Novel strategy to stop cigarette smoking by surgical patients: pilot study in a preadmission clinic

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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
A novel strategy to stop cigarette smoking by surgical patients, using a computerised delivery service, was examined. The system identified, interactively, patient barriers to cessation, provided selected solutions, and provided feedback and advice on-screen.

Type of intervention
Primary and/or secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised all patients who attended the surgical preadmission clinic, who were over the age of 18, and who were able to complete the study procedures. All patients were considered eligible.

Setting
The setting was tertiary care (a teaching hospital). The economic study was carried out in Australia.

Dates to which data relate
The effectiveness data were collected during a 2-month period in 1999 and an additional follow-up 9 months later. Initial capital costs were recorded. The price year was not reported.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The cost data consisted only of capital costs. Thus, no cost data were derived from the patient sample used to determine the effectiveness of the intervention. The authors did not state when the cost data were collected.

Study sample
There were no details of how the study sample size was determined. The sample appears to have been a convenience sample of patients who attended the preadmission clinic during the study period (n=234). All patients were considered eligible for inclusion in the study sample and, of these, 56 (23.9%) were smokers. The average age of the smokers was 48 (+/- 15) years and over half of them (57%) were women. Nine months after discharge, 37 (66.1%) of these smokers agreed to participate in the follow-up survey, 8 (14.3%) declined to participate, 9 (16.1%) patients were unable to be
contacted, and 2 (3.6%) had died.

**Study design**
This was a non-randomised, single-arm, observational, pilot study that was conducted in a single centre. All smokers were followed up 9 months after the intervention. Nineteen patients (8.1% of the overall sample; 33.9% of smokers) were lost to follow-up. The outcome assessment was unblinded.

**Analysis of effectiveness**
The primary health outcome measured was smoking cessation. Smoking status was determined by patient self-report. Crude smoking cessation rates, as well as intention to treat smoking cessation rates, were reported. There was no significant difference between the participants and those who were lost to follow-up in terms of age, gender, education, employment and state of change.

**Effectiveness results**
At follow-up, 22 of the 37 participants (59.5%) reported that they stopped smoking prior to their surgery 9 months previously. The inclusion of participants lost to follow-up and their classification as smokers resulted in a cessation rate of 39.3%.

Of the 37 participants, 5 reported that they were no longer smokers at the 9-month follow-up (13.5% cessation rate, confidence interval, CI: 5 - 29). The inclusion of those smokers who were lost to follow-up resulted in a cessation rate of 8.9% (CI: 0.5 - 17.4) after the 9-month period.

**Clinical conclusions**
The findings of this pilot study indicated that an interactive, computerised smoking cessation programme is a potentially effective means of providing routine smoking cessation advice to surgical preadmission clinic patients.

**Measure of benefits used in the economic analysis**
No summary measure of benefits was synthesised. Thus, in effect, a cost-consequences analysis was performed.

**Direct costs**
The capital costs of implementing the computerised cessation system were reported. The cost of developing the cessation programme was Aus$10,000, the cost of the computer hardware was Aus$3,000, and the cost of the software was Aus$300. The costing appears to have been undertaken from the hospital perspective, although this was not explicitly stated in the paper. The source of the cost data was not stated. Discounting was not carried out, which was appropriate as the effectiveness analysis was carried out over 9 months and the costs were projected over 12 months. The date to which the price data referred was not stated. No ongoing costs were included.

**Statistical analysis of costs**
The costs were treated deterministically and no statistical analysis was carried out.

**Indirect Costs**
The indirect costs were not included in the analysis.

**Currency**
Australian dollars (Aus$).
Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The capital costs included the cost of developing the programme (Aus$10,000), and the costs of the computer hardware (Aus$3,000) and software (Aus$300).

The capital costs were extrapolated over a 12-month period. It was estimated that the cost per patient would be Aus$9.47, the cost per smoker Aus$39.47, and the cost per quitter Aus$443.

Synthesis of costs and benefits
Not relevant.

Authors' conclusions
The study demonstrated that an interactive, computerised smoking cessation programme is a potentially effective, feasible and acceptable method of providing routine smoking cessation advice to surgical preadmission clinic patients.

CRD COMMENTARY - Selection of comparators
This was a before-and-after study in which the comparator appears to have been the smoking rate of the study sample prior to the intervention. The authors gave no explicit justification for the comparator used. A more appropriate comparator would have been the standard method of delivering smoking cessation interventions, for example, e.g. expert smoking cessation counselling by physician, nursing or specialist counselling staff. You should decide if these technologies are relevant to your own setting.

Validity of estimate of measure of effectiveness
The internal validity of the measure of effectiveness was compromised somewhat by the single-centred, before-and-after study design with no control group. In addition, the sample size was small (only 37 patients participated in the follow-up study). However, the authors clearly stated that this was a pilot study and they are currently conducting further research using a randomised controlled design.

The reliance on patient self-reported smoking status as an outcome measure imposes some limits on the interpretation of the study findings. In addition, it might have resulted in an overestimation of the cessation rates. The authors acknowledged this limitation of the study design. They also highlighted that further research into the efficacy of the programme would require biochemical validation of smoking outcomes.

Validity of estimate of measure of benefit
The estimates of effectiveness were not aggregated into a summary measure of health benefit. Therefore, the comments (above) about the validity of the estimate of the measure of effectiveness apply.

Validity of estimate of costs
The initial cost of developing the computerised smoking cessation intervention was reported. However, this is a capital cost and it was used to derive per patient costs, which were also extrapolated from the 2-month period to a full year. The presentation of the results in this manner was somewhat misleading because, as the number of patients receiving the intervention increases, the cost per patient will fall accordingly and, over time, the capital costs would be...
negligible. Some relevant costs were omitted from the analysis (e.g. institutional overheads, indirect costs, and costs associated with future consequences of the intervention). The costs were not disaggregated into unit costs and resource use quantities, although the time required to complete the programme was stated. The year to which the costs related was not stated, and it was not reported whether deflation was applied.

Other issues
This was a useful study demonstrating the benefits of an interactive, computerised smoking cessation programme. The main advantage is that it can deliver up to 21 minutes of expert smoking cessation counselling and feedback to smokers, a service which, owing to time constraints, is difficult to deliver by counselling staff. However, the study was limited by the lack of a randomised controlled design, insufficient detail on the costing, and the lack of a sensitivity analysis.

The authors stated that their findings support those from other studies concerning the effectiveness, feasibility and acceptability of computer-based, but non-interactive, behaviour change programmes. The authors stated that it is likely that the results can be generalised to all elective surgical patients.

Implications of the study
As this was a pilot study without a randomised controlled design, the findings should be evaluated within the known limitations of the study design. The authors are conducting further research using a randomised controlled design. Despite its high initial capital cost, the negligible ongoing costs suggest that this approach may represent a relatively cheap means of delivering smoking cessation advice to patients.

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None stated.

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Other publications of related interest


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