The cost-effectiveness of solifenacin vs fesoterodine, oxybutynin immediate-release, propiverine, tolterodine extended-release and tolterodine immediate-release in the treatment of patients with overactive bladder in the UK National Health Service

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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 study assessed the cost-effectiveness of solifenacin versus other antimuscarinic drugs for the treatment of patients with overactive bladder syndrome. The authors concluded that, of all the therapies considered, solifenacin provided the greatest benefit for all three outcomes, and it was most cost-effective, except compared with oxybutynin for frequency and incontinence. The methods and results were generally well reported and the results appear to be appropriate, but there were some study limitations.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of solifenacin versus other antimuscarinic treatments for patients with overactive bladder syndrome.

Interventions
Solifenacin (5mg or 10mg) was compared with fesoterodine (4mg or 8mg), oxybutynin (15mg) immediate release, propiverine (20mg) extended release, tolterodine (4mg) extended release, and tolterodine (2mg or 4mg) immediate release.

Location/setting
UK/primary and secondary care.

Methods
Analytical approach:
A decision-tree model was used to combine the data from systematic reviews and other published sources. The analysis had a one-year time horizon. The authors stated that it took the perspective of the UK NHS.

Effectiveness data:
The effectiveness data were from a published systematic review and meta-analysis (Chapple, et al. 2008, see 'Other Publications of Related Interest' below for bibliographic details). Another systematic review and meta-analysis provided the baseline data for urinary frequency, urgency, and incontinence. The persistence data for each drug were from the Information Management System Database. The percentage of patients stopping or switching from fesoterodine was based on data for tolterodine extended release, in the absence of other data. Expert opinion was used for the proportion of patients who stopped or switched treatment due to non-adherence. The main clinical effectiveness estimate was the treatment success. Success for a 24-hour period, for urgency was defined as no urge episodes, for frequency was defined as eight or fewer voids, and for incontinence was defined as no incontinence episodes.

Monetary benefit and utility valuations:
The health utilities were from published literature and were measured using the European Quality of life (EQ-5D) questionnaire to assess the impact on quality of life of a reduction in voids and incontinence episodes. The utilities for a partial response were assumed to be the mid-point between the baseline utility and the utility for a full response. Patients who stopped or switched treatments returned to their baseline utility level.
Measure of benefit:
The primary measure of benefit was quality-adjusted life-years (QALYs).

Cost data:
The cost categories included the drugs, GP visits, and out-patient visits for urology and gynaecology. The drug costs were from the British National Formulary and other unit costs were from standard sources. The cost of adverse events or the additional costs incurred by either adhering or discontinuing treatment were not included. It was assumed that patients who discontinued treatment incurred no further costs. The resource use was based on expert opinion. All costs were reported in 2007 to 2008 UK pounds sterling (£).

Analysis of uncertainty:
The uncertainty was explored in both one-way and probabilistic sensitivity analyses. The probabilistic sensitivity analysis used 1,000 Monte Carlo simulations. The health utilities and costs were varied by 20% in the one-way sensitivity analysis only. Any variable that was excluded from the probabilistic sensitivity analysis and was found to be a driver of the results was varied in a threshold analysis.

Results

Urgency:
Solifenacin dominated fesoterodine (4mg or 8mg) and tolterodine extended release, as it was more effective and less costly. The incremental cost-effectiveness ratio (ICER) for solifenacin (5mg or 10mg) compared with propiverine extended release was £8,087 per QALY. Oxybutynin and tolterodine immediate release were not analysed.

Frequency:
Solifenacin dominated fesoterodine (4mg or 8mg) and tolterodine extended release and immediate release (2mg or 4mg). The ICER for solifenacin (5mg or 10mg) compared with oxybutynin immediate release was £80,009 per QALY and compared with propiverine it was £4,457 per QALY.

Incontinence:
Solifenacin dominated fesoterodine (4mg or 8mg) and tolterodine extended release and immediate release (2mg or 4mg). The ICER for solifenacin (5mg or 10mg) compared with oxybutynin was £87,162 per QALY and compared with propiverine it was £2,639 per QALY.

The results were robust to all the sensitivity analyses conducted. The probabilistic sensitivity analysis found that solifenacin was the most cost-effective strategy for all treatment outcomes relative to fesoterodine, propiverine, and tolterodine immediate and extended release in more than 75% of simulations.

Authors' conclusions
The authors concluded that, of all the therapies considered, solifenacin provided the greatest clinical benefit and associated QALYs for all three outcomes, and it was most cost-effective, except compared with oxybutynin immediate release for frequency and incontinence.

CRD commentary
Interventions:
The interventions were well described and appear to have been relevant to the study setting. Not all relevant comparators were analysed; trospium and darifenacin were not included because they were not included in the published systematic review and meta-analysis.

Effectiveness/benefits:
The effectiveness data were from a systematic review and meta-analysis of randomised controlled trials, which are considered to be robust sources of evidence. The details of these trials were reported elsewhere and they should be consulted to assess their quality. The benefit measure appears to have been appropriate as it incorporated both morbidity and mortality of the patients. Using QALY measures for each success criterion separately might reduce the comparability of the estimates, as other relevant treatments would need to focus on the success criterion to be comparable. No discount rate was applied due to the short time horizon.
Costs:
The perspective was clearly stated and the costs were relevant to this perspective. The unit costs were from standard sources and were presented in a table. The resource use was based on expert opinion, which can be highly uncertain. The costs were appropriately adjusted for inflation. No discount rate was applied due to the short time horizon. The drug unit costs were not varied in the sensitivity analysis and the utilities and costs were not varied in the probabilistic analysis.

Analysis and results:
A decision analytic model was appropriate for synthesising the data from a variety of sources, given the interventions. The impact of adverse events on quality of life, costs, and adherence was not analysed and this reduces the ability to reflect the true costs and benefits of the interventions. The methods used to estimate the efficacy and costs were well reported. The model was presented in a diagram. Sensitivity analysis was conducted and discussed, but the results were not transparently reported. If they had been presented in a cost-effectiveness acceptability curve, it would have been informative for decision makers with differing thresholds. The authors discussed some limitations to their study.

Concluding remarks:
The methods and results were generally well reported and the results appear to be appropriate, but the study limitations should be considered.

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