UK cost-consequence analysis of aripiprazole in schizophrenia: diabetes and coronary heart disease risk projections (STAR study)


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 investigated the clinical effects and their associated costs for the treatment of patients with schizophrenia using aripiprazole compared with other typical antipsychotic medications. The authors concluded that aripiprazole could improve patient outcomes and reduce health care costs. In summary, the methods were transparent, thorough and appropriate, and the authors’ conclusions seem to be robust.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study estimated the costs and long-term disease risks of treating schizophrenia patients with aripiprazole compared with other standard agents. The population was individuals aged 18 to 65 years, with a diagnosis of schizophrenia, according to Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria, currently being treated in a community setting.

Interventions
Aripiprazole (15 to 30mg per day) was compared with other commonly used antipsychotic drugs, which were olanzapine (5 to 20mg per day), risperidone (2 to 8mg per day) or quetiapine (100 to 800mg per day).

Location/setting
UK/primary care.

Methods

Analytical approach:
This evaluation was based on the first 26-weeks of clinical data from a single trial. The authors stated that the perspective was that of the UK National Health Service (NHS). The time horizon was 10 years from the start of treatment.

Effectiveness data:
Data on risk factor assessments for diabetes and coronary heart disease (CHD) were derived from a large multinational (12 European countries) randomised controlled trial; the Schizophrenia Trial of Aripiprazole (STAR, Kerwin, et al. 2007, see 'Other Publications of Related Interest' below for bibliographic details). Risk factor data on metabolic outcomes from the STAR were used to predict the incidence of diabetes and CHD. Metabolic outcomes included changes in fasting total cholesterol, fasting high-density lipoprotein (HDL)- and low-density lipoprotein (LDL)-cholesterol, fasting triglycerides, fasting glucose, and body weight. The Framingham risk equation was used to estimate changes in CHD while a modified Stern equation was used for diabetes (Blonde, et al. 2008, see 'Other Publications of Related Interest' below for bibliographic details). Analyses of covariance were used to assess the mean effect changes, adjusted for baseline covariates.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measures of benefit were metabolic changes and risk predictions, as listed above.

Cost data:
The direct and indirect costs were those of schizophrenia-related in-patient and out-patient visits, diabetes complications, and lost employment for patients and carers due to diabetes. Several sources were used for the calculation of the annual cost per patient. In addition, schizophrenia prevalence data were used to estimate the cost-saving of avoided cases in the UK. All costs were inflated using the NHS pay and prices index (1998 to 2007) and reported in 2007 UK pounds sterling (£). They were discounted at an annual rate of 3.5%.

Analysis of uncertainty:
One-way sensitivity analyses were undertaken to assess the results when the following key parameters were varied: prevalence of schizophrenia; yearly costs of diabetes or CHD events; discount rates; and cost-savings over 7.5 and 10 years.

Results
At 26 weeks, a significantly lower proportion of patients in the aripiprazole group had potentially clinically relevant changes in their total cholesterol, HDL-cholesterol, LDL-cholesterol, triglyceride levels, and body weight compared with the standard group.

Over 7.5 years, the number of cases of diabetes avoided with aripiprazole was 23.4 fewer than with standard care. Over 10 years, there were 3.7 fewer CHD events with aripiprazole than with standard care.

The associated direct and indirect cost-savings for using aripiprazole were £37.3 million for diabetes and £7.5 million for CHD.

The sensitivity analyses showed that these estimates were most sensitive to variation in the discount rates, which were varied between 0% and 6%. This varied the cost-savings from £33 to £45 million for diabetes and from £7 to £9 million for CHD.

Authors' conclusions
The authors concluded that aripiprazole could have long-term cost-savings for the UK health service, as a consequence of the reduced incidence of diabetes and CHD, compared with other antipsychotic treatments for patients with schizophrenia.

CRD commentary
Interventions:
The interventions were clearly reported, including the dosages, and were designed to reflect the usual clinical practice across the participating countries.

Effectiveness/benefits:
The effectiveness data were derived from a single multinational trial and, while the full details were not presented, there was sufficient detail to suggest that the trial was of good quality and robust. The measurement of the clinical effects and their statistical analyses were clearly reported, and rigorously analysed taking into account baseline covariates. Clear tables outlining the patient characteristics at baseline and metabolic parameters at both baseline and 26 weeks were presented.

Costs:
The types of costs appeared to go beyond the stated UK NHS perspective in that employment losses, which are normally used in evaluations conducted from a societal perspective, were included. The sources of cost data were clearly reported. Due to the extensive costing several sources were used and in some instances adjustments were necessary. The full details were transparently and clearly presented.

Analysis and results:
The cost and effect analyses were well reported and should enable the reader to understand the analytical steps taken.
The authors acknowledged limitations, which included the restrictions and assumptions of the risk equations used to model the disease incidence; and the short length of the STAR, which could mean the risk calculations were underestimated. The costs and effects were not combined and no summary measure of benefit or cost-effectiveness ratio was presented. Missing data and losses to follow-up were not discussed and readers were referred to the STAR publication for further information (Kerwin, et al. 2007). The results of the sensitivity analyses were briefly reported.

Concluding remarks:
The methodology appears to have been appropriate, and the study was explicitly and clearly reported. The authors’ conclusions seem to be robust.

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