Prescription of transdermal nicotine patches for smoking cessation in general practice: evaluation of cost-effectiveness

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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.

Health technology
The health technology investigated in the study was transdermal nicotine patches as nicotine-replacement therapy (NRT) for smoking cessation.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population was comprised of smokers.

Setting
The setting was general practice. The economic study was carried out in the UK.

Dates to which data relate
Effectiveness evidence and resource use data were gathered between 1994 and 1998. The price year was 1998.

Source of effectiveness data
The effectiveness evidence was derived from published studies.

Modelling
An abstinent-contingent-treatment (ACT) model was used to assess outcomes and costs of counselling and NRT prescriptions on the assumption that treatment would be stopped for patients who did not remain abstinent during treatment.

Outcomes assessed in the review
The outcomes assessed were undiscounted life years saved by stopping at different ages (under 35 years, 35-44 years, 45-54 years, and 55-65 years), the 12-month cessation rate from GP counselling plus nicotine-patch treatment, the relapse rate after 12-months of cessation, the 12-month cessation rate from GP counselling alone, and the annual unaided cessation rate.

Study designs and other criteria for inclusion in the review
Only the details of a single study, carried out by the same authors, were reported.

**Sources searched to identify primary studies**  
Not stated.

**Criteria used to ensure the validity of primary studies**  
Not reported.

**Methods used to judge relevance and validity, and for extracting data**  
Not reported.

**Number of primary studies included**  
Four primary studies were used as the source of effectiveness estimates.

**Methods of combining primary studies**  
Primary studies were not combined, as each study provided a single estimate.

**Investigation of differences between primary studies**  
Not stated.

**Results of the review**  
The undiscounted life years saved by stopping smoking were 7.5 years (range: 6 - 9 years) under 35 years, 7 years (range: 5.6 - 8.4 years) between 35 and 44 years, 4.5 years (range: 3.6 - 5.4 years) between 45 and 54 years, and 2.5 years (range: 2 - 3 years) between 55 and 65 years.

The 12-month cessation rate from GP counselling plus nicotine-patch treatment was 9.6% (range: 7.9% - 11.3%). The relapse rate after 12-months of cessation was 40% (range: 30% - 50%).

The 12-month cessation rate from GP counselling alone was 4.5% (range: 2.8% - 6.2%) and the annual unaided cessation rate was 1.5% (range: 1.2% - 1.8%).

**Measure of benefits used in the economic analysis**  
The benefit measure used in the economic analysis was the number of extra life years saved (LYS) per patient treated. It was calculated as the difference between incremental health gain additional to brief GP counselling, based on the assumption that counselling was normal practice. Future health benefits were discounted at 1.75% rate, as suggested by the UK Department of Health guidelines (1995).

**Direct costs**  
Discounting was not relevant because all the costs of treatment were incurred within one year. Quantities and costs were reported separately. The resource/cost boundary adopted was that of the NHS. The costs included counselling time, nicotine patches, pharmacy fees for NHS prescription, patient booklet, and biochemical validation of smoking cessation. The estimation of costs and resources was based on both actual data and published studies. Resource use data were gathered between 1994 and 1998. The price year was 1998.

**Statistical analysis of costs**
No statistical analysis of costs was reported.

**Indirect Costs**
Indirect costs were not included.

**Currency**
UK pounds sterling (€).

**Sensitivity analysis**
Sensitivity analyses were conducted to assess the robustness of the analysis to changes in the cost and effectiveness estimates. The type of analysis was not specified, but it appeared that one-way sensitivity analyses were carried out.

**Estimated benefits used in the economic analysis**
The extra LYS per patients treated were 0.086 in the group of subjects under 35 years, 0.099 in the group 35-44 years, 0.079 in the group 45-54 years, and 0.055 in the group 55-65 years.

**Cost results**
The costs per minute of GP and practice nurse time were 1.77 (GP) and 0.43 (practice nurse).

The cost of 1-week of nicotine patches was 9.07.

The pharmacy fee was 0.94.

The costs of patient booklet and biochemical validation were 0.20 (patient booklet) and 1 (biochemical validation).

The extra cost per patient treated was 34.14 in three of the subject groups, (under 35 years, between 35 and 44 years, and between 45 and 54 years).

In the fourth group of patients (55-65 years) the extra cost per patient treated was 43.08.

**Synthesis of costs and benefits**
An incremental cost-effectiveness analysis was performed to combine costs and benefits. The incremental cost-effectiveness ratio of nicotine patches and counselling over GP counselling alone was 397.95 in the group of subjects under 35 years, 344.68 in the group 35-44 years, 432.32 in the group 45-54 years, and 785.43 in the group 55-65 years. Results were quite robust to changes in both cost and effectiveness estimates. The variables with the greatest impact were the 12-month cessation rate attributable to the intervention and the cost of nicotine patches.

**Authors' conclusions**
The analysis showed that nicotine patches and GP counselling were cost-effective in all age-groups. The treatment was marginally more cost-effective in individuals aged 35-44 and less effective for older patients, who are often exempt from NHS prescription charges and have fewer years to gain after stopping smoking.

**CRD COMMENTARY - Selection of comparators**
The rationale for the choice of the comparator was clear. GP counselling represented the routine intervention recommended in the UK. You should consider whether it represents a commonly used strategy in your own setting.
Validity of estimate of measure of effectiveness
The effectiveness measures (model parameters) were not derived from a review of the literature, but based on estimations obtained from studies which were not combined. Search methods and criteria that would improve the validity of primary studies were not reported. Further, the estimates derived from different sources were used in the model but the authors did not consider the impact of differences between the primary studies when estimating effectiveness measures.

Validity of estimate of measure of benefit
The estimation of benefits was modelled. The extra life years saved per patient treated were used as the benefit measure and appeared appropriate to the study objective.

Validity of estimate of costs
It appeared that all the categories of costs relevant to the perspective of the study were included in the analysis. Quantities and costs were reported separately and sensitivity analyses were performed, therefore enhancing the external validity of the study. However, the cost estimates were quite specific to the NHS setting.

Other issues
The authors made several comparisons of their findings with those from other studies. The issue of the generalisability of the results to other setting was partially addressed by performing sensitivity analyses on effectiveness and cost estimates. The conclusions reached by the authors appeared justified within the limitations of the study as outlined above.

Implications of the study
The results apply directly to patients who smoke 15 or more cigarettes per day, but also to those who smoke less. In contrast to the White Paper, the authors suggested that GPs should be allowed to treat all suitable smokers with NRT. Furthermore, while the White Paper indicated to stop the treatment after one week, the authors recommend continuing the treatment to abstinent subjects.

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