Cost-effectiveness study comparing pharmaceutically licensed plasma for transfusion (OctaplasLG) versus fresh frozen plasma (FFP) in critically ill patients in the UK

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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 OctaplasLG, compared with fresh frozen plasma, for critically ill patients who required a plasma transfusion. The authors concluded that OctaplasLG was a cost-effective alternative to fresh frozen plasma. The methods were valid, but the costs were not transparently reported and the validity of the clinical data could not be assessed. The conclusions might be appropriate, but their validity cannot be fully assessed.

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

Study objective
The objective was to assess the cost-effectiveness of OctaplasLG, compared with fresh frozen plasma, for critically ill patients requiring a plasma transfusion.

Interventions
The interventions were OctaplasLG (pharmaceutically licensed plasma for transfusion) and fresh frozen plasma.

Location/setting
UK/secondary care.

Methods
Analytical approach:
The study was based on a published decision model, which focused on the first complication following a transfusion and the health states for each complication. The model was adapted to include UK data and considered a lifetime horizon. It combined a decision tree, to assess the acute events immediately after a transfusion, with a long-term Markov model. The authors stated that a UK health care perspective was taken.

Effectiveness data:
The clinical evidence was from a selection of relevant studies and UK data. The main source of UK data was the Serious Hazards of Transfusion study, which was a UK independent confidential enquiry. The estimates for transfusion-related lung injury were from a UK prospective nested case-control study. The key inputs were the risks of individual complications from transfusion, and the probabilities of future disease progress with each complication.

Monetary benefit and utility valuations:
The utility values were from various published sources.

Measure of benefit:
Life-years and quality-adjusted life-years (QALYs) were presented as the summary measures of benefit and they were discounted at an annual rate of 3.5%.

Cost data:
The economic analysis included the costs of interventions and transfusion-related complications. The cost data were from various sources, including the pharmaceutical manufacturer, a Health Technology Assessment report, and publicly available databases. All costs were in UK pounds sterling (£) and were discounted at an annual rate of 3.5%. The price
year was 2009.

Analysis of uncertainty:
A probabilistic sensitivity analysis was carried out on the key model inputs. Alternative scenarios were considered with different risks of transfusion-related lung injury with fresh frozen plasma.

Results
The total costs were £280.02 (95% CI 280.01 to 280.02) for OctaplasLG and £252.04 (95% CI 200.11 to 321.54) for fresh frozen plasma. The life-years gained were 6.71 (95% CI 5.99 to 7.55) for OctaplasLG and 6.68 (95% CI 5.97 to 7.52) for fresh frozen plasma. The QALYs were 6.17 (95% CI 5.51 to 6.94) for OctaplasLG and 6.14 (95% CI 5.49 to 6.92) for fresh frozen plasma.

The incremental costs were £949 per life-year saved and £1,030 per QALY saved, suggesting that OctaplasLG was cost-effective compared with fresh frozen plasma.

The scenario analysis and probabilistic sensitivity analysis confirmed the results of the base case.

Authors' conclusions
The authors concluded that OctaplasLG was a cost-effective alternative to fresh frozen plasma for critically ill patients.

CRD commentary
Interventions:
The selection of the comparators was valid, and both were the available treatment options in the authors’ setting.

Effectiveness/benefits:
The clinical inputs were from selected relevant UK sources, but not a randomised controlled trial. Database data can be appropriate, but their validity is difficult to assess. The authors made a few assumptions for the transition probabilities and utility values, but did not fully justify them. Limited details of the derivation of the utility values were given, but the instrument used and the population studied were not reported. QALYs were an appropriate benefit measure and they capture the impact of the interventions on quality and length of life.

Costs:
The cost categories were appropriate for the perspective stated. The unit costs for OctaplasLG and fresh frozen plasma were provided, but the other costs were reported as category totals. The resources used were not provided limiting generalisability. The costs were varied in the sensitivity analysis and appropriate distributions were used. The price year and discounting were reported.

Analysis and results:
The costs and benefits was appropriately synthesised in an incremental analysis. An extensive description of the model and the transition patterns between health conditions was given. The uncertainty was satisfactorily investigated, in a probabilistic analysis. The evidence on which the analysis was based was from databases and their validity could not be assessed.

Concluding remarks:
The methods were valid, but the costs were not transparently reported and the validity of the clinical data could not be assessed. The conclusions might be appropriate, but their validity cannot be fully assessed.

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