Cost-effectiveness analysis of degarelix for advanced hormone-dependent prostate cancer

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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
The objective was to assess the cost-effectiveness of degarelix, compared with triptorelin plus a short-term antiandrogen, for advanced prostate cancer. The authors concluded that degarelix was unlikely to be cost-effective. The methods were adequate. There were limitations in the data for the clinical and effectiveness inputs, but the authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of two treatments for advanced prostate cancer.

Interventions
The two interventions were a monthly injection of degarelix, compared with three-monthly luteinising hormone-releasing hormone analogue (triptorelin) plus a short-term antiandrogen (flutamide, cyproterone, or bicalutamide).

Location/setting
UK/in-patient secondary care.

Methods
Analytical approach:
The evaluation used a short-term decision tree, which modelled patients from the start of treatment to the end of month one, followed by a Markov model, which evaluated patients from the end of month one up to 10 years (the lifetime of the patient). The authors reported that the perspective was that of the NHS.

Effectiveness data:
The clinical and effectiveness data were from published studies and the opinion of local clinicians. The main difference in effectiveness between the two interventions was that triptorelin caused an initial flare that could lead to serious clinical symptoms requiring hormone treatment. The two major complications were spinal cord compression and bladder outlet obstruction. Complication rates were from published studies or the opinion of local clinicians.

Monetary benefit and utility valuations:
The utility estimates were from published sources. The adverse events, other than those from the initial flare, were assumed to have a similar impact on quality of life with each treatment.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the summary measure. Future benefits were discounted at an annual rate of 3.5%.

Cost data:
The direct costs analysed were those of the drugs, their administration, and the treatment of significant events as a result of the initial flare. These costs were from the British National Formulary, published health and social care reference costs, NHS health-related group costs, and national reports. Future costs were discounted at an annual rate of 3.5%. All costs were reported in UK £.
Analysis of uncertainty:
One- and multi-way sensitivity analyses were undertaken by varying individual parameters. A probabilistic sensitivity analysis was conducted to assess the uncertainty of the results when varying all uncertain inputs simultaneously. For this analysis, probability distributions were fitted for every model parameter and 10,000 simulations were performed.

Results
The average QALYs gained were 2.4548 with degarelix and 2.4419 with triptorelin and an antiandrogen. The average cost per patient was £3,883 with degarelix and £3,125 with triptorelin and an antiandrogen.

Compared with triptorelin and an antiandrogen, degarelix was associated with an incremental cost of £59,012 per QALY gained.

The probabilistic sensitivity analysis showed that at a willingness-to-pay threshold of £30,000 per additional QALY gained, degarelix was cost-effective in less than 10% of simulations.

Authors’ conclusions
The authors concluded that degarelix was unlikely to be cost-effective, compared with triptorelin plus a short-term antiandrogen.

CRD commentary
Interventions:
The interventions were reported clearly and an explicit rationale was given for the comparator chosen.

Effectiveness/benefits:
The clinical and effectiveness data were from published studies and the opinions of local experts. The authors provided no details on how the published studies were identified and whether or not a systematic review of the literature was undertaken. As a result, it was not clear if all the relevant information was considered, which makes the reliability of the inputs uncertain.

Costs:
The authors explicitly reported that the perspective was that of the UK NHS. For this perspective, it would appear that all the relevant cost categories were included. Only the costs of drugs, their administration, and the treatment of initial flare were included; the authors assumed that all other costs were similar regardless of treatment. They reported the sources for the cost information and the time horizon and discount rate, but the price year was not reported, which will hinder future inflationary exercises.

Analysis and results:
The details of the model structure were provided, including a diagram. The impact of uncertainty on the results was thoroughly tested in a series of one- and multi-way sensitivity analyses, as well as a probabilistic sensitivity analysis. The authors reported that the main limitation to their study was the lack of data for some model parameters, where they had to use expert opinion to derive an estimate.

Concluding remarks:
The methods were adequate. There were limitations in the data for the clinical and effectiveness inputs, but the authors’ conclusions appear to be appropriate.

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Bibliographic details

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