Assessing the value of atomoxetine in treating children and adolescents with ADHD in the UK
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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 was an economic evaluation of atomoxetine for children with attention deficit and hyperactivity disorder compared with treatments such as psychostimulants, in various subgroups of patients, depending on their treatment history and specific contraindications. The authors concluded that atomoxetine was good value for money from the perspective of the UK National Health Service. The methodology was valid, but most of the details of the methods and results were published in another paper. The authors’ conclusions appear to be robust.

Type of economic evaluation
Cost-utility analysis

Study objective
This study was an economic evaluation of atomoxetine for children with attention deficit and hyperactivity disorder (ADHD) compared with alternative treatments, such as psychostimulants, in various subgroups of patients depending on their previous treatment history and contraindications due to co-existing conditions. It was part of a formal submission to the UK National Institute for Health and Clinical Excellence (NICE).

Interventions
Atomoxetine was compared with the current ADHD drugs, such as methylphenidate (extended- and immediate-release) and dexamphetamine. A strategy of no medication was also considered. Atomoxetine was used as the first-line medication in a sequence of treatments and this was compared with the same sequence without atomoxetine. The sequence depended on the subgroup of patients analysed.

Location/setting
UK/secondary care.

Methods
Analytical approach:
The analysis was based on a Markov model with a one-year time horizon. The authors stated that the analysis was carried out from the perspective of the National Health Service (NHS).

Effectiveness data:
The clinical inputs for the model were derived from a thorough review of randomised controlled trials (RCTs) and other clinical literature available at the time of the study and the data were validated by international experts. More information on the data sources was presented in another paper submitted to NICE (Cottrell, et al. 2008, see 'Other Publications of Related Interest' below for bibliographic details). The key clinical input was the treatment efficacy.

Monetary benefit and utility valuations:
The utility values were derived from a published survey of 83 parents of children with ADHD in the UK and this used the standard gamble methodology.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the summary benefit measure.
Cost data:
The economic analysis included only the drug costs, as the other direct medical costs (general practitioner and specialist visits) were assumed to be equivalent. The sources of the economic data were presented in the other publication (Cottrell, et al. 2008) and reflected the recommended dosages and official prices. All costs were in UK pounds sterling (£) and the price year was 2004.

Analysis of uncertainty:
The issue of uncertainty was investigated by means of a Monte Carlo simulation and other deterministic sensitivity analyses.

Results
The costs and benefits were not reported, but the authors stated that atomoxetine led to higher costs and more QALYs gained than all the comparators.

The incremental cost per QALY gained with atomoxetine versus immediate-release methylphenidate was £15,224 in stimulant-naive patients, and £15,878 in stimulant-averse patients, who were patients whose parents wanted them to change from immediate-release methylphenidate to atomoxetine.

The incremental cost per QALY gained with atomoxetine over extended-release methylphenidate was £13,241 in stimulant-naive patients and £14,169 in stimulant-averse patients.

The incremental cost per QALY gained with atomoxetine over dexamphetamine was £14,945 in stimulant-failed patients, who had failed on either immediate- or extended-release methylphenidate.

In comparison with no treatment, the incremental cost per QALY gained with atomoxetine was £11,523 in stimulant-contraindicated, drug-naive patients and £12,370 in stimulant-contraindicated patients, who had been previously exposed to stimulants.

The authors stated that the results were robust in all scenarios considered in the sensitivity analyses, but the data were not reported.

Authors’ conclusions
The authors concluded that atomoxetine was good value for money for the treatment of ADHD from the perspective of the UK NHS.

CRD commentary
Interventions:
The authors provided a justification for the selection of the comparators, which included only psychostimulants as other potential medications, such as tricyclic antidepressants, clonidine, risperidone, and bupropion were not licensed in the UK at the time.

Effectiveness/benefits:
The authors did not explicitly report the sources of the data nor the methods used to identify them. It appears that valid sources of evidence were used as they were mainly RCTs, which are usually considered to be robust, due to the strengths of their design. It was also stated that a literature review was conducted. Other features of the analysis, such as comparability of sources and details of the patients and treatments were not provided and this limits the possibility of making an objective assessment of the quality of the evidence. The authors referred readers to another published paper for more details (Cottrell, et al. 2008). QALYs are an appropriate benefit measure given the impact of the disease on quality of life. Some key details on the derivation of the utility estimates were reported.

Costs:
The economic analysis was based on a crucial assumption of the equivalence of all costs across the treatment arms, except for the medication costs, which were the only cost item in the economic evaluation. No formal justification for this assumption was given and it appears to have been based on the authors’ opinion. The costs and quantities reflected
the UK setting and the issue of variability around the economic estimates was not investigated. The price year was appropriately reported.

Analysis and results:
The results were only partially reported, but clearly favoured the atomoxetine strategy. The costs and benefits were appropriately synthesised using an incremental approach. The issue of uncertainty was satisfactorily investigated, but the results were not fully reported. The authors did not address the issue of the generalisability of the findings to other settings. The use of a Markov model appears to have been appropriate for simulating the course of the disease.

Concluding remarks:
The methodology was valid, but most of the details of the methods and results had been published in another paper. The authors’ conclusions appear to be robust.

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Other publications of related interest

Prasad S, Harpin V, Poole L. A multi-centre, randomised, open-label study of atomoxetine with standard current therapy in UK children and adolescents with ADHD. Current Medical Research and Opinion 2007; 23: 379-394.

Indexing Status
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MeSH
Adolescent; Adrenergic Uptake Inhibitors /economics /therapeutic use; Atomoxetine Hydrochloride; Attention Deficit Disorder with Hyperactivity /drug therapy /economics; Child; Cost-Benefit Analysis; Great Britain; Humans; Practice Guidelines as Topic; Propylamines /economics /therapeutic use; Quality of Life; Quality-Adjusted Life Years; Randomized Controlled Trials as Topic

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