A cost-utility study of the use of pregabalin in treatment-refractory neuropathic pain

Gordon J, Lister S, Prettyjohns M, McEwan P, Tellow A, Gabriel Z

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 cost-effectiveness of pregabalin for patients with refractory neuropathic pain. The authors concluded that it was a cost-effective alternative to usual care. On the whole, the methods were well reported and the authors' conclusions seem valid for pregabalin in addition to usual care, rather than as an alternative.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of pregabalin for patients with refractory neuropathic pain.

Interventions
Pregabalin (150mg to 600mg per day) in addition to the usual care was compared with usual care alone. Usual care included one or more weak or strong opioid, non-steroidal anti-inflammatory drug, or analgesic.

Location/setting
UK/primary and secondary care.

Methods
Analytical approach:
A fixed time increment, stochastic model, with a one-week cycle length, was developed to estimate the cost-effectiveness of the two interventions. A five-year time horizon was used, and the authors stated that the perspective of the UK NHS was adopted.

Effectiveness data:
The clinical data were from a systematic review of the literature. Initially, randomised controlled trials (RCTs) were sought, but none was found. Subsequently, a search of PubMed and the Internet, using Google, with the search terms 'pregabalin' and 'refractory', identified four relevant, prospective, non-randomised studies. Authors' assumptions were used to generate estimates for missing data, in the four studies. The main measure of effectiveness was the reduction in pain score.

Monetary benefit and utility valuations:
The utility estimates were from 284 pain clinic out-patients with both refractory and non-refractory neuropathic pain, who completed the European Quality of life (EQ-5D) questionnaire and a pain scale. A mapping function was used to convert the pain scores to EQ-5D scores and estimate utility. The utility values for adverse events were assumed by the authors.

Measure of benefit:
The main measure of benefit was quality-adjusted life-years (QALYs), which were discounted at an annual rate of 3.5%.

Cost data:
The economic analysis considered drug acquisition and NHS and Personal Social Services expenditure. The resource use data were from the survey that provided the utility values and the drug costs were from the British National Formulary. Other cost estimates were mainly from the Personal Social Services Research Unit, with some author
assumptions. The costs were discounted at an annual rate of 3.5% and all costs were reported in £.

Analysis of uncertainty:
The analysis of uncertainty included a number of deterministic one-way sensitivity analyses, varying the cost of usual care, the frequency of adverse events, and the time horizon.

Results
The number of QALYs gained per person was 0.68 with the intervention and 0.43 with usual care. The cost per person was £18,372 with the intervention and £15,624 with usual care. The additional cost per QALY gained with the intervention was £10,803.

The sensitivity analysis showed that the incremental cost per QALY gained ranged from £8,505 to £22,116 and the results were most sensitive to variations in the utility estimates.

Authors’ conclusions
The authors concluded that pregabalin was a cost-effective alternative to usual care for patients with refractory neuropathic pain.

CRD commentary
Interventions:
The selection of the comparators was appropriate, as the proposed treatment was compared with usual care. Details of the intervention, including its dosage, were reported.

Effectiveness/benefits:
RCTs are the gold standard in clinical research, but a systematic search found no relevant RCTs, so the search was extended to identify the source studies. The search methods were reported and should ensure that the most up-to-date and relevant clinical data were used. Appropriate methods were used to generate the data that were missing from these studies. The method used to derive the utility values was reported and appears to have been appropriate. QALYs were an appropriate outcome measure, as they capture the impact of the intervention on a patient’s quality of life as well as allowing comparisons with other interventions for other diseases.

Costs:
The perspective was stated and the relevant costs were included. The sources for the resource use and unit cost estimates were reported and they were appropriate for the authors’ setting. The unit costs and quantities were reported, making it easier to replicate the analysis. Future costs were appropriately discounted, but the price year was not reported, making it difficult to inflate costs in the future.

Analysis and results:
The analytic model was described in detail and a diagram of its structure was provided. An appropriate incremental analysis was performed to identify the most cost-effective option. A deterministic sensitivity analysis examined the uncertainty in each estimate one at a time. A more complete analysis of uncertainty could have been achieved by probabilistic sensitivity analysis, varying all the inputs at the same time. The authors reported a number of limitations to their analysis, including the use of non-randomised clinical data. The results should be generalisable to similar settings.

Concluding remarks:
On the whole, the methods were well reported and the authors’ conclusions seem valid for pregabalin as an addition to usual care rather than an alternative.

Funding
Fundied by Pfizer Ltd, UK.

Bibliographic details