Cost-effectiveness of several atypical antipsychotics in orally disintegrating tablets compared with standard oral tablets in the treatment of schizophrenia in the United States

Ascher-Svanum H, Furiak NM, Lawson AH, Klein TM, Smolen LJ, Conley RR, Culler SD

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 study assessed cost-effectiveness of standard oral tablets compared with orally disintegrating antipsychotic tablets (ODT) formulations for treating schizophrenia. The authors reported that olanzapine ODT was cost-effective for treatment of schizophrenia. The quality of the study methodology was good and the methods and results were well presented. The lack of direct randomised evidence and the short time horizon mean that the authors’ conclusions may not accurately reflect the cost-effectiveness of these interventions.

Type of economic evaluation
Cost-utility analysis

Study objective
The study objective was to assess the cost-effectiveness of standard oral tablets (SOT) compared with orally disintegrating antipsychotic tablets (ODT) formulations in the treatment of schizophrenia.

Interventions
The study assessed three frequently used atypical antipsychotics (olanzapine, risperidone and aripiprazole) in both ODT and SOT formulations.

Location/setting
USA/outpatient secondary care.

Methods
Analytical approach:
An updated and expanded a previously published Monte Carlo microsimulation model was used to compare the cost-effectiveness of atypical antipsychotics in their ODT and SOT formulations. The time horizon of the study was one year. The authors reported that the perspective adopted in the economic analysis was that of a public or private third-party payer healthcare payer.

Effectiveness data:
Effectiveness data were derived from previously published studies and a clinical expert panel of 12 schizophrenia experts. Based on results in the published literature, effectiveness of each antipsychotic was assumed to be the for ODT and SOT formulations; adherence rate was the only clinical estimate that varied. Therefore, the main clinical estimate used in the model was adherence level for each medication and formulation. These estimates were obtained from previously published estimates and expert opinion.

Monetary benefit and utility valuations:
Utility estimates were obtained from previously published estimates and the opinion of the 12 clinical experts. Previously published estimates were derived using the Positive and Negative Syndrome Scale.

Measure of benefit:
The benefit measure was quality-adjusted life-years (QALYs). This measure was not discounted due to the one-year time horizon.
Cost data:
Direct costs were for medication, health service utilisation (including hospitalisation, day hospital, emergency room visits, physician visits, home care, group intervention visits and nutritionist visits) and treatment-emergent adverse events. Medication costs were obtained from net wholesale prices.

Resource use utilisation and unit costs were obtained from published studies and Healthcare Cost and Utilisation Project Nationwide Inpatient Sample. Direct healthcare costs for treatment emergent adverse events were derived from published studies and online drug sources. Costs were presented in 2010 US Dollars ($) and due to the one-year time horizon were not discounted.

Analysis of uncertainty:
Sequential bifurcation analysis was performed to determine which variables that affected total treatment costs warranted more focus during sensitivity analysis. Multivariable probabilistic sensitivity analyses was used to examine uncertainty in the model. Results were presented in cost-effectiveness acceptability curves.

Results
Average costs were $9,533 for SOT olanzapine, $8,881 for SOT risperidone, $12,589 for SOT aripiprazole, $9,808 for ODT olanzapine, $10,922 for ODT risperidone and $12,589 for ODT aripiprazole.

Average QALYs were 0.733 for SOT olanzapine, 0.718 for SOT risperidone, 0.715 for SOT aripiprazole, 0.747 for ODT olanzapine, 0.731 for ODT risperidone and 0.728 for ODT aripiprazole.

Costs and benefits were combined using an incremental cost-utility ratio (additional cost per QALY gained). When compared with olanzapine SOT, olanzapine ODT was associated with an incremental cost per QALY gained of $19,643. When compared with risperidone SOT, olanzapine ODT was associated with an incremental cost per QALY gained of $39,966. Olanzapine ODT was dominant (more effective and less costly) when compared with SOT aripiprazole, ODT risperidone and ODT aripiprazole.

The authors reported that adherence rate was the variable with most impact on cost-effectiveness of olanzapine ODT.

Authors' conclusions
The authors reported that olanzapine ODT was cost-effective for the treatment of schizophrenia.

CRD commentary
Interventions:
The interventions under study were reported adequately and appeared to be appropriate comparators.

Effectiveness/benefits:
Effectiveness data were derived from previously published studies and expert opinion. It was not reported how published studies were identified and whether a systematic review of the literature was undertaken so it was not clear whether all the best available data were considered for inclusion in the model. The authors reported a lack of head-to-head data and that effectiveness data were derived using indirect methods. Methods for combining data were not presented so it was unclear whether they were combined appropriately. Some input estimates (especially those from expert opinion) required further study to be validated. The assumptions used were stated clearly and data were well referenced.

Some details were given on the utility estimates and these appeared appropriate.

Costs:
The perspective adopted in the economic analysis was reported explicitly. It appeared that all relevant major cost categories and costs for the perspective were included in the analysis. Sources for resource use and costs were reported adequately. Price year, time horizon, inflationary exercises and currency details were reported clearly.

Analysis and results:
A microsimulation model was used to synthesise cost and outcome information. Adequate details of the model structure
were provided and there was a graphical depiction of the model. Uncertainty in the model results was tested adequately using a series of one-way and probabilistic sensitivity analyses. The results of the study were presented clearly.

The authors reported a lack of randomised evidence and the short time horizon as limitations to their study; they reported that the time horizon might not be sufficiently long to observe all changes in costs and outcomes.

Concluding remarks:
The quality of the study methodology was good and the methods and results were generally well presented. The lack of direct randomised evidence and the short time horizon mean that the authors’ conclusions may not accurately reflect the cost-effectiveness of these interventions.

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