Effectiveness of providing financial incentives to healthcare professionals for smoking cessation activities: systematic review

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CRD summary
The review concluded that financial incentives for healthcare professionals appeared to improve recording of smoking status and increase provision of cessation advice and referrals to cessation services. There was insufficient evidence to show that financial incentives led to reductions in smoking rates. The authors’ conclusions reflect the evidence presented but data limitations may affect their reliability.

Authors' objectives
To evaluate the effectiveness of providing financial incentives to healthcare professionals for smoking cessation activities.

Searching
MEDLINE, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, DARE, Cochrane Central Register of Controlled Trials (CENTRAL) and Web of Science were searched to May 2011 for relevant articles in any language. GreyNet International and Open Grey were searched for grey literature searched. Reference lists of retrieved articles and relevant reviews were checked.

Study selection
Studies that reported the effects of any financial incentive provided to individual and group healthcare providers to undertake smoking cessation-related activities were eligible for inclusion. Eligible study designs were randomised controlled trials (RCTs), controlled trials and observational studies with a before-and-after design. Participants could be registered with any healthcare provider and be with or without chronic disease but had to be aged 15 years or over. Studies that were of patient competitions or that were related to provision of reduced cost or free medications were excluded. Also excluded were studies that reported results as a composite quality score and that included other measures of chronic disease management.

More than half of the studies reported on the Quality of Outcomes Framework (QOF) in the UK which offered financial rewards to general practices for smoking cessation activities. Other studies examined fee for service or bonus-type payments on smoking cessation activities in the UK, Germany, Taiwan and USA or the effect of financial incentives on individual doctors or groups of healthcare professionals. Patients included people who intended to quit smoking, were on a routine visit or had various medical conditions including chronic heart disease, chronic obstructive pulmonary disease, hypertension, diabetes, asthma or stroke.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Study quality was assessed using the Downs and Black guidelines for randomised and non-randomised studies of healthcare interventions. Scores ranged from 1 (poor) to 4 (excellent).

Two reviewers independently assessed study quality. Differences were resolved through discussion with a third reviewer.

Data extraction
Data on smoking status, smoking cessation advice and/or referral to smoking cessation services and quit rates were extracted and used to calculate odds ratios with 95% confidence intervals of the effect before and after an intervention or between intervention and control groups. The percentage change within each study for each outcome was calculated.

One reviewer extracted data, which were checked by a second reviewer.
Methods of synthesis
As there was evidence of substantial statistical heterogeneity ($I^2>90\%$) the authors conducted a narrative synthesis. Results were reported by outcome.

Results of the review
Eighteen studies were included in the review: three RCTs and 15 observational studies. Studies were considered to be mid-range for quality.

Smoking Status: Studies of QOF reported improvements in recording smoking status that ranged from 19\% (OR 3.12, 95\% CI 2.80 to 3.48) to 52\% (OR 24.19, 95\% CI 22.42 to 26.11). One RCT reported improvements in incentive clinics in the USA.

Smoking advice or referral: QOF studies reported an increase in smoking advice that ranged from 12.2\% (OR 4.64, 95\% CI 5.23 to 5.34) to 16.4\% (OR 7.87, 95\% CI 5.68 to 10.90). Other studies reported mixed findings: two studies reported no differences for financial incentives and some studies reported an improvement that ranged from 2.25\% (OR 5.05, 95\% CI 4.98 to 5.12) to 5.7\% (OR 1.26, 95\% CI 1.11 to 1.42).

Prescriptions for nicotine replacement therapy/bupropion: Two studies reported that financial incentives were associated with an increase in the proportion of smokers receiving prescriptions (range OR 2.75, 95\% CI 1.33 to 5.65 to OR 6.32, 5.85 to 6.83).

Quit rates: Two studies reported no improvements in quit rates as a result of incentives and one study reported mixed effects for outcomes.

Changes in smoking prevalence: Two of three QOF studies reported reductions in smoking prevalence in patients that ranged from a 3.8\% reduction (OR 0.73, 95\% CI 0.69 to 0.86) to a 6\% reduction (OR 0.73, 95\% CI 0.72 to 0.73). One non-QOF study reported a reduction in smoking prevalence and an increase in the proportion of ex-smokers in Taiwan associated with an increase in funding for activities.

Authors' conclusions
Financial incentives appeared to improve recording of smoking status and increase provision of cessation advice and referrals to stop smoking services. There was insufficient evidence to show that financial incentives led to reductions in smoking rates.

CRD commentary
The review question was clear with broadly defined inclusion criteria. Several relevant sources were searched and efforts were made to locate grey (unpublished) literature. Study quality was assessed but results for individual studies were not reported. Appropriate methods to reduce reviewer error and bias were used for quality assessment and data extraction; it was unclear whether similar methods were used to select studies for inclusion.

The methods of synthesis appeared appropriate given the differences between studies in terms of study designs, interventions and outcome assessment. Most data were retrieved from observational studies, which are prone to multiple biases. The authors noted that most studies did not account for secular changes during study periods (such as new guidelines for smoking cessation or recent fiscal policy or legislation).

The authors' conclusions reflect the evidence presented but potential for bias in the study quality and a lack of accounting for secular trends may affect the reliability of the conclusions.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research with RCTs or cohort studies was needed to determine the effectiveness of financial incentives. In particular, there was a need for RCTs to assess quit rates as a result of financial incentives. Cost-effectiveness studies were needed and should include calculation of price elasticity and possible optimum incentive levels.
Funding
NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) Scheme, NIHR Biomedical Research Centre scheme and Imperial Centre for Patient Safety and Service Quality, UK.

Bibliographic details
Hamilton FL, Greaves F, Majeed A, Millett C. Effectiveness of providing financial incentives to healthcare professionals for smoking cessation activities: systematic review. Tobacco Control 2013; 22(1): 3-8

PubMedID
22123941

DOI
10.1136/tobaccocontrol-2011-050048

Original Paper URL
http://tobaccocontrol.bmj.com/content/22/1/3.abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Health Personnel /economics; Health Promotion /economics /methods /standards; Humans; Motivation; Smoking /economics /prevention & control; Smoking Cessation /economics

AccessionNumber
12013011049

Date bibliographic record published
15/03/2013

Date abstract record published
30/10/2013

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.