A modelled economic evaluation comparing atomoxetine with methylphenidate in the treatment of children with attention-deficit/hyperactivity disorder in Spain

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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 aim was to evaluate the cost-effectiveness of atomoxetine compared with methylphenidate (immediate and extended release) or no treatment, in Spanish children with attention deficit hyperactivity disorder (ADHD). The authors concluded that atomoxetine was cost-effective, compared with methylphenidate, for the Spanish National Health Service and it had greater value for patients with no other treatment option. There were a few limitations to the study and the authors’ conclusions should be considered with caution.

Type of economic evaluation
Cost-utility analysis

Study objective
The aim was to evaluate the cost-effectiveness of atomoxetine, compared with methylphenidate (both immediate and extended release) or no treatment, in Spanish children with attention deficit hyperactivity disorder (ADHD).

Interventions
Methylphenidate, a mild stimulant and the most common treatment for children with ADHD, was compared with atomoxetine, a new non-stimulant alternative, in Spain. The study also compared no medication to capture those patients who could not receive stimulant medication due to a previous adverse experience or co-morbidities. Three populations were evaluated: patients with no history of pharmacotherapy (stimulant naive) and without contraindications, patients for whom stimulant therapy had failed, and stimulant-naive patients with a contraindication to stimulants due to a pre-existing condition.

Location/setting
Spain/secondary care.

Methods
Analytical approach:
A UK decision model (Cottrell, et al. 2008, see ‘Other Publications of Related Interest’ below for bibliographic details) was adapted to a Spanish setting, to synthesise the published evidence. The analysis duration was one year and the authors stated that the study perspective was that of the Spanish National Health Service.

Effectiveness data:
The effectiveness data were identified by a systematic review of clinical trials. Other data were from individual randomised trials, data on file from the UK decision model, and clinical experts. The main clinical parameters were the response rates and selected side-effects of each comparator for each population.

Monetary benefit and utility valuations:
The utility values for the 14 health states were based on a survey of 83 parents of children with ADHD, in the UK, using the standard gamble methodology (Secnik, et al. 2005, see ‘Other Publications of Related Interest’ below for bibliographic details).

Measure of benefit:
The measure of benefit was quality-adjusted life-years (QALYs).
Cost data:
The only cost category analysed was the cost of the drugs; it was assumed that all other costs would be equivalent for each comparator. The resource use data were from studies and authors' assumptions. The unit costs were from the General Spanish Council of Pharmacists. The currency was Euros (EUR).

Analysis of uncertainty:
One-way sensitivity analyses and scenario-based sensitivity analyses were undertaken on a range of model variables and assumptions, to assess the uncertainty in the results.

Results
Atomoxetine was associated with higher costs and more QALYs than methylphenidate (immediate and extended release) and no medication.

In stimulant-naive patients without contraindications, atomoxetine had 0.930 QALYs compared with 0.910 QALYs for immediate-release methylphenidate or 0.933 QALYs compared with 0.920 QALYs for extended-release methylphenidate. It cost EUR 1,047 compared with EUR 366 for immediate-release, and EUR 1,208 compared with EUR 902 for extended-release methylphenidate. The incremental cost-effectiveness ratio (ICER) of atomoxetine was EUR 34,308 per QALY compared with immediate-release methylphenidate and EUR 24,310 per QALY compared with extended-release methylphenidate.

In the other populations, where it was compared against no treatment, the ICER was EUR 23,820 per QALY for those for whom stimulants had failed and EUR 23,323 per QALY for stimulant-naive patients with contraindications.

The sensitivity analysis showed that the results were most sensitive to the utility values. If differences in the utility values between the interventions were reduced by up to 50%, atomoxetine was still found to be cost-effective. If the differences were removed atomoxetine was no longer cost-effective.

Authors' conclusions
The authors concluded that atomoxetine was cost-effective, compared with methylphenidate, for the Spanish National Health Service, and it had greater value for patients with no other treatment option.

CRD commentary
Interventions:
The interventions were described and appear to have been relevant and appropriate comparators. The patient population was described.

Effectiveness/benefits:
The authors stated that they undertook a systematic review of clinical trials, but they did not report the search strategy nor the methods used to identify and select the trials, which makes it difficult to assess whether all the best available evidence was used. A lot of data were on file and their validity is difficult to assess. The measure of benefit appears to have been appropriate.

Costs:
The costs appear to have been relevant to the perspective, but only the costs of the drugs were analysed. The costs of adverse effects, consultations, etc were not included. The authors argued that this was conservative towards atomoxetine because atomoxetine had fewer adverse effects, but it could have introduced bias in the results. The price year was not reported and it was unclear if the costs were appropriately adjusted for inflation.

Analysis and results:
The model was not described in detail, making it difficult to assess if the synthesis was appropriate, but more details were available in the UK model publication. The results were appropriately combined in an incremental analysis. The sensitivity analysis was not described in detail, making it difficult to assess if it was comprehensive, but the full results were available from the authors. The authors acknowledged some limitations to their study, including that the utilities came from a UK sample of parents, the inclusion of only the drug costs, and the relatively short time horizon for a...
chronic disorder.

Concluding remarks:
There were a few limitations to the study, so the authors’ conclusions should be considered with caution.

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