Incremental cost-effectiveness of various monthly doses of vardenafil
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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 objective was to assess the cost-effectiveness of various monthly doses of vardenafil for male military veterans with erectile dysfunction. The authors concluded that four doses of vardenafil was the most cost-effective strategy, but six or eight doses compared favourably with other accepted medical treatments. There were some limitations in the reporting of the methods, particularly for the effectiveness data. Given the scope of the study, the authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of various monthly doses of vardenafil, for male military veterans with erectile dysfunction.

Interventions
The interventions were four, six, or eight doses of vardenafil per month, compared with no vardenafil.

Location/setting
USA/primary care.

Methods
Analytical approach:
A Markov model, with a one year cycle length and a lifetime horizon, was used to synthesise the costs and outcomes associated with the various monthly doses, for a 60-year-old man. The authors reported that a third-party payer perspective was adopted.

Effectiveness data:
The effectiveness data were from the literature. The main clinical effectiveness estimate was the drug efficacy.

Monetary benefit and utility valuations:
The utility values were from the literature and from authors’ assumptions.

Measure of benefit:
The primary measure of benefit was the quality-adjusted life-year (QALY) and these were discounted at an annual rate of 3%.

Cost data:
The drug costs were included and were from Veterans Affairs pharmacy data. The price year was 2009 and the costs were discounted at an annual rate of 3%. They were presented in US dollars ($).

Analysis of uncertainty:
The uncertainty in the model estimates was explored in one-way and probabilistic sensitivity analyses, varying the main model parameters. The results of the one-way sensitivity analyses were presented in line graphs.
Results
The QALYs gained were 10.13 for no vardenafil; 11.36 for four doses a month; 11.50 for six doses a month; and 11.57 for eight doses a month. The monthly costs were zero for no vardenafil; $707.70 for four doses; $1,061.60 for six doses; and $1,415.50 for eight doses.

The incremental cost per QALY gained for four doses, compared with none, was $576. The incremental cost-effectiveness ratio (ICER) for six doses, compared with four, was $2,585. The ICER for eight doses, compared with six, was $5,169.

These results were sensitive to the additional utility associated with providing two or more doses per month, and the cost of vardenafil. At a willingness-to-pay threshold of $20,000 per QALY gained, six doses per month was preferred over four doses in 63% of iterations, and eight doses was preferred over six doses in 35% of iterations.

Authors' conclusions
The authors concluded that four doses of vardenafil was the most cost-effective strategy, but six or eight doses compared favourably with other accepted medical treatments.

CRD commentary
Interventions:
The interventions were described and were appropriately compared with the usual practice in the authors' setting.

Effectiveness/benefits:
The effectiveness data were from published studies, but the methods used to identify them were not reported, making it unclear if all the best available evidence was used. The designs of the source studies were not stated, which limits the possibility of assessing the validity of the clinical evidence. QALYs were an appropriate outcome measure, as they capture the impact of the intervention on quality of life. Little information on how they were calculated was provided.

Costs:
The cost analysis included only the drug costs, which might have been appropriate for the third-party perspective, if all other costs were assumed to be the same for each dose. The source of the unit cost data was reported and appears to have been appropriate for the authors' setting. Adjustments, including the price year and discounting, were reported.

Analysis and results:
The authors completed an appropriate incremental analysis and the full results were presented. One-way and probabilistic sensitivity analyses were performed on the main uncertain model parameters. The authors noted some limitations to their study, including the possible lack of generalisability to other settings, given the use of Veterans Affairs pharmacy cost data.

Concluding remarks:
There were some limitations in the reporting of the methods, particularly for the effectiveness data. Given the scope of the study, the authors' conclusions appear to be appropriate.

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Bibliographic details

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