The effectiveness of smoking cessation interventions prior to surgery: a systematic review

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CRD summary
The authors concluded that hospital-based pre-operative smoking cessation interventions were effective in terms of pre-surgery abstinence. Long-term abstinence was less clear. Potential methodological limitations related to the review process, together with the inclusion of a small number of variable studies, suggested that the reliability and generalisability of the authors' conclusion is uncertain.

Authors' objectives
To evaluate the effectiveness of pre-surgery smoking cessation interventions delivered in hospital.

Searching
MEDLINE, EMBASE, PsycINFO, and CINAHL were searched from 1806 to December 2006 to identify published English-language articles for inclusion in the review. Search terms were reported. The Cochrane Library and references lists were searched to locate any further articles of relevance.

Study selection
Randomised controlled trials (RCTs) of cessation programmes for smokers (classified by self-report, carbon monoxide readings or cotinine levels) aged over 18 years old and awaiting elective surgery were eligible for inclusion in the review. Outcomes of interest were quit rates (a reduction by more than half of normal daily rate), measured by self-reported behaviour, carbon monoxide and the number of cigarettes smoked per day at pre- and post-surgery time points. In addition to patients undergoing general elective surgery, others included were due to receive hip or knee surgery, coronary artery bypass graft and open colonic or rectal surgery. Most cessation programmes included a counseling component; additional features were nicotine replacement therapy, advisory letters and tailored self-help material delivered alone or in combination. Control groups received usual care. The pre-operative period (where reported) ranged from 8.5 months to one to two weeks pre-surgery. Follow-up ranged from one day before surgery to 12 months post surgery. The process of study selection was carried out by all reviewers and disagreements were resolved by consensus.

Assessment of study quality
Study quality was assessed using guidelines from the Centre for Reviews and Dissemination (2001) in terms of randomisation procedure, eligibility criteria, blinding and intervention description. The authors stated neither how many reviewers were involved the assessment of study quality nor how disagreements were resolved.

Data extraction
Data were extracted on the percentage of patients who were abstinent from smoking pre- or post-surgery. Statistical significance was reported, but not defined. The authors stated neither how the data were extracted for the review nor many reviewers performed the data extraction.

Methods of synthesis
Studies were synthesised narratively.

Results of the review
Seven RCTs (n=870) were included in the review. Sample sizes ranged from 47 to 237 patients. Randomisation procedure and eligibility criteria were clearly specified in six studies. Comparison data were provided for all studies.

All studies showed that smoking cessation programmes were effective in terms of numbers of patients who were abstinent before surgery. Studies that included counselling in addition to nicotine replacement therapy showed greater benefits. Statistically significant differences were reported between intervention group proportions (range 18% to 93% with a mean of 55%) compared to those in the control groups (range 2% to 65%, mean 27.7%). Two studies reported follow-up rates at six months, at which point no statistically significant differences were reported between intervention
Authors' conclusions
Pre-operative smoking cessation interventions delivered in a hospital setting were effective in terms of pre-surgery abstinence.

CRD commentary
The review question was clear and supported by detailed inclusion criteria for study design and outcomes. Intervention and participant criteria were broad, and consequently attracted wide variation within the included studies. Several relevant sources were searched to identify studies for inclusion in the review, although the restriction to published English-language articles meant that relevant studies may have been missed and publication and language biases could not be ruled out. Appropriate study quality assessment criteria were applied and the results were used to support the results. The absence of reporting on how the processes of data extraction and validity assessment were carried out represented a limitation in this review. The authors acknowledged a further limitation from wide variation within the included studies. The absence of details that concerned control group interventions made it difficult to interpret the results. Taken together, these limitations suggest that although the authors conclusions reflected the evidence presented, their reliability and generalisability is uncertain.

Implications of the review for practice and research
Practice: The authors stated that pre-operative smoking cessation programmes should include some form of patient education or counselling in addition to nicotine replacement therapy products.

Research: The authors stated that future research should address outcomes from longer-term smoking cessation support and explore to what extent tailoring by individual patient or intervention factors might contribute to success.

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