Cost-effectiveness analysis of olanzapine and risperidone in Norway

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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 two atypical antipsychotics, olanzapine and risperidone, for the treatment of schizophrenia. Due to the uncertainty in the results, the authors could not conclude that olanzapine was more cost-effective than risperidone, in Norway, but they stated that the model could be useful with more reliable trial data. The methods were robust and various areas of uncertainty were considered. The authors’ conclusions appear to be valid.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study assessed the cost-effectiveness of two atypical antipsychotics, olanzapine and risperidone, for the treatment of schizophrenia.

Interventions
The two first-line treatments for schizophrenia were olanzapine 10mg and risperidone 4mg. If patients were intolerant or treatment failed, those on olanzapine were switched to risperidone or vice versa. Clozapine 300mg was the third-line treatment.

Location/setting
Norway/primary and secondary care.

Methods
Analytical approach:
The analysis was based on a comprehensive decision model, which combined a decision tree for the acute period, with a Markov model for the maintenance period. A five-year time horizon was considered, with the effects evaluated over one year. The authors stated that the analysis was carried out from the perspective of the health care payer.

Effectiveness data:
The clinical data were from a review of the literature in commonly used databases. The key endpoint was the change in the Positive and Negative Symptom Scale (PANSS) score with each treatment. These data were from a meta-analysis published in the Cochrane Library.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The PANSS score was the summary benefit measure.

Cost data:
The economic analysis included the costs of drugs, equipment, hospitalisation, physician visits, residential care, suicides, and drop-outs. These costs were incurred for two distinct phases: acute and maintenance. The drug costs were from the Norwegian Medicines Agency. The costs of health care for patients with schizophrenia were from a Norwegian study. Suicide costs were from a 1994 US study. All costs were in Euros (EUR) and a 4% annual discount rate was applied. The price year was 2008.
Analysis of uncertainty:  
One-way sensitivity analyses were carried out to consider the impact of variations in all the model inputs. A probabilistic analysis was carried out, using a Monte Carlo simulation and conventional probability distributions for the model inputs. A willingness-to-pay (WTP) threshold of EUR 625 per PANSS score improvement was used, on the basis of a previous study.

Results  
The costs incurred in the first year were EUR 68,718 with olanzapine and EUR 70,359 with risperidone. The five-year costs were EUR 217,449 with olanzapine and EUR 224,991 with risperidone. The PANSS score reduction in the first year was 112.60 with olanzapine and 111.55 with risperidone.

Olanzapine was dominant, as it was more effective and less expensive than risperidone.

The best strategy changed with variations in the probability of drop-out with either drug, the probability of inadequate response to risperidone, and the cost of hospitalised care.

In the probabilistic sensitivity analysis, the total costs ranged from EUR 42,851 to EUR 88,313 with olanzapine and from EUR 43,054 to EUR 90,731 with risperidone. The PANSS score ranged from 105 to 120 with olanzapine and from 104 to 120 with risperidone. The optimal strategy was uncertain due to overlapping confidence intervals. The chance of olanzapine being preferred was 67.1%.

Authors’ conclusions  
Due to the uncertainty in the results, the authors could not conclude that olanzapine was more cost-effective than risperidone, in Norway, but they stated that the model could be useful with more reliable trial data.

CRD commentary  
Interventions:  
The selection of the comparators was appropriate as olanzapine and risperidone were two of the three (together with quetiapine) most commonly prescribed antipsychotics for schizophrenia. The two drugs accounted for about 55% of the prescriptions for schizophrenia in Norway. The authors stated that future studies should consider a wider range of antipsychotics.

Effectiveness/benefits:  
The clinical inputs were from a review of the literature in standard databases, which should have identified the key studies. Most of the data were from a meta-analysis, but the studies that were included in this synthesis were not reported. It is likely that most of them were clinical trials, but a full description is needed to judge the validity of the clinical inputs. The authors justified their selection of benefit measure, which was relevant to the disease and took account of the patients’ quality of life, but was not comparable with benefit measures for other diseases.

Costs:  
The economic analysis was extensively presented. The cost categories and their sources appear to have been relevant to the stated health care perspective and the Norwegian setting, except for the cost of suicide, which was from a relatively old US study. The authors acknowledged that most of the costs were from a Norwegian study, conducted in 1999, and the resource use might have changed since then. Other details of the analysis, such as the price year and discounting, were clearly reported. The costs were treated stochastically in the probabilistic sensitivity analysis.

Analysis and results:  
The results were clearly reported and an incremental approach was used to identify the optimal treatment. The calculation of a cost-effectiveness ratio was not required as olanzapine was dominant. Appropriate methods were used to assess uncertainty, and the results were clearly presented and discussed. The authors compared their results with those of other published studies, which had similar findings. The transferability of the results was not discussed and it is unclear whether they could be relevant to other settings, given the high uncertainty found.

Concluding remarks:  
The methods were robust and various areas of uncertainty were considered. The authors’ conclusions appear to be valid.
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