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 evaluated the cost-effectiveness of long-acting injectable antipsychotics for chronic schizophrenia. The authors concluded that the lower cost and better clinical outcomes with paliperidone palmitate made it a cost-effective option in Finland. The study was superficially reported. The lack of transparency makes a full assessment of the validity of the methods difficult and raises uncertainty around the reliability of the results.

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

Study objective
This study evaluated the cost-effectiveness of long-acting injectable antipsychotics for stable chronic schizophrenia.

Interventions
Three long-acting injectable antipsychotics were compared; paliperidone palmitate, olanzapine pamoate, and risperidone. Dosages represented the average patient using the weighted average dose for stable disease, relapse requiring out-patient treatment, and relapse requiring in-patient treatment.

Stable doses were 69.3mg monthly for paliperidone, 432mg every four weeks for olanzapine, and 40.3mg every two weeks for risperidone. Relapse doses were higher, with even higher doses for paliperidone and olanzapine for initial in-patient treatment, reduced to about the higher maintenance dose after two or three more frequent doses.

Location/setting
Finland/secondary care.

Methods
Analytical approach:
A published one-year Norwegian decision tree was adapted to Finland using local resource data and costs. The model had three states: stable disease, relapse, and hospitalisation. Switching treatments due to a lack of efficacy or intolerance was allowed. The stated perspective was that of the Finnish National Health Service.

Effectiveness data:
The model parameters included adherence rates, remission rates, emergency room relapse rates, and hospitalisation rates. The primary effectiveness data were the transition probabilities between the three health states. All parameters were derived from published studies. Some transition probabilities were modified using assumptions based on published studies.

Monetary benefit and utility valuations:
The utility values were a simple weighted average from multiple sources, which used the standard gamble or time-trade off methods.

Measure of benefit:
The primary measure of benefit was quality-adjusted life-years (QALYs). Days with stable disease, and hospitalisation rates were also reported.

Cost data:
The cost categories included pharmaceuticals; psychiatrists, primary care physicians and psychiatric nurses; and institutional care. Pharmaceutical costs were from Finnish price lists. The costs for psychiatrists, primary care physicians and psychiatric nurses were Finnish unit costs and direct costs from hospitals. The costs for institutional care were Finnish unit costs; these included emergency room and other hospital ward care. All costs were reported in 2011 Euros (EUR). Where they needed to be inflated, this was done using the Finnish consumer price index.

Analysis of uncertainty:
One-way sensitivity analyses were applied for the drug costs, adherence rates, hospitalisation rates, and rates of stable disease. A 10,000 iteration, probabilistic sensitivity analysis was used to assess the impact of joint parameter uncertainty on the results. Normal distributions were used for the rates using the 95% confidence interval to define the range. Gamma distributions were used for the costs with a range of plus or minus 10% from the mean.

Results
Paliperidone dominated the other treatments, as it was less expensive and more effective than olanzapine and risperidone.

Sensitivity analysis found that the results were robust to changes in most parameters, including the drug prices, and the rates of stable disease and hospitalisation, but were sensitive to small changes in adherence.

Probabilistic analysis found that paliperidone dominated olanzapine in 77.8% of simulations; and risperidone in 85.9% of simulations.

Authors' conclusions
The authors concluded that the lower cost and better clinical results for paliperidone palmitate made it a cost-effective option in Finland.

CRD commentary
Interventions:
Long-acting injections were assessed as treatment options for patients with chronic schizophrenia. Daily oral antipsychotics were available and could have been viable options for these patients, but were not considered.

Effectiveness/benefits:
The methods used to select the data were not reported, and the effectiveness sources were not described. It was therefore unclear whether the best available evidence was used. It seems that no head-to-head data were available, but the limitations of this were not discussed. Where parameters, such as utility, were derived from multiple sources a simple weighted average was produced. This does not take into account between-study variation, which alone could distort the results, as well as other issues. Adherence for paliperidone was from patient registry data, which were modified based on a trial of monthly versus two-weekly risperidone, because there were no long-term data for paliperidone. This might have been reasonable, but increased the uncertainty in the estimate. As acknowledged by the authors, adverse events were not considered, and these could affect adherence, patient quality of life, and costs.

Costs:
The costs appear to have been from appropriate Finnish national sources. They were reported in detail, but without the resource use data. It was not clear how many days an average hospitalisation lasted, nor if any quantities were applied to cost categories such as psychiatrist and nurse visits. These limitations in the reporting reduce the transparency of the model.

Analysis and results:
The results were generally clearly reported. It was unclear whether the utility parameters were varied in the probabilistic sensitivity analysis. The authors used normal distributions for the rates, which raises two issues. Firstly, the rates should not go below zero and above one, indicating that a beta distribution would have been more appropriate. Secondly, rates and probabilities are not the same and it was unclear which were used. It is unclear what effect these issues might have had on the results. As acknowledged by the authors, the one-year time horizon was too short to capture the costs and benefits of a lifelong condition like schizophrenia.
Concluding remarks:
The study was superficially reported. The lack of transparency makes a full assessment of the validity of the methods difficult and raises uncertainty around the reliability of the results.

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