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IN BRIEF

- UK Government policy aims to improve health by reducing levels of chronic disease, especially coronary heart disease, obesity and cancer.
- Dental teams could contribute to Government targets set for reducing these diseases through preventive health interventions.
- Current health policy emphasises evidence-based commissioning of services.
- Dental teams' future involvement in general health promotion will depend on whether the pro fession sees itself as having a general public health role and whether it is economically viable for them to do so.

General health promotion in general dental practice — The involvement of the dental team Part 1: A review of the evidence of effectiveness of brief public health interventions

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Objectives To review the evidence of the effectiveness of dentists, dental teams and other healthcare workers in seven different brief public health interventions that might contribute to Government targets in cancer and circulatory disease. The interventions were: smoking prevention, smoking cessation, advice on alcohol consumption, diet counselling, advice on physical exercise, advice on skin cancer prevention and blood pressure monitoring.

Method A series of literature reviews, using a generic systematic approach, were undertaken to investigate the effectiveness of dentists, dental teams and other healthcare workers in each intervention. **Results** Apart from smoking cessation and dietary advice, no studies were identified on the effectiveness of dentists or dental teams in the interventions investigated. There is some evidence that dentists and dental teams can be effective in smoking cessation. There is minimal evidence for effectiveness in dietary counselling, and that which exists shows only a transient effect. There is evidence that other healthcare workers can have some effect in all interventions, though the effect in preventing skin cancer is questionable.

Conclusions Due to the paucity of studies undertaken, there is minimal evidence of effectiveness of dentists and dental teams in any of the seven interventions. However other healthcare workers are effective in most of them. Dentists and dental teams' involvement in such brief general health promotion interventions might contribute to Government targets on cancer and circulatory disease.

The term Professionals Complementary to Dentistry (PCDs) has been retained in this report as this was the accepted term for Dental Care Professionals at the time of data collection and when the paper was accepted for publication

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INTRODUCTION

Saving lives: Our healthier nation¹ outlines the Government's intention to improve health of the whole population, but particularly of the most socioeconomically disadvantaged. Cancer and circulatory diseases (coronary heart disease and stroke) were identified as two of the five main causes of premature death. A broad-based approach was described to address inequalities with initiatives on education, welfare to work, housing, transport and the environment. It asserted that people could also improve their own health through physical activity, better diet and quitting smoking and stressed that individuals and families would benefit from health education to enable lifestyle choices. Such changes in lifestyle would also contribute to a reduction in diabetes and obesity.

A key development from *Saving lives: Our healthier nation* was the creation of a National Service Framework (NSF) for Coronary Heart Disease (CHD).² General medical practitioners (GMPs) and primary care teams were to identify people with established, or at risk of, CHD and offer them appropriate advice or treatment. The document did not specify which primary care teams should be involved in this work. The Health Development Agency (HDA) produced guidance for the 'downstream' preventive aspects for CHD; health education and behavioural change techniques could be carried out on a one-to-one basis, through group work or family counselling with a key element being regular contact with clients.³ Although these approaches could be within the remit of general dental practice, the HDA did not include them as potential partners, despite including pharmacists and ambulance trusts.

Concurrently the Government's strategy for NHS dentistry was outlined in *Modernising NHS dentistry: Implementing the plan*,⁴ which included broader health issues. Smoking cessation and prevention of excess alcohol consumption were highlighted due to their established aetiological role in periodontal disease and oral cancer.⁵⁻⁷ It emphasised dental health care workers involvement in multisectoral approaches to health improvement through a common risk factor approach,^{8,9} especially via healthy eating messages.

Key for abbreviations for tables 1 – 10												
RCT = F	Randomised controlled trial				D =	Number of trials included in a systematic review			SR=	Systematic review		
n = 1	Number of participants in a trial				RT=	Nicotine replacement therapy			HCW=	Healthcare worker		
Table 1 Smoking prevention: effectiveness of other healthcare workers												
Author	HCW	Design	No	Intervention	Inclu	sion criteria	Quality	Effect si	ze	Comment		
Sowden <i>et</i> <i>al.</i> , (2003) ¹⁴	Various	SR	17	Various	RCTs asses of mu	and non-RCTs that sed the effectiveness ulti-component rammes	High	Limited e support	evidence to effectivenes	Difficult to interpret findings due to diversity of interventions		

Table 2 Smoking cessation: effectiveness of dentists											
Author	Design	n	Intervention	Inclusion criteria	Quality	Effect size – Quit rate	Comments				
Kentala <i>et al</i> ., (1999) ¹⁷	RCT	2586	Brief with photograph of adverse oral effects	Not applicable	Fair	No statistically significant difference at 2 yrs between intervention and control group	For adolescents only No biochemical verification of quit status				
Cohen <i>et al.</i> , (1989) ¹⁶	RCT	1027	Lecture Lecture with reminder Lecture with NRT gum Lecture with NRT gum & reminder	Not applicable	Fair	Lecture - 7.7% Lecture & reminder – 8.6% Lecture & gum – 16.3% Lecture, gum & reminder – 16.9%	Difficult to interpret as no true control. Small sample using private patients Results not necessarily generalisable Biochemical verification of quit status Interpret with caution as not 'intention to treat' analysis				
Smith <i>et al.</i> (1997) ¹⁸	Clinical trial	154	Brief intervention with or without NRT patch	Not applicable	Fair	11% quit at 9 months	Biochemical verification of quit status No control group Unable to quantify the effect of brief intervention without NRT Unable to quantify the effect of NRT alone				
MacGregor (1996) ¹⁹	Controlled trial	164	Brief intervention with dental health advice	Not applicable	Fair/poor	Control – 5.3% Intervention – 13.3% Between 3 –12 months	Variable period of follow-up No biochemical verification of quit status Patients had added incentive to quit Interpret with caution				

*Options for change*¹⁰ built on *Modernising NHS dentistry: Implementing the plan.* As well as recommendations to reform general dental practitioners' (GDPs) remuneration, it recommended the introduction of an oral health assessment, which would involve lifestyle advice on smoking and oral health education. New oral health promotion services provided by practices might also include smoking cessation services and blood pressure checks, possibly led by professionals complementary to dentistry (PCDs).

Through the legislative changes proposed in the Health and Social Care Act,¹¹ the present single contract for GDPs across England will be replaced with Primary Care Trusts (PCTs) commissioning services locally in line with policy across healthcare. Theoretically this will allow PCTs to secure locally appropriate, high quality services and address inequalities from April 2006. In 2002 the then Secretary of State announced the intention to develop the public health role of primary care dental teams.¹² Local commissioning of services may provide opportunities for dental teams to be involved in partnerships for health promotion, particularly where there is high circulatory disease and cancer morbidity and mortality.

Present health policy emphasises the Government's commitment to evidence-based commissioning through organisations such as the National Institute for Clinical Excellence and the ongoing development of clinical governance. Equally, the dental profession has increased the emphasis it places on evidencebased practice; the establishment of the Cochrane Oral Health Group, as part of the Cochrane Collaboration and consequent increased activity in systematic reviews is evidence of this. It is essential that the effectiveness of dental teams in the delivery of public health interventions is reviewed so that any future commissioning decisions made by PCTs are based on the best available evidence.

The aim of this study was to review the evidence of effectiveness of brief public health interventions that could be undertaken by dental teams and that might contribute to the Government's aims of reducing the prevalence of circulatory disease and cancer.

METHOD

The brief public health interventions that might contribute to circulatory disease and cancer targets set in *Saving lives: Our healthier nation* and that could be undertaken by dental teams are:

- Smoking prevention
- Smoking cessation
- Advice on alcohol consumption

- Diet counselling
- Advice on physical exercise
- Advice on skin cancer prevention
- Blood pressure monitoring.

A generic approach was adopted to undertake a series of reviews, performed systematically, of the evidence supporting the use of dentists, PCDs and other healthcare workers in these public health interventions. For each intervention, the search question was:

What is the evidence that a brief intervention undertaken in a primary care setting by dentists, PCDs and other health care workers will achieve behavioural change?

- The databases searched for each intervention were:
- Cochrane Database of Systematic Reviews
- Cochrane Central Register of Controlled Trials
- Medline (1966-2003)
- Embase (1980-2003).

Although there were minor alterations made for each database, each included a search under the medical subject headings (MeSH) of 'primary prevention', 'health promotion', 'health education' and combined them with MeSH headings of 'smoking', 'smoking cessation', 'smoking counselling', 'alcohol drinking', 'food habits', 'diet', 'exercise', 'skin neoplasms' and 'blood pressure'. These were also combined with a series of alternative terms for the subject areas on a free text search. This search was run separately for dentists, PCDs and for other healthcare workers. For reasons of practicality, if systematic reviews were identified on a particular intervention, that search was terminated. However if a high quality randomised controlled trial (RCT) was published after a systematic review, this would be included. Failing this, the best level of evidence available was reported.

The strength of the evidence to support each intervention is indicated using the following hierarchy, modified from that adopted by Davies *et al.*:¹³

- Type 1 Systematic review
- Type 2 At least one RCT
- Type 3 Non-randomised intervention studies
- Type 4 Observational studies.

FINDINGS

Details of the studies identified are provided in Tables 1 to 10. Critical appraisals of each study are summarised in the Tables. The following provides a summary of the findings for each intervention, an indication of the level of evidence found and any conclusions that can be drawn.

Smoking prevention

The search revealed no studies of the effectiveness of dental teams in smoking prevention. However, there is limited evidence that other healthcare workers can have some effect in preventing smoking in young people as part of wider community initia-tives¹⁴ (Table 1). *Evidence*:Type 1

Discussion: Although much has been written on the involvement of the dental team in smoking cessation, there is very little in the literature on involvement in smoking prevention. As dental teams regularly see a large proportion of the adolescent population at least every 15 months,¹⁵ they seem the ideal healthcare workers to be involved in this work. As other healthcare workers have been shown to have a small effect in prevention, it is likely that dental teams could have a similar effect. As the cost and risk of adverse outcomes of dental teams being involved in smoking prevention are both low, it would be reasonable for dental teams to be involved as part of wider community initiatives, particularly as the oral consequences of smoking could be used as additional motivating factors for prevention.

Smoking cessation

The small numbers of studies that exist for dentists and dental teams provide limited evidence of effectiveness in smoking cessation. All these studies have methodological weaknesses¹⁶⁻²¹ (Tables 2-4).

Evidence: Type 2,3,4

There is good evidence that physicians, nurses and health visitors have a small but significant effect on smoking cessation rates that will have demonstrable benefit on the public's health^{22,23} (Table 5).

Evidence: Type 1

Discussion: Accepting the limitations of the dental studies, those that do show an effect suggest quit rates similar to those produced by other healthcare professionals in high quality systematic reviews. As the risk of any adverse consequences is low and the public health benefits of involvement are high, dental teams should be involved in smoking cessation using a brief intervention as is widely recommended.^{5,24-29}

Table 3 Smoking cessation: effectiveness of dental teams (dentists and PCDs)										
Author	Design	n	Intervention	Inclusion criteria	Quality	Effect size – Quit rate	Comments			
Severson <i>et al.,</i> (1998) ²¹	RCT	3068	Brief & Extended (quit date set, informational video & telephone follow-up)	Not applicable	Fair	Control – 2.4% Brief – 2.6% Extended – 2.5% No statistical significant difference at 1 year	No biochemical verification of quit Practices randomised, not patients			

Table 4 Smoking cessation: effectiveness of hygienists

Author	Design	n	Intervention	Inclusion criteria	Quality	Effect size – Quit rate	Comments
Secker-Walker <i>et al.,</i> (1988) ²⁰	Quasi-experimental trial	51	Brief	Not applicable	Fair / poor	14.6% at 6 mths. 'Controls' – 5-7.1%	Small pilot study No true control – retrospectively reported quit rates No biochemical verification of quit Interpret with caution

Alcohol consumption counselling

The literature search was unable to identify any studies reporting the effectiveness of dental teams delivering alcohol consumption advice. *Evidence:* nil

There is some evidence that brief interventions carried out in primary care by a range of healthcare workers can deliver moderate reductions in alcohol consumption^{30,31} (Table 6). *Evidence*:Type 1

Discussion: It has been recommended that dental teams provide advice on alcohol consumption as part of primary prevention measures for oral cancer.^{7,32,33} Although there is no evidence of the effectiveness of dental teams, other healthcare workers appear to have an effect. It would be reasonable for dental teams to deliver such messages.

Dietary counselling

There is little quality evidence for the effectiveness of any member of the dental team in diet counselling, and the evidence that exists shows only a weak and transient effect.^{34,35} (Table 7). *Evidence:* Type 1

There is some evidence that other healthcare workers can produce moderate changes in diet for up to 18 months through brief interventions³⁶ (Table 8). *Evidence:*Type 1 *Discussion*: Although there is little or no evidence of effectiveness of dental teams in delivering dietary advice, systematic reviews of the effectiveness of dental health education reported that the quality of the studies included were generally poor.^{34,35} Many of the studies were able to demonstrate a change in knowledge but not behaviour. As there is evidence that other healthcare workers can produce moderate changes,³⁶ better designed and executed studies may demonstrate an effect. Furthermore, in the past dietary advice delivered by dental teams has had a narrow focus, which was not always consistent with general health advice. Effectiveness might be increased if advice provided is integrated into general health advice as previously recommended³⁷⁻³⁹ using a common risk factor approach^{8,9} and which is congruent with oral health messages and appropriate to a dental setting.

Physical exercise

The literature search found no studies of dental teams' effectiveness in increasing physical activity. *Evidence*: nil

There is some evidence that brief interventions delivered by other healthcare workers can increase physical activity levels in the short to medium term. Changes were not maintained without recurrent contact. Intensive interventions tended to be more effective⁴⁰⁻⁴² (Table 9).

Evidence: Type 1

Table 5 Smoking cessation: effectiveness of other healthcare workers										
Author	HCW	Design	No	Intervention	Inclusion criteria	Quality	Effect size	Comment		
Silagy & Stead (2003) ²²	Physician	SR	34	Brief & more intensive	RCTs Biochemical verification of quit > 6 mth. follow-up	High	Brief intervention Odds of quitting increased: OR(95%Cl) =1.69 (1.45,1.98)	Small but significant effect		
Rice & Stead (2003) ²³	Nurses, Health Visitors	SR	16	Brief Intensive (1 ⁰ £t 2 ⁰ care)	RCTs > 6 mth. follow-up	High	Odds of quitting increased: OR(95%CI) = 1.5 (1.29,1.73) No statistically significant difference between brief and intensive	Small but significant effect Some studies included biochemical verification of quit		

Table 6 Alcohol consumption counselling: effectiveness of other healthcare workers										
Author	HCW	Design	No	Intervention	Inclusion & exclusion criteria	Quality	Effect size	Comment		
Poikolainen (1999) ³⁰	Primary care workers	SR and meta-analysis	7	Brief and extended	Inclusion RCTs in 1 ⁰ care Follow-up 6 –12 mths Exclusion Alcoholics & hospital patients	High	Significant effect for brief and extended interventions	Moderate changes Some studies of poor quality included Statistical heterogeneity Interpret with caution		
Wilk <i>et al.</i> , (1997) ³¹	Primary care workers	SR and meta-analysis	12	Brief	Inclusion RCTs in 1 ⁰ care Follow-up 6 –12 mths	High	Significant intervention effect	Moderate changes Some studies of poor quality included Statistical heterogeneity Interpret with caution		

Table / Dietary advice: effectiveness of dental teams										
Author	HCW	Design	No	Intervention	Inclusion criteria	Quality	Effect size	Comments		
Kay and Locker (1997) ³⁴	Dental team	SR	47 of 184	Various	Broad	High	No reliable evidence of effectiveness	Studies looking at diet of poor quality Reported behaviour often used as outcome measure Methodological heterogeneity		
Sprod <i>et al.</i> , (1996) ³⁵	Dental team	SR	106*	Various	Broad	High	Very limited evidence of effectiveness	Difficult to interpret effect in the long term *Unclear how many of the studies look at diet modification Methodological heterogeneity		

Table 8 Dietary advice: effectiveness of other healthcare workers									
Author	HCW	Design	No	Intervention	Inclusion criteria	Quality	Effect size	Comment	
Brunner <i>et al.</i> , (1997) ³⁶	Physicians, nurses, health promotion personnel	SR	17	Diet advice to reduce fat or sodium and increase fibre	RCTs Studies with systematic allocation Follow-up 9-18 mths.	Fair	Modest dietary change Modest change in indicators (BP/serum cholesterol)	Studies of variable quality & much heterogeneity of findings Interpret with caution	

Discussion: Although not traditionally regarded as part of the dental team's work, other healthcare workers can increase levels of physical activity. Dental teams may be able to provide the recurrent contact required to maintain increased activity levels.

Skin cancer prevention

There are no studies on the effectiveness of dental teams in health education for skin cancer prevention.

Evidence: nil

There is little or no evidence of effectiveness of other healthcare workers⁴³ (Table 10). *Evidence:* Type 1

Discussion: Undergraduate teaching for dental students considers the aetiology and prevention of oro-facial cancers. Although there is no evidence of effect, dental teams are well placed to provide such advice.

Blood pressure monitoring

The literature search did not identify any studies on the effectiveness of blood pressure monitoring alone in reducing circulatory disease levels. One US study evaluated a protocol in which patients identified by dentists as hypertensive were then referred to their medical practitioner. The programme successfully established a referral pattern⁴⁴ but no details of long-term health gain were provided. *Evidence*: Type 4

No studies were identified involving other healthcare workers on the effectiveness of blood pressure screening providing long-term health gain. *Evidence*: nil

Discussion: There are moral and ethical barriers to undertaking a clinical trial to investigate the effectiveness of blood pressure screening in reducing circulatory disease levels. As a consequence,

there is no evidence that blood pressure screening *per se* reduces levels of disease. However all prospective follow-up studies of large populations in westernised countries have demonstrated a close association between height of blood pressure and circulatory disease incidence.⁴⁵ Once diagnosed there is good evidence that the treatment of hypertension reduces the incidence of circulatory disease.⁴⁶ Dental teams are well placed to monitor blood pressure of their patients. Indeed, in the US dentists have been involved in national education and prevention programmes for more than two decades.⁴⁷⁻⁴⁹ Also US PCD organisations endorse their involvement.⁵⁰ UK dentists who undertake conscious sedation must measure blood pressure as part of the patient assessment⁵¹ but involvement in routine blood pressure monitoring as part of a broader prevention strategy would be reasonable, as has been previously recommended.⁵²

CONCLUDING DISCUSSION

This review has revealed that there is minimal evidence of effectiveness of dentists or dental teams in delivering any of the public health interventions identified. However it found that other healthcare workers have some effect in most of them.

Dental teams could play a part in current preventive approaches to tackle key chronic diseases as outlined by the HDA.³ In so doing they would have a true public health role and contribute to reaching the targets set in Saving lives: Our healthier nation. Such an approach is commensurate with the shift of emphasis toward prevention expressed by Options for change and a more holistic view of oral care. The main reason for a lack of evidence is the paucity of studies undertaken investigating the effect of the dental team in these activities. Nevertheless, evidence that other healthcare workers are effective suggests that dental teams could have similar effects. The population approach to prevention⁵³ using a common risk factor approach^{8,9} means that small effects delivered by dental teams may not have significant health benefits for the individual, but could deliver significant benefit for general and oral health at the population level. As the relative cost and risk of any adverse consequences of dental teams' involvement is low,

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Table 9 Physical exercise: effectiveness of other healthcare workers											
Author	HCW	Design	No	Intervention	Inclusion criteria	Quality	Effect size	Comments			
Eaton and Menard (1998) ⁴⁰	Primary HCWs	SR	8	Various – some brief	Clinical trial Follow up > 1 mth. (3 RCTs)	Fair	5 of 8 trials had statistically significant. changes, of which, 2 of 3 RCTs had statistically significant. changes	Variable quality of study & heterogeneity of findings Search method not clear Demonstrated short to medium term effectiveness. Improvements not maintained unless reinforced Interpret with caution			
Simons- Morton et al., (1998) ⁴¹	HCWs in any health care setting	SR	12 for 1 ⁰ prevention 24 for 2 ⁰ prevention	Various	RCTs and systematic allocation studies Physical activity and cardio- respiratory outcomes measures 1 ⁰ prevention - 7 RCTs 2 ⁰ prevention - 24 RCTs	High	1º prevention Short term - 3 of 4 RCTs reported statistically significant effect Long term - 2 or 5 RCTs reported statistically significant effect 2º prevention Long-term 13 of 24 RCTs reported statistically significant difference at >12 months	Variable quality of study & heterogeneity of findings Demonstrated short to medium term effectiveness Improvements not maintained unless reinforced Interpret with caution			
Harland <i>et al.</i> , (1999) ⁴²	Primary HCWs	RCT	n = 523	Brief 1 interview Intensive 6 interviews	Adults 40 –64 yrs.	High	Increased activity at 12 weeks Control – 16% Intervention – 38%	Short term effectiveness Improvements not maintained unless reinforced			

Table 10 Skin cancer prevention: effectiveness of other healthcare workers	
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Author	HCW	Design	No.	Intervention	Inclusion criteria	Quality	Effect size	Comment
Harvey (1995) ⁴³	Physicians nurses, health promotion personnel	SR	17 on 1 ⁰ prevention 30 on 2 ⁰ prevention	Health education & promotion programmes	RCTs Quasi- experimental Observational	Fair	Little evidence of effect	Variable quality of study & heterogeneity of findings UK studies found no evidence of effect

it would be reasonable to include dental teams in broader health promotion strategies.

However it is widely accepted that such strategies should follow the five principles of the Ottawa Charter for Health Promotion:54 building healthy public policy; creating supportive environments; strengthening community action; developing personal skills and re-orienting health services. The brief interventions described only contribute to one or two of these principles (developing personal skills and re-orienting health services) and it is therefore not surprising that they are of limited effect in isolation of other measures. Indeed this has been suggested as one of the reasons for the lack of evidence of effect of dental health education in systematic reviews.55 Arguably, dental teams would be more effective in achieving dietary change through counselling if the other principles are considered. For example, advertisements aimed at children could be proscribed (healthy public policy); confectionery and carbonated drinks vending machines could be removed from schools and replaced with healthier snack options (creating supportive environments); community-based parental support groups could be established to consider the risks of foods with high refined sugar and fat content (strengthening community action) and all dental services should emphasise and

reward prevention rather than mainly intervention (re-orienting health services).

Although the dental team is well placed to undertake public health interventions, involvement would mean a radical change of approach to practice for most dentists and their teams. The adoption of such changes is likely to be determined by two main factors: firstly, whether the profession sees dental teams as having a more general public health role, and secondly, whether it is economically possible for dental teams to make this change. If the Government wants dental teams to deliver public health interventions as part of wider health promotion approaches, it is essential that their views are sought on their involvement. Part 2 of this series explores and describes the factors that might influence dental teams' public health intervention activity in the general dental services using qualitative and quantitative methodologies.

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