Cost-effectiveness analysis of topical treatments for actinic keratosis in the perspective of the Italian health care system


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 examined the cost-effectiveness of three treatments for actinic keratosis, which were 3% diclofenac in 2.5% hyaluronic acid gel, imiquimod 5% cream, and photodynamic therapy with methyl aminolevulinate. The authors concluded that diclofenac was the most cost-effective treatment. The methods were good and the analysis was clearly presented. The authors’ conclusions seem robust.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the cost-effectiveness of three treatments for actinic keratosis, which were diclofenac, imiquimod, and photodynamic therapy.

Interventions
The three treatments were 3% diclofenac in 2.5% hyaluronic acid gel, imiquimod 5% cream, and photodynamic therapy with methyl aminolevulinate. A maximum of two lines of treatment were considered. After diclofenac or imiquimod, the second-line treatment was photodynamic therapy and after photodynamic therapy it was diclofenac.

Location/setting
Italy/secondary care.

Methods
Analytical approach:
The analysis was based on a decision-tree model with a three-month time horizon. The authors stated that the analysis took the perspective of the Italian health care system.

Effectiveness data:
The clinical inputs for the model were from selected published literature, which only included randomised controlled trials (RCTs) of each treatment. No head-to-head trials were included. The authors did not state the approach used to pool the evidence from multiple sources. The clinical response rate and tolerability were the key inputs for the model.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The rate of responders was the benefit measure. A responder was defined as a patient whose lesions were all clinically cleared, with an excellent cosmetic result. The tolerability of treatment was also considered as an outcome.

Cost data:
The economic analysis included the costs of the three treatments. Diclofenac and imiquimod treatment included their drug costs, while photodynamic therapy included the costs of disposable materials, personnel, and machines or equipment for the following treatment stages: desquamation or removal of crusts, cream application and occlusive bandage, bandage removal and wound cleaning, and light exposure. The patterns of resource consumption were from a
Delphi panel of five Italian dermatologists. The costs were from official prices, such as national tariffs. They were in Euros (EUR) and the price year was 2010.

Analysis of uncertainty:
The uncertainty was investigated in two ways. One-way sensitivity analyses were undertaken by varying the individual inputs of the model, over plausible ranges and a probabilistic sensitivity analysis was carried out, using predetermined probability distributions for the model inputs.

Results
The projected costs were EUR 256 with diclofenac, EUR 342 with imiquimod, and EUR 320 with photodynamic therapy. The benefits were 0.813 with diclofenac, 0.734 with imiquimod, and 0.813 with photodynamic therapy.

Diclofenac dominated both imiquimod (which was less effective and more expensive) and photodynamic therapy (which was similarly effective, but more expensive). The average cost per responder was EUR 315 with diclofenac, EUR 466 with imiquimod, and EUR 394 with photodynamic therapy.

The dominance of diclofenac was confirmed in both the deterministic and probabilistic sensitivity analyses.

Authors' conclusions
The authors concluded that diclofenac was the most cost-effective treatment for actinic keratosis.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear as the authors stated that the available treatments for actinic keratosis patients were considered. The dosages were reported.

Effectiveness/benefits:
Little information on the approach used to derive the clinical inputs was reported. No search of the literature was mentioned and the sources might have been those known to the authors. The inclusion of RCTs was appropriate as clinical trials are usually considered to be valid sources of evidence due to their rigorous methods. More details on the patient populations, types of interventions, follow-up, and other aspects of these trials would have been useful in judging the validity of the clinical inputs. The authors did not report how they selected the values for the base-case analysis and did not investigate heterogeneity between trials, which was an issue as no head-to-head trials were found. The benefit measure was disease specific and might not be easily comparable with the benefits of other health care interventions.

Costs:
The economic analysis was restricted to treatment costs, which was appropriate for the perspective of the third-party payer. The unit costs were not reported for each item, but the key category totals of costs and some quantities of resources were given. The data sources for the unit costs were reported and appear to have been appropriate. The Delphi panel ensured that the resource use was representative of the Italian context. The price year was explicitly stated, allowing reflation exercises for other time periods. The cost estimates were treated deterministically in the base case, but alternative estimates were considered in the sensitivity analyses.

Analysis and results:
The results were clearly presented and the costs and benefits were analysed using an incremental approach, which showed the superior clinical and economic profile of diclofenac over its comparators. The analysis was based on a decision-tree model and its structure and key assumptions were clearly described. The uncertainty was appropriately investigated by various methods, which appear to have been valid and the results were clearly presented. The time horizon of the analysis was appropriate for capturing all the clinical and economic outcomes of the three treatments.

Concluding remarks:
The methods were good and the analysis was clearly presented. The authors’ conclusions seem robust.
Funding
Not stated.

Bibliographic details

PubMedID
20930692

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Administration, Topical; Aminolevulinic Acid /analogs & derivatives /economics /therapeutic use; Aminoquinolines /economics /therapeutic use; Cost-Benefit Analysis; Decision Trees; Delivery of Health Care; Diclofenac /economics /therapeutic use; Health Care Costs; Humans; Italy; Keratosis, Actinic /drug therapy /economics

AccessionNumber
22011000248

Date bibliographic record published
09/03/2011

Date abstract record published
27/04/2011