



**How to increase the delivery of effective smoking cessation treatments in primary care settings: guidance for doctors, nurses, other health professionals and healthcare organisations**

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David Brinson

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## Foreword

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This report summarises the evidence on the delivery of effective smoking cessation. It focuses on the ABC approach to smoking cessation which brings with it a more “assertive” manner in which clinicians can work. Smoking is the most serious of the common risk factors for premature mortality and morbidity and as such deserves to get the attention of clinicians (for clinicians I include doctors and nurses and, in an ideal world, clinic receptionists). Such is the lethal magnitude of smoking that we only have to stop two potential lifelong smokers to save a life. There is no other intervention for a common problem that is so effective. We have all experienced the seeming lack of effect from a one-time intervention for smoking cessation. What we have to remember is that if we keep intervening we will start seeing success. The more often we ask, the closer we can get an individual to quitting. In the clinical setting we need to aspire to having the smoking status of all patients recorded and have a “rule” that every clinician asks every smoker at every visit about quitting. So the clinical mantra should be every patient at every visit by everybody. Wide advice coverage may be better than an intense approach to a few individuals. This should not be couched as an attack on the patient but rather expressed in terms of “how can we help you to quit?” We have adopted this approach in our clinic and we are seeing huge benefits.

We have to learn verbal scripts to enhance our effectiveness such as “you are 48 years old and this is a good age to quit – how can I help you?” This not only personalizes the advice but shows that the clinician is concerned – and it does not take long to do. If time is short a further visit can be arranged and a phone call from the practice in between visits can have a remarkably good impact on the clinic-patient relationship. There are many options for treatment, including in-house services which can enable all clinicians to become skilled in smoking cessation or referral to providers such as Quitline which augment their services with text messaging. However, treatment in the primary care setting will not start unless the initial step of asking is taken.

The final issue is audit. This often is the last item to be spoken about presumably because it is seen as important but not urgent. However the important can become urgent if not given timely attention. Audit allows clinicians to measure their progress and celebrate their successes and plan for improvements. We need it to ensure we are on the right track.

Dr Bruce Arroll

## Acknowledgements

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## Introduction

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The purpose of this document is to provide evidence-based guidance for doctors, nurses, other health professionals and healthcare organisations on the different elements and key points of leverage that can be used to better implement and support smoking cessation activities in primary care settings – The ABC approach. This evidence-based document summarises current research findings<sup>a</sup> in relation to the question “What interventions have been successfully implemented in primary care to increase (a) the assessment of smoking status (b) the provision of brief advice and (c) the offer of effective smoking cessation treatment (including counselling, pharmacotherapy, or referral for smoking cessation treatment), compared to standard care”?

The overall aim of the document is to promote ‘more quit attempts, supported with effective treatments, more often’. The document is presented in two parts: pages 2–11 provide a rapid summary of the issue, what can be done, and what does and doesn’t work to increase the delivery of smoking cessation treatments in primary care settings. In addition, more detailed descriptions, evidence summaries, and examples of different intervention types<sup>1–9</sup> follow in pages 12–23.

<sup>a</sup> This document provides a rapid summary and overview of the following systematic review of the literature: Brinson D, Ali W. 2009. The effectiveness of interventions to increase the delivery of effective smoking cessation treatments in primary care settings – the ABCs. *HSAC Report 2(9)*.

## The issue

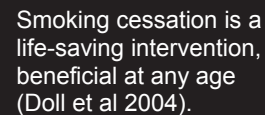
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Smoking tobacco is a major public health problem in New Zealand. Several decades after tobacco smoke was identified as a deadly carcinogen, about one in five New Zealanders still smoke tobacco daily.<sup>b</sup> Around 5000 premature smoking-related deaths still occur in New Zealand every year, both as a consequence of active smoking and through exposure to second-hand smoke. Half of these people die in middle age, losing 13 to 15 years of life on average.<sup>10</sup>

Despite the known cost-effectiveness of patient-level smoking cessation treatments, a common finding from international health services research is that many patients do not receive these treatments. Many studies of the delivery of smoking cessation interventions in primary care settings suggest that opportunities to intervene are very often missed.

### Prevalence and priorities

The prevalence of current smokers varies considerably by ethnicity. The prevalence of smoking among Maori continues to be high (46%) and the prevalence of smoking among Pacific People is also high (36%), compared with Asian people (12%), and European/Other ethnic groups (20%).<sup>11</sup> A significant proportion of the disparities in health seen between Maori and non-Maori may be accounted for by differences in smoking prevalence in these groups. A greater reduction in smoking prevalence in Maori, compared to non-Maori, would close this inequalities gap.<sup>12</sup>

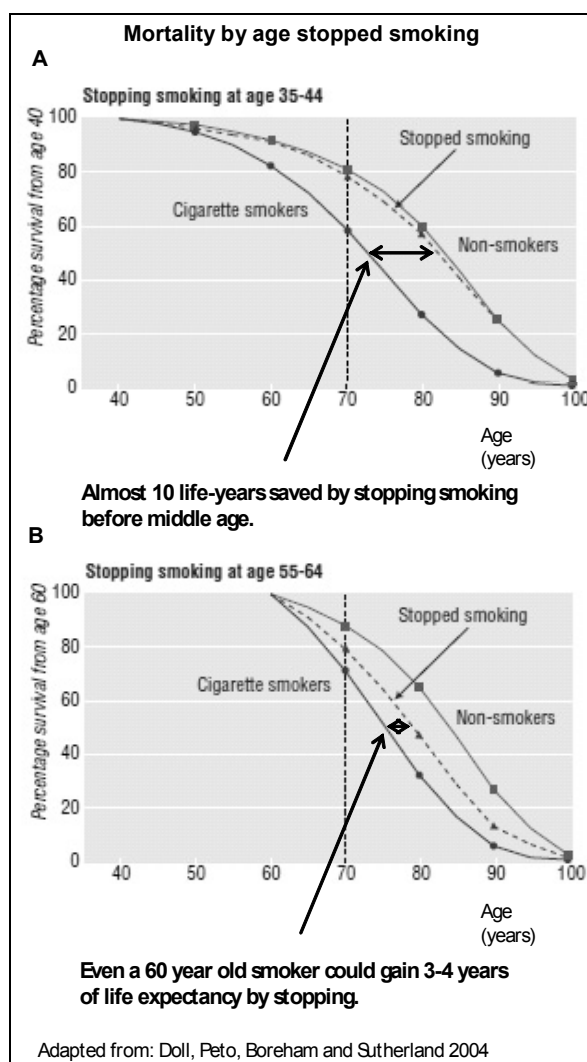


Smoking cessation is a life-saving intervention, beneficial at any age (Doll et al 2004).

<sup>b</sup> Prevalence estimates for 2006: 20.7% as reported in the Census and 23.5% as reported in the New Zealand Tobacco Use Survey 2006.

## Cause and effect: the dose-response relationship

Results of the 50-year follow-up of the landmark British doctors' smoking study demonstrated the increased morbidity associated with early and heavy smoking. The study found that up to 66% of lifelong smokers are likely to die from a tobacco-related disease, with half these deaths occurring prematurely.<sup>13</sup> Smoking contributes to socioeconomic and ethnic inequalities in health.<sup>14</sup> The good news is that stopping smoking confers immediate health benefits on those who already have smoking related diseases, and cessation prior to age 35–40 is particularly beneficial. **Figure 1** illustrates the effects on survival of stopping smoking at different ages compared to lifelong smokers. Over time, the excess risk of illness and premature death caused by smoking may reduce to that of never smokers.<sup>15</sup> Stopping earlier is associated with greater benefit. Those who stopped before middle age gained about 10 years, those who stopped at about age 40 gained about nine years, and those who stopped at about age 50 gained about six years of life expectancy. All people of all ages who smoke should be advised to stop, as even a 60 year old cigarette smoker could gain at least three years of life expectancy.

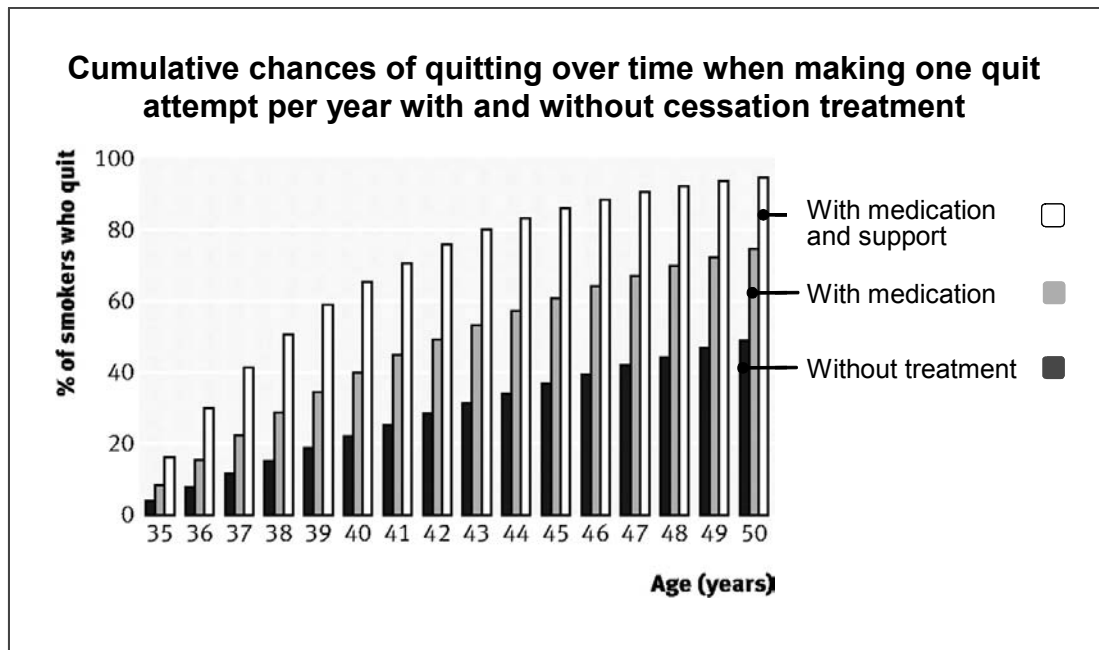


**Figure 1: Effects on survival of stopping smoking cigarettes**

Effects on survival of stopping smoking cigarettes at age 35–44 compared to stopping later in life age 55–64, compared to 'lifelong smokers'. Graph A shows that people who stop smoking between 35–44 years of age have mortality profiles approaching that of never-smokers. However, graph B shows that for those smokers who stop later and later in life, a great proportion of such benefits are lost.

## What can be done?

Given that the goal is to encourage and support more smokers to make more quit attempts, more often, then how can this goal be achieved? **Figure 2** illustrates the cumulative chances of quitting over time when making only *one* attempt per year. It is clear then that increasing the rates or frequency of delivering effective smoking cessation treatments in primary care settings is an important if not essential step in achieving better patient care, and the evidence indicates that several interventions offer much promise.



**Figure 2: Cumulative chances of quitting over time**

Effects on smoking prevalence of strategies to help smokers, if all smokers made one attempt per year to stop, starting at age 35. Adapted from: Aveyard and West (2007).<sup>19</sup>

Helping people who smoke to stop is a leading national health goal. The New Zealand Smoking Cessation Guidelines<sup>16</sup> provide updated guidance for health care professionals to help people who smoke tobacco. These guidelines supersede all earlier national smoking cessation guidelines and are based on an updated comprehensive literature review that summarises the most recent national and international evidence on best practice in smoking cessation.<sup>17</sup> The Guidelines are structured around a new and simplified memory aid – ‘ABC’ (**Figure 3**), which aligns with but now supersedes the previously used ‘5As’ (Ask, Advise, Assess, Assist, Arrange).<sup>18</sup>

It is clear that increasing the delivery of effective smoking cessation treatments in primary care settings is an important if not essential step in achieving better patient care, and the literature indicates that several interventions offer much promise.

# Smoking Cessation ABCs

## Ask

### Ask about and document smoking status for all people

For those who smoke or have recently stopped smoking this should be checked and updated on a regular basis. For example you could ask: 'Do you currently smoke cigarettes?'

## Brief advice

### Give clear advice

For example, you could say: 'You may know the risks involved with smoking, but do you realise how harmful it is? I cannot stress enough how important it is to stop. It is the best thing that you can do to improve your health. I understand that stopping smoking can be difficult, but if you want to stop smoking I can help you.'

### Personalise the advice

Link smoking to a current illness and discuss how stopping smoking might help, for example, improved health, benefits to children with reduced exposure to secondhand smoke, money saved.

Document that advice was provided

## Cessation

### Refer

Health care workers without the expertise or time to help people to stop smoking should make a referral to smoking cessation services or the Quitline (tollfree 0800 778 778 or [www.quit.org.nz](http://www.quit.org.nz)). 'Give the Quitline a call. They will help support you and provide you with medication that will help make quitting easier. The number is 0800 778 778.'

or

### Provide support

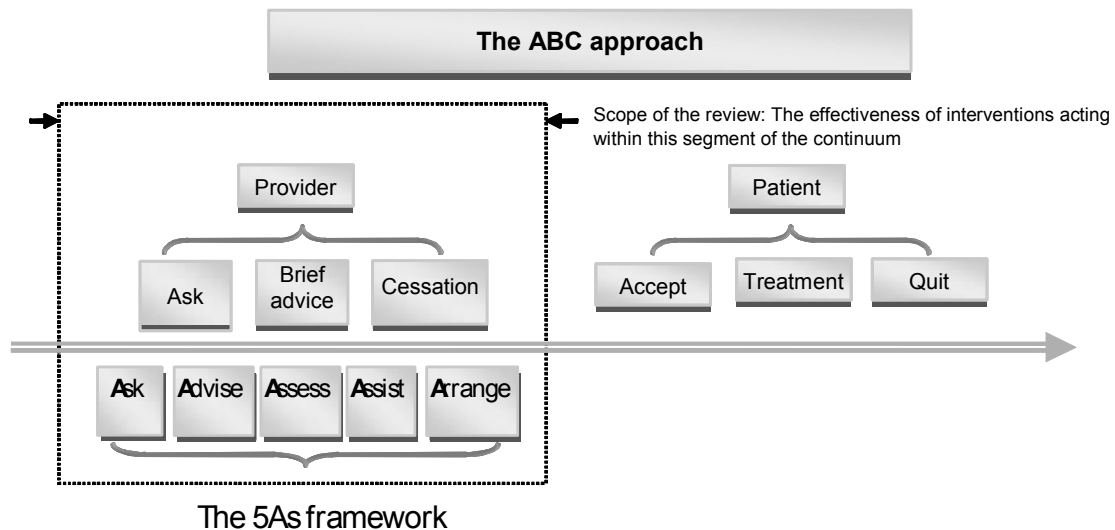
Health care workers able to provide cessation support and medication should do so. Support includes:

- offering advice<sup>1</sup>
- setting a quit date
- advising that complete abstinence from smoking is best
- arranging medication to aid the quit attempt
  - Nicotine replacement therapy (NRT)
  - Bupropion
  - Varenicline
  - Nortriptyline
- arranging for follow-up within a week.

<sup>1</sup> Assessment of the degree of nicotine dependence helps guide treatment (see Appendix 2). If people smoke within 30 minutes of waking, they have a higher degree of tobacco dependence and are likely to benefit from more intensive smoking cessation support.

**Figure 3: The ABC approach to smoking cessation**

This overview is perhaps different from the norm as it does not consider the effectiveness of interventions designed to increase the chances of quitting in individual smokers per se (e.g. face-to-face counselling or pharmacotherapy). Rather, this overview considers the effectiveness of interventions delivered in typical primary care settings that aim to increase the *likelihood* of health care professionals intervening: by asking all patients their smoking status, providing brief advice to smokers, and by offering and providing cessation support to smokers willing to quit. **Figure 4** illustrates the scope of this overview and makes clear the distinction between provider (process) outcomes and patient outcomes.

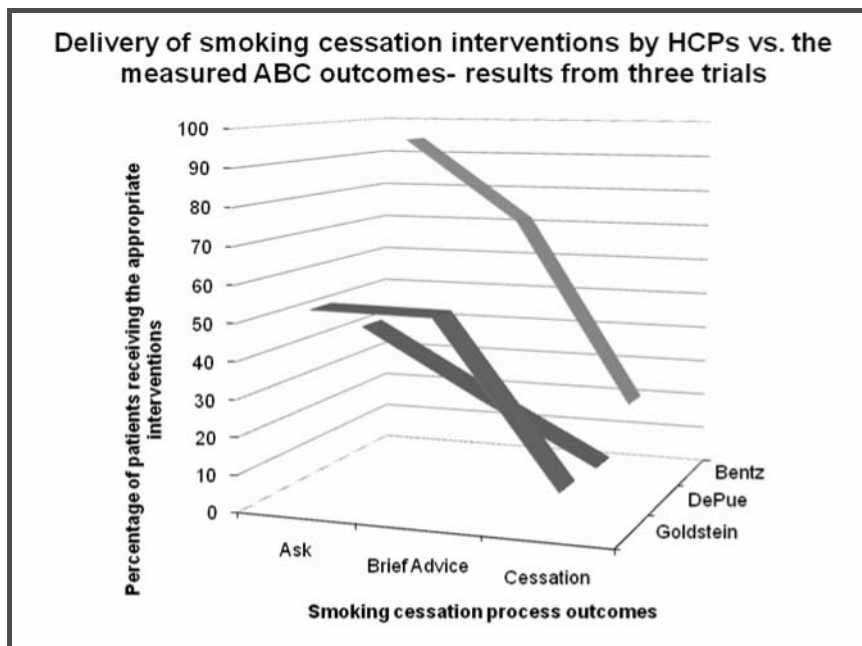


**Figure 4: The scope of the review**

Figure 4 illustrates the scope of the overview. Provider or process outcomes include any recommended component of the ABC approach, for example, the provision of brief advice to identified smokers. The scope specifically excludes patient outcomes, such as acceptance of treatment, quit rates, satisfaction with services received, or self-efficacy, as these outcomes relate to the effectiveness of the therapies themselves.

One observation is that general practitioners tend to focus on trying to improve their effectiveness (i.e. how *well* they intervene with individual patients) rather than improving coverage (how *many* smokers are reached). Many studies of smoking cessation practices report that the delivery of brief advice and cessation support activities are, on average, quite low. Healthcare professionals may be better off spending a greater proportion of their time helping more people to try and quit than in investing a lot of time in helping one individual to succeed. In other words, improving coverage may ultimately produce a higher return for effort.

Overall, there appears to be a decline in cessation activities by healthcare professionals that is associated with the ‘degree of difficulty’ or ‘resource intensiveness’ of the intervention. This relationship is illustrated in **Figure 5**, which reproduces data sourced from three good quality, moderately large studies as examples.<sup>c</sup> For the three example studies used in **Figure 5**, it can be seen that as the complexity of the brief intervention increases, the likelihood of an intervention (Ask → Brief advice → Cessation support) actually being delivered by health care professionals appears to *decrease*. In a recent review of the literature<sup>20</sup> it was found that ‘Ask’ rates were typically moderate to high and in many cases, recording patients’ smoking status was achieved successfully by non-medical and/or administrative staff (rather than the GPs). The delivery of ‘brief advice’ to identified smokers by GPs and nurses was typically moderate, but the provision of actual cessation support much less common.<sup>d</sup> The time required for cessation support activities and the number of activities available to GPs (e.g. prescription of pharmacotherapy, referral to external specialist counselling services, providing one-on-one counselling) arguably makes this component of the ABC approach (or 5As as the case may be)<sup>e</sup> the most complex and time intensive, and, it appears, the least commonly implemented.



**Figure 5: The complexity versus delivery relationship**

The apparent decline in cessation activities by health care professionals with the increasing complexity of the activities. Data sourced from three good quality, moderately large, and relatively recent studies as examples only.<sup>21 22</sup>

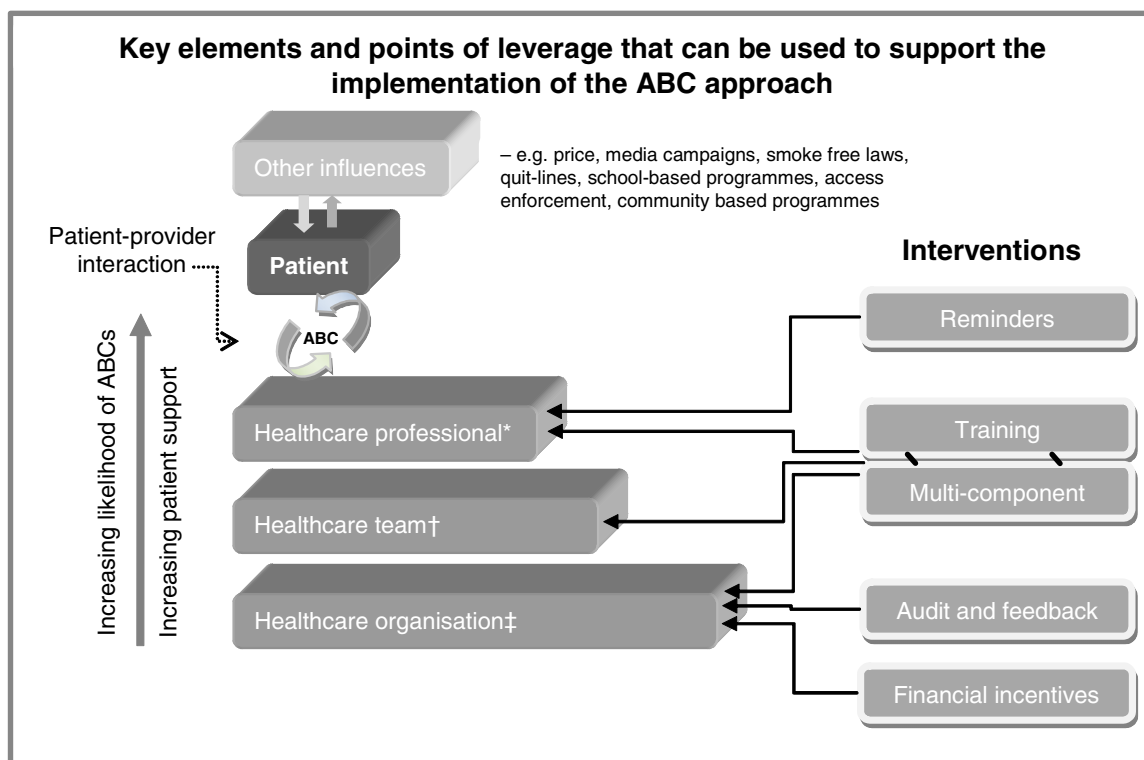
<sup>c</sup> Figure 5 is not based on a formal secondary data analysis or any form of modelling, but simply reproduces data from the three included studies as an illustration.

<sup>d</sup> When considering possible barriers to providing cessation support, it is of note that while actually providing counselling does take a significant amount of time, *referring* a patient to counselling does not.

<sup>e</sup> The 5As framework of ask, advise, assess, assist, arrange, as recommended by the US Department of Health and Human Services Clinical Practice Guidelines 1996, and based on outcomes from six major clinical trials of physician-delivered smoking interventions conducted in the late 1980s (Glynn et al 1990).

## Key elements and points of leverage – implementation of the ABC approach

**Figure 6** illustrates how the most common intervention types were typically applied at different levels within the overall system. The diagram is not exhaustive and in many cases interventions were applied in different combinations and at multiple levels. However, **Figure 6** does represent the common themes.



**Figure 6: Key elements and points of leverage – implementation of the ABC approach**

\* e.g. doctor, dentist, nurse, physiotherapist.

† Two or more health care professionals (including administrative) sharing the responsibility for delivering the ABCs.

‡ Clinic, practice, group, district, whole system.

## Key learning

Many programmes that have aimed to increase the frequency with which health professionals provide smoking cessation interventions in primary care settings have been shown to be effective in terms of the ABC outcomes.

On the whole, when using interventions such as training, reminders, audit and feedback, and multi-component interventions, absolute improvements in practice of between 5% and 10% appear to be realistic and relevant.

It is important to keep in mind that even small changes in health care professionals' behaviours might be potentially important when many hundreds of patients are affected.

The evidence suggests that in order to maximise the potential of smoking cessation programmes in primary care, a comprehensive package needs to be delivered.

Team approaches, in which the different tasks of the ABC approach are shared amongst different health professionals and organisations, is a promising approach.

## Rapid overview

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### What works to increase the delivery of effective smoking cessation treatments in primary care settings?

#### Training (modest effect sizes)\*

- ✓ Particularly skills-based training
- ✓ On-site training
- ✓ Training that is reinforced and supported by efficient office systems

#### Multi-component interventions (modest effect sizes)

- ✓ Training, audit and feedback, and reminders are the most commonly combined intervention components
- ✓ Other combinations of: training and educational materials, consensus building, opinion leaders and networking, patient-mediated activities, and patient education materials

#### Reminders (moderate effect sizes)

- ✓ Particularly electronic prompts and linked electronic referral systems
- ✓ Simple non-electronic reminders can still be effective

#### Financial incentives

- ✓ Performance targets coupled with financial incentives
- ✓ When incorporated within a comprehensive tobacco control strategy

#### Audit and feedback (modest effect sizes)

- ✓ Individualised comparative feedback reports are contingent on the integration of practice and system supports to be effective

**Note:** It is important to keep in mind that even small changes in health care professionals' behaviours are likely to be potentially important when many hundreds of patients are affected.

\* To describe the median absolute difference across post intervention measures the following terms are used:

Small = effect sizes  $\leq 5\%$

Modest = effect sizes  $> 5\%$  and  $\leq 10\%$

Moderate = effect sizes  $> 10\%$  and  $\leq 20\%$

Large = effect sizes  $> 20\%$

### What didn't work?

Overall the review suggests that the following interventions performed relatively poorly and are of limited value only:

- x Training general practitioners in continuous quality improvement (CQI) methods
- x Training in office systems only
- x Off-site workshops
- x Smoking cessation interventions 'nested' within general or multi-component behaviour change programmes
- x Dissemination of printed educational materials only (while printed education materials are often important, as a stand-alone intervention, their effects may be short-lived)
- x Algorithms only

## Methods

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### The research question

“What interventions have been successfully implemented in primary care to increase (a) the assessment of smoking status (b) the provision of brief advice and (c) the offer of effective smoking cessation treatment (including counselling, pharmacotherapy, or referral for smoking cessation treatment), compared to standard care?”

The review methodology used in preparation of this report is broadly based upon guidelines published by the Australian National Health and Medical Research Council (NHMRC).<sup>23–27</sup>

### The search process

A systematic process of literature search, study selection, data extraction from individual studies, critical appraisal, and synthesis of data was employed in the preparation of this report. The authors searched and abstracted data for this review from the following – Pubmed, Embase, the Cochrane Library and other HTA databases. Of the 464 resources identified, 42 articles met all of the predefined inclusion criteria and were fully appraised. These 42 articles form the basis of this summary report.

### Interventions

Critical evaluation of the various interventions suggested a diverse range of intervention types. Therefore, to allow for meaningful comparisons, the authors grouped similar interventions into the following six categories – training, multi-component interventions, reminders, financial incentives, audit and feedback, and other interventions (other intervention types have not been included in this summary report due to the low number of trials found to be eligible).

### Comparator

In the main, the interventions were compared with ‘no-intervention’ or ‘usual care’ but this was often not explicit.

### Outcomes

The identified studies often measured a range of outcomes, using various different tools. Broadly, the outcomes were the performance of any/all elements of the ABC approach in primary care setting – documentation of patients’ smoking status; the provision and/or documentation of brief advice; the offer and/or delivery of appropriate smoking cessation treatments.

## Context

Two variations of study context were apparent: ‘smoking specific’ studies (85%) and ‘general behaviour change’ studies (15%). Smoking specific studies were those studies in which the intervention and outcomes related only to health care professionals’ smoking cessation activities. General behaviour change studies were those studies in which two or more activities were addressed within one trial (e.g. smoking cessation and diet and exercise counselling). General ‘behaviour change’ in this context refers to activities directed primarily toward early detection and treatment (or prevention) of disease, not prevention of smoking initiation per se. Only smoking related outcomes are reported in this summary.

For further details of any aspect of this report, readers are directed to the full report (Brinson and Ali 2009) and/or the original articles.

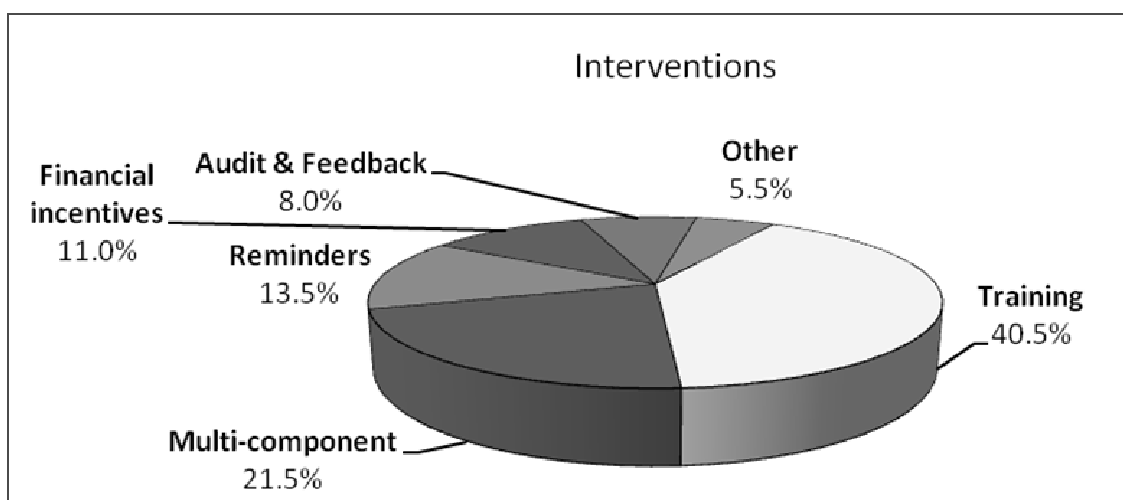
The full report is available at: [www.healthsac.net](http://www.healthsac.net)

## Summary of key findings

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Of the 42 research papers identified as eligible, five were systematic reviews and 37 were original primary research studies. One review evaluated the effectiveness of a single intervention (training), whereas the other four evaluated the effectiveness of up to nine different types of interventions, alone and in combination. In all included studies, the trial population was health care professionals, with the majority being general practitioners (GPs) working in primary care/community settings. Other health care professionals included nurse practitioners, physician assistants, and other administrative staff. Health care professionals were studied as individuals, in groups, or within an entire clinic or practice. More often than not, the patients were ‘passive’ and not formally enrolled in the study, although informed consent to complete interviews and questionnaires was usual.

The term ‘effectiveness’ as it is used in this summary relates to the documentation of smoking status, provision of brief advice to stop smoking, and the offer and/or provision of, or referral to smoking cessation treatments or services – *not* quit rates. Throughout the following sections, the study results are grouped according to the type of intervention, listing the more frequently reported first, as represented in **Figure 7**.



**Figure 7:** Percentage of reviewed studies represented according to type of intervention

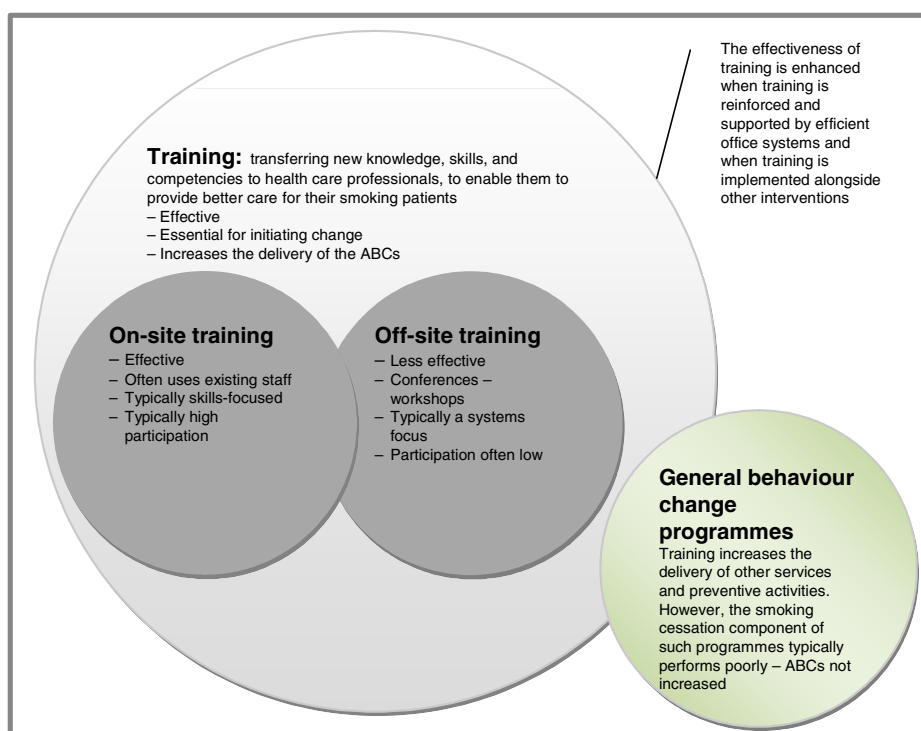
## Summary of results by intervention type

### Training

Training interventions were interventions in which the principal component was imparting or transferring new knowledge, skills, and competencies to health care professionals, enabling them to provide better care for their smoking patients by improving the delivery of smoking cessation activities within the practice. The different approaches (as described by the original authors) included academic detailing, tutorials, lectures, workshops, educational facilitators, outreach facilitation, outreach visits, continuing medical education, and continuous quality improvement.<sup>f</sup> For the purpose of this summary, all studies that involved training of any type have been grouped together and the general characteristics, contexts, and settings of these training interventions are summarised in **Figure 8**.

### Main findings

Training was used as a ‘stand alone’ intervention in about 40% of all the studies reviewed. Typically, these interventions involved training health care professionals to increase their delivery of recommended treatments or treatment strategies, or training health care professionals in smoking cessation treatment skills. Nearly three quarters of the studies involved training health care professionals ‘on-site’ in their own clinics with the remainder of the studies involving ‘off-site’ training.



**Figure 8:** A summary of training interventions

<sup>f</sup> For more information on these different types of training, the reader is directed to the original published articles.

Training emerged as an essential component with regard to the delivery of smoking cessation interventions to all patients who smoke. Within the results four themes are evident. Firstly, training health care professionals appears to be essential to initiating change.<sup>8</sup> Training health care professionals can be moderately effective in increasing the delivery of the ABCs. Secondly, without appropriate reinforcement and system level support, the effectiveness of training interventions typically diminishes over time. The provision of ‘one off’ training programmes does not necessarily lead to sustained effects on clinical practice. Thirdly, differences in the content and focus of training programmes appear to have a marked effect on outcomes and two distinct categories of training content and focus emerged. One can be described as training health care professionals in the design and implementation of ‘office systems’, and the other, training GPs and other health care professionals in the practical skills of actually delivering smoking cessation services to their patients (e.g. brief interventions and specific patient centred counselling techniques such as motivational interviewing). In general, the ‘skills’ training proved much more effective than the ‘systems’ training.

Finally, differences in the settings in which the training was delivered were also related to the effectiveness of the programme. Generally, interventions were conducted either ‘on-site’ (educational outreach) or ‘off-site’ (training workshops or conferences). On-site training typically features personal educational visits to clinicians in their own practice settings, but may also include training of staff by a senior clinician within a practice setting. On-site training appears more effective than off-site training and it is probable that this reflects differences in the likelihood of staff participation and the type of training delivered. Participation rates for on-site training were typically higher than for off-site training: 60–80% for on-site versus a mean participation rate of less than 50% for off-site training. Training that occurred off-site tended to focus more on system changes rather than training individuals in counselling skills.

## Conclusions

Trained professionals are reportedly 1.5 to 2.5 times more likely to perform tasks of smoking cessation than untrained controls.<sup>28</sup> It appears that the most effective form of training is on-site training of health care professionals in the skills of actually delivering smoking cessation treatments to their patients (including referral to specialist smoking cessation services). Training health care professionals to design and implement systems and to initiate system-wide change does not appear to produce sustained benefits. For best results, training will need to be focused on skills, be practice-based, and utilise existing opportunities. It is clear from the evidence that training-based interventions perform best when they are implemented alongside other interventions.

### Examples of effective interventions

**Intervention:** A 40-minute visit by a health educator to the physician’s office to provide individual physician training in brief smoking cessation counselling and following an ‘academic detailing’ approach (Unrod et al 2007).

**Intervention:** A 40-minute interactive training session addressing the rationale and skills for referral of smokers for treatment (McRobbie et al 2008).

**Intervention:** On-site training for clinicians in providing brief quit-smoking advice and counselling for midlife and older smokers. The training programme was designed for brief office-based presentation using the principles of pharmaceutical and academic detailing (Morgan et al 1996).

<sup>8</sup> While printed education materials are often important, as a stand-alone intervention, their effects may be short-lived.

## Multi-component interventions

Broadly, a multi-component intervention is any intervention that includes two or more different intervention components. Training, audit and feedback, and reminders were the most commonly combined intervention components.

### Main findings

In about one fifth of all the studies reviewed, training was combined with another intervention component or components to form a multi-component intervention approach. Adjunct components included simple office-based tools (e.g. an algorithm or a simple reminder system) through to many components (e.g. a seven component programme combining audit and feedback, consensus building, opinion leaders and networking, academic detailing and education materials, reminder systems, patient-mediated activities, and patient education materials).

In all cases, the studies of multi-component interventions as implemented in smoking specific contexts demonstrated positive effects on primary care clinicians' delivery of at least one component of the ABC approach. Additionally, four of five studies demonstrated statistically significant increases in the delivery of the more intensive cessation counselling and/or cessation support components of the ABC approach.

### Conclusions

Taken together, these studies suggest that multi-component interventions based on training are effective in increasing the frequency with which primary care clinicians intervene with their patients who smoke. However, no clear patterns emerged to illustrate which combinations of intervention components were more or less effective or what relative contributions the individual components might play. The more complex multi-component interventions did not appear notably more effective than the less complex two-or-three component interventions. Training, audit and feedback, and reminders were the most commonly combined intervention components – these appeared to be effective.

General behaviour change programmes performed rather less well than smoking specific programmes– with respect to smoking outcomes. In other words, the 'smoking related' intervention-effect appears to become diluted, and disproportionately so, compared to other preventive activities and services.

#### Examples of effective interventions

**Intervention:** A five-component intervention. A tutorial for nurses or medical assistants who document the reasons for the office visit and check patients' vital signs. Group and individual performance feedback for intake clinicians, use of a modified vital signs stamp, an offer of free nicotine replacement therapy, and proactive telephone counselling (Katz et al 2004).

**Intervention:** Two tutorials (delivered by existing staff not smoking cessation 'experts') in smoking cessation counselling. Including; a slide show/lecture, video, handouts/flowchart, group discussion, and a non-computerised chart-based reminder to assist physicians to provide counselling (Strecher et al 1991).

## Reminders

A reminder intervention is any system (manual or computerised) that prompts the health care provider to perform a clinical action. Examples include concurrent or inter-visit reminders to professionals about desired actions such as screening or other preventive services, and/or administrative support (e.g. follow-up appointment systems). The GP or physician is actively alerted if his or her patient is a smoker and prompted to take action – i.e. to provide brief advice and/or offer further cessation support.

## Main findings

Five studies evaluated the effectiveness of interventions that comprised electronic reminders (two studies) or non-electronic reminder systems (three studies). Taken together, these studies suggest that reminder systems are effective in increasing the frequency with which primary care clinicians intervene with their patients who smoke. All of the studies demonstrated statistically significant increases in one or more of the ABC outcomes, with three of five studies demonstrating statistically significant increases in the incidence of smoking cessation counselling. All of the programmes involved sharing the responsibility for office-based smoking cessation activities among all staff. In these studies, the effectiveness of the programmes in increasing clinicians' advice-giving and counselling rates appears to be contingent on the level of compliance by 'other' staff with regards to the screening and prompting tasks.

## Conclusions

Reminder systems were found to be generally effective in changing health care professionals' advice-giving rates and counselling activities. Sharing the responsibility for office-based smoking cessation activities among all staff appears to be a promising strategy, and addressing the barrier of clinician 'forgetfulness' is a core component.<sup>h</sup>

### Example of an effective intervention

**Intervention:** An Electronic Linkage System (eLinkS) to prompt clinicians at the point of care to offer behaviour counselling and then electronically refer patients directly to an external speciality service provider. Community counselling programme staff contact the patient 'proactively', rather than having the patient contact the counselling staff (reactive counselling). Using an existing electronic medical record system (EMR) as a platform, eLinkS was designed to make it fast and easy to refer patients to intensive counselling outside the office, and to establish two-way communication between practices and community counsellors (Krist et al 2008).

<sup>h</sup> In part, the relatively small number of included studies of reminder systems reflects the exclusion criteria used for this review. Several other studies of reminder systems have been undertaken prior to 1990 and/or report patient rather than provider outcomes. A large number of studies evaluating the effectiveness of reminders in various settings and contexts are reviewed in Grimshaw et al (2004) and Dickey et al (1999). The reader may wish to review these publications independently.

## Financial incentives

Financial incentives include any ‘pay-for-performance’ scheme or bonus payment incentives offered for reaching preset clinical performance targets.<sup>i</sup>

### Main findings

Four studies evaluated financial incentives, two within the context of smoking specific trials and two within the context of general behaviour change trials (including smoking cessation). One moderately large cluster randomised controlled trial and one population-based time series study were conducted in the United States, and two population-based time series studies were conducted in the United Kingdom. The randomised trial measured the assessment of patients’ smoking status, the delivery of brief advice, and referral to a smoking cessation counselling program via patient exit surveys. The population-based studies assessed the delivery of services via data extracted from large numbers of electronic patient records.

In all of the studies, the assessment of patient’s smoking status increased significantly, and in three out of four studies recording of the delivery of GPs’ brief smoking cessation advice also increased significantly. However, only one of the studies reported cessation support outcomes (which did not remain statistically significant at 12 month follow-up), and the other three programmes did not incorporate cessation support targets or incentives.

### Conclusions

Taken together, the studies of financial incentives suggest that performance targets coupled with financial incentives do appear to change health care professionals’ clinical behaviours. One limitation of the population-based evaluations is that it is not possible to wholly control for secular trends. Therefore, it is not entirely clear how much of the increases in GP’s smoking cessation activities can be apportioned to the financial incentives alone. It was also noted that some of the observed increases in advice-giving may not reflect more advice being given, but rather, more complete recording of advice that GPs already give.<sup>1</sup> Notwithstanding these limitations, the evidence does suggest that incentive schemes can be effective when they are incorporated within a comprehensive tobacco control strategy. More research is required to determine the effectiveness of financial incentives with regard to cessation support outcomes, and further, what the optimal performance thresholds and/or the optimum levels of incentives might be.

#### Examples of effective interventions

**Intervention:** Financial incentives introduced as part of a comprehensive new contract for UK general practitioners by the National Health Service (NHS), in April 2004 (Coleman et al 2007).

**Intervention:** In the context of a network model health plan in the USA, financial incentives were paid for ‘ask’ and ‘advise’ rates  $\geq 80\%$  (but not cessation targets that were implemented at the time). The intervention was applied at the medical group level (Amundson et al 2003).

<sup>i</sup> All studies of financial incentives include ‘audit’ and some degree of ‘feedback’. These audit and feedback components are inherent to all incentive schemes because it is necessary to measure health care professionals’ performance and make a comparison to some performance/payment threshold, and further, receipt of a payment (or not) is a form of feedback.

## Audit and feedback

An Audit and Feedback intervention is any summary of clinical performance or health care (over a specified period) that is fed back to clinicians, either on an individual or group basis. Additionally, comparisons with nominal or target performance may be provided. The performance information is obtained from medical records, computerised databases (electronic health records), from patients, or by observation.

### Main findings

Three randomised trials evaluated audit and feedback: two of the studies were smoking specific and one was conducted within the context of a general behaviour change trial. Generally, feedback reports rated individual health care professionals' performance in asking, advising, and offering smoking cessation support, compared to a clinic average and/or an achievable benchmark of care (e.g. the average performance of the top 10% of providers being measured). In one of the trials, the measurement and reporting system was automated and fully incorporated into the intervention (via an electronic medical record). In the other two trials, the audit data were collected independently by research staff from audits of patients' notes. Feedback reports were subsequently compiled and presented to clinicians. All three studies reported favourable and statistically significant between-group differences on the outcomes measured.

### Conclusions

Audit and Feedback appears to be an effective means of changing health care professionals' behaviour. However, additional research is required to establish the optimal methods of conducting audits and of delivering meaningful feedback in the context of typical New Zealand primary care settings. To be practical and sustainable over time, it appears that Audit and Feedback interventions need to be linked to suitably adaptable electronic medical record systems that are capable of quickly and easily generating individualised comparative feedback reports. Audit and Feedback interventions require an integration of practice and system supports to become effective.<sup>29</sup>

#### Example of an effective intervention

**Intervention:** An electronic health record (EHR) system was modified to include an electronic Quitline fax-referral capability and the capacity to generate feedback reports that rated individual health care professional's performance. The reports detailed health care professionals' performance in asking, providing brief advice, and cessation support activities, compared with a clinic average, and an achievable benchmark of care that was defined as the average performance of the top 10% of providers with medication being measured (Bentz et al 2007).

## Overall conclusions

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Smoking cessation remains an important focus, as stopping smoking is probably the best way an individual can improve his or her health. Many programmes that have aimed to increase the frequency with which health professionals provide smoking cessation interventions in primary care settings have been shown to be effective in terms of the ABC outcomes. On the whole, when using interventions such as training, reminders, audit and feedback, and multi-component interventions, absolute improvements in practice of between 5% and 10% appear to be realistically achievable and relevant. It is important to keep in mind that even small changes in health care professionals' behaviours are likely to be potentially important when many hundreds of patients are affected.

In order to provide what could be considered 'a minimum standard of care', the research suggests that a comprehensive package needs to be delivered. At minimum, a comprehensive package would include providing all health care professionals with adequate training and resources, implementing a system to record the smoking status of all patients in every clinic, and providing health care professionals with prompts, feedback, and the incentive to ensure that patients consistently receive appropriate and effective treatments. Team approaches, in which the different ABC tasks are shared amongst different health professionals and organisations, look to be promising.

## Limitations

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It is difficult to compare study contexts and settings exactly. Studies were selected on the basis that they reflected the New Zealand context/setting as much as possible at the level of the patient-provider interaction. For a full discussion of methodological and contextual limitations, refer to the following review: Brinson D, Ali W. (2009). The effectiveness of interventions to increase the delivery of effective smoking cessation treatments in primary care settings – the ABCs. *HSAC Report 2(9)*. Unfortunately, there is insufficient evidence to be able to ‘rank’ interventions for effectiveness or predict how any one intervention or combination of intervention components might perform in any particular context or setting. Careful selection and evaluation of programmes should be conducted to ensure the optimum utilisation of resources.

## Recommendations

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It is recommended that any issues of generalisability be carefully considered but that generalisability should not be seen as a barrier to programme implementation.

Generally, the incidence of recording patients' smoking status in medical records appears to be the most easily influenced behaviour. However, the more complex and time-intensive activities of providing cessation support and counselling appear to be more resistant to change. More research is required to evaluate ways of specifically increasing cessation support activities. Further, more research is required to continually develop innovative ways in which such programmes can be established and maintained in typical practice settings without ongoing research-funded support.

## Included studies (alphabetical)

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- Amundson G, Solberg LI, Reed M, Martini EM, Carlson R. 2003. Paying for quality improvement: compliance with tobacco cessation guidelines. *Joint Commission Journal on Quality and Safety* 29(2): 59–65.
- Anderson P, Jané-Llopis E. 2004. How can we increase the involvement of primary health care in the treatment of tobacco dependence? A meta-analysis. *Addiction* 99(3): 299–312.
- Bentz CJ, Bayley KB, Bonin KE, Fleming L, Hollis JF, Hunt JS, et al. 2007. Provider feedback to improve 5A's tobacco cessation in primary care: A cluster randomised clinical trial. *Nicotine and Tobacco Research* 9(3): 341–349.
- Borgiel AEM, Williams JI. 1999. Evaluating the effectiveness of two educational interventions in family practice. *CMAJ: Canadian Medical Association Journal* 161(8): 965.
- Cockburn J, Ruth D, Silagy C, Dobbin M, Reid Y, Scollo M, et al. 1992. Randomised trial of three approaches for marketing smoking cessation programmes to Australian general practitioners. *British Medical Journal* 304(6828): 691–694.
- Coleman T, Lewis S, Hubbard R, Smith C. 2007. Impact of contractual financial incentives on the ascertainment and management of smoking in primary care. *Addiction* 102(5): 803–808.
- DePue JD, Goldstein MG, Schilling A, Reiss P, Papandonatos G, Sciamanna C, et al. 2002. Dissemination of the AHCPR clinical practice guideline in community health centres. (Research Paper). *Tobacco Control* 11(4): 329(327).
- Dickey LL, Gemson DH, Carney P. 1999. Office system interventions supporting primary care-based health behaviour change counselling. *American Journal of Preventive Medicine* 17(4): 299–308.
- Dietrich AJ, O'Connor GT, Keller A, Carney PA, Levy D, Whaley FS. 1992. Cancer: improving early detection and prevention. A community practice randomised trial. *British Medical Journal* 304(6828): 687–691.
- Fiore M, Jaén C, Baker T, Bailey WC, Benowitz NL, Curry SJ, et al. 2008. Treating tobacco use and dependence: 2008 update from US Department of Health and Human Services. Public Health Service: [http://www.surgeongeneral.gov/tobacco/tr\\_eating\\_tobacco\\_use08.pdf](http://www.surgeongeneral.gov/tobacco/tr_eating_tobacco_use08.pdf)
- Fiore MC, Jorenby DE, Schenky AE, Smith SS, Bauer RR, Baker TB. 1995. Smoking status as the new vital sign: Effect on assessment and intervention in patients who smoke. *Mayo Clinic Proceedings* 70(3): 209–213.
- Flocke SA, Gordon LE, Pomiecko GL. 2006. Evaluation of a Community Health Promotion Resource for Primary Care Practices. *American Journal of Preventive Medicine* 30(3): 243–251.
- Goldstein MG, Niaura R, Willey C, Kazura A, Rakowski W, DePue J, et al. 2003. An academic detailing intervention to disseminate physician-delivered smoking cessation counselling: smoking cessation outcomes of the Physicians Counselling Smokers Project. *Preventive Medicine: An International Journal Devoted to Practice and Theory* 36(2): 185–196.
- Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, et al. 2004. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technology Assessment* 8(6): iii–iv, 1–72.
- Hogg W, Lemelin J, Graham ID, Grimshaw J, Martin C, Moore L, et al. 2008. Improving prevention in primary care: Evaluating the effectiveness of outreach facilitation. *Family Practice* 25(1): 40–48.

- Joseph AM, Arikian NJ, An LC, Nugent SM, Sloan RJ, Pieper CF. 2004. Results of a randomised controlled trial of intervention to implement smoking guidelines in veterans affairs medical centres: increased use of medications without cessation benefit. *Medical Care* 42(11): 1100–1110.
- Katz DA, Muehlenbruch DR, Brown RL, Fiore MC, Baker TB. 2004. Effectiveness of implementing the Agency for Healthcare Research and Quality Smoking Cessation Clinical Practice Guideline: a randomised, controlled trial. *Journal of the National Cancer Institute* 96(8): 594–603.
- Kottke TE, Solberg LI, Brekke ML, Conn SA, Maxwell P, Brekke MJ. 1992. A controlled trial to integrate smoking cessation advice into primary care practice: Doctors Helping Smokers, Round III. *The Journal of Family Practice* 34(6): 701–708.
- Krist AH, Woolf SH, Frazier CO, Johnson RE, Rothenich SF, Wilson DB, et al. 2008. An electronic linkage system for health behaviour counselling: effect on delivery of the 5As. *American Journal of Preventive Medicine* 35(5 Suppl): S350–S358.
- Lancaster T, Fowler G. 2000. Training health professionals in smoking cessation. *Cochrane Database Systematic Reviews* (3), Art no: CD000214. DOI: 000210.001002/14651858.
- Lemelin J, Hogg W, Baskerville N. 2001. Evidence to action: a tailored multifaceted approach to changing family physician practice patterns and improving preventive care. *CMAJ: Canadian Medical Association Journal* 164(6): 757.
- Lennox AS, Bain N, Taylor RJ, McKie L, Donnan PT, Groves J. 1998. Stages of Change training for opportunistic smoking intervention by the primary health care team. Part I: randomised controlled trial of the effect of training on patient smoking outcomes and health professional behaviour as recalled by patients. *Health Education Journal* 57(2): 140–149.
- McPhee SJ, Bird JA, Fordham D, Rodnick JE, Osborn EH. 1991. Promoting cancer prevention activities by primary care physicians: results of a randomised, controlled trial. *Journal of the American Medical Association* 266(4): 538–544.
- McRobbie H, Hajek P, Feder G, Eldridge S. 2008. A cluster-randomised controlled trial of a brief training session to facilitate general practitioner referral to smoking cessation treatment. *Tobacco Control* 17(3): 173–176.
- Millett C, Gray J, Saxena S, Netuveli G, Majeed A. 2007. Impact of a pay-for-performance incentive on support for smoking cessation and on smoking prevalence among people with diabetes. *Canadian Medical Association Journal* 176(12): 1705–1710.
- Moher M, Yudkin P, Wright L, Turner R, Fuller A, Schofield T, et al. 2001. Cluster randomised controlled trial to compare three methods of promoting secondary prevention of coronary heart disease in primary. *BMJ* 322(7298): 1338–1342.
- Morgan GD, Noll EL, Orleans CT, Rimer BK, Amfoh K, Bonney G. 1996. Reaching midlife and older smokers: Tailored interventions for routine medical care. *Preventive Medicine* 25(3): 346–354.
- Ockene JK, Adams A, Pbert L, Luippold R, Hebert JR, Quirk M, et al. 1994. The physician-delivered smoking intervention project: factors that determine how much the physician intervenes with smokers. *Journal of General Internal Medicine* 9(7): 379–384.
- Ockene JK, Lindsay EA, Hymowitz N, Giffen C, Purcell T, Pomrehn P, et al. 1997. Tobacco control activities of primary-care physicians in the Community Intervention Trial for Smoking Cessation. COMMIT Research Group. *Tobacco Control* 6 Suppl 2: S49–S56.

- Ozer EM, Adams SH, Lustig JL, Millstein SG, Camfield K, El Diwany S, et al. 2001. Can it be done? Implementing adolescent clinical preventive services. *Health Services Research* 36(6 Pt 2): 150–165.
- Pbert L, Fletcher KE, Flint AJ, Young MH, Druker S, DiFranza J. 2006. Smoking prevention and cessation intervention delivery by pediatric providers, as assessed with patient exit interviews. *Pediatrics* 118(3): e810–824.
- Piper ME, Fiore MC, Smith SS, Jorenby DE, Wilson JR, Zehner ME, et al. 2003. Use of the vital sign stamp as a systematic screening tool to promote smoking cessation. *Mayo Clin Proc* 78(6): 716–722.
- Richmond R, Mendelsohn C, Kehoe L. 1998. Family physicians' utilisation of a brief smoking cessation program following reinforcement contact after training: a randomised trial. *Preventive Medicine* 27(1): 77–83.
- Roski J, Jeddelloh R, An L, Lando H, Hannan P, Hall C, et al. 2003. The impact of financial incentives and a patient registry on preventive care quality: increasing provider adherence to evidence-based smoking cessation practice guidelines. *Preventive Medicine* 36(3): 291–299.
- Rothemich SF, Woolf SH, Johnson RE, Burgett AE, Flores SK, Marsland DW, et al. 2008. Effect on cessation counselling of documenting smoking status as a routine vital sign: an ACORN study. *Annals of Family Medicine* 6(1): 60–68.
- Secker-Walker RH, Solomon LJ, Flynn BS, LePage SS, Crammond JE, Worden JK, et al. 1992. Training obstetric and family practice residents to give smoking cessation advice during prenatal care. *American Journal of Obstetrics and Gynecology* 166(5): 1356–1363.
- Solberg LI, Kottke TE, Brekke ML, Magnan S, Davidson G, Calomeni CA, et al. 2000. Failure of a continuous quality improvement intervention to increase the delivery of preventive services: a randomised trial. *Effective Clinical Practice* 3(3): 105–115.
- Strecher VJ, O'Malley MS, Villagra VG, Campbell EE, Gonzalez JJ, Irons TG, et al. 1991. Can residents be trained to counsel patients about quitting smoking? Results from a randomised trial. *Journal of General Internal Medicine* 6(1): 9–17.
- Tremblay M, Gervais A, Lacroix C, O'Loughlin J, Makni H, Paradis G. 2001. Physicians taking action against smoking: an intervention program to optimise smoking cessation counselling by Montreal general practitioners. *Canadian Medical Association Journal* 165(5): 601–607.
- Unrod M, Smith M, Spring B, DePue J, Redd W, Winkel G. 2007. Randomised controlled trial of a computer-based, tailored intervention to increase smoking cessation counselling by primary care physicians. *Journal of General Internal Medicine* 22(4): 478–484.
- Wadland WC, Holtrop JS, Weismantel D, Pathak PK, Fadel H, Powell J. 2007. Practice-based referrals to a tobacco cessation quit line: assessing the impact of comparative feedback vs general reminders. *Annals of Family Medicine* 5: 135–142.
- Young JM, D'Este C, Ward JE. 2002. Improving family physicians' use of evidence-based smoking cessation strategies: a cluster randomisation trial. *Preventive Medicine* 35(6): 572–583.

## References

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- 1 Coleman T, Lewis S, Hubbard R, Smith C. 2007. Impact of contractual financial incentives on the ascertainment and management of smoking in primary care. *Addiction* 102(5): 803–08.
- 2 Bentz CJ, Bayley KB, Bonin KE, Fleming L, Hollis JF, Hunt JS, et al. 2007. Provider feedback to improve 5A's tobacco cessation in primary care: A cluster randomised clinical trial. *Nicotine and Tobacco Research* 9(3): 341–49.
- 3 Unrod M, Smith M, Spring B, DePue J, Redd W, Winkel G. 2007. Randomised controlled trial of a computer-based, tailored intervention to increase smoking cessation counselling by primary care physicians. *Journal of General Internal Medicine* 22(4): 478–84.
- 4 McRobbie H, Hajek P, Feder G, Eldridge S. 2008. A cluster-randomised controlled trial of a brief training session to facilitate general practitioner referral to smoking cessation treatment. *Tobacco Control* 17(3): 173–76.
- 5 Morgan GD, Noll EL, Orleans CT, Rimer BK, Amfoh K, Bonney G. 1996. Reaching midlife and older smokers: Tailored interventions for routine medical care. *Preventive Medicine* 25(3): 346–54.
- 6 Katz DA, Muehlenbruch DR, Brown RL, Fiore MC, Baker TB. 2004. Effectiveness of implementing the Agency for Healthcare Research and Quality Smoking Cessation Clinical Practice Guideline: a randomised, controlled trial. *Journal of the National Cancer Institute* 96(8): 594–603.
- 7 Strecher VJ, O'Malley MS, Villagra VG, Campbell EE, Gonzalez JJ, Irons TG, et al. 1991. Can residents be trained to counsel patients about quitting smoking? Results from a randomised trial. *Journal of General Internal Medicine* 6(1): 9–17.
- 8 Krist AH, Woolf SH, Frazier CO, Johnson RE, Rothenich SF, Wilson DB, et al. 2008. An electronic linkage system for health behaviour counselling: effect on delivery of the 5As. *American Journal of Preventive Medicine* 35(5 suppl): S350–S58.
- 9 Amundson G, Solberg LI, Reed M, Martini EM, Carlson R. 2003. Paying for quality improvement: compliance with tobacco cessation guidelines. *Joint Commission Journal on Quality and Safety* 29(2): 59–65.
- 10 Public Health Intelligence. 2004. *Tobacco Facts: Occasional Report*. Wellington: Ministry of Health.
- 11 Ministry of Health. 2006. *Tobacco Trends 2006: Monitoring tobacco use in New Zealand*. Wellington: Ministry of Health.
- 12 Ministry of Health. 2007. *New Zealand Tobacco Use Survey 2006*. Wellington: Ministry of Health.
- 13 Doll R, Peto R, Boreham J, Sutherland I. 2004. Mortality in relation to smoking: 50 years observations on male British doctors. *British Medical Journal* 328: 1519.
- 14 Ministry of Health. 2004. *Clearing the Smoke: A five-year plan for tobacco control in New Zealand (2004–2009)*. Wellington: Ministry of Health.
- 15 Peto R, Darby S, Deo H, Silcocks P, Whitley E, Doll R. 2000. Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies. *British Medical Journal* 321: 323–9.
- 16 Ministry of Health. 2007. *New Zealand Smoking Cessation Guidelines*. Wellington: Ministry of Health.
- 17 Ministry of Health. 2008. *Literature Review for the Revision of the New Zealand Smoking Cessation Guidelines*. Wellington: Ministry of Health.
- 18 Glynn TJ, Manley MW, Pechacek TF. 1990. Physician-initiated smoking cessation program: the National Cancer Institute trials. *Prog Clin Biol Res* 339: 11–25.
- 19 Aveyard P, West R. 2007. Managing smoking cessation. *British Medical Journal* 335(7609): 37–41.

- 20 Brinson D, Ali W. 2009. The effectiveness of interventions to increase the delivery of effective smoking cessation treatments in primary care settings – the ABCs. *HSAC Report* 2(9).
- 21 DePue JD, Goldstein MG, Schilling A, Reiss P, Papandonatos G, Sciamanna C, et al. 2002. Dissemination of the AHCPR clinical practice guideline in community health centres (research paper). *Tobacco Control* 11(4): 329(7).
- 22 Goldstein MG, Niaura R, Willey C, Kazura A, Rakowski W, DePue J, et al. 2003. An academic detailing intervention to disseminate physician-delivered smoking cessation counselling: smoking cessation outcomes of the Physicians Counselling Smokers Project. *Preventive Medicine: An International Journal Devoted to Practice and Theory* 36(2): 185–96.
- 23 NHMRC. 1999. *A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines*. Canberra: NHMRC.
- 24 NHMRC. 2000a. *How to Review the Evidence: Systematic identification and review of the scientific literature*. Canberra: NHMRC.
- 25 NHMRC. 2000b. *How to Use the Evidence: Assessment and application of scientific evidence*. Canberra: NHMRC.
- 26 NHMRC. 2005. *Interim Levels of Evidence*. Canberra: NHMRC. Available from: [http://www.nhmrc.gov.au/consult/\\_files/level\\_s\\_grades05.pdf](http://www.nhmrc.gov.au/consult/_files/level_s_grades05.pdf).
- 27 NHMRC. 2008. *Additional Levels of Evidence and Grades for Recommendations for Developers of Guidelines*. Canberra: NHMRC.
- 28 Lancaster T, Fowler G. 2000. Training health professionals in smoking cessation. *Cochrane Database Systematic Reviews* (3): Art no: CD000214. DOI: 10.1002/14651858.
- 29 Wadland WC, Holtrop JS, Weismantel D, Pathak PK, Fadel H, Powell J. 2007. Practice-based referrals to a tobacco cessation quit line: assessing the impact of comparative feedback vs general reminders. *Annals of Family Medicine* 5: 135–42.

