Economic evaluation of etoricoxib versus non-selective NSAIDs in the treatment of ankylosing spondylitis in the UK


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 evaluate the cost-effectiveness of etoricoxib versus non-selective nonsteroidal anti-inflammatory drugs (nsNSAIDs) in the treatment of ankylosing spondylitis. The authors concluded that given the assumptions and data used, etoricoxib was a cost-effective therapy when compared with nsNSAIDs. Overall the methodology was adequate and the methods and results were well reported. Given the scope of the analysis, the author’s conclusions appear to be valid.

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

Study objective
The objective was to evaluate the cost-effectiveness of etoricoxib versus non-selective nonsteroidal anti-inflammatory drugs (nsNSAIDs) in the treatment of ankylosing spondylitis.

Interventions
The study investigated the use of etoricoxib, a cyclooxygenase-2 selective inhibitor. This intervention was compared against non-selective nonsteroidal anti-inflammatory drugs (nsNSAIDs).

Location/setting
UK/secondary care.

Methods
Analytical approach:
A Markov model was developed to estimate the cost-effectiveness of etoricoxib versus nsNSAIDs over a period of 52 weeks. In an additional analysis, the health states and utility scores at 52 weeks were assumed to persist over the life expectancy. The authors stated that the perspectives of society and the UK National Health Service (NHS) were adopted.

Effectiveness data:
The effectiveness and clinical data were derived mainly from randomised controlled trials (RCTs) and meta-analyses. The main effectiveness parameter was the probability of discontinuing treatment due to lack of efficacy. This effectiveness parameter was derived from a clinical trial in ankylosing spondylitis (van der Heijde, et al. 2005, see 'Other Publications of Related Interest' below for bibliographic details).

Monetary benefit and utility valuations:
Quality-of-life weights were derived from published data on Bath AS Functional Index (BASFI) scores and Short Form (SF)-36 scores.

Measure of benefit:
The measures of benefit were quality-adjusted life-years (QALYs) saved, the number of upper gastrointestinal perforations, ulcers or bleeding, and the number of lower gastrointestinal bleeds.

Cost data:
The direct costs were those that related to treatment (medications and dispensing), primary care consultations, out-patient gastrointestinal consultations, investigations, in-patient days and surgery. The resource use data were derived from published studies and an expert panel. In order to obtain the episodes of sickness absence, a logistic regression was performed that described the probability of sickness absence for a given BASFI score. Costs that related to sickness absence were calculated by applying the human capital approach and using average daily earnings. Health care unit cost data were derived from the literature, the MediPlus UK 2004 database, and data from NHS trusts. All costs were reported in 2004 prices and expressed in UK pounds sterling (£).

Analysis of uncertainty:
A probabilistic sensitivity analysis was performed to quantify the uncertainty in the model outcomes. Each model parameter was fitted with a distribution that reflected its uncertainty. A random value was then sampled over 1,000 times from each distribution. A series of scenario analyses were performed by varying the cost of nsNSAIDs, the proportion of patients in employment, and the number of patients receiving concomitant proton pump inhibitor from the beginning.

Results
The quality-adjusted life-weeks over the 52-week follow up were: 41.52 (95% uncertainty interval, UI: 40.28 to 42.72) for a patient starting with etoricoxib; and 41.22 (95% UI: 40.13 to 42.32) for nsNSAIDs.

From an NHS perspective, the mean annual cost of etoricoxib was £450 (95% UI: 403 to 509) compared with £414 (95% UI: 285 to 567) for nsNSAIDs. From a societal perspective, the mean annual cost of etoricoxib was £1,138 (95% UI: 989 to 1,278) compared with £1,136 (95% UI: 937 to 1,326).

Costs and benefits were combined using an incremental cost-utility ratio (the additional cost per QALY saved) and an incremental cost-effectiveness ratio. From a NHS perspective, the additional cost per QALY saved was £5,611; from a societal perspective it was £281. From a NHS perspective, the incremental cost per upper gastrointestinal perforation, ulcer or bleeding or lower gastrointestinal bleed avoided was £2,003; from a societal perspective it was £100.

No incremental cost-effectiveness ratio was presented for the lifetime horizon.

Results from the probabilistic sensitivity analysis showed that there was a 77% probability that the incremental cost-utility ratio would be below £20,000 per QALY saved and an 83% probability that it would be below £30,000 per QALY saved.

Authors' conclusions
The authors concluded that, given the assumptions and data used, etoricoxib was a cost-effective therapy compared with nsNSAIDs.

CRD commentary
Interventions:
The interventions were reported clearly and well. An explicit justification was given for using nsNSAIDs as the comparator, namely that they represented first-line treatment in the UK at the time of the study.

Effectiveness/benefits:
The authors reported neither whether a systematic literature review was performed nor the methods used to identify relevant studies. Therefore, it was not possible to determine if all the relevant literature was included. However, the main clinical estimates used to populate the model were derived either from RCTs or meta-analyses, which are considered to be the highest standard of evidence when synthesising evidence from numerous sources.

Costs:
The perspective adopted in the economic analysis (NHS and societal) was well reported. Given this perspective, it appeared that all major relevant costs were included. The sources of unit costs and resource use data were well reported. The authors also reported the price year and currency used, and reported resource quantities and unit costs separately.
Analysis and results:
Appropriate details of the Markov model were reported and presented together with a diagram. Overall model uncertainty was examined by use of a probabilistic sensitivity analysis, considered in the UK to be the gold-standard method of evaluating overall model uncertainty. The methods and results were adequately reported. The authors acknowledged the limitations of their study in their discussion.

Concluding remarks:
Overall the methodology of the study was adequate and the methods and results were well reported. Given the scope of the analysis, the author's conclusions appear to be valid.

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