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 health and economic effects of varenicline compared with other smoking cessation interventions in three different scenarios: private health plans, state Medicaid, and the employer. For all payer scenarios and interventions, the use of varenicline substantially reduced the health care costs, and became cost-saving within two to five years. There were a few limitations to the study's methodology and for this reason the authors' conclusions should be considered with a degree of caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to evaluate the health and economic effects of varenicline compared with other smoking cessation interventions, in three different scenarios: private health plans, state Medicaid, and the employer.

Interventions
Varenicline, a nicotinic acetylcholine-receptor partial antagonist, for 12 weeks, was compared with three alternative strategies: nicotine patches for nine weeks, bupropion for 12 weeks, and no pharmacologic aid. Once only treatment was considered, with no additional or subsequent strategies.

Location/setting
USA/primary and secondary care.

Methods
Analytical approach:
A model which followed hypothetical cohorts of 1,000 smokers for a 10 year time-horizon was used. The authors reported that further details of the model were published elsewhere (Halpern, et al. 2000, see ‘Other Publications of Related Interest’ below for bibliographic details). They did not explicitly report the study perspective although the analysis was conducted for three different scenarios: the employer, private health plans, and state Medicaid.

Effectiveness data:
The epidemiologic and clinical data were obtained from the literature. The main clinical endpoints were the rates of cessation and smoking-related diseases such as coronary artery disease and chronic obstructive pulmonary disease.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
Successful smoking cessation rates were the primary outcome. Other health outcomes included smoking-related morbidity from coronary artery disease, chronic obstructive pulmonary disease, lung cancer, and pregnancy complications.

Cost data:
The cost categories were those of the pharmacologic interventions, their related counselling, medical care costs according to gender and smoking status, and absenteeism and productivity losses. All costs were reported in 2005 US dollars ($). Former costs were appropriately inflated and future costs were discounted at an annual rate of 3%.
Analysis of uncertainty:
Not reported.

Results
The one year costs associated with the treatments were, $342 for Varenicline, $366 for bupropion, $244 for nicotine patches and $73 for no pharmacologic aids.

Treatment with varenicline resulted in an increase in the number of successful smoking cessations after 10 years of approximately 14% when compared with bupropion, 25% when compared with nicotine patches, and 38% when compared with no pharmacologic aid.

The incremental costs per cessation were reported for the two-year time horizon. In the Medicaid model, varenicline was dominant (more effective and less costly) when compared with bupropion and with nicotine patches; the incremental cost per cessation of varenicline compared with no aid was $836. The results were also reported for the employer model and for the private health plan model.

In the employer model, the health care cost savings, after 10 years, for varenicline were $112,934 compared with bupropion, $219,295 compared with nicotine patches, and $333,706 compared with no aids. These results were also reported at one, two and five years. When the productivity costs were included, the cost savings ranged from $575,705 compared with bupropion to 1,686,203 compared with no pharmacologic aid.

Authors’ conclusions
The authors concluded that, for the three payer scenarios, the use of varenicline substantially reduced the health care costs, and became cost-saving within two to five years compared with the other smoking cessation interventions.

CRD commentary
Interventions:
The interventions were adequately reported, but it was not clear whether other relevant comparators could have been included.

Effectiveness/benefits:
The identification strategy for the efficacy data was not described, and the selected studies were included without a systematic review of the literature. For this reason it is impossible to assess whether or not the best available evidence was used.

Costs:
The authors did not report their perspective. Therefore, it is not possible to ascertain if all the relevant costs were included. It appears that the analysis was conducted from a societal perspective, where productivity costs were included, and from a Medicaid perspective, where only the direct costs were included. The costs of branded bupropion were used because generic bupropion was not available at the time this study was conducted. This may have favoured varenicline.

Analysis and results:
The model structure was presented graphically along with the modelling assumptions. However, a more thorough reporting of the model details would have been useful. No sensitivity analysis was performed and for this reason it is difficult to assess whether the results were robust.

Concluding remarks:
There were a few limitations to the study’s methodology and for this reason the authors’ conclusions should be considered with a degree of caution.

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