

EVIDENCE REVIEW

Workplace interventions to promote smoking cessation

November 2006

Kirsten Bell, PhD

Lindsay Richardson, MA.

Lucy McCullough, BSc.

Lorraine Greaves, PhD



British Columbia
Centre of Excellence
for Women's Health

Table of Contents

1. Executive Summary	3
EVIDENCE STATEMENTS.....	4
2. Background.....	11
2.2 Smoking control in UK workplaces.....	11
3. Methodology	13
3.1 Literature Search.....	13
3.2 Selection of Studies for Inclusion.....	13
3.3 Quality Appraisal.....	14
4. Summary of Findings.....	16
4.1 Which interventions work best in workplaces where comprehensive smoke-free legislation has been introduced in other jurisdictions?.....	17
4.2 What are the most effective and appropriate interventions for different sectors of the workforce such as men and women, younger and older workers, minority ethnic groups and temporary/casual workers?.....	19
4.3 What are the most effective ways of encouraging employee compliance with a smoke-free policy?.....	24
4.4 How can employers support and encourage smokers to quit?.....	26
4.5 What support can employers offer smokers who are not currently ready to quit?	27
4.6 How can employers be encouraged to provide smoking cessation support?.....	29
4.7 What are the resource needs of large, medium and small enterprises in implementing smoke-free legislation and supporting smokers to quit?.....	30
4.8 Which interventions are cost effective?.....	32
4.9 What are the adverse or unintended outcomes in the workplace of smoke-free legislation?.....	33
5. Overview and Discussion	36
6. EVIDENCE TABLE.....	Error! Bookmark not defined.
7. APPENDIX A – Excluded Studies	39
8. APPENDIX B – Level 3 and 4 Evidence	40
9. APPENDIX C	42
10. APPENDIX D.....	64

1. Executive Summary

This review contains assessments of the available evidence on workplace interventions for smoking cessation. The available data has been assessed to answer 9 preset questions examining in detail the effectiveness of workplace interventions in facilitating smoking cessation. A comprehensive literature search was conducted and a total of 13,023 titles and abstracts were screened, with 27 studies identified as direct evidence.

Results: Although there are no studies exploring which workplace interventions are most effective in the context of smoke-free legislation, there is some evidence that the most effective workplace interventions (regardless of context) are those with proven effectiveness in other settings. Group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation.

There is also evidence that a 'one size fits all' approach to employed smokers is less effective than interventions tailored to different sectors of the workforce. Thus, women exhibit less confidence in their ability to quit, are less ready to quit than men and may require extra stimuli in order to quit smoking, therefore they are particularly likely to benefit from workplace interventions. It is also clear that workplace interventions should be tailored for multiethnic populations; intervention approaches should be inclusive of workers from diverse backgrounds and materials should be developed in the appropriate languages. Combining health promotion with occupational health and other health promotion activities may also help to improve the relevance of smoking cessation interventions for multiethnic populations. Unfortunately, there is very little information on how to tailor interventions for temporary/casual workers and further research is urgently needed in this area.

Monitoring data from countries that have gone smoke-free indicates that compliance with smoke-free policies is unlikely to be a significant issue. However, support for and compliance with smoking bans can be improved by encouraging smokers to think about the harms of passive smoking, and educating smokers about the health consequences of second-hand smoke. Creating and enforcing a smoking compliance strategy is also an effective way to increase compliance.

Employers can encourage smokers to quit in a variety of ways including offering smoking cessation support and providing incentives to quit. Employers can also take steps to support smokers who are not ready to quit – as smokers in this category are likely to outweigh the number of smokers who are highly motivated to quit. It is therefore important that smoking cessation materials are tailored to deal with smokers at different stages of change and proactive interventions are required. Encouragingly, there is some evidence that an 'enriched' environment (including smoking bans, educational campaigns and worksite health promotion activities alongside of smoking cessation support) does influence those smokers who are not ready to quit. Although an enriched environment may not lead these smokers to cease smoking, it may encourage them to reduce their consumption and reduce the perceived barriers to quitting.

A central factor predicting whether a workplace will offer smoking cessation support is the personal attitude of the employer towards employee health. Thus, it may be important to directly target leaders and persuade them of the benefits of investing in employee health and the role it plays in company success; indeed, although further research needs to be conducted before the cost effectiveness of workplace interventions can be conclusively determined, the available evidence does indicate that they are extremely cost effective – especially in the long term. However, despite the advantage of supporting smoking cessation in the workplace, small enterprises appear to have significant financial constraints that impede their ability to offer smoking cessation support and may also have characteristics that do not lend themselves to formal onsite programmes. It is also important to emphasise that workplace tobacco control activities do have some side effects, as smoking bans may also increase tensions between smokers and non-smokers, increase perceived exposure to ETS because of intensified contact with smoking at entrances and exits to buildings and may also lead to unsafe smoking practices.

EVIDENCE STATEMENTS

No.	Statement	Grade	Country/s	Evidence
	Which interventions work best in workplaces where comprehensive smoke-free legislation has been introduced in other jurisdictions?			
1	<p>Although there are no available studies exploring which workplace interventions are most effective in the context of smoke-free legislation, one 2+ study of a variety workplace intervention types offered in the context of a localised smoking ban found that more intensive interventions (e.g. group treatment and one-hour clinics) produce higher success rates than less intensive interventions (e.g. brief individual counselling and self-help manuals).</p> <p>It is unclear how readily these findings translate to workplaces in jurisdictions where comprehensive smoke-free legislation has been introduced.</p>	One 2+ study	USA	(Waranch et al. 1993 2+)
2	<p>A 1++ systematic review and a 1+ meta-analysis of the available international literature indicates that the most effective smoking cessation interventions in workplace settings are those interventions that have proven effectiveness more broadly. There is strong evidence that group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation. However, both reviews failed to identify effects due to particular intervention type. There is also evidence that minimal interventions including brief advice from a health professional are effective. Self help manuals appear to be less effective, although there is limited evidence that interventions tailored to the individual have some effect.</p>	One 1++ systematic review and one 1+ meta-analysis	International	(Moher et al. 2005 1++; Fisher et al. 1990 1+)
	What are the most effective and appropriate interventions for different sectors of the workforce such as men and women, younger and older workers, minority ethnic groups and temporary/casual workers?			
3	<p>A 1+ study and a 2++ study indicate that men and women are equally successful in achieving abstinence in workplace smoking cessation programmes; however, important</p>	One 1+ study, one 2+ study and one 2++ study	USA	(Campbell et al. 2000/2002 2+; Stockton et al. 2000 2++; Gritz et

	<p>gender differences are apparent in smoking attitudes and behaviours. Women have less confidence in their ability to quit, are less ready to quit than men and may require extra stimuli in order to quit smoking. In light of these factors, a 2+ study indicates that a multi-behavioural approach to behaviour change may be more effective for female smokers than a single-component intervention as it allows women to prioritize behaviour changes and may result in a greater sense of control and empowerment which increases women's confidence in tackling more challenging issues such as smoking cessation.</p> <p>Although these findings are based on American studies, they are likely to be broadly applicable to a UK setting.</p>			al. 1998 1+)
4	<p>Although no studies were identified in the literature search that specifically address effective workplace interventions for younger and older smokers, evidence from a 2++ study indicates that older smokers are more likely to achieve successful abstinence in workplace interventions than younger smokers (although these employees were also more likely to be managers and light smokers). Furthermore, two 2+ studies examined the impact of age and job stress on cessation. Results from one study revealed that younger employees benefited more from higher demands than older employees with regards to smoking cessation. However, these findings were not supported in the other 2+ study. Therefore, although further research is needed in this area it may be possible that younger employees who smoke require more intensive support for smoking cessation than older smokers and that specifically tailoring interventions based on age may be beneficial.</p> <p>Although these findings are based on American studies, they are likely to be broadly applicable to a UK setting.</p>	One 2++ study	USA	(Olsen et al. 1991 2++)
5	<p>A 2+ study found racial and ethnic differences in predictors of smoking cessation amongst participants in a workplace intervention. White males tended to be heavier smokers than minority ethnic males and the authors suggest that interventions focusing on</p>	Two 2+ studies	USA	(Daza et al. 2006; Hunt et al. 2003/Emmons et al 2005 2+)

	<p>alleviating withdrawal symptoms, enhancing motivation, and teaching coping skills to increase self-efficacy would also be relevant for this sub-population. The study also found that minority ethnic males did not achieve higher cessation rates, despite smoking profiles that were more conducive to cessation; the authors conclude that incorporating a stress reduction component into interventions aimed at minority populations may be beneficial. Another 2+ study found that inclusive intervention approaches, developing materials in the appropriate languages, and combining health promotion with occupational health and other health promotion activities helped to improve the success of an intervention tailored to working class multiethnic populations.</p> <p>Although these studies are from the USA, which has a different ethnic composition to the UK, the findings of these studies seem broadly applicable to a UK setting.</p>			
6	No studies were identified in the literature search that specifically addressed effective workplace interventions for temporary or casual workers. As delivering workplace interventions to this population pose a significant challenge, research is urgently needed in this area.			
	What are the most effective ways of encouraging employee compliance with a smoke-free policy?			
7	Monitoring data (3+) from countries that have gone smoke-free indicates that employee non-compliance with smoke-free policies is unlikely to be a significant issue. Evidence from Ireland, Scotland and New Zealand reveal extremely high levels of compliance (between 94-98%) with smoke-free workplace legislation. However, one 2+ study found that support for smoking bans in Australia, USA, Canada, and the United Kingdom was higher among smokers who reported thinking about the harms of passive smoking more frequently, and among those who endorsed the belief that second-hand smoke can cause lung cancer in non-smokers.	Four 3+ case studies and one 2+ study	International	(Pisano 2006 3+; Ministry of Health 2005 3+; Office of Tobacco Control - Ireland 2005 3+; Scottish Executive 2006 3+; Borland et al. 2006 2+)
8	Various 4+ sources have indicated that creating and enforcing a smoking compliance strategy is an effective way to increase compliance. Specific tips	Four 4+ reports	International	(Griffiths 2005 4+; Quit 2001a 4+; Quit 2001b

	for enforcing smoke free policy include providing training on how to enforce the policy, establishing links between the policy and HR policies, increasing awareness of the consequences of breaching policy, providing reminders that it is a criminal offence not to comply with policy and notifying staff that action will be taken if someone is in breach of the policy.			4+; Worldbank 2002 4+)
	How can employers support and encourage smokers to quit?			
9	According to a 1++ systematic review, a key way that employers can encourage smokers to quit is by offering smoking cessation support. Such support is particularly important in the context of workplace smoking bans. A 2+ study concludes that because different types of smokers appear to choose different strategies for cessation, making a variety of smoking cessation strategies available to employees may meet the needs of more employees and increase participation in workplace programmes.	One 1++ systematic review and one 2+ study	International	(Moher et al. 2005 1++; Waranch et al. 1993 2+)
10	Two 1++ systematic reviews of international studies indicate that financial incentives can support and encourage smokers to quit. While the addition of incentives does not appear to increase the quit rates of smoking cessation interventions in the workplace, there is evidence that such incentives do improve recruitment rates into worksite cessation programmes, which may lead to higher absolute numbers of successful quitters in the long-term.	Two 1++ systematic reviews	International	(Moher et al. 2005 1++; Hey et al. 2005 1++)
	What support can employers offer smokers who are not currently ready to quit?			
11	According to a 2+ study, the majority of employed smokers are not ready to quit smoking. Therefore, smoking cessation materials and programmes need to recognise that smokers are at different stages of change rather than tailoring their materials only to those smokers who are highly motivated to quit. The researchers argue that proactive interventions are required, including access to subsidised pharmacological cessation aids, monetary incentives for assessment of smoking risk, direct personalized feedback, media/social marketing campaigns, and changes in the social norms and physical environment at the workplace, in public places, and in the	One 2+ study	USA	(Abrams & Biener 1994 2+)

	<p>home.</p> <p>Although this is an American study, its findings are likely to be broadly applicable to a UK setting.</p>			
12	<p>Two 2+ studies and a 2- study have explored the impact of an 'enriched' environment (including smoking bans, worksite health promotion activities and smoking cessation programmes) on those smokers who are not ready to quit. Although a 2+ study found that an enriched environment did not increase cessation amongst those smokers who do not engage in formal cessation activities, a 2- study and a 2+ study have both found that an enriched environment increases the motivation of smokers to change their smoking behaviours and may lead to a reduction in cigarette consumption and a reduction in perceived barriers to quitting.</p> <p>Although these findings are based on American studies, their findings are likely to be broadly applicable to a UK setting.</p>	<p>One 1++ systematic review, one 2++ study, one 2+ study</p>	USA	<p>Waranch et al. 2003 2+; Willemssen 1999 2+; Conrad et al. 1996 2-)</p>
	How can employers be encouraged to provide smoking cessation support?			
13	<p>Two 2++ studies indicate that a key factor predicting whether a workplace will offer smoking cessation support is the personal attitude of the employer towards employee health. Thus, a key way of encouraging employers to provide smoking cessation support may be to directly target leaders and persuade them of the benefits of investing in employee health and the role it plays in company success.</p>	<p>Two 2++ studies</p>	USA	<p>(Sorensen et al. 1997 2++; Emmons et al. 2000 2++)</p>
	What are the resource needs of large, medium and small enterprises in implementing smoke-free legislation and supporting smokers to quit?			
14	<p>Two 2++ American studies and one 2+ Scottish study provide strong evidence that small enterprises are far less likely to offer smoking cessation support than large enterprises. The findings of these studies suggest that small workplaces may have significant financial constraints that impede their ability to offer smoking cessation support and may also have characteristics that do not lend themselves to formal onsite programmes. Thus, unlike large</p>	<p>Two 2++ studies and two 2+ studies</p>	USA, Scotland	<p>(Biener et al. 1994 2+; Sorensen et al. 1997 2++; Emmons et al. 2000 2++; Docherty et al. 1999 2+)</p>

	<p>enterprises, small enterprises have substantial needs in implementing smoking control activities in their worksite.</p> <p>As the conclusions of the US studies are echoed in a Scottish study, these findings are likely to be directly applicable to a UK setting.</p>			
	Which interventions are cost effective?			
15	<p>A 1++ systematic review indicates that further research needs to be conducted before the cost effectiveness of workplace interventions can be determined. However, according to a 2+ American study, which examined the health and economic implications of a workplace smoking-cessation programme using a simulation model, worksite smoking cessation programmes appear to be a sound economic investment. Long term benefits revealed an eventual benefit-cost ratio of 8.75 (after 50 years).</p> <p>The findings of this study are not directly applicable to a UK setting.</p>	One 1++ systematic review and one 2+ study	International, USA	(Moher et al. 2005 1++; Warner et al. 1996 2+)
	What are the adverse or unintended outcomes in the workplace of smoke-free legislation?			
16	<p>Overall, one 2- study found that a workplace smoking ban was not a significant source of tensions between smokers and non-smokers, despite the minor advantages that were seen to be associated with exiled smoking. According to a 4+ report, the increased visibility of smoking that often accompanies the introduction of workplace smoking bans may lead to the stigmatisation of smokers and contribute to discriminatory practices and social stereotyping.</p> <p>It is unclear how readily these findings translate to a UK setting.</p>	One 2- study and one 4+ report	Australia, USA	(Clarke et al., 1997 2-; Greaves & Jategaonkar 2006 4+)
17	<p>Overall, one 2+ Scottish study and a 2+ study from the Republic of Ireland indicate that smoke-free legislation may encourage smokers to congregate around building entrances and exits, thereby increasing the exposure of non-smokers to second-hand smoke through more intensive contact with the smoke as they enter buildings and contact with drifting smoke.</p> <p>These findings are directly applicable</p>	One 2+ study, one 2+ study	Scotland and Republic of Ireland	(Parry et al. 2000 2+; Mulcahy et al. 2006 2+)

	to a UK setting.			
18	<p>Two 2- English studies and one 2+ Scottish study report that workplace smoking bans may lead to an increase in dangerous smoking practices (such as smoking in inappropriate locations and the build-up of smoking related debris). One of the English studies also raises the potentially negative effects of bans on smokers who must venture outside to smoke, even in poor weather conditions.</p> <p>These findings are directly applicable to a UK setting.</p>	Two 2- studies and one 2+ study	UK	(Strobl & Larter 1998 2-; Parry et al. 2000 2+; Anderson 1991 2-)
19	<p>According to one 2++ study and 3+ reports from Scotland, smoke-free legislation leads to an increase in smoking-related litter which creates costs for local authorities in cleaning up/providing disposal for cigarette butts in outdoor public places.</p> <p>These findings are directly applicable to a UK setting.</p>	One 2+ study and two 3+ case reports	UK	(Parry et al. 2000 2+; MacDonald 2006 3+; Vallely 2006 3+)

2. Background

2.1 Health and economic effects of smoking

Cigarette smoking is the leading cause of preventable death in the United Kingdom today. In England alone, between 1998 and 2002 smoking was estimated to be responsible for 86,500 deaths per year (Twigg et al. 2004). More than half of all smoking-related deaths were due to respiratory diseases such as lung cancer, chronic obstructive pulmonary disease (COPD) and pneumonia, while ischaemic heart disease, other cancers, circulatory and digestive diseases accounted for the rest (Royal College of Physicians 2000). However, although the harms caused by cigarette smoking are well established, there is a growing body of evidence that environmental tobacco smoke (ETS), otherwise known as second-hand smoke or passively ingested smoke, also causes harm to those exposed to it.

The first study linking passive smoking and lung cancer was published in 1981 (Hirayama 1981) and since that time there has been a groundswell of literature on the health-related harms connected with ETS. In a recent assessment of the available evidence, the Scientific Committee on Tobacco and Health (SCOTH 2004) concluded that exposure to ETS substantially increases the risk of lung cancer and ischemic heart disease amongst non-smokers. Children exposed to ETS are at increased risk of bronchitis, asthma attacks, pneumonia, middle ear disease, sudden infant death syndrome (SIDS) and a reduction in lung function.

Given that approximately one quarter of Britons smoke (Lader and Goddard 2005), exposure to ETS remains a significant issue. Indeed, a recent study (Jamrozik 2005) estimates that across the United Kingdom as a whole, passive smoking in the workplace is likely to be responsible for the death for more than two employed people per working day (617 deaths per year), including 54 deaths in the hospitality industry each year – almost three times the number of deaths from industrial injuries and accidents (Health and Safety Commission 2003).

Aside from the health effects of smoking, it has considerable economic costs as well. Smoking currently costs the National Health Service (NHS) between approximately 1.4-1.5 billion pounds annually, from health care expenditure on smoking induced disease to sickness/invalidity benefits, widows' pensions and other social security benefits for dependants (Parrot and Godfrey 2004). Employee smoking also imposes a variety of costs on employers. There is evidence that employees who smoke decrease productivity, increase absenteeism and insurance rates, and cause smoking area costs (Parrot, Godfrey & Raw 2000). For example, employees who smoke are more likely to take smoke breaks (interrupting work time), require medical treatment and take time off work due to illness (Parrot, Godfrey & Raw 2000). Furthermore, smokers may increase facility insurance rates as a result of fire or smoke damage claims (Parrott, Godfrey & Raw, 2000), and increase disability and life insurance premiums due to higher morbidity rates (Health Canada, 2006). Parrott, Godfrey, and Raw (2000) estimate that the annual cost of employee smoking in Scotland is in the region of £450 million due to lost productivity, £40 million due to absenteeism, and £4 million as a result of fire damage.

2.2 Smoking control in UK workplaces

In 1998 the landmark White Paper *Smoking Kills* (Department of Health 1999) was published. *Smoking Kills* laid out a comprehensive plan for reducing the prevalence of smoking in the UK, and entailed measures such as a ban on tobacco advertising, increases in the price of tobacco, a significant injection of funding into smoking cessation services and strategies to reduce smoking in work and public places (McNeill et al. 2005). The 2004 White Paper *Choosing Health* (Department of Health 2004) solidified the government's

commitment to reducing smoking in UK workplaces by proposing action to introduce smoke-free workplaces through a stepped approach:

- 1) by the end of 2006, government departments and the NHS will be smoke-free
- 2) by the end of 2007, all enclosed work and public places, other than licensed premises
- 3) by the end of 2008, arrangements for licensed premises in place.

The proposed legislation was brought forward in the Health Bill in 2005, although strong public and political sentiment that this legislation was not strong enough led the government to bring forward alternative options for extending the smoke-free provisions. The option to create “national legislation to make all indoor public places and workplaces completely smoke-free (with minimal exemptions)” was resoundingly favoured by the House of Commons and the legislation is due to be implemented in 2007 (Department of Health 2006).

The successful campaign for comprehensive smoke-free legislation in England represents a significant achievement for the tobacco control movement and a turning point in the development of a national, comprehensive tobacco control policy – which has led some commentators to describe it as the single most important public health measure of the past 30 years (Willmore 2006). Through this legislation, the government’s objective is to:

- reduce the risks to health from exposure to second-hand smoke
- recognise the right to be protected from harm and to enjoy smoke-free air
- increase the benefits of smoke-free enclosed public places and workplaces for people trying to give up smoking so that they can succeed in an environment where social pressures to smoke are reduced
- save thousands of lives over the next decade by reducing both exposure to hazardous second-hand smoke and overall smoking rates (Department of Health 2006).

Although smoke-free legislation represents a key element of workplace tobacco control, another essential element of successful workplace smoking control strategies is smoking cessation support. Indeed, workplace interventions for smoking cessation hold a number of potential advantages over interventions in other settings. First, given that a large proportion of the employed population spends a third of their waking hours at work, workplace interventions provide access to large numbers of people who constitute a relatively stable population and may have the potential for higher participation rates than non-workplace environments (Moher et al. 2005; Hunt et al. 2003). Second, worksites also have the potential to provide sustained peer support and positive peer influence for quitting (Moher et al. 2005; Hunt et al. 2003). Third, worksites may have occupational health staff to provide professional support. However, most importantly, workplace interventions provide an opportunity to target people (such as blue-collar workers) at particularly high risk of smoking-related disease who may not otherwise be accessible (Moher et al. 2005; Hunt et al. 2003).

Integrating smoking cessation support into workplaces following the implementation of smoke-free legislation in 2007 will not only to support those employed smokers who are interested in quitting, but will also maximise the unique opportunity this legislation provides to positively transform smokers’ behaviours.

3. Methodology

3.1 Literature Search

Julie Glanville and Kate Light (Centre for Reviews and Dissemination, University of York) conducted the searches for this rapid review in May 2006, with input from NICE and the British Columbia Centre of Excellence for Women's Health (BCCEWH) team. The first literature search covered systematic reviews in the standard databases and produced 533 records (see Appendix C, parts 1a & 1b). The second literature search covered non-reviews in the standard databases and produced 6878 records (see Appendix C, part 2). A further Medline search of both reviews and non-reviews was undertaken using the earlier Medline search strategy, but changing line 18 to include abstracts as well as titles (see Appendix C, part 3). This search produced 740 records (reviews) and 4872 records (non-reviews) respectively. In total the BCCEWH team received 13,023 references. A detailed report of processes, databases, and search terms used in the review is presented in Appendix C. Studies not published in English were excluded from the review. A further search was undertaken of key websites (see Appendix C, part 4) in order to obtain reports and documents relevant to the review; a further 20 reports were obtained through this process.

3.2 Selection of Studies for Inclusion

Once the literature search was complete the project team selected relevant studies based on the criteria outlined in section 4.1 of the *Public Health Guidance Methods Manual*. Before acquiring papers for assessment, preliminary screening of the literature search was carried out to discard irrelevant material. Titles were initially scanned by one reviewer who removed the clearly irrelevant studies. The remaining 200 abstracts were independently scrutinised in relation to the research questions by two reviewers and those that did not directly deal with the issues raised in the research questions were eliminated. Once this sifting process was complete, paper copies of the selected studies or reviews were acquired for assessment.

3.2.1 Populations

Groups covered in this review are smokers aged 16 and over who are engaged in paid or voluntary employment outside of the home.

3.2.1 Interventions

The review was international in scope and included workplace interventions for smoking cessation. All types of intervention were considered, such as group therapy, individual counselling, self-help materials, and nicotine replacement therapy (NRT). Broader health promotion interventions that included a smoking cessation component were also considered.

3.2.3 Outcomes

The key outcome of interest was:

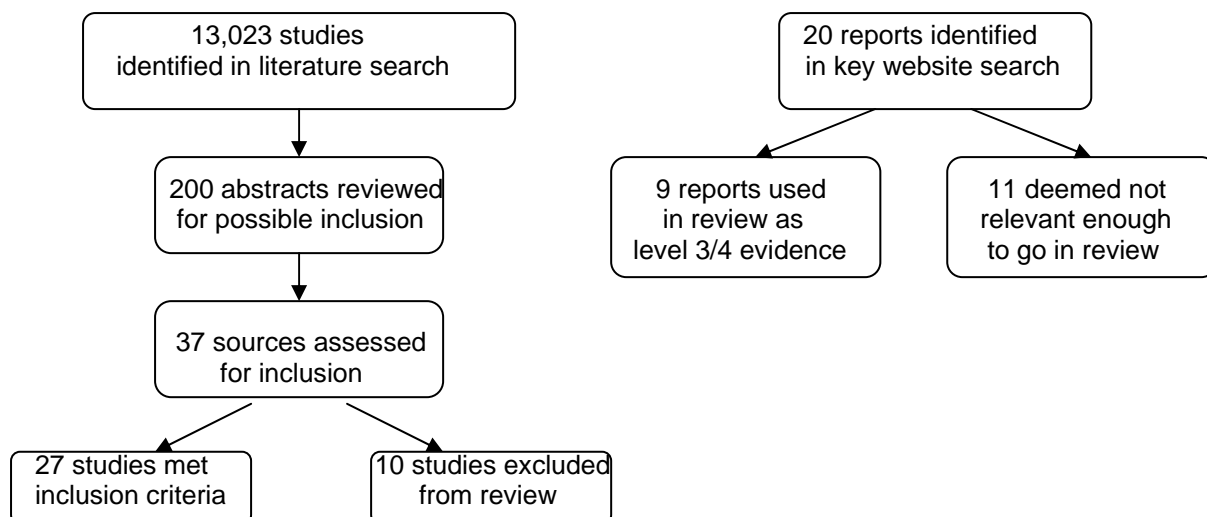
1. Changes in smoking-related knowledge, attitudes and behaviours following the intervention (with biochemical validation where recorded).

Following the elimination of 12,823 irrelevant records based on title alone, the two reviewers assessed abstracts of 200 records for possible inclusion and 37 records were determined to be addressing the key outcomes and populations of interest based on their abstract. Full copies of these studies were obtained and were independently assessed for inclusion by two reviewers. Of these studies, 27 met the inclusion criteria for this rapid review (see figure 1). A list of excluded studies with reasons for exclusion is presented in Appendix A.

A recent Cochrane Review (Moher et al. 2005) on the effectiveness of workplace interventions for smoking cessation provided a key source of evidence in the following

review. When evaluating the effectiveness of workplace interventions for smoking cessation, the Cochrane Review has been used as the preferred source of evidence over the individual studies identified in the literature search on this topic. However, studies identified in the literature search that covered other key issues of interest have been incorporated into this review, even in cases where they are also discussed in the Cochrane Review.

Figure 1. The evidence



3.3 Quality Appraisal

All of the studies that met the inclusion criteria were rated by two independent reviewers in order to determine the strength of the evidence. Once the research design of each study was determined (using the NICE algorithm), studies were assessed for their methodological rigour and quality based on the critical appraisal checklists provided in Appendix B of the *Public Health Guidance Methods Manual* (see table 1). Each study was categorised by study type and graded using a code ‘++’, ‘+’ or ‘–’, based on the extent to which the potential sources of bias had been minimised. Those studies that received discrepant ratings from the two reviewers were given to a third reviewer for final evaluation.

There is currently no methodological checklist for cross-sectional studies in the *Public Health Guidance Methods Manual*. In order to assess the quality of these studies, modifications to existing NICE checklists are recommended and a cross-sectional checklist based on the cohort study checklist in the manual was created (see Appendix D).

Table 2. Level and quality of evidence

Type and quality of evidence	
1++	High quality meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a very low risk of bias
1+	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a low risk of bias
1 ⁻	Meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a high risk of bias
2++	High quality systematic reviews of these types of studies, or individual, non-RCTs, case-control studies, cohort studies, CBA studies, ITS, and correlation studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal
2+	Well conducted non-RCTs, case-control studies, cohort studies, CBA studies, ITS and correlation studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
2-	Non-RCTs, case-control studies, cohort studies, CBA studies, ITS and correlation studies with a high risk – or chance – of confounding bias, and a significant risk that the relationship is not causal
3	Non-analytic studies (for example, case reports, case series)
4	Expert opinion, formal consensus
Grading the evidence	
++	All or most of the quality criteria have been fulfilled Where they have been fulfilled the conclusions of the study or review are thought <i>very unlikely</i> to alter
+	Some of the criteria have been fulfilled Where they have been fulfilled the conclusions of the study or review are thought <i>unlikely</i> to alter
-	Few or no criteria fulfilled The conclusions of the study are thought <i>likely or very likely</i> to alter

3.4 Synthesis

Due to heterogeneity of design among the studies, a narrative synthesis was conducted.

4. Summary of Findings

This review focuses on workplace interventions to promote smoking cessation in order to ascertain what works in motivating and changing employees' health behaviour.

The following research questions were addressed in this review:

1. Which interventions work best in workplaces where comprehensive smoke-free legislation has been introduced in other jurisdictions?
2. What are the most effective and appropriate interventions for different sectors of the workforce such as men and women, younger and older workers, minority ethnic groups and temporary/casual workers?
3. What are the most effective ways of encouraging employee compliance with a smoke-free policy?
4. How can employers support and encourage smokers to quit?
5. What support can employers offer smokers who are not currently ready to quit?
6. How can employers be encouraged to provide smoking cessation support?
7. What are the resource needs of large, medium and small enterprises in implementing smoke-free legislation and supporting smokers to quit?
8. Which interventions are cost effective?
9. What are the adverse or unintended outcomes in the workplace of smoke-free legislation?

4.1 Which interventions work best in workplaces where comprehensive smoke-free legislation has been introduced in other jurisdictions?

Given the very recent implementation of comprehensive smoke-free legislation in countries such as the Republic of Ireland, Norway, Scotland and Italy, there are no available studies exploring which workplace interventions are most effective in jurisdictions where comprehensive smoke-free legislation has been introduced. However, there is some evidence on the effectiveness of workplace interventions in the context of localised smoking bans.

The literature search produced one study which explored the effectiveness of different intervention types in the context of a workplace smoking ban. Waranch and co-workers (Waranch et al. 1993) (rating 2+) focus on the influence of a smoking ban and educational campaign at Johns Hopkins Hospital in Maryland, USA on employee participation in different types of worksite-sponsored stop smoking programmes. The new smoking policy was officially announced six months prior to its implementation and was followed by an extensive internal communication and educational campaign emphasising the health effects of passive smoking and the benefits of stopping smoking. Free health screening for exhaled CO, cholesterol and blood pressure was also offered to all employees beginning six months pre-ban and continuing for one year post-ban. Smoking cessation materials and programmes were also offered free of charge to all employees. Four distinct forms of treatment were offered: intensive group-oriented treatment incorporating behavioural and pharmacotherapy, two different types of self-help manual, one hour clinics, and brief individual counselling given to employees who called asking for help in stopping smoking.

At one year follow up, the two programmes with the highest success rate were the multi-component group (12.5%) and the one-hour clinics (21.7%¹); the less intensive programmes produced even lower quit rates – the three self/minimal help programmes had the largest numbers of participants but very low success rates (between 1.7-9.1%²). Interestingly, the programme that produced the highest quit rates (one hour clinics) was also the least popular option for smokers employed at the hospital, who had a strong preference for group interventions and self-help materials. The findings of this study echo the findings on workplace interventions more broadly.

No. 1

Strength and applicability of evidence

Although there are no available studies exploring which workplace interventions are most effective in the context of smoke-free legislation, one 2+ study of a variety workplace intervention types offered in the context of a localised smoking ban found that more intensive interventions (e.g. group treatment and one-hour clinics) produce higher success rates than less intensive interventions (e.g. brief individual counselling and self-help manuals). It is unclear how readily these findings translate to workplaces in jurisdictions where comprehensive smoke-free legislation has been introduced.

¹ Although this number seems quite high, there were only 23 people who took part in the programme. Therefore, this percentage should be treated with some caution as it represents only 5 people.

² Again, the numbers of people taking part in the brief individual counselling were extremely small. Only 3 people successfully quit at one year.

A recent Cochrane Review (Moher et al. 2005) (rating 1++) provides the most up-to-date source of international evidence on which smoking cessation interventions in the workplace are most effective. This review concludes that the most successful smoking cessation interventions in the workplace are those with proven effectiveness in other settings. Thus, there is strong evidence that group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation. However, the authors of the review are unable to determine the incremental effectiveness of the different intervention types. Drawing on previous Cochrane Reviews they indicate that while group therapy approximately doubles the odds of quitting in workplaces and other settings (OR 1.97, 95% CI 1.57 to 2.48 compared with self help), there is no evidence that more intensive counselling was more effective than brief counselling (R 0.98, 95% CI 0.51 to 1.56). In addition, there is no evidence of a difference in effect between individual counselling and group therapy (OR 1.33, 95% CI 0.83 to 2.13).

The Cochrane Review (Moher et al. 2005) also found that some minimal interventions are effective, including brief advice from a health professional (OR 1.69 95% CI 1.45 to 1.98). However, they found that self help interventions are less effective than the aforementioned interventions, although there is limited evidence that interventions tailored to the individual have some effect.

These findings are echoed in an early meta-analysis of workplace interventions for smoking cessation (Fisher et al. 1990) (rating 1+) which similarly failed to identify effects due to particular intervention strategies. The authors provide three possible explanations for the lack of significant differences in effect size based on intervention type: first, many worksite smoking cessation interventions are multi-component and it is difficult to provide an unconfounded test of individual components; second, in a number of studies there is low statistical power to detect possible effects; finally, it could be that there is no one “silver bullet” or optimal approach.

However, although the findings of the Cochrane Review on workplace interventions (Moher et al. 2005) and the earlier meta-analysis (Fisher et al. 1990) (rating 1+) failed to find significant differences in effect size based on intervention type, both reviews found that interventions of greater intensity were more effective than those of less intensity. According to the meta-analysis (Fisher et al. 1990), more intensive interventions produce an increased effect size of .42 (\pm .13 for 2 to 6 hours; QR = 18%). Nevertheless, as Waranch and co-workers (Waranch et al. 1993) found, more intensive interventions may *not* be the most attractive option for employees. Therefore, it seems that offering a range of intervention types in the workplace is important.

No. 2

Strength and applicability of evidence

A 1++ systematic review and a 1+ meta-analysis of the available international literature indicates that the most effective smoking cessation interventions in workplace settings are those interventions that have proven effectiveness more broadly. There is strong evidence that group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation. However, both reviews failed to identify effects due to particular intervention type. There is also evidence that minimal interventions including brief advice from a health professional are effective. Self help manuals appear to be less effective, although there is limited evidence that interventions tailored to the individual have some effect.

4.2 What are the most effective and appropriate interventions for different sectors of the workforce such as men and women, younger and older workers, minority ethnic groups and temporary/casual workers?

Unfortunately, the body of literature on which interventions are most effective and appropriate for different sectors of the workforce is not large, which reflects a broader gap in our knowledge about the effectiveness of either individual or societal level smoking cessation interventions among particular sub-populations (Lawrence et al. 2003). However, there are a few available studies that examine the differential effectiveness of smoking cessation interventions for particular sectors of the workforce as well as several important studies that have attempted to tailor interventions to these sectors.

4.2.1 Effective interventions for men and women

Gritz and co-workers (Gritz et al. 1998) (rating 1+) present gender-specific data from the results of the Working Well Trial (WWT), a large worksite cancer prevention study aimed primarily at blue-collar worksites that included a smoking cessation component. Worksites assigned to the intervention condition received a comprehensive health promotion intervention including strategies to encourage smoking cessation. Control sites received minimal interventions consisting of the distribution of widely available materials such as posters and brochures. The researchers found substantial differences in outcome based on education, although gender was not significantly related to cessation outcomes. For both men and women, those with more than a high school education quit at a higher rate than those with a high school education or less on both short-term and long-term measures of cessation. However, although there were no significant differences in female and male long-term (6 months) or short-term (7 days) self-reported quit rates on the final survey, there were important gender differences in male and female quit attempts and smoking behaviours. For example, women engaged in significantly fewer processes of change than men and were significantly more likely to be in the pre-contemplation stage of change, indicating that they were less ready to quit.

One particularly significant finding of the study was that more women in the intervention condition achieved long-term cessation (15%) than women in the control condition (10.6%). In other words, women were 1.5 times more likely to quit if there were cessation opportunities available to them than if there were not. Importantly, this difference was not apparent for men – who were equally likely to quit whether assigned to the intervention or control condition. The researchers speculate that the worksite setting may have provided enough additional opportunities and encouragement for women to make a quit attempt – extra stimuli that were not necessary for men. The authors conclude, “This study supports the need for worksite smoking intervention programmes for assisting female smokers to stop smoking”.

Similar gender differences were apparent in smoking behaviour in another study exploring the effectiveness of a worksite smoking cessation programme (Stockton et al. 2000) (rating 2++). The researchers found no gender differences in short and long-term quit rates following the completion of a multi-component smoking cessation programme which included workers from 63 different US companies. However, some important gender differences were found in male and female smoking behaviours at baseline. Although men and women were equally likely to quit smoking, logistic regression analyses indicated that men reported being heavier smokers than women at pre-test, at the 6 month assessment and at the 24 month assessment. Women were found to be more likely to have previously tried to quit smoking and men were more likely to report that they would quit smoking on their own if the programme were not offered at their company. Men also reported significantly more confidence in their ability to quit with the programme than women and rated quitting as requiring less effort than women. The authors conclude that although

gender did not predict outcome, males and females appear to differ in the psychological variables that comprise their approach to smoking cessation, which could have important implications for targeting and implementing smoking cessation support.

Another study (Campbell et al. 2000) (rating 1+) discusses a tailored and targeted worksite health promotion programme specifically for blue-collar women. The Health Works for Women (HWW) project was a 5-year worksite health promotion project focusing on rural, blue-collar women working in North Carolina manufacturing plants that did not have health promotion programmes. The programme focused on multiple health behaviours including physical inactivity, unhealthy diet, smoking and breast and cervical cancer screening. Women were asked to select among several options for health behaviour change; only one-third of current smokers wanted to focus on quitting, with the majority choosing a different behavioural priority.

According to Campbell and co-workers (Campbell et al. 2002) at the 18-month follow-up period, the intervention group had significantly increased a number of health promoting behaviours (such as fruit and vegetable consumption and exercise) and reduced their red meat and fat intake, although the rates of smoking cessation and cancer screening did not differ between study groups. However, the authors speculate that experiencing success in changing one 'gateway' behaviour, such as lowering fat intake or increasing exercise levels, may provide increased motivation and confidence to attempt other more difficult changes such as quitting smoking.

These findings provide support for a choice-based approach to behaviour change, rather than trying to affect multiple behaviours simultaneously, or offering only single-component interventions (such as smoking cessation alone). The authors point out that most previous tailored interventions have focused on single risk behaviours such as smoking cessation; however, as the majority of smokers in the study were not currently ready to quit smoking, a single-component intervention would have enrolled a far smaller number of participants. While a multi-behavioural approach to change that allows women to prioritize behaviour changes does entail the likelihood that women may not choose to work on the behaviour that may be most beneficial to their health (e.g. quitting smoking), the authors argue that "...allowing women to choose a behaviour (rather than having one chosen by an expert) may result in a greater sense of control and empowerment, which may ultimately lead to more behaviour change" (p. 312-313).

No. 3

Strength and applicability of evidence

A 1+ study and a 2++ study indicate that men and women are equally successful in achieving abstinence in workplace smoking cessation programmes; however, important gender differences are apparent in smoking attitudes and behaviours. Women have less confidence in their ability to quit, are less ready to quit than men and may require extra stimuli in order to quit smoking. In light of these factors, a 2+ study indicates that a multi-behavioural approach to behaviour change may be more effective for female smokers than a single-component intervention as it allows women to prioritize behaviour changes and may result in a greater sense of control and empowerment which increases women's confidence in tackling more challenging issues such as smoking cessation.

Although these findings are based on American studies, they are likely to be broadly applicable to a UK setting.

4.2.2 Effective interventions for younger and older workers

No studies were identified in the literature search that specifically addressed effective workplace interventions for younger and older smokers. However, one study of the long-term effectiveness (5 year follow-up) of a smoking cessation incentive programme for employees in a US chemical factory (Olsen et al. 1991) (rating 2++) found that age was an important predictor of smoking cessation – although those who quit successfully were also more likely to have been managers and lighter smokers. This finding supports monitoring data from NHS stop smoking services which indicates that younger smokers are less likely to successfully quit smoking than older smokers (Baker et al. 2006). Therefore, it is likely that younger employees who smoke will require more intensive support for smoking cessation than older smokers in the workforce.

Another study also highlights the importance of age in workplace interventions. A recent Danish longitudinal study of a cohort of employed smokers (Albertsen et al. 2004) (rating 2+) found that the while the probability of cessation was reduced by environmental factors such as noise and physical load and increased when the employee's work was associated with responsibility and high psychological demands, younger employees benefited more from higher demands than older employees with regards to smoking cessation. More specifically, results revealed that high demand was positively associated with cessation among employees under 30, while negatively associated with employees over 50. These findings may have important implications on the design and delivery of cessation programmes. For example, specifically tailoring interventions according to age and stress levels may prove to be beneficial in assisting employees to quit smoking.

The positive impact of workplace demands on efforts to quit smoking is also supported in another study (Chan and Heaney 1997) (rating 2+). However, findings did not reveal that age was an important variable when examining job stress and intention to participate in a worksite smoking cessation programme. Chan and Heaney found that perceived job stress was significantly and positively associated with employees' intentions to participate in a smoking cessation programme (OR = 1.61, 95% CI = 1.10-2.30) regardless of demographic variables such as age.

No. 4

Strength and applicability of evidence

Although no studies were identified in the literature search that specifically addressed effective workplace interventions for younger and older smokers, evidence from a 2++ study indicates that older smokers are more likely to achieve successful abstinence in workplace interventions than younger smokers (although these employees were also more likely to be managers and light smokers). Furthermore, two 2+ studies examined the impact of age and job stress on cessation. Results from one study revealed that younger employees benefited more from higher demands than older employees with regards to smoking cessation. However, these findings were not supported in the other 2+ study. Therefore, although further research is needed in this area it may be possible that younger employees who smoke require more intensive support for smoking cessation than older smokers and that specifically tailoring interventions based on age may be beneficial.

Although these findings are based on American studies, they are likely to be broadly applicable to a UK setting.

4.2.3 Effective interventions for working class, multiethnic populations

Daza and co-workers (Daza et al. 2006) (rating 2+) discussed the racial and ethnic differences in predictors of smoking cessation amongst the study participants³ in the Working Well Trial (WWT). The researchers found that African Americans and Hispanics smoked fewer cigarettes per day than did Whites, Hispanics waited longer before having their first cigarette, and African Americans reported more confidence in relation to quitting smoking than did whites. African Americans also used more behavioural processes of change and reported more cons of smoking. However, ethnicity was not predictive of abstinence at follow up, although education was. Participants with less than a high school education and those with a high school degree or some college were less likely to be abstinent than participants with a college or postgraduate degree (OR = .08, p ,.01 and OR=.46, p , .02, respectively). Gender, age and marital status were not predictive of abstinence.

The authors argue that the racial/ethnic differences that were found on the significant predictors of abstinence may have implications for tailoring treatment to the needs of specific groups. Thus, interventions with a greater focus on alleviating withdrawal symptoms, enhancing motivation, and teaching coping skills to increase self-efficacy might be more helpful for whites. However, although Hispanics and African Americans displayed more favourable profiles in relation to cessation than whites, they were not significantly more likely to successfully quit smoking. The authors suggest that this discrepancy may be explained by the fact that Hispanics and African Americans typically have a lower socioeconomic status than whites, which may counterbalance their more favourable profiles – although the lack of racial/ethnic differences persisted even after controlling for education and occupational status. The authors argue that other factors that may reduce the abstinence rates among minority groups are negative affect and stress – as there is evidence that minority populations have higher levels of stress and fewer resources to cope with this stress. Thus, incorporating a stress reduction component into interventions aimed at minority populations may be beneficial (Daza et al. 2006).

Hunt and co-workers (Hunt et al. 2003) (rating 1+) also conducted a health promotion intervention targeting cancer prevention with a working class, multiethnic population. This intervention integrated health promotion and occupational health activities. For example, the researchers used a carbon monoxide analyser not only to address smoking, but also the possible synergistic effects of smoking with exposure to hazardous substances. The intervention included joint worker-management participation and Employee Advisory Boards (EAB) were created that served as channels for worker-manager input into intervention activities. EAB included representation from workers, management and various departments and met for approximately 1 hour each month.

Group delivery of the intervention activities meant that they were not ethnically tailored but the researchers used intervention approaches that would be inclusive of workers from diverse backgrounds (e.g. they avoided making assumptions about activities and foods familiar to participants, or using culturally specific phrases like 'lunch' or 'dinner'). First, they planned strategies such as self-assessments with feedback and used open-ended questions that enabled workers to from varying cultural backgrounds to draw on their own life experiences in intervention activities. Second, they developed materials in the language primarily represented in the study worksites (Spanish, Portuguese, Vietnamese and English) and assigned bilingual field staff to appropriate worksites. Third, intervention staff were trained in and sensitised towards cultural difference.

³ 78% of participants were male. The researchers found that gender, age and marital status were not predictive of abstinence and there were no significant interactions between these variables.

Although the researchers (Emmons et al. 2005) do not report on the intervention's effect on secondary outcomes (smoking and occupational exposures), the intervention did lead to significant behaviour change among the treatment group in relation to primary outcomes (fruit and vegetable consumption, multivitamin intake and red meat consumption). The intervention effect was not changed when gender, education, race/ethnicity were included in the analysis; thus, it was effective for all minority groups (Emmons et al. 2005).

Although the studies outlined are from the USA, which has a very different minority ethnic composition to the United Kingdom, it is likely that the interventions contain elements relevant to a UK setting. For example, in the UK, working class white males also tend to be heavier smokers than minority ethnic males; thus, interventions that focus on alleviating withdrawal symptoms, enhancing motivation, and teaching coping skills to increase self-efficacy would also be relevant for this population. Using intervention approaches that would be inclusive of workers from diverse backgrounds and developing materials in the appropriate languages seem equally important for a UK setting. Finally, combining health promotion with occupational health and other health promotion activities may also help to improve the relevance of smoking cessation interventions for working class multiethnic populations, who may be more concerned with other health issues (both on a personal level and in relation to occupational health) than smoking cessation – which in some UK minority ethnic groups (e.g. Bangladeshi men) is socially acceptable and associated with social bonding, tradition, and normative masculinity itself (Bush et al. 2003).

No. 5

Strength and applicability of evidence

A 2+ study found racial and ethnic differences in predictors of smoking cessation amongst participants in a workplace intervention. White males tended to be heavier smokers than minority ethnic males and the authors suggest that interventions focusing on alleviating withdrawal symptoms, enhancing motivation, and teaching coping skills to increase self-efficacy would also be relevant for this sub-population. The study also found that minority ethnic males did not achieve higher cessation rates, despite smoking profiles that were more conducive to cessation; the authors conclude that incorporating a stress reduction component into interventions aimed at minority populations may be beneficial. Another 2+ study found that inclusive intervention approaches, developing materials in the appropriate languages, and combining health promotion with occupational health and other health promotion activities helped to improve the success of an intervention tailored to working class multiethnic populations.

Although these studies are from the USA, which has a different ethnic composition to the UK, the findings of these studies seem broadly applicable to a UK setting.

4.2.4 Effective interventions for temporary/casual workers

No studies were identified in the literature search that specifically addressed effective workplace interventions for temporary or casual workers. As delivering workplace interventions to this population pose a significant challenge, research is urgently needed in this area.

No. 6

Strength and applicability of evidence

No studies were identified in the literature search that specifically address effective workplace interventions for temporary or casual workers. As delivering workplace interventions to this population pose a significant challenge, research is urgently needed in this area.

4.3 What are the most effective ways of encouraging employee compliance with a smoke-free policy?

The literature search produced no studies which explore the most effective ways of encouraging employee compliance with a smoke-free policy. However, based on available evidence from countries which have gone smoke-free, employee non-compliance with smoke-free policies is unlikely to be a significant issue. For example, monitoring data from the Republic of Ireland indicates that there have been consistently high levels of compliance with smoke-free workplace legislation (Office of Tobacco Control - Ireland 2005) (rating 3+). On average, 94% of hotels, restaurants, licensed premises and other worksites (such as offices and factories) have been compliant with the legislation, based on the 34,957 inspections and compliance checks conducted over the nine month period from the introduction of the law on March 29 to the end of 2004. Similarly, in Scotland compliance rates with the smoke-free legislation as of 30 June 2006 were 98% on average for hotels, restaurants, licensed premises and other worksites (Scottish Executive 2006) (rating 3+). Recent monitoring data from Italy (Pisano 2006) (rating 3+) and New Zealand (Ministry of Health 2005) (rating 3+) also indicates that there have been high levels of compliance with smoke-free legislation, although full compliance data are not presently available for these countries.

Although there are no available studies that systematically examine the most effective ways of encouraging employee compliance with smoke-free policies, a recent study (Borland et al. 2006) (rating 2+) does shed light on this issue. The study explores support for and compliance with smoke-free legislation by smokers in four countries: Australia, USA, Canada, and the United Kingdom. The researchers found that support for the bans was higher among smokers who reported thinking about the harms of passive smoking more frequently, and among those who endorsed the belief that second-hand smoke can cause lung cancer in non-smokers; they also found that support for bans was related to reported compliance with them. The researchers conclude that support for (and compliance with) smoke-free legislation can be strengthened among smokers by informing the public about the adverse health effects of passive smoking and by encouraging them to continue thinking about this issue. Thus, an informed workforce will be more receptive to smoke-free policy since employees will understand their personal connection to creating a healthy environment.

No. 7*Strength and applicability of evidence*

Monitoring data (3+) from countries that have gone smoke-free indicates that employee non-compliance with smoke-free policies is unlikely to be a significant issue. Evidence from Ireland, Scotland and New Zealand reveal extremely high levels of compliance (between 94-98%) with smoke-free workplace legislation. However, one 2+ study found that support for smoking bans in Australia, USA, Canada, and the United Kingdom was higher among smokers who reported thinking about the harms of passive smoking more frequently, and among those who endorsed the belief that second-hand smoke can cause lung cancer in non-smokers.

Despite the benefits of using education as a means of encouraging employee compliance, people affected by the policy or approach should be aware that it is underpinned by enforcement measures (Griffiths 2005). Various sources (Worldbank 2002; Griffiths 2005; Quit 2001a; Quit 2001b) (rating 4+) all support developing a non-compliance strategy. It is suggested that outlining a simple step-by-step process telling employees what to do if they encounter someone smoking in a smoke-free area may assist with compliance (Quit 2001b). Specific tips outlined by *Smoke-free Scotland* (rating 4+) include:

- 1) Make managers, or those who are responsible for enforcing the policy, aware of the implications of the policy and their role in implementing it.
- 2) Train managers and staff on the specifics of enforcement: how to raise the issue with a member of staff suspected of breaching the policy; collecting evidence; making a record of the discussions with the individuals concerned, etc.
- 3) Remind managers and staff of the terms of the smoke-free legislation and that it is a criminal offence to fail to comply.
- 4) Establish clear links between the tobacco policy and other HR policies such as the Disciplinary Policy and the Health and Safety Policy.
- 5) Make all staff aware of their responsibilities and of the consequences of being in breach of the policy.
- 6) Notify staff that action will be taken if anyone is found to be smoking in breach of the policy.

It is felt that effectively implementing and enforcing a workplace smoke-free policy will limit the incidence of non-compliance, create a supportive environment for all staff, and achieve better working conditions (Quit 2001b).

No. 8*Strength and applicability of evidence*

Various 4+ sources have indicated that creating and enforcing a smoking compliance strategy is an effective way to increase compliance. Specific tips for enforcing smoke free policy include providing training on how to enforce the policy, establishing links between the policy and HR policies, increasing awareness of the consequences of breaching policy, providing reminders that it is a criminal offence not to comply with policy and notifying staff that action will be taken if someone is in breach of the policy.

4.4 How can employers support and encourage smokers to quit?

There are several ways that employers can support and encourage smokers to quit: 1) offering a variety of smoking cessation support options and 2) providing incentives to attend smoking cessation programmes.

4.4.1 Offering smoking cessation support

The key way that employers can support and encourage smokers to quit is through the offer of smoking cessation support (Moher et al. 2005) (rating 1++), whether this takes the form of an on-site programme, release time to attend off-site services (such as local NHS stop smoking services), or providing access to self-help materials or pharmacotherapies (e.g. NRT or bupropion). Indeed, smoking cessation support becomes particularly important in the context of smoke-free legislation and workplace smoking bans should be accompanied by provision of help and support for smokers (Moher et al. 2005). Based on the findings of their study on the effectiveness of smoking cessation interventions in the context of a smoking ban (see section 4.1) Waranch and co-workers (Waranch et al. 1993) (rating 2+) conclude that different types of smokers appear to choose different strategies for cessation and they suggest that making a variety of smoking cessation strategies available to employees may meet the needs of more employees and also increase participation in workplace programmes.

No. 9

Strength and applicability of evidence

According to a 1++ systematic review, a key way that employers can encourage smokers to quit is through the offer of smoking cessation support. Such support is particularly important in the context of workplace smoking bans. A 2+ study concludes that because different types of smokers appear to choose different strategies for cessation, making a variety of smoking cessation strategies available to employees may meet the needs of more employees and increase participation in workplace programmes.

These findings are broadly applicable to a UK setting.

4.4.2 Incentives

One key way that employers can support and encourage smokers to quit is through the offer of incentives. The Cochrane Review *Workplace interventions for smoking cessation* (Moher et al. 2005) (rating 1++) and the Cochrane Review *Competitions and incentives for smoking cessation* (Hey and Perera 2005) (rating 1++) both discuss the types of incentives employers have provided to encourage employees to comply with workplace smoking bans and take up provision of support for smoking cessation. The incentives offered in the studies were largely financial in nature and included the following:

- 1) Cash payments rewarding verified abstinence: for example, in one study smokers were paid US\$10 each time they were confirmed abstinent by CO validation at monthly meetings over the course of the year-long programme; in another study, smokers were paid US\$1 per day for every day of verified abstinence up to six months, provided the quitter had not relapsed between readings).
- 2) Smokers were paid for signing up to a programme, for completing it and for a set period of continuing abstinence following completion.
- 3) Cash payments were provided to programme registrants to entitle them to complete for cash rewards.
- 4) Lottery tickets and prize draws (such as expense-paid holidays) for successful abstainers (these were often combined with smaller cash payments for ongoing verified abstinence)

Both Cochrane Reviews found evidence that incentives increase recruitment rates into worksite interventions, thereby leading to potentially higher absolute numbers of quitters in the long-term. However, there is limited evidence that incentives increase the effectiveness of workplace interventions. Moher and co-workers (Moher et al. 2005) report the findings of five studies which involved comparison sites: three studies failed to detect an effect of monetary incentives on quit rates, one study found that contingent payments delayed but did not necessarily prevent relapse to smoking, and a fifth study found that although programme recruitment was higher in worksites that offered incentives, this did not translate into higher quit rates overall.

No. 10

Strength and applicability of evidence

Two 1++ systematic reviews of international studies indicate that financial incentives can support and encourage smokers to quit. While the addition of incentives does not appear to increase the quit rates of smoking cessation interventions in the workplace, there is evidence that such incentives do improve recruitment rates into worksite cessation programmes, which may lead to higher absolute numbers of successful quitters in the long-term.

4.5 What support can employers offer smokers who are not currently ready to quit?

The key evidence on how employers can support smokers who are not currently ready to quit comes from studies that have been conducted with smokers who choose not to take part in workplace smoking cessation programmes. Several studies identified in the literature search focus on smokers who are not currently ready to quit and provide valuable information about the characteristics of these smokers and how their smoking attitudes and behaviours are impacted by workplace smoking cessation programmes and the worksite environment more broadly.

Abrams & Biener (Abrams and Biener 1992) (quality rating 2+) discuss the motivational characteristics of white- and blue-collar smokers who did not volunteer for cessation at a worksite programme. Using the transtheoretical⁴ model, the researchers found that less than 8% of smokers surveyed were currently ready to quit smoking – and blue-collar smokers were less motivated than white-collar smokers to quit. Thus, 1% of white-collar workers and 14.7% of blue-collar workers surveyed had no thought of quitting, 17.7% of white-collar workers and 18.2% of blue-collar workers indicated that they needed to consider quitting someday, 39.6% of white-collar workers and 36.7% of blue-collar workers indicated that they are not quite ready to quit. However, while only 7.1% of white-collar workers and 8% of blue-collar workers were currently taking action to quit, 29.6% of white-collar workers and 22.4% of workers were currently thinking about how to change their smoking patterns.

Given these results, the authors point out that accelerating cessation on a population-wide basis is going to be a significant challenge – especially for blue-collar workers. However, the researchers do provide a useful discussion on how to address this challenge. First, they point out that many available intervention materials are designed to focus on quitting skills, and are underwritten by an assumption that the smoker is highly motivated and therefore ready to take action. Therefore, even if interventions are specifically targeted to lower income workers, they tend to utilise materials that are unlikely to be relevant to the majority of individuals who are not ready to quit. The researchers argue that proactive interventions

⁴ The transtheoretical model delineates at least five distinct stages of motivation: pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska, Velicer & DiClemente 1988).

are required, including access to subsidised pharmacological aids to cessation, monetary incentives for assessment of smoking risk, direct personalized feedback, media/social marketing campaigns, and changes in the social norms and physical environment at the workplace, in public places, and in the home. They conclude,

Interventions must begin to target those individual and environmental factors (i.e. norms and policy) that influence the mediating processes along the path towards cessation. This needs to be done over longer time periods in a sustained effort, in sharp contrast to the current practice of offering 'one-shot' clinics or simply distributing self-help manuals designed for the small minority of smokers who are ready to quit (p. 686).

No. 11

Strength and applicability of evidence

According to a 2+ study, the majority of employed smokers are not ready to quit smoking. Therefore, smoking cessation materials and programmes need to recognise that smokers are at different stages of change rather than tailoring their materials only to those smokers who are highly motivated to quit. The researchers argue that proactive interventions are required, including access to subsidised pharmacological aids to cessation, monetary incentives for assessment of smoking risk, direct personalized feedback, media/social marketing campaigns, and changes in the social norms and physical environment at the workplace, in public places, and in the home.

Although this is an American study, its findings are likely to be broadly applicable to a UK setting.

Clearly, the implementation of smoke-free legislation will have an important role to play in addressing those 'environmental' factors that may influence the mediating processes along the path towards cessation. Indeed, there is evidence (Waranch et al. 1993) (rating 2+) that smoking bans may encourage smokers who are not currently motivated to quit to enrol in workplace smoking cessation programmes in order to reduce their smoking and gain more control over their consumption. Thus, while structural changes in the workplace environment may not necessarily spur all smokers to enrol in cessation programmes with the intention of quitting smoking, they may be stimulated to make positive changes to their smoking behaviour (such as reducing their consumption).

Indeed, some researchers have hypothesised that an 'enriched' environment including anti-smoking health education and a broader health promotion environment (as well as smoking restrictions) may impact people who do not take part in formal cessation activities (i.e. those smokers who are not ready to quit). To test this hypothesis, Willemsen and co-workers (Willemsen et al. 1999) (rating 2+) conducted a case-control study of smokers in an 'enriched' environment and those in organisations with minimal smoking cessation activities who did not engage in formal cessation activities. In the enriched environment an intensive health education campaign occurred. A central feature of this campaign was an exhibition at strategic locations in each intervention worksite. Exhibitions provided up-to-date information about the ongoing cessation programme, as well as education about the health risks of smoking and passive smoking and general information about smoking cessation. Smoking employees were invited to measure the CO content of their expired breath and their lung capacity at the exhibition sites and they could compare their score with those of non-smokers. Company newsletters also contained discussions of passive smoking and the ongoing cessation programme.

At the conclusion of the study, the researchers found that smoking cessation did not differ significantly between the enriched environment and control worksites, although they point

out that the measures used to assess programme exposure were rather crude and may not have been able to detect an effect had one existed. The authors therefore tentatively conclude that a comprehensive smoking cessation programme and enriched environment had little effect on smokers who did not directly take part in cessation activities.

However, although Willemsen and co-workers (Willemsen et al. 1999) found that an 'enriched' environment did not increase cessation amongst smokers who did not take part in the smoking cessation programme, it may nevertheless have positive if less dramatic effects on smokers. Thus, Conrad and co-workers (Conrad et al. 1996) (rating 2-) found that an enriched environment had statistically significant direct and indirect effects⁵ on smokers who did not take part in formal cessation programmes, leading to both a reduction in daily cigarette consumption and the amount smokers inhaled as well as a reduction in the perceived barriers to quitting smoking.

No. 12

Strength and applicability of evidence

Two 2+ studies and a 2- study have explored the impact of an 'enriched' environment (including smoking bans, worksite health promotion activities and smoking cessation programmes) on those smokers who are not ready to quit. Although a 2+ study found that an enriched environment did not increase cessation amongst those smokers who do not engage in formal cessation activities, a 2- study and a 2+ study have both found that an enriched environment increases the motivation of smokers to change their smoking behaviours and may lead to a reduction in cigarette consumption and a reduction in perceived barriers to quitting.

Although these findings are based on American studies, their findings are likely to be broadly applicable to a UK setting.

4.6 How can employers be encouraged to provide smoking cessation support?

In their examination of 351 worksites that participated in the Community Intervention Trial for Smoking Cessation (COMMIT), Sorensen and co-workers (Sorensen et al. 1997) (rating 2++) found that the only worksite characteristic consistently predictive of cessation programme offering was the existence of other health-promotion programmes – worksites offering other health promotion activities were four times as likely to initiate cessation programmes. The findings of this study therefore indicate that employers who are concerned generally with employee health are more likely to recognise the importance of providing smoking cessation support in the workplace.

The importance of individual employer attitudes is even more apparent in Emmons and co-workers' (Emmons et al. 2000) (rating 2++) study of worksites participating in the Working Well Trial. The researchers found that companies in which leaders held attitudes that were favourable toward employee health were much more likely to provide tobacco control activities. The authors conclude,

Leadership characteristics are key to the acceptance and implementation of... smoking control activities. It is important to understand leaders' attitudes and values regarding smoking as part of intervention implementation and to target the leaders directly if necessary. Focusing on the broader issue of the role that employee health plays in company success may be an effective strategy for

⁵ The study does not indicate the size of reduction for these three outcomes, just that a 'statistically significant' reduction occurred.

companies in which leaders themselves are smokers or initially resistant to efforts focused on smoking (p. 499).

Thus, it appears that an important means of encouraging employers to provide smoking cessation support may be to directly target leaders and persuade them of the benefits of investing in employee health. As Docherty and co-workers (Docherty et al. 1999) note, efforts must be made to convince workplaces of the positive impact of health promotion, and workplaces are more likely to divert resources to health promotion activities such as smoking cessation, if the issue is perceived as being of direct relevance to them.

Potential benefits to employers that have been identified to date are:

- 1) enhanced morale and image: “smoke-free workplace policies and other initiatives to help employees give up smoking communicate that the employer cares about the health and safety of its employees and community (PACT 2002).
- 2) Increased productivity and reduced medical costs: smoking cessation initiatives reduce the costs of doing business by controlling the increased absenteeism and medical costs attributed to smokers (PACT 2002).

No. 13

Strength and applicability of evidence

Two 2++ studies indicate that a key factor predicting whether a workplace will offer smoking cessation support is the personal attitude of the employer towards employee health. Thus, the key way of encouraging employers to provide smoking cessation support may be to directly target leaders and persuade them of the benefits of investing in employee health and the role it plays in company success.

4.7 What are the resource needs of large, medium and small enterprises in implementing smoke-free legislation and supporting smokers to quit?

There is a considerable body literature that suggests that workplace size has a direct impact on employers’ desire and ability to implement smoke-free legislation and smoking cessation programmes. One early study (Biener et al. 1994) explored the characteristics of those companies that either accepted or declined to take part in a health promotion intervention. The researchers found that although very few characteristics distinguished reliably between the participants and non-participants, the companies that declined to participate were more financially stable and employed fewer workers. However, the authors emphasised that this was an exploratory study only and its results were largely inconclusive. Indeed, more recent studies have reached very different conclusions. Thus, Sorensen and co-workers (Sorensen et al. 1997) (rating 2++) explore worksite characteristics and changes in worksite tobacco control initiatives in worksites taking part in COMMIT and focused on two variables: adoption of a smoking ban and offering smoking cessation services – which included any “lectures, classes, materials or other programs to help or encourage employees to quit smoking.” The researchers found that small worksites were the least likely to initiate smoking cessation activities and the authors speculate that financial factors are likely to be the key reason for his difference.

Similar findings have been produced in several other studies focusing on workplace size and smoking control activities. Thus, using survey data from 114 worksites that participated in the Working Well Trial, Emmons and co-workers (Emmons et al. 2000) (rating 2++) found that the key predictor of worksite smoking control activities was the size of the worksite, with larger worksites significantly more likely to offer smoking control activities. Companies that

were highly centralised were also more likely to offer smoking cessation assistance for their employees.

In a Canadian study explicitly exploring the relationship between workplace size and the existence of restrictions and cessation programmes, Ashley and co-workers (Ashley et al. 1997) (rating 2-) also found that small organisations were significantly less likely to report the provision of pamphlets or lectures about smoking and health, and the availability of incentive programmes to assist smokers in quitting. The researchers argue that, “Small workplaces may have fewer resources and skills to facilitate compliance with smoke-free legislation or to mount smoking related programmes. Further, they may have workforces and social dynamics that have implications for how such legislation and programming is viewed and implemented” (Ashley et al. 1997). Their findings indicate that programme interventions in small worksites present a distinctive challenge because their characteristics may not lend themselves to formal onsite programmes, and further research is needed in this particular setting (Ashley et al. 1997).

Although the studies discussed so far are North American, a Scottish study confirms the salience of workplace size in determining employers' ability to offer health promotion activities such as smoking cessation support. Docherty and co-workers (Docherty et al. 1999) conducted a postal survey of Scottish worksites to assess the current state of health promotion activity in the workplace, and they found that large workplaces had higher levels of health promotion activity than small or medium workplaces. Large workplaces were more significantly more likely to provide smoking cessation support than small workplaces (31% vs. 7%, respectively). Indeed, large workplaces tended to have a more positive attitude overall towards health promotion than either medium or small workplaces. The researchers also found that occupational health services were more often provided by the public sector (74% vs. 39% respectively). According to the authors, “The public sector showed the most appreciation of the benefits of workplace health promotion compared with the manufacturing and service sectors” (p. 570). The researchers conclude that the barriers to health promotion in the workplace are both motivational *and* resource-related. As smaller businesses lack both resources and time, their less positive attitude to health promotion in the workplace is unsurprising and their impaired ability to offer health promotion activities needs to be taken into account when planning or implementing health promotion resources.

These studies indicate that large, medium and small enterprises have very different resource needs in implementing smoke-free legislation and supporting smokers to quit and that there is an inverse relationship between the size of an organisation and its ability to undertake smoking control activities. Thus, it appears that large enterprises with a centralised structure often have the capacity and resources to implement smoking control activities, and it may therefore be largely a matter of encouraging employers to undertake these activities (see section 4.5). However, the available evidence indicates that small enterprises may have substantial needs in implementing smoking control activities in their worksite, as they may lack the financial resources to fund worksite programmes (both in terms of direct financial outlays and the indirect costs associated with employee leave time to attend the programmes) and facilitate compliance with legislation.

No. 14*Strength of evidence*

Two 2++ American studies and one 2+ Scottish study provide strong evidence that small enterprises are far less likely to offer smoking cessation support than large enterprises. The findings of these studies suggest that small workplaces may have significant financial constraints that impede their ability to offer smoking cessation support and may also have characteristics that do not lend themselves to formal onsite programmes. Thus, unlike large enterprises, small enterprises have substantial needs in implementing smoking control activities in their worksite.

As the conclusions of the US studies are echoed in a Scottish study, these findings are likely to be directly applicable to a UK setting.

4.8 Which interventions are cost effective?

It is clear that implementing workplace cessation programmes can result in many financial benefits for employers (Smedslund et al. 2004). For example, smoking cessation programmes can protect non-smokers from the effects of ETS, increase productivity, reduce absenteeism and loss of smoking staff due to ill health, decrease the direct costs of health care, decrease costs for health disability and life insurance, reduce cleaning costs, and reduce the risk of fires (Moher et al. 2005; Biener et al. 1994). However, workplace interventions do entail certain costs for the employer. Aside from vendor costs, on-site programmes can interfere with production activities and may require significant administrative time to support (Biener et al. 1994). While the long-term benefits of workplace interventions are likely to significantly outweigh their costs, the cost effectiveness of introducing smoking cessation programmes in the workplace is rarely addressed in the literature (Moher et al. 2005).

According to the Cochrane Review on workplace interventions (Moher et al. 2005) (rating 1++) it is difficult to draw conclusions about the cost effectiveness of workplace interventions as the methods of calculating costs differ significantly from one study to the next. Thus, some studies calculate a cost per quitter from among the smokers only, while others use the entire workforce as the denominator. However, these approaches do not take into account the smokers who are affected positively by the programme, but who are not officially enrolled in it (see section 4.5) and are therefore unlikely to provide a real estimate of the cost-effectiveness of workplace interventions. Finally, the majority of cost-effectiveness analyses have been conducted in the USA and therefore have limited applicability to other healthcare systems (Moher et al. 2005).

Nevertheless, bearing in mind the difficulty of determining the cost-effectiveness of workplace interventions based on the existing literature, the available estimates to emphasise the cost-effectiveness of workplace interventions. For example, Warner and co-workers (Warner et al. 1996) (rating 2+) present an economic evaluation of a simulated workplace smoking-cessation programme in the United States. The purpose of the article was to examine the health and economic implications of a workplace smoking-cessation programme by using a simulation model that includes consideration of long-term as well as short term implications and evaluation of effects of employee turnover and benefits derived by both the firm and the broader community. Results revealed that smoking cessation was a sound economic investment for the simulated firm. More specifically, the worksite smoking cessation programme generated economic benefits that exceeded the programme costs. This is especially true when long term benefits were included, with an eventual benefit-cost ration of 8.75 (after 50 years). Also, by year 5 the simulated programme

accumulated benefits up to \$1.03 million, including a small benefit in reduced medical payments to retirees. Cumulative programme costs equal \$595,870. As a result, the programme generated net benefits of nearly \$440,000. On a final note, Warner and co-workers highlight that the most dramatic economic gains from the smoking cessation programme would not be realised until many years into the future. As a result, workplace smoking cessation programmes appear economically beneficial in both the short term and long term.

No. 15

Strength and applicability of evidence

A 1++ systematic review indicates that further research needs to be conducted before the cost effectiveness of workplace interventions can be determined. However, according to a 2+ American study, which examined the health and economic implications of a workplace smoking-cessation programme using a simulation model, worksite smoking cessation programmes appear to be a sound economic investment. Long term benefits revealed an eventual benefit-cost ratio of 8.75 (after 50 years).

The findings of this study are not directly applicable to a UK setting.

4.9 What are the adverse or unintended outcomes in the workplace of smoke-free legislation?

Although the available evidence indicates that smoke-free legislation is likely to positively transform the smoking norms in the workplace, several adverse and unintended outcomes may accompany the introduction of smoking bans in the workplace.

Effects on the relationship between smokers and non-smokers

A potential side effect of smoking bans is that they may lead to an increase in tension between smokers and non-smokers in the workplace. An Australian study (Clarke et al. 1997) (rating 2-) explores the extent to which antagonism may build up between exiled smokers⁶ and non-smokers, as smokers may be perceived to be afforded special privileges such as taking longer and more frequent breaks than those available to non-smokers, and the extent to which such breaks are seen to add to the work load of non-smoking colleagues (such as having to answer phones in the absence of the smokers on a break).

The researchers found that most non-smokers perceived smokers to be obtaining some advantages from exiled smoking. For example, they thought smokers took either a lot more time (32%) or a little more time (46%) away from work than non-smokers. However, although non-smokers (regardless of gender, occupation or education) saw smokers as getting something extra, it was not generally seen as something highly desirable and they did not feel strongly deprived; thus, exiled smoking was not a significant source of tension between smokers and non-smokers.

Workplace smoking bans may also increase the visibility of smokers as they move outdoors into highly visible public places to smoke (Greaves and Jategaonkar 2006) (rating 4+). This increased visibility may increase the stigma associated with smoking (Greaves and Jategaonkar 2006), particularly for certain populations: for example, low SES pregnant

⁶ 'Exiled smokers' refers to smokers frequently leaving their workstations to smoke because of workplace smoking policies and congregating outside their work buildings, on rooftops, in alleys or car parks.

women and ethnic minorities such as Bangladeshi males (both of whom have particularly high rates of smoking). The resultant divide between smokers and non-smokers may contribute to discriminatory practices and social stereotyping (Greaves and Jategaonkar 2006).

No. 16

Strength and applicability of evidence

Overall, one 2- Australian study found that a workplace smoking ban was not a significant source of tensions between smokers and non-smokers, despite the minor advantages that were seen to be associated with exiled smoking. According to a 4+ report, the increased visibility of smoking that often accompanies the introduction of workplace smoking bans may lead to the stigmatisation of smokers and contribute to discriminatory practices and social stereotyping.

It is unclear how readily these findings translate to a UK setting.

Increases in Exposure to Smoke and Drifting Smoking Issues

There is some evidence that although smoking bans significantly reduce the amount of smoking at work, and overall ETS exposure, they may actually increase the perception of exposure to ETS by some non-smokers at work due to the changes in smoking patterns that occur. In a study of a university smoking ban in Scotland (Parry et al. 2000) (rating 2+), the researchers found that the removal of designated areas had a significant effect on smoking patterns at work. While the ban led to a 43% reduction in smoking at work, it increased the level of smoking at entrances and exits of university buildings – so much so that non-smokers who took part in the survey described entering buildings as ‘running the smoking gauntlet’. Non-smokers objected to the smoke pollution that they now had to breathe when entering or leaving buildings; ironically, the ban was perceived to lead to an increase in passive smoking because of the greater interaction with intense smoking activity outside buildings. People in offices with windows directly above the entrances and exits where smokers congregated also complained about the increased smoke drifting into their offices.

Although the Scottish study took place before the implementation of national smoke-free legislation, a recent study evaluating second-hand smoke exposure following the Irish smoking ban (Mulcahy et al. 2005) (rating 2+) indicates that similar side effects may be associated with large scale legislation. According to the Irish study, despite the significant reduction in ETS in hotels and bars witnessed following the implementation of the national legislation, exposure to ETS amongst hotel staff has still not been totally eliminated. This appears to be related to the concentration of smokers outside of entrances and near windows which allows tobacco smoke to migrate into indoor areas.

No. 17

Strength and applicability of evidence

Overall, one 2+ Scottish study and a 2+ study from the Republic of Ireland indicate that smoke-free legislation may encourage smokers to congregate around building entrances and exits, thereby increasing the exposure of non-smokers to second-hand smoke through more intensive contact with the smoke as they enter buildings and drifting smoke issues.

These findings are directly applicable to a UK setting.

Unsafe Smoking

Another adverse outcome that may be associated with workplace smoking bans is the potential for unsafe smoking, which may take two forms: dangerous smoking practices and smoking in unsafe environments. In an English study of nurse attitudes to smoking bans in an NHS trust (Anderson et al. 1999) (rating 2-), interviewees reported anecdotal evidence of dangerous smoking practices, such as 'little old ladies' stubbing out cigarettes in bins that contained paper towels. Similar concerns were also reported in a study at another English hospital (Strobl and Latter 1998) (rating 2-) following the introduction of a smoking ban. The vast majority of responses to open-ended questions expressed concern about non-compliance with the policy, poor enforcement, as well as safety issues due to smoking taking place secretly in inappropriate locations, particularly with respect to patients. Similarly, following the university smoking ban in Scotland (Parry et al. 2000) (rating 2+) the increase in smoking debris associated with 'doorstop smoking' led to two incidents of smoking related fire.

The safety of smokers also needs to be considered in relation to smoking bans. The nurses in one of the English hospital studies (Anderson et al. 1999) (rating 2-) UK study report that the hospital smoking ban on smoking had potentially detrimental effects on patients who wished to smoke while still abiding by the policy – which necessitated patients venturing out of the hospital to smoke, even in poor weather conditions.

No. 18*Strength and applicability of evidence*

Two 2- English studies and one 2+ Scottish study report that workplace smoking bans may lead to an increase in dangerous smoking practices (such as smoking in inappropriate locations and the build-up of smoking related debris). One of the English studies also raises the potentially negative effects of bans on smokers who must venture outside to smoke, even in poor weather conditions.

These findings are directly applicable to a UK setting.

Another unintended consequence of smoke-free legislation is the increase in smoking-related debris and the costs to local authorities in cleaning up/providing disposal for cigarette butts in outdoor public places. At the Scottish university where the smoking ban was implemented (Parry et al. 2000) (rating 2+) 'doorstop smoking' was blamed for the increase in smoking debris (particularly cigarette butts) which littered the ground outside of entrances and exits to buildings. Indeed, an increase in smoking-related litter seems to be an inevitable side effect of smoke-free legislation – newspapers in Scotland have already indicated that litter has increased substantially since the implementation of the ban (MacDonald 2006; Vallely 2006) and the majority of the littering fines that have been handed out since the onset of the ban have been to smokers throwing away cigarette butts.

No. 19*Strength and applicability of evidence*

According to one 2++ study and 3+ reports from Scotland, smoke-free legislation leads to an increase in smoking-related litter which creates costs for local authorities in cleaning up/providing disposal for cigarette butts in outdoor public places.

These findings are directly applicable to a UK setting.

5. Overview and Discussion

Workplaces can offer services with proven effectiveness to smokers who are seeking to quit (Moher et al. 2005). Although there are no available studies exploring which workplace interventions are most effective in the context of smoke-free legislation, one 2+ study of a variety workplace intervention types offered in the context of a localised smoking ban found that more intensive interventions (e.g. group treatment and one-hour clinics) produced higher success rates than less intensive interventions (e.g. brief individual counselling and self-help manuals). Although it is unclear how readily these findings translate to workplaces in jurisdictions where comprehensive smoke-free legislation has been introduced, they do echo the broader evidence base on which workplace interventions are most effective.

According to a 1++ systematic review and a 1+ meta-analysis, interventions that are most effective in the workplace are those with proven effectiveness in other settings. Thus, there is strong evidence that group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation. Self-help interventions appear less useful although there is limited evidence that interventions tailored to the individual have some effect.

Unfortunately, the body of literature on which interventions are most effective and appropriate for different sectors of the workforce is not large; however, there are a few available studies that examine the differential effectiveness of smoking cessation interventions for particular sectors of the workforce, as well as several important studies that have attempted to tailor interventions to these sectors.

A 1+ study and a 2++ study indicate that men and women are equally successful in achieving abstinence in workplace smoking cessation programmes, although important gender differences are apparent in smoking attitudes and behaviours. Women have less confidence in their ability to quit, are less ready to quit than men and may require extra stimuli in order to quit smoking. In light of these factors, a 2+ study indicates that a multi-behavioural approach to behaviour change may be more effective for female smokers than a single-component intervention as it allows women to prioritise behaviour changes and may result in a greater sense of control and empowerment which increases women's confidence in tackling more challenging issues such as smoking cessation.

The literature search did not produce any studies that specifically address effective workplace interventions for younger and older smokers; however, evidence from a 2++ study indicates that older smokers are more likely to achieve successful abstinence in workplace interventions than younger smokers (although these employees were also more likely to be managers and light smokers. Two 2+ studies also examined the impact of age and job stress on cessation. Results from one study revealed that younger employees benefited more from higher demands than older employees with regards to smoking cessation. However, these findings were not supported in the other 2+ study. Therefore, although further research is needed in this area it may be possible that younger employees who smoke require more intensive support for smoking cessation than older smokers and that specifically tailoring interventions based on age may be beneficial.

Although the literature search did not produce any studies on worksite interventions for minority ethnic groups in the UK, several US studies have produced findings which appear to be broadly relevant to a UK setting. As working white males in the UK also tend to be heavier smokers than minority ethnic males, interventions that focus on alleviating withdrawal symptoms, enhancing motivation, and teaching coping skills to increase self-efficacy would also be relevant for this population. Using intervention approaches that would be inclusive of workers from diverse backgrounds and developing materials in the appropriate languages seem equally important for a UK setting. Finally, combining health

promotion with occupational health and other health promotion activities may also help to improve the relevance of smoking cessation interventions for working class multiethnic populations, who may be more concerned with other health issues than smoking cessation.

Unfortunately no studies were identified in the literature search that specifically addressed effective workplace interventions for temporary or casual workers and there appears to be a dearth of research in this area. Given the unique challenges that exist in delivering workplace interventions to this population, further studies are urgently needed in this area.

3+ monitoring data from countries (Ireland, Scotland, Italy and New Zealand) that have gone smoke-free indicates that employee non-compliance with smoke-free policies is unlikely to be a significant issue. However, one 2+ study found that support for smoking bans in Australia, USA, Canada, and the United Kingdom was higher among smokers who reported thinking about the harms of passive smoking more frequently, and among those who endorsed the belief that second-hand smoke can cause lung cancer in non-smokers. Thus, educating smokers about the health effects of ETS seems to be the most effective way of encouraging employee compliance with smoke-free policies. Nevertheless, various 3+ sources have indicated that creating and enforcing a smoking compliance strategy is also an effective way to increase compliance. Specific tips for enforcing smoke free policy include providing training on how to enforce the policy, establishing links between the policy and HR policies, increasing awareness of the consequences of breaching policy, providing reminders that it is a criminal offence not to comply with policy and notifying staff that action will be taken if someone is in breach of the policy.

Anecdotal reports indicate that a key way that employers can support and encourage smokers to quit is through the offer of smoking cessation support, whether this takes the form of an on-site programme, release time to attend off-site services (such as local NHS stop smoking services), or providing access to self-help materials or pharmacotherapies (e.g. NRT or bupropion). This support becomes particularly important in the context of smoke-free legislation. Employers can also provide incentives to support smokers to quit. Two 1++ systematic reviews have found that although the addition of incentives does not appear to increase the quit rates of smoking cessation interventions in the workplace, there is evidence that such incentives do improve recruitment rates into worksite cessation programmes, which may lead to higher absolute numbers of successful quitters in the long-term.

However, according to a 2+ study, the majority of employed smokers are not ready to quit smoking. Therefore, smoking cessation materials and programmes need to recognise that smokers are at different stages of change rather than tailoring materials only to those smokers who are highly motivated to quit. The researchers argue that proactive interventions are required, including access to subsidised pharmacological aids to cessation, monetary incentives for assessment of smoking risk, direct personalised feedback, media/social marketing campaigns, and changes in the social norms and physical environment at the workplace.

Several studies have conducted further research into the impact of an 'enriched' workplace environment (including smoking bans, worksite health promotion activities and smoking cessation programmes) on those smokers who are unready to quit. Although a 2+ study found that an enriched environment did not increase cessation amongst those smokers who do not engage in formal cessation activities, a 2- study and a 2+ study have both found that an enriched environment increases the motivation of smokers to change their smoking behaviours and may lead to a reduction in cigarette consumption and a reduction in perceived barriers to quitting.

Although there are many ways that employers can support smokers in the workplace, not all employers and enterprises are interested in providing smoking cessation. Two 2++ studies indicate that a key factor predicting whether a workplace will offer smoking cessation support is the personal attitude of the employer towards employee health. Thus, the key way of encouraging employers to provide smoking cessation support may be to directly target leaders and persuade them of the benefits of investing in employee health and the role it plays in company success.

However, two 2++ American studies and one 2+ Scottish study provide strong evidence that small enterprises are far less likely to offer smoking cessation support than large enterprises. The findings of these studies suggest that small workplaces may have significant financial constraints that impede their ability to offer smoking cessation support and may also have characteristics that do not lend themselves to formal onsite programmes. Thus, unlike large enterprises, small enterprises have substantial needs in implementing smoking control activities in their worksite.

Nevertheless, there are clearly many advantages for employers in offering smoking cessation support. Although further research needs to be conducted before the cost effectiveness of workplace interventions can be determined, according to a 2+ American study, which examined the health and economic implications of a workplace smoking-cessation programme using a simulation model, worksite smoking cessation programmes appear to be a sound economic investment. Long term benefits revealed an eventual benefit-cost ratio of 8.75 (after 50 years).

Although smoking control activities in the workplace have a number of clear health and economic advantages, it is important to be aware of the potential side effects that may accompany bans. One potential side effect of smoking policies is that they may cause tension between smokers and non-smokers who feel that smokers are being advantaged by the opportunity to take smoking breaks. However, one 2- study indicates that although non-smokers may perceive exiled smokers to be obtaining some advantages from exiled smoking (such as increased time away from work), they did not feel strongly deprived as a result. Therefore, exiled smoking does not appear to be a significant source of tension between smokers and non-smokers. Nevertheless, the increased visibility of smoking that often accompanies the introduction of workplace smoking bans may lead to the stigmatisation of smokers and contribute to discriminatory practices and social stereotyping.

According to a 2+ study and a 2++ study, another adverse outcome that may be associated with workplace smoking bans – and national smoke-free legislation more broadly – is that indoor smoking prohibitions may encourage smokers to congregate around building entrances and exits, thereby increasing the exposure of non-smokers to second-hand smoke through more intensive contact with the smoke as they enter buildings and drifting smoke issues.

Two 2- English studies and one 2+ Scottish study report that workplace smoking bans may also lead to an increase in dangerous smoking practices (such as smoking in inappropriate locations and the build-up of smoking related debris). One of the English studies also raises the potentially negative effects of bans on smokers who must venture outside to smoke, even in poor weather conditions. Finally, according to a 2+ study and two 3+ reports from Scotland, other minor unintended consequences of smoke-free legislation are the costs to local authorities in cleaning up/providing disposal for cigarette butts in outdoor public places. However, these side effects are relatively minor and may be ameliorated to a large degree by careful planning.

7. APPENDIX A – Excluded Studies

<i>Paper</i>	<i>Reason for exclusion</i>
Brenner, H. and Mielck, A. (1992) Smoking prohibition in the workplace and smoking cessation in the Federal Republic of Germany. <i>Preventive Medicine</i> , 21(2): 252-61.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Cruse, S.M., Forster, N.J.D., Thurgood, G. and Sys, L. (2001) Smoking cessation in the workplace: results of an intervention programme using nicotine patches. <i>Occupational Medicine</i> , 51(8): 501-506.	No relevant outcomes.
Daughton, D.M., DeWolf Roberts, M.A., Patil, K.D. and Rennard, S.I. (1990) Smoking cessation in the workplace: evaluation of relapse factors, <i>Preventive Medicine</i> , 19: 227-230.	Not directly relevant to any of the research questions
Dawley, H.H., Jr. (1991) A comprehensive worksite smoking control, discouragement, and cessation program. <i>International Journal of the Addictions</i> , 26(6): 685-96.	A more recent publication (1993) of this study was included.
Hibbard, J. (1993) Social roles as predictors of cessation in a cohort of women smokers, <i>Women and Health</i> , 20(4): 71-80.	Too far outside scope of review. Does not deal specifically with employed female smokers.
Koffman, D.M., Lee, J.W., Hopp, J.W. and Emont, S.L. (1998) The impact of including incentives and competition in a workplace smoking cessation program on quit rates, <i>American Journal of Health Promotion</i> , 13(2): 105-111.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Ringgen, K., Anderson, N., McAfee, T., Zbiowski, S.M. and Fales, D. (2002) Smoking cessation in a blue-collar population: Results from an evidence-based pilot program, <i>American Journal of Industrial Medicine</i> , 42: 367-377.	Very poor quality study. Intervention provided unclear, study population unclear. No usable outcomes discussed.
Salina, D., Jason, L.A., Hedeker, D., Daufman, J., Lesondak, L., McMahon, S.D., Taylor, S. and Kimball, P. (1994) A follow-up of a media-based, worksite smoking cessation program. <i>American Journal of Community Psychology</i> , 22(2): p. 257-271.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Swartz, S.H. and Hays, J.T. (2004) Office-based intervention for tobacco dependence, <i>Medical Clinics of North America</i> , 88: 1623-1641.	Study deals with a medical clinic, not a workplace intervention
Voit, S. (2001) Work-site health and fitness programs: impact on the employee and employer, <i>Work</i> , 16: 273-286.	Not relevant enough to review – programme did not include smoking cessation.

8. APPENDIX B – Level 3 and 4 Evidence

<i>Paper</i>	<i>Rating</i>	<i>Rationale for incorporation as level 3 or 4 evidence and reason for rating</i>
Griffiths, J. (2005). <i>Smoke-free Scotland: Guidance on smoking policies for the NHS, local authorities, and care service providers</i> . Scottish Executive.	4+	Report provides information on the development of an approach to tobacco which will maximize the benefits of being smoke-free and on how to comply with smoke free policy. Findings are of good quality but are based on second-hand data.
NHS. (2005). <i>Smokefree policy pack</i> . London, NHS.	4+	Report outlines tips on how to implement smokefree policy in the workplace. Findings are based on expert opinion and second hand date.
Office of Tobacco Control (2005) <i>Smoke-free workplaces in Ireland: one year review</i> . Ireland: Office of Tobacco Control.	3+	Summary of the reception of the Republic of Ireland's smoking ban and levels of compliance with it. Evidence quality seems high – particularly compliance data which reports on inspections rather than calls to national complaint lines.
Pisano M (2006) The smoking ban: what lessons from Italy? Scottish Council Foundation [On-line]. Available: http://www.scottishcouncilfoundation.org/story_more.php?id=93&print=1	3+	Summary of the reception of Italy's smoking ban and levels of compliance with it. No way to evaluate the quality of this report but it seems of a reasonable standard.
Quit. (2001). <i>Going smokefree a policy kit for sports club and associations: Creating healthy sporting environments</i> . Carlton, Quit.	4+	Report provides information on smoking policy within sporting environments in Australia. No formal research was conducted and findings are based on expert opinion.
Quit. (2001). <i>Going smokefree...it works for me: A guide for workplaces</i> . Carlton, Quit.	4+	Report provides information on workplace smoking policy in Australia. Findings are based on second hand date. No

		formal research was conducted.
Scottish Executive. (2006). Latest situation. Retrieved October 30, 2006 from http://www.clearingtheairscotland.com/latest/index.html .	3+	Website offers the latest statistics on smokefree legislation and national compliance data in Scotland. Evidence quality seems high.
PACT. (2002). Employers' smoking cessation guide: Practical approaches to a costly workplace problem. New Jersey, PACT.	4+	Report provides information for employers about implementing workplace smoking cessation programmes. Findings are of good quality but are based on expert opinion.
Worldbank. (2002). <i>Smoke-free workplaces: At a glance</i> . Washington DC, Worldbank.	4+	Report provides a brief outline of factors associated with workplace smoking policy. Findings are based on expert opinion and formal consensus. No formal research was conducted.

9. APPENDIX C**Workplace policies: search process**

Julie Glanville/Kate Light

Vers. 1, 18 May 2006

Vers. 2, 11 May 2006

Vers. 3, 26 May 2006

Vers. 4, 31 May 2006

Part 1.A

Search for reviews in reviews/guidelines and project databases.

Database	Dates covered /date searched	Records retrieved	Records retained after deduplication	Custom 4 code
Cochrane Database of Systematic Reviews	Issue 2006/2	3	3	cdsr 11/5/06 review
DARE	May 2006	57	57	Dare 11/5/06 review
National Research Register (including CRD ongoing reviews database)	Issue 2006/2	133	126	Nrr 15/5/06 project
Health Technology Assessment Database	May 2006	14	14	Hta 11/5/06 review
SIGN Guidelines	11/5/06	0	0	n/a
National Guideline Clearinghouse	15/5/06	5	5	Ngc 11/5/06 review
HSTAT	11/5/06	6	5	Hstat 11/5/06 review
TRIP	15/5/06	0	0	n/a

CDSR (Cochrane Library 2006/2)

#1 [smoking or smoker or smokefree or smoke in Title, Abstract or Keywords or tobacco or nicotine or cigar* or bidi* or kretek or paan in Title, Abstract or Keywords or gutkha or snuff or snus or betel in Title, Abstract or Keywords in Cochrane Reviews](#)

#2 [MeSH descriptor Smoking, this term only in MeSH products](#)

#3 [MeSH descriptor Tobacco explode all trees in MeSH products](#)

#4 [MeSH descriptor Tobacco Smoke Pollution explode all trees in MeSH products](#)

#5 [MeSH descriptor Tobacco Use Disorder explode all trees in MeSH products](#)

#6 [MeSH descriptor Tobacco Use Cessation explode all trees in MeSH products](#)

#7 [MeSH descriptor Nicotine explode all trees in MeSH products](#)

- #8 [\(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7\)](#)
 #9 [MeSH descriptor Occupational Health explode all trees in MeSH products](#)
 #10 [MeSH descriptor Workplace explode all trees in MeSH products](#)
 #11 [MeSH descriptor Work, this term only in MeSH products](#)
 #12 [MeSH descriptor Occupational Health Services explode all trees in MeSH products](#)
 #13 [MeSH descriptor Occupational Health Nursing explode all trees in MeSH products](#)
 #14 [work or worker or workplace or office or factory in Title, Abstract or Keywords or employee or business in Record Title in all products](#)
 #15 [\(#9 OR #10 OR #11 OR #12 OR #13 OR #14\)](#)
 #16 [\(#8 AND #15\)](#)

13 records were identified and 3 relevant reviews were downloaded.

DARE (CRD admin database May 11 2006)

S smok\$ or tobacco\$ or cigarette\$ or nicotine or bidi\$ or kretek or paan or gutkha or snuff or snus or betel or hand(w)roll\$
 S occupational or workplace\$ or work(w)place\$ or work or worker\$ or office or offices or factory or factories
 S employee\$ or business\$
 S s1 and (s2 or s3)

57 records were identified and downloaded. Coded in Custom 4 as 'dare 11/5/06 review'

HTA (CRD admin database May 11 2006)

S smok\$ or tobacco\$ or cigarette\$ or nicotine or bidi\$ or kretek or paan or gutkha or snuff or snus or betel or hand(w)roll\$
 S occupational or workplace\$ or work(w)place\$ or work or worker\$ or office or offices or factory or factories
 S employee\$ or business\$
 S s1 and (s2 or s3)

14 records were identified and downloaded. Coded in Custom 4 as 'hta 11/5/06 review'

SIGN (<http://www.sign.ac.uk/>) Searched May 11 2006

The list of guidelines was scanned and no relevant guidelines was noted. The work programme was scanned (<http://www.sign.ac.uk/guidelines/development/index.html>) and no relevant guidelines are planned.

National Guideline Clearinghouse (<http://www.guideline.gov/>) Searched 11 May 2006

Workplace and (smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel)

Found 3 potentially relevant guidelines

occupational and (smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel)

Found 1 potentially relevant guideline

work and (smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel)

Found 1 potentially relevant guideline

Worker and (smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel)

No additional relevant guidelines identified.

Workers and (smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel)

No additional relevant guidelines were identified.

(office or offices or factories or factory or “business*” or “employee*”) and (“smok*” or “tobacco*” or “cigarette*” or nicotine or “bidi*” or kretek or paan or gutkha or snuff or snus or betel)

No additional relevant guidelines were identified.

HSTAT (<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat>) searched 11/5/06

(occupational or work* or office or offices or factory or factories or employee* or business*) AND (smok* OR tobacco* OR cigarette* OR nicotine OR bidi* OR kretek OR paan OR gutkha OR snuff OR snus OR betel) AND hstat[book]

Workplace and AND (smok* OR tobacco* OR cigarette* OR nicotine OR bidi* OR kretek OR paan OR gutkha OR snuff OR snus OR betel) AND hstat[book]

6 references were identified and added to the library.

National Research Register (<http://www.nrr.nhs.uk/search.htm>). 2006 issue 2.

- #1. [smoking](#)
- #2. [\(smoker or smokers or smokefree or tobacco\)](#)
- #3. [\(nicotine or cigarette*\)](#)
- #4. [\(bidi* or kretek or paan or gutkha or snuff or snus or betel or roll or rolled\)](#)
- #5. [SMOKING single term \(MeSH\)](#)
- #6. [TOBACCO SMOKE POLLUTION single term \(MeSH\)](#)
- #7. [TOBACCO SMOKELESS single term \(MeSH\)](#)
- #8. [TOBACCO USE CESSATION explode all trees \(MeSH\)](#)
- #9. [TOBACCO USE DISORDER single term \(MeSH\)](#)
- #10. [NICOTINE single term \(MeSH\)](#)
- #11. [\(#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10\)](#)
- #12. [OCCUPATIONAL HEALTH single term \(MeSH\)](#)
- #13. [OCCUPATIONAL HEALTH NURSING single term \(MeSH\)](#)
- #14. [OCCUPATIONAL HEALTH SERVICES single term \(MeSH\)](#)
- #15. [WORKPLACE single term \(MeSH\)](#)

- #16. [WORK single term \(MeSH\)](#)
- #17. [work](#)
- #18. [workers](#)
- #19. [worker](#)
- #20. [workplace](#)
- #21. [office](#)
- #22. [offices](#)
- #23. [factory](#)
- #24. [factories](#)
- #25. [employee*](#)
- #26. [business](#)
- #27. [businesses](#)
- #28. [office:ti](#)
- #29. [office:mr](#)
- #30. [\(#17 or #18 or #19 or #20 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29\)](#) 7655
- #31. [\(#12 or #13 or #14 or #15 or #16\)](#)
- #32. [\(#30 or #31\)](#)
- #33. [\(#11 and #32\)](#)

133 records retrieved.

TRIP (<http://www.update-software.com/trip/athens/>) 15/5/06

occupational or workplace* or work or worker* or office or offices or factory or factories or business or businesses

This strategy identified 53 evidence-based synopses, 30 clinical questions and 39 US and European guidelines. None of these produced additional relevant records.

Part 1.B

Search for reviews in the following databases:

Database	Dates covered /date searched	Records retrieved	Records retained after deduplication	Custom 4 code
MEDLINE (Ovid)	1966-May week 3 2006	159	139	Medline reviews
EMBASE (Datastar 1974 to date)	25/5/06	160	128	Embase reviews
British Nursing Index (Datastar 1994 to date)	25/5/06	13	10	Bni reviews
CINAHL (Datastar 1982 to date)	25/5/06	35	29	Cinahl reviews
PsycINFO (Datastar 1806 to date)	25/5/06	18	13	Psycinfo reviews

DH-Data (Datastar 1983 to date)	26/5/06	9	4	Dh reviews
King's Fund (Datastar 1979 to date)	26/5/06	0	0	n/a

NOTES:

- A. CENTRAL is a database of controlled trials and was not searched for reviews, but will be searched in Part 2 if required, for non-review publications.
- B. AMED is a database of complementary medicine and it was agreed with NICE that it was not necessary to search this database for this topic.

Medline strategy

- 1 smoking.ti,ab. (78962)
- 2 smoking/ (77953)
- 3 (smoker or smokers or smokefree or smoke free).ti,ab. (31868)
- 4 tobacco, smokeless/ or tobacco smoke pollution/ (7515)
- 5 tobacco.ti,ab. (35410)
- 6 tobacco/ (14900)
- 7 "Tobacco Use Disorder"/ or "tobacco use cessation"/ or smoking cessation/ (11863)
- 8 nicotine.ti,ab. (16320)
- 9 nicotine/ (14317)
- 10 cigar\$.ti,ab. (30288)
- 11 (bidi\$ or kretek or paan or gutkha or snuff or snus or betel or hand roll\$ or betel nut\$).ti,ab. (10062)
- 12 or/1-11 (163545)
- 13 occupational health/ (11980)
- 14 workplace/ (5690)
- 15 work/ (6583)
- 16 occupational health services/ (8368)
- 17 occupational health nursing/ (3623)
- 18 (work or workers or worker or workplace\$ or work place\$ or office or offices or factory or factories or employee\$ or business or businesses).ti. (96311)
- 19 or/13-18 (118116)
- 20 12 and 19 (5396)
- 21 limit 20 to english language (4571)
- 22 review.ab. (293091)
- 23 review.pt. (1216463)
- 24 meta-analysis.ab,ti. (12699)
- 25 meta-analysis.pt. (13283)
- 26 (letter or editorial or comment).pt. (796061)
- 27 (22 or 23 or 24 or 25) not 26 (1326551)
- 28 21 and 27 (253)
- 29 limit 28 to yr="1995 - 2006" (159)

Embase strategy

1. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.

2. SMOKING-AND-SMOKING-RELATED-PHENOMENA#.DE.
3. SMOKING-CESSATION.DE.
4. TOBACCO-DEPENDENCE.DE.
5. TOBACCO.TI,AB.
6. NICOTINE.DE.
7. NICOTINE.TI,AB.
8. TOBACCO-SMOKE.DE.
9. SMOKELESS-TOBACCO.DE.
10. TOBACCO.DE.
11. CIGARETTE-SMOKE.DE.
12. BETEL-NUT.DE.
13. CIGAR\$.TI,AB.
14. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLL\$).TI,AB.
15. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14
16. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
17. 15 AND 16
18. OCCUPATIONAL-HEALTH.DE.
19. OCCUPATIONAL-EXPOSURE.DE.
20. OCCUPATIONAL-CARCINOGENESIS.DE.
21. OCCUPATIONAL-HAZARD.DE.
22. OCCUPATIONAL-HEALTH-NURSING.DE.
23. OCCUPATIONAL-HEALTH-SERVICE.DE.
24. OCCUPATIONAL-SAFETY.DE.
25. QUALITY-OF-WORKING-LIFE.DE.
26. WORKROOM-AIR.DE.
27. WORK.DE.
28. WORK-ENVIRONMENT.DE.
29. WORKPLACE.DE.
30. (WORK OR WORKERS OR WORKER OR WORKPLACES\$ OR WORK ADJ PLACES\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
31. 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30
32. 17 AND 31
33. LG=EN
34. 32 AND 33
35. META-ANALYSIS#.DE.
36. (REVIEW\$ OR OVERVIEW\$).TI.
37. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
38. ((SYNTHESIS OR SYNTHESSES OR SYNTHESIS\$ OR SYNTHESIZ\$) NEXT (LITERATURE OR LITERATURES OR RESEARCH\$ OR STUDIES OR DATA)).TI,AB.
39. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AN.
40. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
41. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.

42. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
43. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT SEARCH\$).TI,AB.
44. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
45. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$)).AB.

BNI strategy

1. SMOKING.DE.
2. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
3. (TOBACCO OR NICOTINE).TI,AB.
4. (cigar OR cigars OR cigarette OR cigarettes).TI,AB.
5. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
6. 1 OR 2 OR 3 OR 4 OR 5
7. OCCUPATIONAL-HEALTH-AND-SAFETY.DE.
8. STUDENT-HEALTH.DE.
9. ENVIRONMENTAL-HEALTH.DE.
10. AIR-QUALITY.DE.
11. STAFF-WELFARE.DE.
12. OCCUPATIONAL-HEALTH-SERVICES.DE.
13. OCCUPATIONAL-DISEASES.DE.
14. OCCUPATIONAL-HEALTH-NURSING.DE.
15. LAW.DE.
16. STAFF-ATTITUDES.DE.
17. (WORK OR WORKERS OR WORKER OR WORKPLACES\$ OR WORK ADJ PLACES\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
18. 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17
19. 6 AND 18
20. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
21. 19 AND 20
22. REVIEW
23. (REVIEW OR OVERVIEW OR META-ANALYSIS OR META-ANALYSES OR META ADJ ANALYS\$ OR METAANALYS\$).TI,AB.
24. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
25. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
26. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
27. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,AB.

28. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
29. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
30. (RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)
31. (PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)
32. (CASE ADJ CONTROL ADJ STUDIES).TI,AB.
33. (PROSPECTIVE ADJ STUDIES).TI,AB.
34. 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29
35. 30 OR 31 OR 32 OR 33
36. 34 NOT 35
37. 21 AND 36

CINAHL strategy

1. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
2. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
3. SMOKING#.DE.
4. SMOKING-CESSATION-PROGRAMMES.DE.
5. NICOTINE.DE.
6. TOBACCO-SMOKELESS.DE.
7. TOBACCO.DE.
8. PASSIVE-SMOKING.DE.
9. BETEL-PALM.DE.
10. (TOBACCO OR NICOTINE).TI,AB.
11. CIGAR\$.TI,AB.
12. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLL\$).TI,AB.
13. 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12
14. 1 AND 13
15. OCCUPATIONAL-EXPOSURE.DE.
16. OCCUPATIONAL-HEALTH.DE.
17. OCCUPATIONAL-HAZARDS.DE.
18. OCCUPATIONAL-SAFETY.DE.
19. OCCUPATIONAL-HEALTH-SERVICES.DE.
20. EMPLOYEE-ASSISTANCE-PROGRAMMES.DE.
21. WORK-ENVIRONMENT#.DE.
22. OCCUPATIONAL-HEALTH-NURSING.DE.
23. WORK.DE.
24. (WORK OR WORKERS OR WORKER OR WORKPLACES\$ OR WORK ADJ PLACES\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
25. 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24
26. 14 AND 25 AND LG=EN
27. META-ANALYSIS.DE.
28. COCHRANE\$.TI,AB.

29. NURSING-INTERVENTIONS.DT.
30. SYSTEMATIC-REVIEW.DT.
31. (REVIEW\$ OR OVERVIEW\$).TI.
32. (META-ANALYS\$ OR METAANALYS\$ OR META ADJ ANALYS\$).TI,AB.
33. LITERATURE-REVIEW#.DE.
34. LITERATURE-SEARCHING#.DE.
35. COMPUTERIZED-LITERATURE-SEARCHING#.DE.
36. ((SYNTHESIS OR SYNTHESSES OR SYNTHESIS\$ OR SYNTHESIZ\$) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
37. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
38. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
39. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
40. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT SEARCH\$).TI,AB.
41. REFERENCE-DATABASES#.DE.
42. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
43. REVIEW.DT. AND (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$).AB.
44. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$)).AB.
45. 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44
46. EDITORIAL.DT. OR LETTER.DT. OR CASE-STUDY.DT.
47. PEER-REVIEW#.DE.
48. RECORD-REVIEW#.DE.
49. ((RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
50. ((PATIENT OR PATIENTS) NEXT (CHART OR CHARTS)).TI,AB.
51. ((PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
52. CASE NEXT REPORT\$.TI,AB.
53. CASE-CONTROL-STUDIES#.DE.
54. PROSPECTIVE-STUDIES#.DE.
55. CASE-STUDIES.DE.
56. ANIMAL-STUDIES.DE.
57. 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56
58. 45 NOT 57
59. 26 AND 58

PsycINFO strategy

- SEARCH: nicotine.DE. OR tobacco-smoking.DE.
 2. smoking-cessation.DE.
 3. smokeless-tobacco.DE.

4. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
5. TOBACCO.TI,AB.
6. NICOTINE.TI,AB.
7. (cigar OR cigars OR cigarette OR cigarettes).TI,AB.
8. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. WORKING-CONDITIONS.DE.
11. WORKING-SPACE.DE.
12. OCCUPATIONAL-SAFETY.DE.
13. EMPLOYEE-ATTITUDES.DE.
14. ORGANIZATIONAL-BEHAVIOR.DE.
15. BUSINESS.DE.
16. EMPLOYEE-ASSISTANCE-PROGRAMMES.DE.
17. BUSINESS-ORGANIZATIONS.DE.
18. (WORK OR WORKERS OR WORKER OR WORKPLACES\$ OR WORK ADJ PLACES\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
19. 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
20. 9 AND 19 AND LG=EN
21. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
22. 20 AND 21
23. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
24. COCHRANE\$.TI.
25. (REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS).TI.
26. META-ANALYSIS.MD.
27. LITERATURE-REVIEW.MD.
28. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI.
29. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
30. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
31. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,DE.
32. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,DE.
33. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,DE.
34. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC OR METHODOLOGIC OR METHODOLOGICAL OR QUANTITATIVE OR RESEARCH OR LITERATURE OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE OR EFFECTIVENESS)).TI.
35. (RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)
36. (PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)
37. (CASE ADJ CONTROL ADJ STUDIES).TI,AB.

- 38. (PROSPECTIVE ADJ STUDIES).TI,AB.
- 39. 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34
- 40. 35 OR 36 OR 37 OR 38
- 41. 39 NOT 40
- 42. 22 AND 41

DH-Data and King's Fund strategy (both use same thesaurus)

- 1. smoking#.DE.
- 2. smoking-cessation.DE.
- 3. smoking-policy.DE.
- 4. cigarettes#.DE.
- 5. tobacco#.DE.
- 6. smoking-control.DE.
- 7. tobacco-consumption.DE.
- 8. smokers.DE.
- 9. nicotine.DE.
- 10. betel.DE.
- 11. tobacco-chewing.DE.
- 12. tobacco-products.DE.
- 13. cigars.DE.
- 14. skoal-bandits.DE.
- 15. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
- 16. (TOBACCO OR NICOTINE).TI,AB.
- 17. (cigar OR cigars OR cigarette OR cigarettes).TI,AB.
- 18. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
- 19. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
- 20. occupational-health-and-safety.DE.
- 21. healthy-workplace.DE.
- 22. staff-health-and-safety.DE.
- 23. employees#.DE.
- 24. working-environment.DE.
- 25. working-conditions.DE.
- 26. social-environment-in-industry.DE.
- 27. staff-support-systems.DE.
- 28. (WORK OR WORKERS OR WORKER OR WORKPLACES\$ OR WORK ADJ PLACES\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
- 29. environmental-exposure.DE. OR legislation.DE.
- 30. 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29
- 31. 19 AND 30
- 32. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
- 33. 31 AND 32
- 34. SYSTEMATIC-REVIEWS#.DE.

35. (REVIEW OR OVERVIEW OR META-ANALYSIS OR META-ANALYSES OR META ADJ ANALYS\$ OR METAANALYS\$).TI,AB.
36. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
37. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
38. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
39. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,AB.
40. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
41. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
42. 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41
43. 33 AND 42

Part 2

Search for publications, other than reviews, in the following databases:

Database	Dates covered /date searched	Records retrieved	Records retained after deduplication	Custom 4 code
MEDLINE (Ovid)	1966-May 26 2006	2975	2574	Medline other
EMBASE (Datastar 1974 to date)	30/5/06	5728	3679	Embase other
British Nursing Index (Datastar 1994 to date)	30/5/06	98	68	Bni other
CINAHL (Datastar 1982 to date)	30/5/06	805	167	Cinahl other
PsycINFO (Datastar 1806 to date)	30/5/06	452	218	Psycinfo other
DH-Data (Datastar 1983 to date)	30/5/06	259	117	Dh other
King's Fund (Datastar 1979 to date)	30/5/06	39	25	Kings fund other
CENTRAL	Cochrane Library 2006/2	146	30	Central other

NOTES:

- A. AMED is a database of complementary medicine and it was agreed with NICE that it was not necessary to search this database for this topic.

Medline strategy

- 1 smoking.ti,ab. (81243)
- 2 smoking/ (77953)
- 3 (smoker or smokers or smokefree or smoke free).ti,ab. (32794)
- 4 tobacco, smokeless/ or tobacco smoke pollution/ (7515)
- 5 tobacco.ti,ab. (36456)
- 6 tobacco/ (14900)
- 7 "Tobacco Use Disorder"/ or "tobacco use cessation"/ or smoking cessation/ (11863)
- 8 nicotine.ti,ab. (16715)
- 9 nicotine/ (14317)
- 10 cigar\$.ti,ab. (30959)
- 11 (bidi\$ or kretek or paan or gutkha or snuff or snus or betel or hand roll\$ or betel nut\$).ti,ab. (10460)
- 12 or/1-11 (167389)
- 13 occupational health/ (11980)
- 14 workplace/ (5690)
- 15 work/ (6583)
- 16 occupational health services/ (8368)

17 occupational health nursing/ (3623)
 18 (work or workers or worker or workplace\$ or work place\$ or
 office or offices or factory or factories or employee\$ or business or
 businesses).ti. (97833)
 19 or/13-18 (119638)
 20 12 and 19 (5483)
 21 limit 20 to english language (4645)
 22 review.ab. (307450)
 23 review.pt. (1217392)
 24 meta-analysis.ab,ti. (13336)
 25 meta-analysis.pt. (13296)
 26 (letter or editorial or comment).pt. (816993)
 27 (22 or 23 or 24 or 25) not 26 (1341796)
 28 21 and 27 (254)
 29 limit 28 to yr="1995 - 2006" (160)
 30 limit 28 to yr="1990-2006" (200)
 31 21 not 27 (4391)
 32 limit 31 to yr="1990=2006" (0)
 33 limit 31 to yr="1990-2006" (3069)
 34 33 not 26 (2975)

EMBASE strategy

1. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ
 FREE).TI,AB.
 2. SMOKING-AND-SMOKING-RELATED-PHENOMENA#.DE.
 3. SMOKING-CESSATION.DE.
 4. TOBACCO-DEPENDENCE.DE.
 5. TOBACCO.TI,AB.
 6. NICOTINE.DE.
 7. NICOTINE.TI,AB.
 8. TOBACCO-SMOKE.DE.
 9. SMOKELESS-TOBACCO.DE.
 10. TOBACCO.DE.
 11. CIGARETTE-SMOKE.DE.
 12. BETEL-NUT.DE.
 13. CIGAR\$.TI,AB.
 14. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR
 HAND ADJ ROLL\$).TI,AB.
 15. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13
 OR 14
 16. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR
 YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR
 YEAR=1997 OR YEAR=1996
 17. 15 AND 16
 18. OCCUPATIONAL-HEALTH.DE.
 19. OCCUPATIONAL-EXPOSURE.DE.
 20. OCCUPATIONAL-CARCINOGENESIS.DE.
 21. OCCUPATIONAL-HAZARD.DE.
 22. OCCUPATIONAL-HEALTH-NURSING.DE.
 23. OCCUPATIONAL-HEALTH-SERVICE.DE.
 24. OCCUPATIONAL-SAFETY.DE.
 25. QUALITY-OF-WORKING-LIFE.DE.
 26. WORKROOM-AIR.DE.
 27. WORK.DE.
 28. WORK-ENVIRONMENT.DE.
 29. WORKPLACE.DE.
 30. (WORK OR WORKERS OR WORKER OR WORKPLACE\$ OR WORK ADJ PLACE\$ OR
 OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR
 BUSINESSES).TI.

31. 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30
32. 17 AND 31
33. LG=EN
34. 32 AND 33
35. META-ANALYSIS#.DE.
36. (REVIEW\$ OR OVERVIEW\$).TI.
37. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
38. ((SYNTHESIS OR SYNTHESSES OR SYNTHESIS\$ OR SYNTHESIZ\$) NEXT (LITERATURE OR LITERATURES OR RESEARCH\$ OR STUDIES OR DATA)).TI,AB.
39. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AN.
40. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
41. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
42. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
43. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT SEARCH\$).TI,AB.
44. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
45. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$)).AB.
46. 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44 OR 45
47. ((RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
48. ((PATIENT OR PATIENTS) NEXT (CHART OR CHARTS)).TI,AB.
49. ((PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
50. CASE NEXT REPORT\$.TI,AB.
51. 47 OR 48 OR 49 OR 50
52. 46 NOT 51
53. 34 AND 52
54. yr=1990 OR yr=1991 OR yr=1992 OR yr=1993 OR yr=1994
55. 16 OR 54
56. 15 AND 31
57. 56 AND (16 OR 54) AND LG=EN
58. 52 AND 56 AND (16 OR 54) AND lg=en
59. 57 NOT 58

CENTRAL strategy

- #1 smoking in Title, Abstract or Keywords in all products 7808 edit delete
- #2 smoker or smokefree or "smoke free" in Title, Abstract or Keywords in all products 3175 edit delete
- #3 tobacco in Keywords in all products 654 edit delete
- #4 nicotine in Title, Abstract or Keywords in all products 1746 edit delete
- #5 cigar in Title, Abstract or Keywords in all products 15 edit delete
- #6 cigarette in Title, Abstract or Keywords in all products 2145 edit delete
- #7 bidi or kretek or paan or gutkha or snuff or snus or betel or "hand roll*" in Title, Abstract or Keywords in all products 47 edit delete
- #8 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7) 8770 edit delete
- #9 MeSH descriptor Occupational Health, this term only in MeSH products 206 edit delete
- #10 MeSH descriptor Workplace, this term only in MeSH products 206 edit delete

#11 MeSH descriptor Work, this term only in MeSH products 128 edit delete
 #12 MeSH descriptor Occupational Health Services, this term only in MeSH products 205 edit delete
 #13 MeSH descriptor Occupational Health Nursing, this term only in MeSH products 10 edit delete
 #14 work or worker or workplace or "work place*" or office or factory or employee or business in Record Title in all products 2620 edit delete
 #15 (#9 OR #10 OR #11 OR #12 OR #13 OR #14) 3025 edit delete
 #16 (#8 AND #15), from 1990 to 2006 171 edit delete

BNI search strategy

1. SMOKING.DE.
2. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
3. (TOBACCO OR NICOTINE).TI,AB.
4. (cigar OR cigars OR cigarette OR cigarettes).TI,AB.
5. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
6. 1 OR 2 OR 3 OR 4 OR 5
7. OCCUPATIONAL-HEALTH-AND-SAFETY.DE.
8. STUDENT-HEALTH.DE.
9. ENVIRONMENTAL-HEALTH.DE.
10. AIR-QUALITY.DE.
11. STAFF-WELFARE.DE.
12. OCCUPATIONAL-HEALTH-SERVICES.DE.
13. OCCUPATIONAL-DISEASES.DE.
14. OCCUPATIONAL-HEALTH-NURSING.DE.
15. LAW.DE.
16. STAFF-ATTITUDES.DE.
17. (WORK OR WORKERS OR WORKER OR WORKPLACE\$ OR WORK ADJ PLACE\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
18. 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17
19. 6 AND 18
20. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
21. 19 AND 20
22. REVIEW
23. (REVIEW OR OVERVIEW OR META-ANALYSIS OR META-ANALYSES OR META ADJ ANALYS\$ OR METAANALYS\$).TI,AB.
24. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
25. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
26. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
27. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,AB.
28. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
29. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
30. (RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)
31. (PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)
32. (CASE ADJ CONTROL ADJ STUDIES).TI,AB.
33. (PROSPECTIVE ADJ STUDIES).TI,AB.
34. 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29

35. 30 OR 31 OR 32 OR 33
36. 34 NOT 35
37. 21 AND 36
38. (6 AND 18) NOT 36

CINAHL search strategy

1. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
2. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
3. SMOKING#.DE.
4. SMOKING-CESSATION-PROGRAMMES.DE.
5. NICOTINE.DE.
6. TOBACCO-SMOKELESS.DE.
7. TOBACCO.DE.
8. PASSIVE-SMOKING.DE.
9. BETEL-PALM.DE.
10. (TOBACCO OR NICOTINE).TI,AB.
11. CIGAR\$.TI,AB.
12. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLL\$).TI,AB.
13. 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12
14. 1 AND 13
15. OCCUPATIONAL-EXPOSURE.DE.
16. OCCUPATIONAL-HEALTH.DE.
17. OCCUPATIONAL-HAZARDS.DE.
18. OCCUPATIONAL-SAFETY.DE.
19. OCCUPATIONAL-HEALTH-SERVICES.DE.
20. EMPLOYEE-ASSISTANCE-PROGRAMMES.DE.
21. WORK-ENVIRONMENT#.DE.
22. OCCUPATIONAL-HEALTH-NURSING.DE.
23. WORK.DE.
24. (WORK OR WORKERS OR WORKER OR WORKPLACE\$ OR WORK ADJ PLACE\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
25. 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24
26. 14 AND 25 AND LG=EN
27. META-ANALYSIS.DE.
28. COCHRANE\$.TI,AB.
29. NURSING-INTERVENTIONS.DT.
30. SYSTEMATIC-REVIEW.DT.
31. (REVIEW\$ OR OVERVIEW\$).TI.
32. (META-ANALYS\$ OR METAANALYS\$ OR META ADJ ANALYS\$).TI,AB.
33. LITERATURE-REVIEW#.DE.
34. LITERATURE-SEARCHING#.DE.
35. COMPUTERIZED-LITERATURE-SEARCHING#.DE.
36. ((SYNTHESIS OR SYNTHESSES OR SYNTHESIS\$ OR SYNTHESIZ\$) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
37. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
38. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
39. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
40. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT SEARCH\$).TI,AB.
41. REFERENCE-DATABASES#.DE.
42. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.

43. REVIEW.DT. AND (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$).AB.
44. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC\$ OR METHODOLOGIC\$ OR QUANTITATIV\$ OR RESEARCH OR LITERATURE\$ OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE\$)).AB.
45. 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44
46. EDITORIAL.DT. OR LETTER.DT. OR CASE-STUDY.DT.
47. PEER-REVIEW#.DE.
48. RECORD-REVIEW#.DE.
49. ((RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
50. ((PATIENT OR PATIENTS) NEXT (CHART OR CHARTS)).TI,AB.
51. ((PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)).TI,AB.
52. CASE NEXT REPORT\$.TI,AB.
53. CASE-CONTROL-STUDIES#.DE.
54. PROSPECTIVE-STUDIES#.DE.
55. CASE-STUDIES.DE.
56. ANIMAL-STUDIES.DE.
57. 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56
58. 45 NOT 57
59. 26 AND 58
60. year=1990 OR year=1991 OR year=1992 OR year=1993 OR year=1994
61. 13 AND 25 AND (1 OR 60)
62. 13 AND 25 AND (1 OR 60) AND 58
63. 61 NOT 62
64. 63 AND LG=EN

PsycINFO search strategy

1. NICOTINE.DE. OR TOBACCO-SMOKING.DE.
2. SMOKING-CESSATION.DE.
3. SMOKELESS-TOBACCO.DE.
4. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
5. TOBACCO.TI,AB.
6. NICOTINE.TI,AB.
7. (CIGAR OR CIGARS OR CIGARETTE OR CIGARETTES).TI,AB.
8. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. WORKING-CONDITIONS.DE.
11. WORKING-SPACE.DE.
12. OCCUPATIONAL-SAFETY.DE.
13. EMPLOYEE-ATTITUDES.DE.
14. ORGANIZATIONAL-BEHAVIOR.DE.
15. BUSINESS.DE.
16. EMPLOYEE-ASSISTANCE-PROGRAMMES.DE.
17. BUSINESS-ORGANIZATIONS.DE.
18. (WORK OR WORKERS OR WORKER OR WORKPLACE\$ OR WORK ADJ PLACE\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
19. 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
20. 9 AND 19 AND LG=EN
21. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
22. 20 AND 21

23. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
24. COCHRANE\$.TI.
25. (REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS).TI.
26. META-ANALYSIS.MD.
27. LITERATURE-REVIEW.MD.
28. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI.
29. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
30. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
31. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,DE.
32. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,DE.
33. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,DE.
34. ((REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS) NEXT (SYSTEMATIC OR METHODOLOGIC OR METHODOLOGICAL OR QUANTITATIVE OR RESEARCH OR LITERATURE OR STUDIES OR TRIAL OR TRIALS OR EFFECTIVE OR EFFECTIVENESS)).TI.
35. (RETROSPECTIVE OR CASE OR CASES OR RECORD OR RECORDS OR PATIENT OR PATIENTS) NEXT (REVIEW OR REVIEWS)
36. (PEER OR CHART OR CHARTS) NEXT (REVIEW OR REVIEWS)
37. (CASE ADJ CONTROL ADJ STUDIES).TI,AB.
38. (PROSPECTIVE ADJ STUDIES).TI,AB.
39. 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34
40. 35 OR 36 OR 37 OR 38
41. 39 NOT 40
42. 22 AND 41
43. year=1990 OR year=1991 OR year=1992 OR year=1993 OR year=1994
44. 9 AND 19 AND (21 OR 43)
45. 9 AND 19 AND (21 OR 43) AND 41
46. 44 NOT 45 AND LG=EN

King's Fund and DH data search strategy

1. SMOKING#.DE.
2. SMOKING-CESSATION.DE.
3. SMOKING-POLICY.DE.
4. CIGARETTES#.DE.
5. TOBACCO#.DE.
6. SMOKING-CONTROL.DE.
7. TOBACCO-CONSUMPTION.DE.
8. SMOKERS.DE.
9. NICOTINE.DE.
10. BETEL.DE.
11. TOBACCO-CHEWING.DE.
12. TOBACCO-PRODUCTS.DE.
13. CIGARS.DE.
14. SKOAL-BANDITS.DE.
15. (SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE).TI,AB.
16. (TOBACCO OR NICOTINE).TI,AB.
17. (CIGAR OR CIGARS OR CIGARETTE OR CIGARETTES).TI,AB.
18. (BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
19. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
20. OCCUPATIONAL-HEALTH-AND-SAFETY.DE.
21. HEALTHY-WORKPLACE.DE.

22. STAFF-HEALTH-AND-SAFETY.DE.
23. EMPLOYEES#.DE.

24. WORKING-ENVIRONMENT.DE.
25. WORKING-CONDITIONS.DE.
26. SOCIAL-ENVIRONMENT-IN-INDUSTRY.DE.
27. STAFF-SUPPORT-SYSTEMS.DE.
28. (WORK OR WORKERS OR WORKER OR WORKPLACE\$ OR WORK ADJ PLACE\$ OR OFFICE OR OFFICES OR FACTORY OR FACTORIES OR EMPLOYEE\$ OR BUSINESS OR BUSINESSES).TI.
29. ENVIRONMENTAL-EXPOSURE.DE. OR LEGISLATION.DE.
30. 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29
31. 19 AND 30
32. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR YEAR=1997 OR YEAR=1996
33. 31 AND 32
34. SYSTEMATIC-REVIEWS#.DE.
35. (REVIEW OR OVERVIEW OR META-ANALYSIS OR META-ANALYSES OR META ADJ ANALYS\$ OR METAANALYS\$).TI,AB.
36. ((SYNTHESIS OR SYNTHESSES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
37. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
38. (DATA NEXT POOL\$).TI,AB. AND STUDIES.TI,AB.
39. ((HAND OR MANUAL OR DATABASE OR DATABASES OR COMPUTER OR COMPUTERS) NEXT (SEARCH OR SEARCHES OR SEARCHING)).TI,AB.
40. (MEDLINE OR MEDLARS OR EMBASE OR CINAHL OR SCISEARCH OR PSYCHINFO OR PSYCINFO OR PSYCHLIT OR PSYCLIT).TI,AB.
41. ((ELECTRONIC OR BIBLIOGRAPHIC\$) NEXT (DATABASE OR DATABASES OR DATA ADJ BASE OR DATABASES)).TI,AB.
42. 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41
43. 33 AND 42
44. yr=1990 OR yr=1991 OR yr=1992 OR yr=1993 OR yr=1994
45. 31 AND (32 OR 44)
46. 31 AND 42 AND (32 OR 44)
47. 45 NOT 46

Part 3.

Medline search for reviews and non-reviews, changing line 18 to abstract field as opposed to title field.

- 14 workplace/ (5690)
- 15 work/ (6583)
- 16 occupational health services/ (8368)
- 17 occupational health nursing/ (3623)
- 18 (work or workers or worker or workplace\$ or work place\$ or office or offices or factory or factories or employee\$ or business or businesses).ab (96311)
- 19 or/13-18 (118116)
- 20 12 and 19 (5396)
- 21 limit 20 to english language (4571)
- 22 review.ab. (293091)
- 23 review.pt. (1216463)
- 24 meta-analysis.ab,ti. (12699)
- 25 meta-analysis.pt. (13283)
- 26 (letter or editorial or comment).pt. (796061)
- 27 (22 or 23 or 24 or 25) not 26 (1326551)
- 28 21 and 27 (253)
- 29 limit 28 to yr="1995 - 2006" (159)

Final results:

740 reviews

4872 other studies

Part 4. Key website search

WEBSITES	KEYWORDS
<p>UK National Smoking Cessation Conference http://www.uknsc.org/index.html (presentations will be searched)</p> <p>Department of Health* http://www.dh.gov.uk</p> <p>National Health Service* http://www.nhs.uk</p> <p>Action on Smoking and Health* http://www.ash.org.uk</p> <p>Action on Smoking and Health Scotland http://www.ashscotland.org.uk</p> <p>ASH Scotland* http://www.ashscotland.org.uk</p> <p>Scottish Executive* http://www.scotland.gov.uk</p> <p>Government of Ireland* http://www.irlgov.ie/</p> <p>Quit http://www.quit.org.uk</p>	<p>*keyword search: smokefree legislation smoke-free legislation workplace smoking bans work smoking bans workplace smoking legislation workplace smoking cessation interventions/initiatives/schemes/programmes workplace support/help/assist smoker work support smoker work help smoker work assist smoker</p> <p>Other words for workplace are: factories, business/businesses, office\$</p>

10. APPENDIX D**Methodology checklist: Cross-sectional studies**

Adapted from CPHE Methods Manual Cohort Analysis Methodology Checklist and Thomson, B; Diamond, K.E.; McWilliam, R; Snyder, S.W. (2005) Evaluating the Quality of Evidence from Correlational Research for Evidence-Based Practice, *Exceptional Children*, 71(2): 181-194.

Study identification <i>Include author, title, reference, year of publication</i>	
Guideline topic:	Key question no:
Checklist completed by:	

1a. Are the objectives of the study stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
1b. Are the hypotheses of the study stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
2. Is the sampling frame defined?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
3. Is the analytic sample defined?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
4. Are the dates between which the study was conducted stated or implicit?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
5. Are eligibility criteria stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable

6. Is the sampling method mentioned?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
7. Is the numbers of participants justified? (what is the power calculation?)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
8. Are the numbers meeting and not meeting the eligibility criteria stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
9. For those not eligible, are the reasons why stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
10a. Was the number of the analytic sample at the beginning of the study stated? Actual N:	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
10b. What is the participation rate? (above 60% is well covered)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
11a. Was the reliability (repeatability) of the measurement methods mentioned for the exposure?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
11b. Was the reliability (repeatability) of the measurement methods mentioned for the outcomes? (e.g. has the measure been used before?, if observational was there inter-rated reliability?)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
12a. Was the validity of the measurement methods mentioned for the exposure?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable

12b. Was the validity of the measurement method mentioned for the outcome?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
13. Was the type of analyses conducted stated?	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
14. Were confounders accounted for in analyses? (multivariate analysis)	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
15. Were missing data accounted for in the analyses? (Did they deal with people who were not eligible or had incomplete surveys, etc).	Well covered Adequately addressed Poorly addressed	Not addressed Not reported Not applicable
16. How reliable are the results? (If neither the exact p value nor the confidence intervals were reported than poor).		
17. Overall Assessment of Study. How well was the study done to minimise the risk of bias or confounding, and to establish a relationship between the variables under consideration? Code ++, + or -		

Reference List

Abrams D, Biener L (1992). Motivational characteristics of smokers at the workplace: A public health challenge. *Preventive Medicine*, 21, 679-687.

Albertsen K, Hannerz H, Borg V et al. (2004). Work environment and smoking cessation over a five-year period. *Scandinavian Journal of Public Health*, 32, 164-171.

Anderson C, Sengupta S, Coleman J (1999). Implementing smoking policies within Trusts: nurses' perceptions and views of effectiveness and implications. (23 refs). *Journal of Nursing Management*, 7, 349-54.

Ashley M, Eakin J, Bull S et al. (1997). Smoking control in the workplace: Is workplace size related to restriction and programs? *Journal of Environmental Medicine*, 39, 866-873.

Baker A, Fowajuh G, Heathcote-Elliot C et al. (2006). *West Midlands stop smoking services: Regional equity profile*. Birmingham: West Midlands Public Health Observatory.

Biener L, DePue J, Emmons K et al. (1994). Recruitment of work sites to a health promotion research trial: Implications for generalizability. *Journal of Occupational Medicine*, 36, 631-636.

Borland R, Yong H-H, Siahpush M et al. (2006). Support for and reported compliance with smoke-free restaurants and bars by smokers in four countries: Findings from the International Tobacco Control (ITC) Four Country Survey. *Tobacco Control*, 15, 34-41.

Bush J, White M, Kai J et al. (2003). Understanding influences on smoking in Bangladeshi and Pakistani adults: community based, qualitative study.[see comment]. *BMJ*, 326, 962.

Campbell M, Tessaro I, DeVillis B et al. (2000). Tailoring and targeting a worksite health promotion program to address multiple health behaviors among blue-collar women. *American Journal of Health Promotion*, 14, 306-313.

Campbell M, Tessaro I, DeVillis B et al. (2002). Effects of a tailored health promotion program for female blue-collar workers: Health works for women. *Preventive Medicine*, 34, 313-323.

Chan W, Heaney C (1997). Employee stress levels and the intention to participate in a worksite smoking cessation program. *Journal of Behavioral Medicine*, 20, 351-364.

Clarke J, Borland R, McGartland M (1997). The effects of smoking outside workplaces on non-regular smokers. *Journal of Occupational & Environmental Medicine*, 39, 734-9.

Conrad K, Campbell R, Edington D et al. (1996). The worksite environment as a cue to smoking reduction. *Research in Nursing and Health*, 19, 21-31.

Daza P, Cofta-Woerpel L, Mazas C et al. (2006). Racial and ethnic differences in predictors of smoking cessation. *Substance Use and Misuse*, 41, 317-339.

- Department of Health (1999). *Smoking kills: a white paper on tobacco* London: Stationery Office.
- Department of Health (2004). *Choosing health: Making healthy choices easier* London: The Stationery Office.
- Department of Health (2006). *Partial Regulatory Impact Assessment - Smokefree Aspects of the Health Bill* London: Department of Health.
- Docherty G, Fraser E, Hardin J (1999). Health promotion in the Scottish workplace: A case for moving the goalposts. *Health Education Research*, 14, 565-573.
- Emmons K, Stoddard A, Fletcher R et al. (2005). Cancer prevention among working class, multiethnic adults: Results of the healthy directions-health centers study. *American Journal of Public Health*, 95, 1200-1205.
- Emmons K, Thompson B, McLerran D et al. (2000). The relationship between organizational characteristics and the adoption of workplace smoking policies. *Health Education and Behavior*, 27, 483-501.
- Fisher KJ, Glasgow RE, Terborg JR (1990). Work site smoking cessation: a meta-analysis of long-term quit rates from controlled studies. *Journal of Occupational Medicine*, 32, 429-439.
- Greaves L, Jategaonkar N (2006). Tobacco policies and vulnerable girls and women: toward a framework for gender sensitive policy. *Journal of Epidemiology and Community Health*, 60, ii57-ii65.
- Griffiths, J. (2005). Smoke-free Scotland: Guidance on smoking policies for the NHS, local authorities, and care service providers. Scottish Executive.
- Gritz E, Thompson B, Emmons K et al. (1998). Gender differences among smokers and quitters in the Working Well Trial. *Preventive Medicine*, 27, 553-561.
- Health and Safety Commission (2003). *New figures on workplace deaths and injuries show no significant change* UK: Health and Safety Commission.
- Hey K, Perera R (2005). Competitions and incentives for smoking cessation. *Cochrane Database of Systematic Reviews*, CD004307.
- Hirayama T (1981). Non-smoking wives of heavy smokers have a higher risk of lung cancer: a study from Japan. *British Medical Journal*, 282, 183-185.
- Hunt K, Stoddard A, Barbeau E et al. (2003). Cancer prevention for working class, multiethnic populations through small businesses: The healthy directions study. *Cancer Causes and Control*, 14, 749-760.
- Jamrozik K (2005). Estimate of deaths attributable to passive smoking among UK adults: database analysis. *British Medical Journal*, 330, 812.
- Lader D, Goddard E (2005). *Smoking-related Behaviour and Attitudes, 2004* London: Office for National Statistics.

Lawrence D, Graber JE, Mills SL et al. (2003). Smoking cessation interventions in U.S. racial/ethnic minority populations: an assessment of the literature. *Preventive Medicine*, 36, 204-216.

MacDonald C (2006). Litter on the rise as smokers kick habit into streets. The Herald [On-line]. Available: <http://www.theherald.co.uk/politics/60801-print.shtml>

McNeill A, Raw M, Whybrow J et al. (2005). A national strategy for smoking cessation treatment in England. *Addiction*, 100, 1-11.

Ministry of Health (2005). *The smoke is clearing: Anniversary report 2005* New Zealand: Ministry of Health.

Moher M, Hey K, Lancaster T. (2005). Workplace interventions for smoking cessation. The Cochrane Database of Systematic Reviews: Reviews 2005 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD003440.pub2. Ref Type: Generic

Mulcahy M, Evans D, Hammond S et al. (2005). Secondhand smoke exposure and risk following the Irish smoking ban: an assessment of salivary cotinine concentrations in hotel workers and air nicotine levels in bars. *Tobacco Control*, 14, 384-388.

Office of Tobacco Control - Ireland (2005). *Smoke-free workplaces in Ireland. A one-year review*. Clane: Office of Tobacco Control.

Olsen GW, Lacy SE, Sprafka JM et al. (1991). A 5-year evaluation of a smoking cessation incentive program for chemical employees. *Preventive Medicine*, 20, 774-84.

PACT (2002). *Employers' smoking cessation guide: Practical approaches to a costly workplace problem*. New Jersey: PACT.

Parrot S, Godfrey C (2004). Economics of smoking cessation. *British Medical Journal*, 328, 947-949.

Parry O, Platt S, Thomson C (2000). Out of sight, out of mind: Workplace smoking bans and the relocation of smoking at work. *Health Promotion International*, 15, 125-133.

Pisano M (2006). The smoking ban: what lessons from Italy? Scottish Council Foundation [On-line]. Available: http://www.scottishcouncilfoundation.org/story_more.php?id=93&print=1

Quit (2001a). *Going smokefree a policy kit for sports club and associations: Creating healthy sportnig environments*. Carlton: Quit.

Quit (2001b). *Going smokefree...it works for me: A guide for workplaces*. Carlton: Quit.

Royal College of Physicians (2000). *Nicotine Addiction in Britain* London: Royal College of Physicians of London.

SCOTH (2004). *Secondhand Smoke: Review of Evidence since 1998* London: Department of Health.

Scottish Executive (2006). Latest situation. In.

Smedslund G, Fisher K, Boles S et al. (2004). The effectiveness of workplace smoking cessation programmes: A meta-analysis of recent studies. *Tobacco Control*, 13, 197-204.

Sorensen G, Glasgow R, Topor M et al. (1997). Worksite characteristics and changes in worksite tobacco-control initiatives: Results from the COMMIT study. *Journal of Environmental Medicine*, 39, 520-526.

Stockton MC, McMahon SD, Jason LA (2000). Gender and smoking behavior in a worksite smoking cessation program. *Addictive Behaviors*, 25, 347-60.

Strobl J, Latter S (1998). Qualified nurse smokers' attitudes towards a hospital smoking ban and its influence on their smoking behaviour. *Journal of Advanced Nursing*, 27, 179-88.

Twigg L, Moon G, Walker S (2004). *The smoking epidemic in England*. London: Health Development Agency.

Valley J (2006). We're cig and tired of litter fines. *The Scotsman*, 17 April.

Waranch HR, Wohlgemuth WK, Hantula DA et al. (1993). The effects of a hospital smoking ban on employee smoking behaviour and participation in different types of smoking cessation programmes. *Tobacco Control* 2, 120-126.

Ref Type: Journal (Full)

Warner K, Smith R, Smith D et al. (1996). Health and the economic implications of a work-site smoking-cessation program: A simulation analysis. *Journal of Occupational and Environmental Medicine*, 38.

Willemsen M, De Vries H, Oldenburg B et al. (1999). Impact of a comprehensive worksite smoking cessation programme on employees who do not take part in cessation activities. *Psychology and Health*, 14, 887-895.

Willmore I (2006). *Smokefree soon: England Switzerland: Global Smokefree Partnership*.

Worldbank (2002). *Smoke-free workplaces: At a glance*. Worldbank.