The cost-effectiveness of the nicotine transdermal patch for smoking cessation

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
Using transdermal nicotine patch plus brief physician counselling versus brief physician counselling alone for smoking cessation.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Smokers who smoked 20 or more cigarettes a day, and who wished to stop smoking.

Setting
Primary care. The economic study was carried out in Atlanta, USA.

Dates to which data relate
The effectiveness and resource data were extracted from studies published between 1983 and 1996. The price year was 1995.

Source of effectiveness data
The evidence for the final outcomes was derived from a meta-analysis of six randomised placebo-controlled double blind clinical trials for physician counselling effectiveness (Oster et al), a meta-analysis of 13 randomised placebo-controlled double blind clinical trials for effectiveness of the patch at the six-month point (Fiore et al), literature review, expert opinion, and a single study.

Outcomes assessed in the review
The outcomes assessed were 12-month abstinence with physician counselling but no patch, percentage increase over counselling baseline with patch prescription at 12 months, relapse rate after 1 year of successful abstinence, underlying spontaneous quit rate in the general population, length of patch treatment, take-up rate, and compliance rate.

Study designs and other criteria for inclusion in the review
Randomised controlled trials for key effectiveness factors incorporated in meta-analysis.

Sources searched to identify primary studies
Criteria used to ensure the validity of primary studies
Randomisation and intention to treat, and blinding methods.

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

Number of primary studies included
At least 3 meta-analyses combining randomised controlled trials plus at least 7 primary studies.

Methods of combining primary studies
Not stated.

Investigation of differences between primary studies
Not reported.

Results of the review
The 12-month abstinence with physician counselling but no patch was 4.5% with 2.7% being used as the lower bound in the sensitivity analysis. The percentage increase over counselling baseline with patch prescription at 12 months was 391% with 236% and 633% as lower and upper bounds in sensitivity analysis. The relapse rate after 1 year of successful abstinence was 35%. The underlying spontaneous quit rate in general population was 1%. The length of patch treatment adopted from the literature and used as the lower bound in the sensitivity analysis was 6 weeks. The take-up rate taken from the literature and used as the upper bound in the sensitivity analysis was 50%. The compliance rate was 50% with 100% as the upper bound in the sensitivity analysis.

Methods used to derive estimates of effectiveness
Clinical judgement or assumptions made.

Estimates of effectiveness and key assumptions
The multiplier conversion factor was assumed to be 3.91 with 2.36 and 6.33 as lower and upper bounds, respectively, in the sensitivity analysis. The length of patch treatment was assumed to be 8 weeks with 10 weeks for the upper bound in the sensitivity analysis. The take-up rate was assumed to be 25% with 10% as the lower bound in the sensitivity analysis.

Measure of benefits used in the economic analysis
The measure of benefits was additional years of life saved (LYS).

Direct costs
The quantities were reported separately from the costs. The cost items were reported separately. The cost items included were cost of the nicotine patch and physician time. An average cost of the nicotine patch was calculated from the four brands currently available in the US for treatments of both less than or more than 8 weeks’ duration. Physician time (for counselling) was costed on the basis of the Medicare Physician's Fee Schedule assuming a 5 minute visit. Direct costs were not discounted, as the authors assumed that all costs would arise in the same year. The date to which the price data referred was 1995. The cost of follow-up counselling was not included.
Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
Multi-way (best and worst scenarios) and one-way sensitivity analyses were carried out on almost all key parameters of the economic study.

Estimated benefits used in the economic analysis
YLS were discounted at 5% per annum. The values of life years gained for the intervention and the comparator were not reported, it being mentioned only that, by adding the patch to counselling, 8.5 additional people in the intervention group (equating to 400 hypothetical patients) would stop smoking.

Cost results
The total costs for 400 hypothetical patients receiving the intervention was $21,456 against $4,656 for the control group.

Synthesis of costs and benefits
The costs and benefits were combined by calculating the average and incremental costs per year of life saved. Against the comparator, the intervention resulted in a range of incremental costs per year of life saved from $1,795 to $2,949 for men (depending on age) and from $3,040 to $4,391 for women.

Authors' conclusions
The authors concluded that "the nicotine patch is cost-effective and less costly per year of life saved than other widely accepted medical practices. Physicians and third-party payers should recommend the nicotine patch to patients who wish to stop smoking.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear.

Validity of estimate of measure of benefit
The internal validity of the benefit results were weakened by the error in the calculation of 12-month abstinence rate noted by Dr J Stapleton in a letter to the editor (Preventive Medicine, 1998, 27(2), pp.304-5) and which was acknowledged by the authors. Quality-adjusted life years (QALYs) were not included in the estimation of the benefits.

Validity of estimate of costs
Adequate details of the cost estimation methods adopted were given. Future cost savings due to improved health were not calculated.

Other issues
The issue of generalisability to other settings or countries was not addressed.
Source of funding
None stated.

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Other publications of related interest


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