



Title	A Systematic Review and Economic Model of the Clinical Effectiveness and Cost Effectiveness of Docetaxel in Combination with Prednisone or Prednisolone for the Treatment of Hormone-Refractory Metastatic Prostate Cancer
Agency	NCCHTA, National Coordinating Centre for Health Technology Assessment Mailpoint 728, Boldrewood, University of Southampton, Southampton SO16 7PX, United Kingdom
Reference	Health Technol Assess 2007;11(2). Jan 2007. www.hta.ac.uk/execsumm/summ1102.htm

Aim

To evaluate the clinical and cost effectiveness of docetaxel (Taxotere®, Sanofi-Aventis) in combination with prednisone/prednisolone in treating metastatic hormone-refractory prostate cancer (mHRPC).

Conclusions and results

Seven randomized controlled trials were identified that met the inclusion criteria. A direct comparison of docetaxel plus prednisone versus mitoxantrone plus prednisone in an open-label randomized trial showed improved outcomes for docetaxel plus prednisone in terms of overall survival, quality of life, pain, and prostate specific antigen (PSA) decline. Two other chemotherapy regimens that included docetaxel: docetaxel plus estramustine and docetaxel plus prednisone plus estramustine, also showed improved outcomes in comparison with mitoxantrone plus prednisone. Indirect comparison suggested that docetaxel plus prednisone was superior to corticosteroids alone in terms of overall survival. Conclusions on cost effectiveness were primarily informed by the results of the in-house model. This indicated that mitoxantrone plus a corticosteroid may be cheaper and more effective than corticosteroid alone. Compared with mitoxantrone plus prednisone/prednisolone, the use of docetaxel plus prednisone/prednisolone (3-weekly) appears cost effective only if the NHS is prepared to pay GBP 33 000 per quality-adjusted life-year (QALY). The incremental cost-effectiveness ratio associated with docetaxel plus prednisone (3-weekly) remained fairly robust to these variations with estimates ranging from GBP 28 000 to GBP 33 000 per QALY. Value of information analysis revealed that further research is potentially valuable. Given a maximum acceptable ratio of GBP 30 000 per QALY, the expected value of information was estimated to be approximately GBP 13 million.

Recommendations

Our review of the data suggests that docetaxel plus prednisone seems to be the most effective treatment for men with mHRPC. The results from the assessment group model suggest that treatment with docetaxel plus prednisone/prednisolone is cost effective in patients with mHRPC as long as the health service is willing to pay GBP 33 000 per additional QALY.

Methods

Twenty-one resources (including MEDLINE, EMBASE, and the Cochrane Library) were searched to April 2005. Two reviewers independently assessed studies for inclusion. Data from included studies were extracted and quality assessed. Where appropriate, outcomes were synthesized using formal analytic approaches. A new economic model was developed to establish the cost effectiveness of docetaxel compared to a range of potential comparators. A separate review identified sources of utility data required to estimate QALYs. Sensitivity analyses explored the robustness of the main analysis in alternative assumptions related to quality of life. Monte Carlo simulation was used to propagate uncertainty in input parameters through the model. The impact of uncertainty in the decision was established using value of information and implementation approaches.

Further research/reviews required

Future research should include the direct assessment of quality of life and utility gain associated with different treatments, including the effect of adverse events of treatment, using generic instruments, which are suitable in cost-effectiveness analyses.