Sequential medication strategies for postherpetic neuralgia: a cost-effectiveness analysis

Smith K J, Roberts M S

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 study evaluated the cost-effectiveness of a suggested sequential management strategy for the relief of postherpetic neuralgia in a hypothetical cohort of 70-year-old patients, using various sequences of 6 drugs. The authors concluded that the suggested treatment algorithm is cost-effective and that recommended treatment algorithms are also economically reasonable. Despite some limitations with data transparency concerning the utility valuation, the methods of the study appear appropriate and comprehensive. The authors' conclusions reflect the scope of the analysis.

Type of economic evaluation
Cost-utility analysis

Study objective
The study evaluated the cost-effectiveness of a suggested sequential management strategy for the relief of postherpetic neuralgia in a hypothetical cohort of 70-year-old patients, with and without coronary artery disease (CAD), using various sequences of 6 drugs (Finnerup et al. 2005, see ‘Other Publications of Related Interest’ below for bibliographic details).

Interventions
Twenty-five sequential management strategies were considered. These comprised the following six drugs:

- gabapentin,
- topical lidocaine patches,
- tricyclic antidepressants (TCAs),
- opioid analgesics,
- pregabalin, and
- tramadol.

Other (recommended) sequential medication strategies were used as a comparator.

Location/setting
USA. The setting was not reported.

Methods
Analytical approach:
A Markov model was used to facilitate the synthesis of costs and clinical data for each of the sequential management strategies. A lifetime time horizon was used in the study. The authors stated the perspective of the study to be societal.

Effectiveness data:
The effectiveness data came from a number of published studies, with the main data source being a recent review of randomised controlled trials of neuropathic pain treatment. The authors did not report any search methods or inclusion
criteria. The main clinical parameter used was the likelihood of greater than 50% relief and severe side-effects from each of the drugs.

Monetary benefit and utility valuations:
The utilities appear to have been derived from a combination of data from a published study and authors' estimations. The instruments used to value the utilities were not reported.

Measure of benefit:
The measure of benefit used was the quality-adjusted life-year. Future health benefits were discounted at a rate of 3%.

Cost data:
The direct costs included in the analysis were those relating to medication and office visits. The indirect costs were the loss of one hours work per week in order to receive care. The costs and resource data were taken from published studies. All costs were presented in 2005 US dollars ($). Discounting was performed at a rate of 3%.

Analysis of uncertainty:
One-way and Monte Carlo (probabilistic) sensitivity analyses were performed. The results of the probabilistic sensitivity analysis showed the likelihood that a given medication would be first, second or third in a sequential medication strategy for a series of willingness-to-pay thresholds.

Results
Only the combinations of the dominant strategies (more effective and less costly) were reported.

In patients with no CAD, and assuming that TCAs increase mortality, the most cost-effective strategy was gabapentin, TCA, pregabalin, opioid and tramadol, with an incremental cost-effectiveness ratio (ICER) of $8,300.

For patients without CAD, and assuming that TCAs increase mortality, the most cost-effective strategy was TCA, gabapentin, pregabalin, opioid and tramadol, with an ICER of $15,600.

For patient with CAD, the most cost-effective strategy was gabapentin, pregabalin, opioid and tramadol, with an ICER of $15,600.

The results of the sensitivity analysis showed the likelihood that a given medication would be first, second, or third in a sequential medication strategy considered acceptable from a societal standpoint for a series of willingness-to-pay thresholds. However, given the extensive level of reporting, the reader of this abstract is referred to the full paper for further details.

Authors' conclusions
The authors concluded that the suggested treatment algorithm is cost-effective and that recommended treatment algorithms are also economically reasonable.

CRD commentary
Interventions:
The interventions were well described and would appear to represent current practice in the authors' setting. The inclusion or exclusion of various sequential management strategies was discussed and justified.

Effectiveness/Benefits:
The effectiveness data were derived from published sources. The methods used in reviewing the literature were not reported, which makes it impossible to determine whether the best available evidence was used. No details were provided of the review from which much of the effectiveness data were taken. The utility values used in the model and their sources were clear, but there were no details on the methods of utility measurement. It is therefore not possible to assess the validity of these values without recourse to the referenced studies.

Costs:
The perspective was clear and it appears that all the relevant costs have been considered. Average medication costs were reported and, in some cases, the unit costs and resource use data. The costs were subject to extensive sensitivity analysis.

Results and Analysis:
The authors conducted an appropriate incremental analysis, and the results for non-dominated strategies were presented clearly and in full. The results of the sensitivity analysis were presented as likelihoods that medications were favoured early in sequential treatment strategies, which showed that the results were generally robust to variation in the model parameters. The authors acknowledged a number of limitations to their analysis.

Concluding remarks:
Despite some limitations with data transparency concerning the utility valuation, the methods of the study appear appropriate and comprehensive. The authors' conclusions reflect the scope of the analysis.

Funding
None stated.

Bibliographic details

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Aged; Algorithms; Analgesics /adverse effects /economics /therapeutic use; Clinical Trials as Topic; Cohort Studies; Coronary Artery Disease /complications /drug therapy; Cost-Benefit Analysis; Humans; Models, Biological; Neuralgia, Postherpetic /drug therapy /economics; Review Literature as Topic

AccessionNumber
22007001104

Date bibliographic record published
04/06/2007

Date abstract record published
03/11/2008