An economic evaluation of vasoactive agents used to treat acute bleeding oesophageal varices in Belgium

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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
This study assessed the cost-effectiveness of the vasoactive drugs terlipressin, somatostatin, and octreotide, for the treatment of bleeding oesophageal varices, in cirrhotic patients attending the hospital emergency department. The authors concluded that terlipressin was the most cost-effective treatment from the perspective of a Belgian hospital. The study was generally well conducted and more details were presented in a previous study. The authors’ conclusions appear to be valid.

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

Study objective
This study assessed the cost-effectiveness of various vasoactive agents for the treatment of bleeding oesophageal varices in cirrhotic patients presenting to the hospital emergency department.

Interventions
The comparators were placebo, terlipressin, somatostatin, and octreotide. Terlipressin was given at 12mg per day and the dose was halved for the first day after bleeding stopped. Somatostatin was given at an initial dose of 250μg followed by an infusion of 250μg per hour and octreotide was given at 50μg, then 50μg per hour for up to five days.

Location/setting
Belgium/emergency department.

Methods
Analytical approach:
The analysis was based on a published discrete event simulation model with five health states and this was adapted to the Belgian context. Two time horizons were considered: one year and three years. The authors stated that the perspective of the hospital was used.

Effectiveness data:
The clinical evidence was identified for the previous economic model and was from several sources, including a Cochrane review of high-quality studies (double-blind randomised controlled trials) and observational studies. Other details on the sources of the clinical evidence were not provided. The efficacy rates for treatment in controlling bleeding were the key inputs of the model.

Monetary benefit and utility valuations:
The utility values for some health states were derived from previous studies, but their details were not given. The data for other health states were from experts’ opinions.

Measure of benefit:
Life-years (LYs) and quality-adjusted life-years (QALYs) were the summary benefit measures. A 1.5% annual discount rate was applied.

Cost data:
The analysis included the costs of drugs and all in-patient and out-patient services related to the treatment of disease and follow-up, including secondary prophylaxis during non-bleeding episodes. The unit costs were from Belgian sources, such as hospital databases and local treatment patterns based on experts' opinions. Some assumptions on resource consumption were made. The resource quantities for drugs were based on recommended dosages. All costs were in Euros (EUR) for the year 2005, except for the drug costs, which were at 2007 prices. Those costs incurred after the first year were discounted at an annual rate of 3%.

Analysis of uncertainty:
A probabilistic sensitivity analysis was undertaken, using published and calculated 95% confidence intervals for the ranges of values, supplemented by experts' opinions, for all inputs. Cost-effectiveness acceptability curves were generated.

Results
The total costs at one year were EUR 2,734 with terlipressin, EUR 2,972 with somatostatin, EUR 2,801 with octreotide, and EUR 2,874 with placebo. The total costs at three years were EUR 4,065 with terlipressin, EUR 4,080 with somatostatin, EUR 3,886 with octreotide, and EUR 3,954 with placebo. The expected benefits were not reported.

Average cost-utility ratios at one year per QALY were EUR 4,672 with terlipressin, EUR 5,878 with somatostatin, EUR 5,540 with octreotide, and EUR 5,687 with placebo. At three years they were EUR 2,720 with terlipressin, EUR 3,410 with somatostatin, EUR 3,348 with octreotide, and EUR 3,306 with placebo. Similar results were found per LY gained.

The incremental analysis showed that terlipressin was the dominant strategy because it improved the benefits at lower costs than the other drugs or placebo. When somatostatin and octreotide were compared against placebo, neither drug was cost-effective because the incremental cost per QALY gained was far above the threshold of EUR 30,000. Somatostatin and octreotide were similarly effective, as shown in previous studies, and an incremental comparison of the two drugs was not performed.

The sensitivity analysis confirmed the dominance of terlipressin, which had a 99.8% chance of being cost-effective at a threshold of EUR 30,000 per QALY.

Authors' conclusions
The authors concluded that terlipressin was the most cost-effective treatment from the perspective of a Belgian hospital.

CRD commentary
Interventions:
An explicit justification for the selection of the comparators was not provided, but they seemed to be vasoactive agents commonly used for the treatment of patients with bleeding oesophageal varices.

Effectiveness/benefits:
The approach used to identify the relevant sources of clinical data was not described because the data were based on a previous model. A description of the key sources of evidence was given. A systematic review of clinical trials is generally considered to identify high-quality sources, which should ensure the validity of the clinical estimates. Most of the utility values were derived from published studies, but the instruments used to elicit the preferences for health conditions were not reported. Both benefit measures were appropriate as they capture the impact of disease on both survival and quality of life and permit cross-disease comparisons to be made.

Costs:
The analysis of costs was generally well conducted and was consistent with the perspective. The unit costs, some key resource quantities, the price year, and the data sources were presented, making the economic report transparent. Variations of the cost estimates were appropriately considered in the sensitivity analysis.

Analysis and results:
The costs and benefits were appropriately synthesised using both an average and an incremental approach. The results were presented selectively; the benefits of each treatment strategy were not reported. The issue of uncertainty was
satisfactorily addressed using a probabilistic approach and the results were clearly presented and discussed. In general, the analysis followed the cost-effectiveness guidelines in the Belgian setting and this ensures its validity. The key details on the published decision model were reported.

Concluding remarks:
The study was generally well conducted and more details were presented in a previous article. The authors’ conclusions appear to be valid.

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