Cost-effectiveness of the transdermal nicotine patch as an adjunct to physicians' smoking cessation counseling

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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
Transdermal nicotine patches as an adjunct to physician-based smoking cessation counselling.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Male and female smokers aged 25-69 years receiving primary care. The base case for analysis was that of a 45 year old male smoker.

Setting
The setting was primary care. The economic study was carried out at the University of Rochester, New York, USA.

Dates to which data relate
Effectiveness and resource data were both obtained between 1994 and 1995. Prices relate to 1995.

Source of effectiveness data
The estimate for final outcome was based upon a review of previously completed studies.

Modelling
A Markov model was used to estimate (quality adjusted) life expectancy for male and female smokers and former smokers. TreeAge software was used.

Outcomes assessed in the review
The outcomes assessed were smoking cessation through relevant physician smoking counselling, with and without nicotine patches.

Study designs and other criteria for inclusion in the review
Not stated.
Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.

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

Number of primary studies included
Two published meta-analyses were used to estimate the effectiveness of physician smoking cessation counselling with and without the nicotine patch. Approximately 8 further studies, the types of which were not reported, were included in the review.

Methods of combining primary studies
The narrative method was used to combine the primary studies.

Investigation of differences between primary studies
Not stated.

Results of the review
Physician smoking cessation counselling resulted in 1.5% (95% confidence interval: 0.1 - 2.8%) additional smokers quitting after a period of 1 year, compared to no intervention. A baseline figure of 2.5% for annual quitters produced an odds of quitting of 0.042 for smokers receiving the physician-based counselling. A quit odds ratio of 0.087 was obtained for the nicotine patch (or quit rate of 7.94%) by multiplying a quit odds ratio of 2.07 (95% CI: 1.6 - 2.6) by the odds of quitting ratio (0.042).

Measure of benefits used in the economic analysis
The measure of benefits was quality-adjusted life years (QALYs) gained, using the Healthy People 2000 years of healthy life (YHL) measure in combination with data from the National Health Interview Survey (NHIS). Markov modelling was used to extrapolate outcome results from the short to long term.

Direct costs
Costs were discounted at 3%. The price year stated was 1995. Quantities and costs were not analysed separately. Costs included were the average wholesale price of one month's supply of patches, retail price estimates from 6 local pharmacies, and physician costs based upon current charges for routine primary care visits. The payer perspective was taken. Quantities and costs were derived using modelling studies.

Statistical analysis of costs
Not undertaken.

Indirect Costs
Not included.
Currency
US dollars ($).

Sensitivity analysis
Various one-way sensitivity analyses were carried out varying the acceptance rate, refill rate, relapse rate, physician time or retail mark-up of nicotine patch therapy, lifetime rate of smoking relapse, excess relapse rate in patch users, annual rate of quitting in the absence of an intervention and a mark-up on cost of the month supply of the patch and the discount rate. All these parameters were varied to test the impact on the incremental cost-effectiveness of the patch. (A Monte-Carlo simulation of a randomly selected range of values identified for each variable was also carried out).

Estimated benefits used in the economic analysis
The QALYs gained (adjusted for quality of life, discounted at 3%) were (male figure/female figure):

25-29 years (2.34/1.94);
30-34 years (2.38/2.04);
35-39 years (2.34/2.08);
40-44 years (2.2/2.06);
45-49 years (1.98/1.97);
50-54 years (1.67/1.81);
55-59 years (1.35/1.62);
60-64 years (1.01/1.39);
65-69 years (0.69/1.08).

The highest discounted benefits from the cessation of smoking were found among middle-aged men. Also, older women were found to benefit more than older men (age 50 onwards).

Cost results
A cost of $111.90 for a month of therapy was imputed (based upon the average wholesale price plus 7.5% mark-up). Additional physician time was $6.67 (based upon a rate of $80 per hour).

Synthesis of costs and benefits
The cost of achieving 1 lifetime quitter was $7,332. Incremental cost-effectiveness ratios of patch use varied between $4,390 - $10,943 (men), and $4,955 - $6,983 (women) per QALY (base case figure was $4,671 per QALY).

Authors' conclusions
The cost-effectiveness results achieved are favourable in comparison with other health system treatment costs, thus the use of the patch in combination with relevant counselling should go hand in hand.

CRD COMMENTARY - Selection of comparators
The reason for choice of comparator is clear.
Validity of estimate of measure of benefit
It is difficult to assess the validity of the estimate of measure of benefit as little information was provided on the criteria used to locate and include studies in the review.

Validity of estimate of costs
Quantity/cost estimates would be clearer if more detail was provided on the method used. All relevant costs for the payer perspective appear to have been included.

Source of funding
None stated.

Bibliographic details
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Other publications of related interest

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