties with data collection, particularly for disability status at three months. Self-reported data were used for length of stay and this might have introduced important bias.

Concluding remarks:
There were a few limitations to the study, but the authors acknowledged these limitations and their conclusions appear to be appropriate for the available evidence.

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