Economic evaluation of early administration of prednisolone and/or aciclovir for the treatment of Bell's palsy

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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 investigated the cost-effectiveness of treating patients with Bell’s Palsy with prednisolone alone, compared with acyclovir alone or in combination. The authors concluded that prednisolone alone was likely to be cost-effective, as it produced lower costs and higher effects than its comparators. The study methods were transparent, thorough and appropriate and the authors’ conclusions reflect the analysis undertaken.

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

Study objective
This study estimated the cost and effective of treating patients with Bell’s palsy, with the steroid agent prednisolone and the antiviral agent acyclovir or either agent alone. The population included adults of 16 years or older, with unilateral facial weakness of no identifiable cause, presenting to an emergency department or their primary physician and recruited within 72 hours.

Interventions
For a 10-day period, prednisolone alone (25mg twice daily) was compared with acyclovir alone (400mg five times daily) and in combination.

Location/setting
UK/out-patient care in 17 hospitals in Scotland.

Methods
Analytical approach:
This evaluation was based on a single study (Sullivan, et al. 2007, see ‘Other Publications of Related Interest’ below for bibliographic details). The costs and effects were analysed over a nine-month period using a decision analytic model. The authors stated that the study perspective was that of the British National Health Service (NHS).

Effectiveness data:
The data on effectiveness in terms of the percentage of patients with "complete recovery of facial function” were derived from a multi-centre, double-blind, placebo-controlled randomised factorial study. Other outcomes were quality of life, pain, appearance, costs and efficiency. Multivariate regression analyses were used to adjust for baseline covariates.

Monetary benefit and utility valuations:
The utility weights were measured by the Health Utilities Index mark III (HUI III) at three, six and nine months. An analysis of covariance was used to obtain the weights, for cured and non-cured participants at three and nine months, which were adjusted for baseline utility scores.

Measure of benefit:
The two measures of benefit were quality-adjusted life-years (QALYs) and the percentage of cured cases.

Cost data:
The cost types were those of initial treatments (drugs) and follow-up (hospital-based and primary-care services). Measurement of the quantities of resources was based on a sub-sample of 74 trial participants. UK unit costs were applied to the medications using the British National Formulary, while follow-up costs were derived from publicly-available sources (Curtis, et al. 2006, see ‘Other Publications of Related Interest’ below for bibliographic details). The cumulative mean costs were estimated for cured and non-cured patients and ordinary least-squared regressions were applied. The costs were reported in 2006 to 2007 UK pounds sterling (£).

Analysis of uncertainty:
Deterministic and probabilistic sensitivity analyses were performed to assess the parameter uncertainty. Monte Carlo simulations with 1,000 iterations were conducted and cost-effectiveness acceptability curves were plotted using a range of willingness-to-pay thresholds from £10,000 to £50,000 per QALY gained. One-way and threshold analyses were also undertaken on the key parameters.

Results
The mean cost for prednisolone alone over nine months was £182.34 compared with £205.14 for no treatment, £219.62 for acyclovir, and £198.09 for the combination. The incremental QALYs for prednisolone were 0.719 compared with 0.717 for no treatment, 0.716 for acyclovir, and 0.718 for the combination. The incremental percentage of cured cases was also higher for prednisolone at 85.6% compared with 78% for all the comparators. Subgroup analyses on the utilities and age were not statistically significant.

The incremental cost-utility and cost-effectiveness ratios were not stated as the prednisolone only option produced lower costs and higher effects than all other options, which meant it dominated the other treatments.

Over a range of willingness-to-pay thresholds, the results of the probabilistic sensitivity analyses showed that the probability of prednisolone alone being cost-effective was 76% to 80%. The findings were only sensitive to the estimates of the probability of being cured for acyclovir compared with no acyclovir.

Authors' conclusions
The authors concluded that the treatment of Bell’s Palsy with prednisolone alone was likely to be cost-effective compared with acyclovir, and further data was required on the costs and utilities to confirm these findings.

CRD commentary
Interventions:
The interventions were clearly reported including their dosage. Two different classes of drug treatment were included and the reader should decide whether these options are relevant in their own setting.

Effectiveness/benefits:
The effectiveness data were based on a single randomised controlled study and this is likely to have produced good quality evidence on the efficacy of the respective drugs, in the absence of notable biases. The measurement of the utilities, using the HUI III, was clearly reported and was rigorously analysed taking into account participant heterogeneity.

Costs:
The categories of costs were consistent with the stated perspective. The resource use and cost results were adequately presented. Limitations were acknowledged by the authors in terms of the possible inaccuracy in resource quantities based on a small trial sub-sample.

Analysis and results:
The cost and effect analyses were transparent and enable the reader to capture all the analytical steps taken. The information on missing data and losses to follow-up were given in a supplementary file. The sensitivity analyses were comprehensive, with the results being well-illustrated and taking into account both the parameter and structural model uncertainty. It is unclear why normal distributions were assigned to the cost estimates, when the authors stated that the costs were skewed. A more appropriate choice would have been the gamma or log normal distributions for costs and beta distributions for probabilities. The authors discussed the possibility that the short time horizon may not have fully
captured all the health benefits or detriments.

**Concluding remarks:**
The methodology of the study appears to have been appropriate and was explicitly and clearly reported. The authors’ conclusions appear to be appropriate.

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