NICE RAPID REVIEW

Workplace policies for Smoking Cessation

Final Draft

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November 2021: NICE guidelines PH10 (February 2008) and PH14 (July 2008) have been updated and replaced by NG209.
The recommendations labelled [2008] or [2008, amended 2021] in the updated guideline were based on these evidence reviews.
See www.nice.org.uk/guidance/NG209 for all the current recommendations and evidence reviews.

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1. Executive Summary

This review contains assessments of the available data on the extent to which workplace policies stimulate, support and utilise smoking cessation, with a view to determining the likely effects of the introduction of national smoke-free legislation in England in 2007. This review was commissioned by the National Institute for Health and Clinical Excellence and the search was conducted before July 19 2006. A second search was conducted in September 2007 to identify any relevant literature published in 2006 and 2007. The available data has been assessed to answer 13 preset questions examining in detail the effectiveness of both workplace policies and workplace interventions in facilitating smoking cessation. Parliament approved the Health Act 2006 with provisions that ban smoking in almost all workplaces in England.

Method: A comprehensive literature search was conducted. A combined total of 13,683 titles and abstracts were screened and full paper copies of 97 studies were assessed for inclusion as evidence, with 51 studies identified as direct evidence.

Results: Cessation programmes aimed at the individual when combined with an institutional approach that provides environmental support for stopping smoking are effective in facilitating smoking cessation, and smoking restrictions positively impact the uptake of smoking cessation resources. The most effective workplace interventions are those with proven effectiveness in other settings. While financial incentives do not appear to increase the quit rates of these interventions, they can improve recruitment rates, thereby leading to higher absolute numbers of quitters in the long-term. Social or 'buddy' support seems to have a limited effect on workplace interventions, although intensive interventions are more effective than minimal interventions in facilitating smoking cessation.

There are few available studies on how the nature of employment and socio-demographic factors influence cessation outcomes in workplace interventions. Although there is some evidence that managers are more likely to successfully quit smoking, this may be partly explained by baseline differences between managers and other job categories. There are clearly gender differences in people's approaches to smoking cessation – although quitting success is reported to be comparable. Occupational status may also influence the effectiveness of workplace smoking cessation interventions.

Given that smoke-free legislation operates simultaneously within a comprehensive tobacco policy context, it is extremely difficult to disentangle the specific impacts of each policy on populations or sub-populations. There is very strong evidence that workplace policies decrease the incidence of smoking in the workplace, thereby reducing the exposure of employees to ETS at work. However, the evidence that overall daily cigarette consumption and smoking prevalence decrease as a result of workplace smoking bans is inconclusive – although early reports from countries that have implemented smoke-free legislation are promising. It is possible that workplace smoking bans may have a reduced impact on people with a lower education and/or women of low socio-economic status.

Attitudes towards smoking bans appear to vary based on the setting of the policy – attitudes to workplace and restaurant bans are more favourable than attitudes towards bans in bars and pubs – although attitudes become more favourable following the implementation of such bans. Indeed, evidence from countries that have implemented smoke-free legislation indicates that support for the legislation increases significantly following its implementation. Based on indicators such as education and occupation, people from lower SES groups and bar and restaurant managers appear to be the most opposed to bans in pubs/bars. According to monitoring data from countries that have implemented smoke-free legislation, compliance with the legislation is extremely high. However, varying degrees of compliance in bars appear to be associated with their socioeconomic and demographic characteristics.

Although the benefits of workplace smoking bans significantly outweigh their side effects, several adverse and unintended outcomes may potentially accompany the introduction of

smoking bans, such as unhealthy smoking behaviours – although the extent to which these smoking patterns undermine the net health benefits of smoking bans has not been established. Workplace 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

Note to Reader: There are two types of evidence drawn on in this review: 1) primary, tested evidence based on published studies; 2) anecdotal, inferential evidence that could not be evaluated. This latter evidence has been separately described and is used merely to illustrate current trends in smoking attitudes and behaviours in the context of smoke-free legislation. It should *not* be taken as direct evidence on the effects of workplace smoking bans (see section 3.4 for further discussion of the way the evidence has been assessed).

No	Statement	Grade	Country/s	Evidence
	WORKPLACE INTERVENTIONS			
	Effectiveness of smoking cessation support and services to smokers in the context of a smoke-free workplace			
1	Overall, it appears that workplace interventions in the context of 'environmental support' (workplace smoking restrictions and educational campaigns) are effective in facilitating smoking cessation. One 2+ American study found that a smoking cessation programme delivered in the context of a workplace smoking ban and educational campaign produced long term success rates similar to smoking cessation programmes more broadly. Another 1- American study found that environmental support may increase the success of workplace interventions, at least in the short term. Two 2- studies have identified Allen Carr workplace seminars to be an effective means of facilitating smoking cessation in the workplace. Online smoking cessation programmes have also been highlighted in a 4+ report as a potentially effective way of facilitating smoking cessation in the workplace. However, evidence on the effectiveness of these intervention types is presently weak and further research is needed to determine their effectiveness.	One 1- study, one 2+- study, two 2- study and one 4+ study.	USA, Austria	(Dawley et al. 1993 1-; Waranch et al. 1993 2+; Moshammer & Neuberger 2006 2-; Hutter, Moshammer & Neuberger 2006 2-; Etter 2006 4+)
	Interventions in the workplace that work best			
2	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	One 1++ systematic review and one 1+ meta-analysis	International	(Moher et al. 2005 1++; Fisher et al. 1990 1+)

	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.			
3	Two 1++ systematic reviews of international studies indicate that financial incentives are most commonly used by employers to encourage employee compliance with smoke-free workplace policies and the uptake of smoking cessation support. While the addition of incentives does not appear to increase the quit rates of smoking cessation interventions in the workplace, there is some 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. There is also some evidence that incentives may delay relapse to smoking, even if they don't prevent it altogether.	Two 1++ systematic reviews	International	(Moher et al. 2005 1++; Hey et al. 2004 1++)
4	One 1++ systematic review of international studies found that adding a social or 'buddy' support component to smoking cessation interventions in the workplace does not substantially improve cessation rates above and beyond group counselling and support alone.	One 1++ systematic review	International	(Moher et al. 2005 1++)
5	Evidence (1+) indicates that interventions that integrate workplace health promotion (WHP) and occupational health and safety (OSH) intervention models can promote smoking cessation for blue collar workers.	One 1+ review	International	(Sorensen et al. 2006 1+)
6	A 1++ systematic review and a 1+ meta-analysis of the available international literature suggests that intensive interventions are more effective than minimal interventions in facilitating smoking cessation in the workplace, although minimal interventions are more effective than no support at all.	One 1++ systematic review and one 1+ meta-analysis	International	(Moher et al. 2005 1++; Fisher et al. 1990 1+)
	Extent to which the type of workplace and/or nature of employment influence smoking cessation outcomes			
7	There are few available studies on how the type of workplace and/or nature of employment influence cessation outcomes in workplace interventions. One 2++ American study found that managers were more likely to successfully quit smoking in the long-term than smokers in other job categories. However, given that lighter smokers and older smokers were also more likely to quit successfully, it is possible that the increased success of managers may have been due to baseline	One 2++ study, one 2- study	USA, Australia	(Olsen et al. 1991 2++; Reilly et al. 2006 2-)

	differences between themselves and smokers in other occupational categories (i.e. the managers are likely to have been older and lighter smokers). There is weak evidence (2-) from an Australian study indicating that smoking cessation interventions may be effective for staff in mental healthcare settings.			
	Variations in the effectiveness of workplace smoking interventions based on factors such as age, sex, gender, class or ethnicity			
8	There is some evidence on how the effectiveness of workplace smoking cessation interventions varies with factors such as age, sex and gender. One 2++ American study that specifically explored the relationship between gender and smoking failed to find gender differences in quit rates following a smoking cessation intervention in the workplace. However, the study does note that significant gender differences were apparent in baseline smoking attitudes and behaviours.	One 2++ study, one 2+ study	USA	(Stockton et al. 2000 2++)
9	There is some evidence on how the effectiveness of workplace smoking cessation interventions varies with factors such as occupational status. One 1- Japanese study found that a low- intensity intervention program for smoking cession was more effective for older white collar workers than younger blue collar workers. However, a 1+ US study found that a tailored intervention can be effective in promoting tobacco use cessation among blue collar construction laborers. According to a 2+ study, workplace restrictions may be more prevalent and effective among (some groups of) women with higher incomes.	One 1- study and one 1+ study	Japan, USA	(Tanaka et al. 2006 1-; Sorensen et al. 2007 1+; Shavers et al. 2006 2+)
	Adverse or unintended outcomes of the intervention			
10	A 1++ systematic review indicates that workplace interventions may have the potential for higher participation rates than other contexts, and also provide the opportunity to access smokers who would otherwise not be accessible. These represent significant potential outcomes of workplace interventions.	One 1++ systematic review	International	(Moher et al. 2005 1++)
11	Evidence from a 2+ American study indicates that people who take part in workplace interventions in the context of smoking bans may enroll in the interventions to better control their cigarette consumption as opposed to intending to quit altogether.	One 2+ study	USA	(Waranch et al. 1993 2+)

	WORKPLACE POLICIES			
	Influence of the smoke-free workplace policy on smoking patterns			
12	A 1++ systematic review of international studies and two Irish studies (a 2++ study and a 2+ study) provide strong evidence that smoke-free workplace policies reduce the prevalence of smoking in the workplace and significantly reduce the exposure of employees to ETS at work.	One 1++ systematic review, one 2++ study, one 2+ study	International, Ireland	(Moher et al. 2005 1++; Allwright et al. 2004 2++; Mulcahy et al. 2005 2+)
13	The international evidence from a 1++ systematic review and a 1- meta-analysis on whether smoke-free work polices lead to a reduction in overall cigarette consumption is inconclusive. Reports from countries that have implemented national smoke-free legislation, including New Zealand (3+), the Republic of Ireland (3+), Italy (3+) and Norway (3-) indicate that a drop in cigarette sales has occurred – although the true effect of smoke-free legislation on cigarette consumption is still to be determined.	One 1++ systematic review, one 1- meta-analysis, three 3+ reports and one 3- report	International, New Zealand, Republic of Ireland, Italy, Norway	(Moher et al. 2005 1++; Fichtenberg & S.A. Glantz 2002 1-; Allwright 2005 2+; Directorate for Health and Social Affairs 2005 3-; Thomson & Wilson 2006 3+; Gallus et al. 2006 3+)
14	The international evidence from a 1++ systematic review and a 1- meta-analysis on whether smoke-free work polices lead to a reduction in overall smoking prevalence is inconclusive. Monitoring data from Italy (rating 3+) indicates that a reduction in smoking prevalence appears to be occurring. However, given the recent implementation of national smoke-free legislation, analytic evidence on its effects on smoking prevalence is not presently available.	One 1++ systematic review, one 1- meta-analysis, one 3+ report	International, Italy	(Moher et al., 2005 1++; Fichtenberg & S.A. Glantz, 2002 1-; Gallus et al. 2006 3+)
15	Although a 2++ American study and a 2+ Australian study have failed to find differences in the effectiveness of workplace smoking bans based on gender, age, and ethnicity, three American studies (one 1+RCT and two 2+ studies) and a 2+ Finnish study indicate that bans may have a reduced impact on the smoking behaviours of people with a lower education and/or women of low socio-economic status. Additionally, one Australian study (2-) found that phased-in smoke-free laws may positively impact young adults more than older adults.	One 1+ RCT, one 2++ study, one 2- and four 2+ studies	USA, Australia, Finland	(Moskowitz et al. 2000 2++; Owen & Borland 1997 2+; Miller & Hickling, 2006 2-; Heloma & Jaakola 2003 2+; Farrelly et al. 1999 2+; Gritz et al. 1998 1+; Levy et al. 2006 2+)
	Variations in the way that workplace policies are implemented that influence effectiveness			
16	Evidence from a 2+ US study	One 2+	USA	(Osinubi et al.

	indicates that a total grounds ban may be more effective than an indoor smoking ban in reducing cigarette consumption.	study		2004 2+)
	Impact of smoke-free workplaces on uptake of smoking cessation resources			
17 **Anecdotal evidence on smoke-free legislation**	According to a 2+ report from New Zealand, smoke-free legislation in conjunction with mass media campaigns does appear to lead to a statistically significant increase in phone calls to telephone quitlines. Newspaper reports on the impact of smoke-free legislation in Scotland also indicate an increase in calls to the national telephone quitline in the period following the enactment of the legislation.	One 2+ study	New Zealand Scotland	(Wilson et al., 2005 2+) (Howie et al. 2006)
18 **Anecdotal evidence on smoke-free legislation**	The available evidence from two 2+ US studies, one 3+ US report and one 2+ Australian study of workplace smoking bans indicates considerable variation in the impact of such bans on the demand for smoking cessation programmes. Demand for stop smoking programmes increased, although overall a relatively small proportion of smokers took advantage of the services that were provided. Newspaper reports from Scotland indicate that demand for smoking cessation services has increased substantially since the enactment of the ban – although it is unclear how much of this increase is due to the ban itself.	Three 2+ studies and one 3+ case report	USA, Australia Scotland	(Passannante et al. 1991 3+; Waranch et al. 1993 2+; Baile et al. 1991 2+; Borland 1990 2+) (Ross 2006; Brodie, 2006; BBC News, 2006)
19 **Anecdotal evidence on smoke-free legislation**	A 2+ US study indicates that smoke-free legislation has a significant impact on NRT sales and substantially increases demand for these products. Newspaper reports from Scotland also report an increase in demand for NRT following the enactment of the smoke-free legislation.	One 2+ study	USA Scotland	(Metzger et al., 2005 2+) (MacDonald, 2006; Rodrick, 2006)
	Steps that should be taken prior to the introduction of smoke-free regulations to maximise the impact			

20 **Anecdotal evidence**	Workplace smoking bans and smoke-free legislation should be carefully planned, include the input of smokers, and be accompanied by provision of help and support for smokers. Public support for bans and legislation can be strengthened by using media campaigns to inform the public about the adverse health effects of passive smoking and by treating the issue as a worker protection law rather than a consumer protection law. An effort should be made to understand diversity and materials and messages should be culturally appropriate. An adequate revenue base is crucial to support the implementation of legislation.			(Waranch et al. 1993; Anderson et al. 1999; Batlle et al. 1991; Baile et al. 1991; Moher et al. 2005; Strobl and Latter 1998); HDA 2005; R. Borland et al. 2006a)
	Acceptability of the policy to people affected by it			
21	A 1++ systematic review on workplace interventions for smoking cessation finds consistent international evidence of positive behaviour and attitudinal changes following the implementation of workplace bans and restrictions. However, a 2+ Australian study and a 2+ UK survey find that based on indicators such as occupation and education, workplace bans are less acceptable to people of lower SES.	One 1++ systematic review and two 2+ studies	International, Australia, UK	(Moher et al., 2005 1++; Borland et al., 1990 2+; Lader & Goddard 2005 2+)
22	There is consistent international evidence from three 2+ studies and two 2- studies that there is less public support for a smoking ban in bars and pubs than in restaurants, although attitudes become more favourable following the implementation of such bans. Based on indicators such as education and occupation, people from lower SES groups appear to be the most opposed to bans in pubs/bars. However, the evidence on how attitudes to bans in restaurants and bars vary based on gender, age and ethnicity is inconclusive. Findings from one Australian (2-) study reveal that support for	Three 2+ studies, three 2- studies, three 3+ studies	Australia, USA, Italy, New Zealand, Republic of Ireland	(Borland 2006b 2+; Friis & Safer, 2005 2-; Feigelman et al. 2006 2+; Schofield & Edwards 1995 2+; Ahmed et al., 2004 2-; Miller & Hickling, 2006 2-; Thomson & Wilson, 2006 3+)

	smoke-free laws was slightly tempered by differing opinions about the merit of a phase-in period for hospitality venues. Monitoring data (3+) from countries that have implemented smoke-free legislation in bars and restaurants (New Zealand, Italy and the Republic of Ireland) indicates that support for legislation increases significantly following its implementation.			
23	According to one 2+ Australian study and one 2- Swedish study, bar and restaurant managers (the former in particular) appear to have particularly negative attitudes towards smoking bans, substantially overestimating the potential financial impact of bans and underestimating the level of public support for them. However, according to two Australian studies (both 2+) and one Irish study (2+) attitudes become more favourable following the implementation of smoke-free legislation. 3+ monitoring data from New Zealand indicates that support for smoke-free bars amongst managers increases significantly following the introduction of legislation.	Three 2+ study, one 2- study, and one 3+ report	Australia, Sweden, New Zealand, Ireland	(Jones et al.1999 2+; Miller et al. 2007 2+; Pursell et al. 2007 2+; Hammar 2004 2-; Thomson & Wilson 2006 3+)
	Factors that affect compliance			
24	According to monitoring data from the Republic of Ireland (3+), Italy (3+) and New Zealand (3+), compliance with smoke-free legislation is reported to be extremely high. However, research from California (two 2++ studies) indicates that compliance in bars appears to be associated with their socioeconomic and demographic characteristics.	Three 3+ reports, two 2++ studies	Republic of Ireland, Italy, New Zealand, California	(Office of Tobacco Control 2005 3+; Thomson & Wilson 2006 3+; Gallus et al. 2006 3+; Moore et al., 2006 2++; Lee et al. 2003 2++) Pp. 43-44
	Adverse or unintended outcomes of the policy			
25	According to four 2+ studies, workplace smoking bans and partial smoke-free legislation	Six 2+ studies	Australia, USA, International	(Wakefield et al. 1992 2+; Baile 1991 2+;

	may lead to unhealthy smoking patterns such as compensatory smoking, harder smoking and displace smoking into the home. However, two 2+ studies indicate that compensatory smoking is unlikely to reach former levels and two 2+ studies indicate that smoking bans are associated with implementing a smoke-free home.			Borland et al., 2006a 2+; Borland et al. 1999 2+; Adda & Cornaglia, 2006 2+; Chapman 1997 2+)
26 **Inferential 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. However, a Brazilian study (2+) found that smoking restrictions made female workers who smoked feel isolated and marginalized. 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.	One 2- study, one 2+ study	Australia, Brazil	(Clarke et al., 1997 2-; Scarinci et al. 2007 2+) (Greaves & Jategaonkar 2006)
27	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.	One 2+ study, one 2+ study	Scotland and Republic of Ireland	(Parry et al. 2000 2+; Mulcahy et al. 2005 2+)
28	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.	Two 2- studies and one 2+ study	UK	(Strobl & Latter 1998 2-; Parry et al. 2000 2+; Anderson 1991 2-)

2. Background

Cigarette smoking is the leading cause of preventable death in the United Kingdom today. In England alone, between 1998-2002 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, and children exposed to ETS are at increased risk of bronchitis, asthma attacks, pneumonia, a reduction in lung function, middle ear disease and Sudden Infant Death Syndrome (SIDS).

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 of 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).

Although workplace restrictions on smoking have been contentious and entail arguments about freedom, privacy, workplace health and rights, as the health impacts of ETS have become more clearly established, the movement to ban smoking in workplaces has gained momentum worldwide, with a range of countries, states and cities implementing smoke-free legislation. In the United States, Canada and Australia, a growing number of regions have established smoke-free ordinances. Two of the most extensive and well publicised examples of such ordinances can be found in California, which extended its smoke-free legislation in January 1998 to include bars, lounges and nightclubs, and New York, which implemented a Smoke Free Air Act in 2003 prohibiting smoking in virtually all enclosed public places.

More recently, several countries have implemented comprehensive smoke-free legislation at the national level, including the Republic of Ireland in March 2004, Norway in June 2004, New Zealand in December 2004, Italy in January 2005, Sweden in June 2005, and Scotland in March 2006. The decision of its closest neighbours to go smoke-free has placed the English government under considerable political pressure to implement similar legislation.

2.1 Current Smoking Restrictions in England

In 1998, following the publication of the landmark White Paper *Smoking Kills* (Department of Health 1999), the health and economic effects of smoking were

placed upon the political agenda in England as never before. *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).

Specifically, the White Paper indicated that the Health and Safety Commission (HSC) would consult on a new Approved Code of Practice on smoking in the workplace in order to substantially toughen existing measures by defining the kind of smoking policies employers would need to implement to comply with existing health & safety legislation. It also included provision of a Public Places Charter whereby signatories representing key organisations in the hospitality industry agreed to "increasing [the] provision of facilities for non-smokers and availability of clean air".

In March 2000 formal targets were agreed between industry representatives and the Department of Health with compliance to be achieved by January 2003 (The Charter Group 2003):

- 50% of all pubs and half the members of the Restaurant Association should have a formal smoking policy and carry an external policy sign
- 35% of these premises should restrict smoking to designated and enforced areas and/or have ventilation that met the agreed standard.

Although *The Public Places Charter on Smoking Industry Progress Report* (The Charter Group 2003) found that both of the targeted sectors (pubs and restaurant association members) had comfortably exceeded their targets[1], it also concluded that non-smoking pubs remain a rarity (The Charter Group 2003). Moreover, while just over half of the respondents surveyed in the 2004 *Smoking-related Behaviour and Attitudes Survey* (Lader and Goddard 2005), indicated that they worked in locations where smoking was not allowed at all on the premises, a further 37% worked in premises that had smoking in designated areas and 8% worked in locations where there were no restrictions on smoking at all (see table 1).

Table 1. Restrictions on smoking where respondent currently works, 1996-2004

Level of restriction	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
	%	%	%	%	%	%	%	%
No smoking at all	40	42	48	44	47	50	50	51
Designated areas only	42	41	37	40	38	36	38	37
No restrictions at all	13	13	11	11	9	9	8	8
Don't work with others	5	4	4	5	6	5	4	4
Base=100%	2154	2195	2104	1883	2040	2251	2084	2174

Although the *Smoking-related Behaviour and Attitudes Survey* (Lader and Goddard 2005) shows that there has been a substantial increase in the implementation of workplace smoking bans since 1996 (see table 1), it is clear that voluntary legislation has not led to the uniform or universal creation of smoking restriction policies, particularly in pubs and restaurants. Moreover, the *Smoking-related Behaviour and Attitudes Survey* (Lader and Goddard 2005) has also revealed that men, heavy smokers and those in routine and manual occupations are the most likely to work at premises that do not restrict smoking.

[1] Questions can be raised about the utility of these targets in increasing the availability of 'clean air' in pubs and restaurants as they merely required half of these establishments to have a formal policy in place, and a third of these locations to restrict smoking to designated areas.

2.2 Smoking-Related Inequalities

In England, as in most developed countries, inequalities in mortality and morbidity are strongly linked to socio-economic factors such as social class (occupation), income, level of education and area of residence (Chesterman et al. 2005). Socio-economic inequalities in smoking are one of the main factors responsible for the gap in life expectancy between rich and poor in England (Killoran et al. 2006). Indeed, tobacco is responsible for more than half the difference in male mortality between those in the highest and lowest socio-economic groups living in the UK (Jarvis and Wardle 1999). Moreover, the gap between the smoking rates of manual and non-manual groups in the UK appears to be widening as there has been a sharper decline in smoking prevalence among non-manual compared with manual social groups (Killoran et al. 2006).

The fact that people in routine and manual occupations are less likely to work in environments that restrict smoking means that whether they smoke or not, their exposure to ETS at work is higher than for those people in intermediate and professional and managerial occupations. Furthermore, this increased exposure to ETS also seems to carry over into the leisure environments of people from routine and manual groups.

A recent study (Tocque et al. 2005) has found that the pubs and restaurants most likely to allow unrestricted smoking are situated in the areas of highest deprivation. These findings provide further evidence that the voluntary legislation has not protected all workers equally from the effects of ETS – and workers in some occupations (particularly routine and manual occupations) continue to suffer from high levels of exposure.

2.3 Smoke-free Legislation in England

In response to these factors and ongoing lobbying by health campaigners, in 2004 the *Choosing Health* White Paper (Department of Health 2004) announced the Government's proposed 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; however, as a result of a strong view amongst members of both the public and parliament that this legislation did not go far enough, the Government brought forward alternative options for extending the smoke-free provisions, including the possibility of "national legislation to make all indoor public places and workplaces completely smoke-free (with minimal exemptions)" (Department of Health 2006). This option 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 and has been described 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 the ostensible goal of smoke-free legislation is to reduce the health effects of ETS on workers, a reduction in smoking prevalence is expected to be an ancillary benefit. However, given that smoke-free legislation operates simultaneously within a comprehensive tobacco policy context, it is extremely difficult to disentangle the specific impacts of each policy on populations or sub-populations (Greaves et al. 2004). As G.T. Fong et al. (2006) point out,

> Evaluation of tobacco control policies at the population level is in its early stages of development, and as such, studies on the effectiveness of tobacco control policies suffer from design limitations. Cross-sectional studies… are generally weak in their ability to yield causal attributions. Longitudinal studies are… higher in internal validity, but the limited number of such studies in tobacco policy research often lack comparison groups, and are thus unable to disentangle policy effects from secular trends and historical event threats to internal validity.

Thus, while policy makers are understandably hopeful that bans implemented as part of a comprehensive tobacco control policy will have a clear effect on cigarette consumption, prevalence rates and health inequalities, unthreading the effects of smoke-free legislation is virtually impossible.

Ultimately, while it is clear that comprehensive tobacco control policies have improved overall population health and health inequalities, there is a lack of research into the various components of tobacco policies and their effectiveness (Greaves et al. 2004). This is particularly true of smoke-free legislation; given its very recent implementation in countries around the world, its long-term impact is still to be assessed. Further research is also needed on the impact of such legislation on sub-populations, particularly disadvantaged groups. As L. Greaves et al. (2004) point out, "the actual patterns, trends and effects of policy implementation among disadvantaged groups are often undiscovered, preventing due consideration of the effects of interventions, and thus, policies, on many sub-populations…".

A key aim of this review is to provide an initial analysis of the existing evidence on the effects of policy implementation – with a particular focus on deprived populations. It contains assessments of the available data on the extent to which workplace policies stimulate, support and utilise smoking cessation, with a view to determining the likely effects of the introduction of national smoke-free legislation in England in 2007.

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.

In addition to the search conducted in May 2006, another literature search was conducted by Daniel Tuvey (Information Specialist, NICE) in September 2007. The first search covered reviews, guidelines and project databases and produced 103 references. A second search covered non-reviews and produced 557 references. A detailed report of processes, databases, and search terms used is presented in Appendix D. Studies not published in English were excluded from the review.

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 240 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 Policies and Interventions

The review was international in scope and included workplace smoking policies and workplace smoking cessation interventions aimed at the workforce. Policies of interest ranged from total indoor bans to total grounds bans on smoking in the workplace. Interventions of interest were those provided in the workplace. All types of intervention were considered, such as group therapy, individual counselling, self-help materials, and nicotine replacement therapy (NRT).

3.3 Outcomes

The outcomes of interest were:

1. Changes in attitudes toward the policy or intervention from the employers' and/or employees' point of view
2. Changes in the consumption of cigarettes at the workplace following the policy or intervention (with biochemical validation where recorded).

The research team was particularly interested in literature that analysed these outcomes based on setting and factors such as sex, gender, class, ethnicity and age.

A recent Cochrane Review (Moher et al. 2005) on the effectiveness of workplace smoking interventions in reducing cigarette consumption provided a key source of

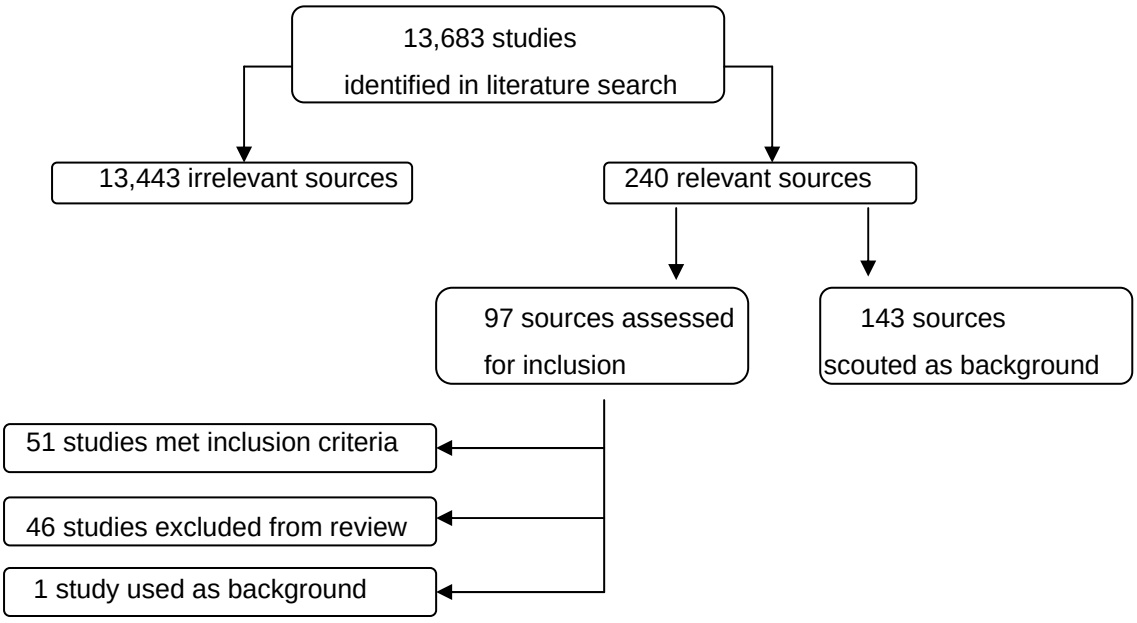
information in the following review. When evaluating the effects of workplace smoking cessation interventions and bans on smoking attitudes and behaviour, the Cochrane Review has been used as the key source of evidence rather than attempting to summarise all of the individual studies identified in the literature search on this topic.[2] However, a number of the studies listed in the Cochrane Review have been separately considered in the following report.

The procedure used to determine whether studies listed in the Cochrane Review should be independently examined was as follows:

1) The abstracts of all the studies listed in the review were searched.
2) Any abstracts that provided mention of the effects of policies or bans on any of the socio-demographic variables of interest (such as gender, class, etc) or any of the other issues of interest (such as unintended consequences, etc) were noted and the copies of the full studies obtained.
3) Following scrutiny of the full papers, two reviewers independently determined whether the studies were relevant enough to rate as evidence.

Following the elimination of 13,443 irrelevant records based on title alone (from the searches conducted in May 2006 and September 2007), two reviewers assessed abstracts of 240 records for possible inclusion and 97 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, 51 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.

Figure 1. The evidence



3.4 Quality Appraisal

Tested Evidence

[2] Obviously there was a substantial degree of overlap between those studies identified in the literature search and those listed in the Cochrane Review.

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.

Several qualitative studies were included in the review; while the *Public Health Guidance Methods Manual* provides guidance on how their methodological rigour should be assessed, the research team had to make a judgement about the level the qualitative studies should be assigned, based on their relevance to the research question. The research team decided that qualitative studies containing rigorous analysis of cigarette consumption and smoking prevalence should receive a level 2 rating.

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 E).

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 *very unlikely* to alter
+	**Some of the criteria have been fulfilled** Where they have been fulfilled the conclusions of the study or review are thought *unlikely* to alter
-	**Few or no criteria fulfilled**

	The conclusions of the study are thought *likely or very likely* to alter

Applicability of evidence
No statements have been made about the applicability of the evidence to the UK setting. The BCCEWH team did not feel that it was appropriate to discuss the applicability of the evidence for two reasons. First, the review was international in scope and covers studies largely from Australia, the United States and Canada. It is therefore unclear how readily the findings of these studies translate to an English setting. Second, as much of the tested evidence relates to localised workplace smoking bans and jurisdictions with partial smoke-free legislation in place, it is also unclear how applicable these findings are when attempting to determine the likely effects of large-scale clean air laws and smoke-free legislation – such as the legislation implemented in England in 2007.

Strength of evidence
Although tested evidence from published studies provides the primary source of evidence for this review and statements regarding the strength of the evidence have been drawn solely from this material, given that it is unclear how readily this evidence translates to countries that have implemented national smoke-free legislation, an effort has been made to consider the available level 3 evidence of the effects of smoke-free legislation from countries that have recently gone smoke-free (e.g. the UK, Republic of Ireland, Norway, Italy and New Zealand). Although level 3 evidence has not been listed in the evidence table because it could not be evaluated accorded to established standards of evidence, some attempt has been made to rate the general quality of this evidence (see Appendix B for a full list of level 3 sources and rationale for their quality rating).

These level 3 reports do not constitute analytic evidence as they merely summarise monitoring data on the legislation, without attempting to account for secular trends that may have influenced present smoking attitudes and behaviour. However, while these data should not be taken as definitive 'evidence', they do constitute the only available information on the effects of national smoke-free legislation and has therefore been outlined in the review alongside the tested evidence.

Other evidence
Aside from the tested and inferential (level 3 & 4) evidence outlined above, this review also draws on anecdotal evidence emerging from Scotland based on its recent experience with going smoke-free as well as anecdotal reports about the steps that can be taken prior to introducing legislation to maximise its effects. (This anecdotal evidence should not be taken as definitive evidence on the effects of smoke-free legislation; it has been separately sign-posted in the evidence statements as 'anecdotal evidence' for this reason). Finally, one section of the report also discusses 'inferential evidence' (see section 4.2.7) where the research team has inferred possible effects of legislation, rather than drawing on tested evidence.

3.5 Synthesis

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

4. Summary of Findings

This review focuses on workplace policies to stimulate, support and utilise smoking cessation in England. A workplace policy is defined as a complete prohibition on smoking, with or without clinical support for cessation attempts. A workplace is defined as all enclosed or substantially enclosed settings where people are employed, including areas they have to enter as part of their paid or unpaid employment[3] (e.g. office buildings, factories, hospitals, leisure facilities, bars and restaurants).

The research questions devised for this review relate to two distinct categories: workplace interventions for smoking cessation and workplace smoking restrictions.

Questions about Interventions

1) What is the effectiveness of smoking cessation support and services to smokers in the context of a smoke-free workplace?

2) Which interventions in the workplace work best?
- What is the content of intervention?
- Does the effectiveness depend on the job title/position of the deliverer?
- Does the intensity of the workplace intervention influence smoking cessation outcomes?

3) To what extent does the type of workplace and/or nature of employment influence smoking cessation outcomes?

4) How does the effectiveness of workplace interventions vary with factors such as age, sex, gender, class or ethnicity?

5) What are the adverse or unintended outcomes of the intervention?

6) How acceptable is the intervention to those affected by it?

[3] We have excluded schools from this review, because none of the available studies on school smoking policies focus on the effects of these policies on staff and visitors. Rather, they aim to reduce the uptake of smoking among adolescents, which is outside the scope of this review.

Questions about Policy

1) What is the effectiveness of the smoke-free workplace policy in:
   - encouraging quit attempts
   - decreasing tobacco consumption
   - decreasing overall smoking prevalence
   - decreasing the prevalence of smoking in the workplace

2) How does the way that workplace policies are implemented influence effectiveness?

3) What is the impact of smoke-free workplaces on uptake of smoking cessation resources? For example, NHS Stop Smoking Services, telephone quitlines, etc.

4) What steps could be taken prior to the introduction of smoke-free regulations to maximise the impact? E.g., public information campaigns, increased resources for smoking cessation support.

5) How acceptable is the policy to people affected by it?
   - Based on the setting of the policy (workplace, restaurants, bars)
   - Based on factors such as age, sex, gender, class or ethnicity

6) What factors affect compliance?

7) What are the adverse or unintended outcomes of the policy?

4.1 WORKPLACE INTERVENTIONS

4.1.1 What is the effectiveness of smoking cessation support and services to smokers in the context of a smoke-free workplace?

While there are a number of studies that assess the effectiveness of workplace smoking cessation interventions and a similarly large body of literature on the effectiveness of workplace smoking bans, there are very few studies that explore the success of smoking cessation support in the context of such bans. Moreover, those studies that do assess multi-component smoking control programmes (Batlle et al. 1991)[4] often do not attempt to tease apart the various components of their tobacco programmes when reporting their results.

Two US studies were identified that discuss the quit rates amongst participants in smoking cessation programmes in the context of 'environmental support', including both educational campaigns and smoking restrictions (Dawley et al. 1993; Waranch et al. 1993). Dawley et al. (Dawley et al. 1993) (rating 1-) report on the findings of smoking cessation interventions at three chemical plants – one of which was randomly assigned to smoking cessation only, while the other two were assigned to a comprehensive programme of smoking control (including smoking restrictions, 'discouragement' in the form of educational campaigns and cessation treatment). However, all three sites already had some form of smoking policy in place. Thus, the study ultimately tests the effectiveness of an educational campaign on top of a smoking cessation intervention in the context of varying degrees of workplace restrictions on smoking.

The authors found that companies assigned to a comprehensive programme of smoking control and discouragement (education) were significantly more likely to have both higher participation rates in the intervention as well as higher quit rates overall. Four months after the completion of the group intervention: Company 1 (the site assigned to the intervention only), which had a participation rate of 7%, had a quit rate of 36%; Company 2 (assigned to a 'comprehensive programme' of smoking control), which had a participation rate of 22%, had a quit rate of 54% and Company 3 (already with a complete smoking ban in place and assigned to a 'comprehensive programme' of smoking control), which had a participation rate of 13%, had a quit rate of 48%. Unfortunately, given the differences between the three companies at baseline and the fact that pre-existing workplace restrictions were not controlled for, it is unclear how these contexts affected the success of the smoking cessation intervention. Nevertheless, the findings of the study indicate that a multi-component approach to smoking cessation improves success in the short-term.

Waranch et al. (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

[4] For example, Batlle et al. (Batlle et al. 1991) report on the implementation of a comprehensive tobacco control programme in a Spanish hospital, which included information sessions on the harmful consequences of smoking, educational posters, restrictive measures against smoking, and the creation of a smoking cessation clinic. The study found that overall, the population of ex-smokers increased from 15.8% to 23.2% in the two and a half years between the implementation of the smoking control programme and the follow up survey. However, the authors do not separately report on the quit rates of those who attended the cessation programme at the smoking clinic and it is unclear what impact the smoking policy had, if any, on their success.

employee smoking behaviour and 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 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.

One year after the hospital became smoke-free, participants were called for a brief telephone interview; those participants who said they were not smoking were encouraged to come in for CO validation. Overall, the success rates of the programme were slightly lower than the long-term success of smoking interventions more broadly[5], producing a combined quit rate of 8.4%. The two programmes with the highest success rate were the multi-component group (12.5%) and the one-hour clinics (21.7%[6]); 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%[7]). Given that during this same period the self-reported smoking prevalence among employees dropped by 5.5 percentage points, the vast majority of those who stopped smoking appear to have done so on their own, without the use of formal support.

The results of this study seem to indicate that the workplace smoking ban and discouragement efforts did not increase the effectiveness of smoking cessation support beyond the results expected by a smoking cessation intervention alone. However, because the numbers of people who enrolled in the cessation programmes were so small, the findings of this study should be treated with some caution.

Several alternative workplace intervention types (i.e. seminars, online cessation programmes), were identified in the literature search; however, these interventions have not been subject to sustained evaluation and their short and long-term effectiveness is presently unclear. Allen Carr's Easyway To Stop Smoking, a commercial smoking cessation programme, currently offers workplace smoking cessation seminars to a number of corporate clients in both the UK and abroad. This method, based on a combination of psychotherapy and hypnotherapy (Allen Carr's Easyway to Stop Smoking 2006) entails one 5-6 hour long seminar where a trainer provides a structured talk and open group discussion to help participants discover why they smoke and allay their fears about quitting. During this process, participants are encouraged to smoke so that they can consciously analyse why they engage in this activity amidst the act of smoking itself (Hutter et al. 2006).

[5] The evidence-base indicates a cessation rate of between 10% (brief intervention plus NRT) and 30% (intensive group support plus pharmacotherapies at 52 weeks (Ferguson et al. 2005).

[6] 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.

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

Two recent journal articles (Hutter et al. 2006; Moshammer and Neuberger 2006) report on the results of Allen Carr Easyway seminars in Austrian workplaces. In one of the studies (Moshammer and Neuberger 2006) (rating 2-), focusing on employees in a steel factory, 51.4% of respondents (N=262) self-reported continuing abstinence at 3 years. The other study (Hutter et al. 2006) (rating 2-), focusing on a variety of workplaces, produced self-reported quit rates at one year of 40%. However, high-quality research needs to be conducted to verify these results, as the Easyway seminars have not been subject to previous independent evaluation (Hutter et al. 2006).

Another alternative to traditional on-site workplace interventions is online smoking cessation programming, which provides access to large numbers of smokers and has the potential to be a cost-effective means of cessation counselling – especially in workplaces which do not have adequate resources to offer onsite smoking cessation support. One example of an online workplace smoking cessation programme is Nicotest (G-nostics 2005). This programme involves both online support and diagnostic testing, producing a personalised behaviour therapy programme. Nicotest online support consists of two components, an initial questionnaire (assessing nicotine dependence and the necessary lifestyle changes needed) and an eleven week follow up course consisting of motivational emails, coping plans and chat rooms. These online measures assist in creating a cessation programme tailored to the specific needs of each individual. However, there is a lack of research and evaluation outlining the effectiveness of Nicotest and other online smoking cessation programmes; as a result, it is not known which components of these programmes are effective, or if they are successful in the long term (Etter 2006) (rating 4+). Further research needs to be conducted to determine the reach and efficiency of these programmes (Etter 2006).

No. 1

Strength of evidence

Overall, it appears that workplace interventions in the context of 'environmental support' (workplace smoking restrictions and educational campaigns) are effective in facilitating smoking cessation. One 2+ American study found that a smoking cessation programme delivered in the context of a workplace smoking ban and educational campaign produced long term success rates similar to smoking cessation programmes more broadly. However, another 2- American study found that environmental support may increase the success of workplace interventions, at least in the short term. Two 2- studies have identified Allen Carr workplace seminars to be an effective means of facilitating smoking cessation in the workplace. Online smoking cessation programmes have also been highlighted in a 4+ report as a potentially effective way of facilitating smoking cessation in the workplace. However, evidence on the effectiveness of these intervention types is presently weak and further research is needed to determine their effectiveness.

4.1.2 Which interventions in the workplace work best?

Content of intervention

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. The findings of studies on interventions in the workplace are largely consistent with the findings from systematic reviews on smoking cessation in other settings. There is strong evidence that group therapy, individual counselling and pharmacological treatments all have an effect in facilitating smoking cessation. The authors conclude, "workplaces can offer services with proven effectiveness to individual smokers seeking to stop smoking" (p. 19). However, M. Moher et al. (2005) 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.

Interestingly, 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; or it could be that there is no one "silver bullet" or optimal approach.

No. 2

Strength 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.

- *Incentives*

One difference between workplace smoking cessation interventions and interventions in other settings is that incentives are commonly used to facilitate smoking cessation and the uptake of smoking cessation services.

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)
5) Smokers were offered bonuses for not smoking at work.

Both Cochrane Reviews found limited evidence that incentives increase the effectiveness of workplace interventions. M. 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. However, both reviews found some evidence that incentives increase recruitment rates into worksite interventions, thereby leading to potentially higher absolute numbers of quitters in the long-term.

No. 3

Strength of evidence

Two 1++ systematic reviews of international studies indicate that financial incentives are most commonly used by employers to encourage employee compliance with smoke-free workplace policies and the uptake of smoking cessation support. While the addition of incentives does not increase the quit rates of smoking cessation interventions in the workplace, there is some 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. There is also some evidence that incentives may delay relapse to smoking, even if they don't prevent it altogether.

- *Social or 'Buddy' Support*

The Cochrane Review (Moher et al. 2005) (rating 1++) also evaluates the effectiveness of workplace smoking cessation interventions that entail social (or 'buddy') support for not smoking. In the two studies reviewed, social support was provided by a 'significant other', such as a spouse, a workmate or a close friend. The two studies of social support found that this additional component did not improve cessation rates above and beyond a basic programme of group counselling and support offered in the workplace.

No. 4

Strength of evidence

One 1++ systematic review of international studies found that adding a social or 'buddy' support component to smoking cessation interventions in the workplace does not substantially improve cessation rates above and beyond group counselling and support alone.

Coordinated and Integrated Interventions

A recent review (1+) examined integrating worksite health promotion and occupational health and safety as means for enhancing the effectiveness of efforts to promote and protect worker health (Sorensen et al., 2006). Evidence indicates that integrating workplace health promotion (WHP) and occupational health and safety (OSH) intervention models promotes smoking cessation among blue collar workers. For example, one study found that smoking quit rates among blue collar workers more than doubled in the WHP/OSH condition relative to those in the WHP condition (11.8% vs. 5.9%; p=0.04) and were comparable to quit rates among white collar workers. Overall, results indicate that coordinating and integrating worksite health promotion and occupational health and safety (OSH) intervention models can promote smoking cessation among certain groups.

No. 5

Evidence (1+) indicates that interventions that integrate workplace health promotion (WHP) and occupational health and safety (OSH) intervention models can promote smoking cessation for blue collar workers.

Does the effectiveness depend on the job title/position of the deliverer?

No studies were identified in the literature search that address whether the effectiveness of smoking cessation interventions in the workplace depend on the job title/position of the deliverer.

Does the intensity of the workplace intervention influence smoking cessation outcomes?

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 (± .13 for 2 to 6 hours; QR = 18%).

No. 6

Strength of evidence

A 1++ systematic review and a 1+ meta-analysis of the available international literature suggests that intensive interventions are more effective than minimal interventions in facilitating smoking cessation in the workplace, although minimal interventions are more effective than no support at all.

4.1.3 To what extent does the type of workplace and/or nature of employment influence smoking cessation outcomes?

Few studies have set out to explore how the type of workplace and/or nature of employment influence the effectiveness of workplace interventions for smoking cessation. A 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 the participants who had quit the longest were more likely to have been managers and lighter smokers. The authors speculate that managers may have felt pressure to lead by example, whereas there was no such additional pressure felt by workers in other job categories. However, as the successful quitters also tended to be lighter smokers at baseline, this is likely to have influenced their ability to maintain abstinence in the long term.

A recent Australian study (2-) examined the implementation of a staff smoking cessation support group within a mental health care service (Reilly et al., 2006). The pre-intervention survey revealed that 11 participants were smoking daily but were trying to quit and four had quit in the previous three months. At the conclusion of the programme, eight participants had stopped smoking, two individuals were still smoking daily, and two were still smoking but trying to quit. Three individuals who did not complete the post intervention survey had indicated that they had quit. Overall, 11 participants had stopped smoking by the end of the programme and seven remained non-smoking three months later.

No. 7

Strength of evidence

There are few available studies on how the type of workplace and/or nature of employment influence cessation outcomes in workplace interventions. One 2++ American study found that managers were more likely to successfully quit smoking in the long-term than smokers in other job categories. However, given that lighter smokers and older smokers were also more likely to quit successfully, it is possible that the increased success of managers may have been due to baseline differences between themselves and smokers in other occupational categories (i.e. the managers are likely to have been older and lighter smokers). There is weak evidence (2-) from an Australian study indicating that smoking cessation interventions may be effective for staff in mental healthcare settings.

4.1.4 How does the effectiveness of workplace smoking interventions vary with factors such as age, sex, gender, class or ethnicity?

Gender

Unfortunately, the Cochrane Review on workplace interventions for smoking cessation does not assess the differential effectiveness of these interventions based on factors such as age, sex, gender, class or ethnicity.[8] Some studies were identified in the literature search that specifically focused on these factors.

In their study of gender and smoking behavior in a worksite smoking cessation program, the researchers (Stockton et al. 2000) (rating 2++) found no gender

[8] See W. Rogers (2004) for a critique of the Cochrane Collaboration based on its "gender blindness" and its potential to disenfranchise women in developing guidelines for 'evidence-based medicine'.

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.

Although the broader literature on gender and smoking cessation suggests that men tend to be more successful at quitting smoking than women (Bjornson and Rand 1995), the findings of Stockton et al.'s (Stockton et al. 2000) study support the large body of research indicating that women have lower levels of confidence in relation to quitting and that there are differences in the meaning and role of tobacco in men and women's lives (Judge et al. 2005; Graham 1994; Jacobsen 1981; Jacobsen 1986; Greaves 1996).

No. 8

Strength of evidence

There is some evidence on how the effectiveness of workplace smoking cessation interventions varies with factors such as age, sex and gender. One 2++ American study that specifically explored the relationship between gender and smoking failed to find gender differences in quit rates following a smoking cessation intervention in the workplace. However, the study does note that significant gender differences were apparent in baseline smoking attitudes and behaviours.

SES

In relation to age and socio-economic status, a Japanese study (1-) by Tanaka et al. (2006) tested the effectiveness of a low- intensity intervention program for employees who had a low readiness to quit. Multiple logistic regression analysis showed that age (50 years or older) (OR=2.49, $p<0.001$), white collar occupation (OR=1.74, $p=0.024$), having attempted to quit in the past (OR=1.60, $p<0.001$), and having higher readiness to quit (stages of contemplation and preparation) (OR=2.75, $p=0.002$) were significantly associated with higher smoking cessation rate at 36 months after study entry.

A recent US study (1+) tested a behavioral intervention among blue collar construction laborers (Sorensen et al., 2007). At baseline, 40% of control group participants and 45% of intervention group participants reported using any tobacco in the last seven days. At the end of the intervention, 8% of baseline cigarettes smokers in the control group had quit, compared to 19% in the intervention group ($p = 0.03$). Similar results were found for cessation from any form of tobacco use (7% versus 19%, respectively, $p = 0.005$). Finally, there were group differences in quit attempts. Of those who responded, 35% of control smokers (28 out of 79) compared to 53% of

intervention smokers (42 out of 80) made at least one quit attempt (p = 0.03). Overall, a tailored intervention can be efficacious in promoting tobacco use cessation among construction laborers.

A recent US study (2+) by Shavers et al. (2006) examined the association of workplace smoking policies and home smoking restrictions with current smoking among US women from diverse backgrounds. Findings revealed that the prevalence of having an official workplace smoking policy that completely banned smoking increased with distance from the poverty level threshold. The adjusted odds of current smoking was lower (OR .79, 95% CI 0.73, 0.85) for white women who reported a workplace policy that permitted smoking in the work area compared with white women who reported no official workplace smoking policy. Finally, compared with not having an official smoking policy, workplace policies that permitted smoking in some areas, were significantly associated with increased odds of current smoking for women at or below the poverty level (OR 1.75, 95% CI 1.14, 2.68). Policies that prohibited smoking in the work area were significantly associated with lower odds of current smoking among women 150% or more above the poverty level only (OR 0.81, 95% CI 0.743, 0.90).

No. 9

Strength of evidence

There is some evidence on how the effectiveness of workplace smoking cessation interventions varies with factors such as occupational status. One 1- Japanese study found that a low- intensity intervention program for smoking cession was more effective for older white collar workers than younger blue collar workers. However, a 1+ US study found that a tailored intervention can be effective in promoting tobacco use cessation among blue collar construction laborers. According to a 2+ study, workplace restrictions may be more prevalent and effective among (some groups of) women with higher incomes.

4.1.5 What are the adverse or unintended outcomes of the intervention?

According to the Cochrane review on workplace interventions for smoking cessation (Moher et al. 2005) (rating 1++), there are certain potential, albeit unintended, advantages to conducting interventions in the workplace. 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. However, most importantly, workplace interventions provide an opportunity to target people who may not otherwise be accessible (for example, young men). Although the literature search did not produce information on any studies that have sought to test whether workplace interventions do enrol more smokers or those who otherwise not access treatment, this possibility may represent a positive unintentional outcome of workplace interventions.

No. 10

Strength of evidence

A 1++ systematic review indicates that workplace interventions may have the potential for higher participation rates than other contexts, and also provide the opportunity to access smokers who would otherwise not be accessible. These represent significant potential outcomes of workplace interventions.

Although the literature search produced no information on the adverse outcomes of smoking cessation interventions in the workplace, there is some evidence that people who take part in workplace interventions specifically in the context of a smoking ban may enrol in such interventions for different reasons than people who enrol in smoking cessation interventions in other contexts. For example, at Johns Hopkins Hospital, researchers found that some participants appeared to be taking part in interventions in order to reduce their smoking, as opposed to quitting altogether (Waranch et al. 1993) (rating 2+). This may be considered an unintended outcome of interventions in the context of smoke-free legislation, as it is generally anticipated that the people who enrol in cessation programmes intend to quit smoking altogether as opposed to merely gaining more control over their consumption.

No. 11

Strength of evidence

Although workplace smoking cessation interventions are not reported to be associated with any adverse or unintended outcomes, evidence from a 2+ American study indicates that people who take part in workplace interventions in the context of smoking bans may enroll in the interventions to better control their cigarette consumption as opposed to intending to quit altogether.

4.1.6 How acceptable is the intervention to those affected by it?

No studies were identified in the literature search that address how acceptable smoking cessation interventions in the workplace are to those affected by them.

4.2 WORKPLACE POLICY

4.2.1 What is the effectiveness of the smoke-free workplace policy in:

a) decreasing the prevalence of smoking in the workplace
b) encouraging quit attempts
c) decreasing tobacco consumption
d) decreasing overall smoking prevalence

A recent Cochrane Review (Moher et al. 2005) (rating 1++) explores the extent to which workplace smoking bans help workers to stop smoking or to reduce tobacco consumption. As this review systematically brings together 25 studies[9], it provides a key source of evidence on this issue.

a) Decreasing the prevalence of smoking in the workplace
According to the Cochrane Review (Moher et al. 2005) (rating 1++), in eight studies smoking restrictions or bans were associated with a reduction in the number of cigarettes smoked during regular work hours. The Cochrane Review concludes that there is consistent evidence that workplace tobacco policies and bans can decrease cigarette consumption during the working day by smokers and exposure of

[9] For studies of restrictions and bans, the Cochrane Review included controlled trials and post-intervention outcomes and interrupted time series studies. The heterogeneity of the included studies meant that a meta-analysis could not be performed and only a narrative summary of the studies was provided.

employees to ETS at work. According to these two measures, the incidence of smoking in the workplace is clearly reduced.

Another strong piece of evidence on this topic is a recent study (Allwright et al. 2005) (rating 2++) in which staff working in pubs in the Republic and Northern Ireland were enrolled in a baseline survey in the six months leading up to the smoking ban in the Republic of Ireland (September 2003 to March 2004) and followed up one year later (September 2004 to March 2005) to assess changes in their exposure to second-hand smoke. Cotinine concentrations in non-smokers in the Republic dropped by 71% following the ban, more than twice as much as in Northern Ireland. Similarly, another study from the Republic of Ireland (Mulcahy et al. 2005) (rating 2+), which assessed changes in exposure to ETS amongst hotel workers in the Republic of Ireland before and after the smoking-free legislation, found that cotinine concentrations reduced by 69%.

No. 12

Strength of evidence

A 1++ systematic review of international studies and two Irish studies (a 2++ study and a 2+ study) provide strong evidence that smoke-free workplace policies decrease the prevalence of smoking in the workplace and significantly reduce the exposure of employees to ETS at work.

b) Encouraging quit attempts

No studies were identified in the literature search that address the overall effectiveness of smoke-free workplace policies in encouraging quit attempts amongst smokers.

c) Decreasing tobacco consumption

According to the Cochrane Review (Moher et al. 2005) (rating 1++), evidence that overall daily cigarette consumption decreases as a result of workplace smoking bans is less consistent than evidence on cigarette consumption during the working day. Eight studies reported a small decrease in overall daily consumption while three studies reported either no decrease or a small increase.[10]

It is worth pointing out that the findings of the Cochrane Review are more conservative than those of the widely cited meta-analysis (Fichtenberg and Glantz 2002) (rating 1-), which found that totally smoke-free workplaces are associated with 3.1 fewer cigarettes smoked per day per continuing smoker. However, there appear to be important methodological problems with this review as the authors use broader inclusion criteria than the Cochrane Review, in that they focus exclusively on smoke-free workplaces and do not require comparison workplaces or pre- and post-ban assessments (Moher et al. 2005). Meta-analyses of observational studies may produce “very precise but equally spurious results” and they promote caution in the statistical combination of observational studies, which they claim should not be a prominent component of reviews of such studies (Egger et al. 1998). [11] Given that

[10] The Cochrane Review does not provide more specific information on the exact size of the decrease or increase in cigarette consumption reported in the eleven studies.

[11] To demonstrate their point they conduct a meta-analysis of cohort studies to determine the relationship between smoking and suicide. Sure enough, a meta-analysis of these studies produces highly precise and significant (if rather misleading) estimates of the increase in suicide risk associated with smoking different daily amounts of cigarettes. Given that

meta-analysis on smoke-free workplaces includes highly heterogeneous studies in their review, its validity is even more questionable.

Monitoring data from countries that have implemented smoke-free legislation indicate that an overall reduction in cigarette sales seems to be occurring. For example, in New Zealand, tobacco sales in supermarkets and service stations declined by 1.5% during the year to October 2005 compared to the year to October 2004 - prior to the implementation of national smoke-free legislation (Thomson and Wilson 2006) (rating 3+). In the three months following the implementation of national smoke-free legislation in Italy cigarette sales were 8.9% lower than for the same period in the previous year (Gallus et al. 2006) (rating 3+). Finally, in the Republic of Ireland, the smoking ban was associated with a 16% drop in cigarette sales (Allwright 2004) (rating 3+), and Norway experienced a 10% drop in cigarette consumption following the first year of national smoke-free legislation (Directorate for Health and Social Affairs 2005) (rating 3-). However, given the very recent implementation of this legislation in countries around the world, further research is needed to determine the extent of the reduction (especially in the long term) and how much of it is due to secular factors unconnected with the legislation itself.

No. 13

Strength of evidence

The international evidence from a 1++ systematic review and a 1- meta-analysis on whether smoke-free work polices lead to a reduction in overall cigarette consumption is inconclusive.

Case reports from countries that have implemented national smoke-free legislation, including New Zealand (3+), the Republic of Ireland (3+), Italy (3+) and Norway (3-) indicate that a drop in cigarette sales has occurred – although the true effect of smoke-free legislation on cigarette consumption is still to be determined.

d) Decreasing overall smoking prevalence

According to the Cochrane Review (Moher et al. 2005) (rating 1++), the evidence on whether smoking restrictions or bans also lead to a reduction in smoking prevalence is also inconclusive. Five studies reported no change and four studies reported minor decreases in prevalence. Only two studies reported a significant decrease in prevalence 12 months following the ban – in one study there was a reduction in prevalence from 22% to 14% in this period and in another study smoking prevalence decreased from 29% to 24% in a similar period. However, both of these studies relied on pre- and post-test cross-sectional surveys with low response rates.[12]

Like many of the available studies on the effects of workplace bans on smoking prevalence, instead of trying to follow up individuals over time, the researchers have compared the prevalence of smoking among a cross-section of employees in the workplace at time 1 to a cross-section of employees at time 2. However, in between time 1 and time 2, people will have left work and new people will have come in – possibly as a direct result of the smoking ban. Indeed, the people who have left an

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Fichtenberg & Glantz' meta-analysis combines studies that are far more heterogeneous than Egger et al.'s cautionary review, the potential for misleading results is even more substantial.

[12] The first study discusses the findings of three cross-sectional surveys of employees with response rates of 46%, 38% and 16% respectively. The second study discusses the findings of two cross-sectional surveys of employees with response rates of 62% and 53% respectively.

intervention workplace (with very restrictive smoking policies) may be more likely to smoke heavily, and the new people who come into intervention workplaces may be more likely to smoke less, thus biasing the results of the studies in a positive direction.

Although the countries that have implemented national smoke-free legislation are carefully monitoring its effects on smoking prevalence, it is too early to tell whether the legislation has led to a reduction in the number of smokers, although an annual Italian poll recorded a 2.3% reduction in the number of people self-reporting as smoking in the period following the implementation of legislation (Gallus et al. 2006). However, given the very recent implementation of this legislation in countries around the world, further analytic research is needed to determine its effects on smoking prevalence.

No. 14

Strength of evidence

The international evidence from a 1++ systematic review and a 1- meta-analysis on whether smoke-free work polices lead to a reduction in overall smoking prevalence is inconclusive.

Monitoring data from Italy (rating 3+) indicates that a reduction in smoking prevalence appears to be occurring. However, given the recent implementation of national smoke-free legislation, analytic evidence on its effects on smoking prevalence is not presently available.

How does the effectiveness of workplace smoking bans vary with factors such as age, sex, gender, class or ethnicity?

Once again, the Cochrane Review does not consider the differential effectiveness of smoking restrictions and prohibitions based on factors such as gender, ethnicity and class. However, there are a number of studies that do report on these factors.

Two studies have failed to find any differences in the effectiveness of workplace smoking bans based on factors such as gender, age, and ethnicity. In a study focusing on the impact of workplace smoking ordinances in California (Moskowitz et al. 2000) (rating 2++), the researchers conclude that workplace smoking ordinances have similar effects on smoking cessation across different segments of the population, regardless of race, age, sex, or educational status. In an Australian study (Owen and Borland 1997) (rating 2+), the researchers also found that in the two year period following the implementation of a total smoking ban at Commonwealth offices there was no statistically significant differences in changes in cigarette consumption between men and women or any effects as a function of age.

However, the majority of studies have reported differences in the impact of smoking bans, particularly in relation to gender, age, and/or socio-economic status. For example, a recent Australian study (2-) examined the reported impact of phased-in smoke-free bar laws on bar patronage and smoking behaviour, particularly among young adults (Miller & Hickling, 2006). Findings revealed that in 2005, 17.7% of young adult smokers reported that they were already smoking less because of the phase 1 laws and 31.5% said that they were more inclined to quit (vs. 14.9% in older ages; x^2=18.9, df=2, p<0.001). When asked about the 2007 smoking bans, 54.7%

predicted that they would smoke less overall (vs. 31.5% of older ages; x^2=20.4, df=s, p<0.001), and 31.5% predicted they would be more likely to quit altogether (vs. 16.5% in older ages; x^2=6.7, df=2, p<0.05). As a result, phased-in smoke-free laws may positively impact young adult's more than older adults.

In a Finnish study (Heloma and Jaakkola 2003) (rating 2+) researchers found that while workplace smoking restrictions in Finland were associated with a continuous decline in smoking prevalence among men, this trend was not observed consistently in women – whose smoking prevalence increased after an initial drop.

Similarly, a US study (Farrelly et al. 1999) (rating 2+), which assessed the impact of workplace restrictions among indoor workers in various industry groups found that a complete smoking ban appeared to have a slightly larger effect for men, relative to women. Moreover, largest effect in percentage decline was observed for workers with a college degree (28.4% decline) and the least for workers who had dropped out of high school (13.7% decline). Nevertheless, the reverse was true for the effect of the smoking ban on average daily consumption – the workers in the lowest education group had the largest decline in cigarette consumption (3.9 cigarettes as opposed to a 1.69 cigarette reduction amongst college graduates).

A gender-based analysis of workplace restrictions and individual smoking cessation strategies aimed at primarily blue-collar worksites (Gritz et al. 1998) (rating 1+) also found substantial differences in outcome based on education, although gender was not significantly related to cessation outcomes. Overall, 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, although significantly more women in the intervention condition achieved long-term cessation (15%) than women in the control condition (10.6%). 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. Despite these gender differences, when education was held constant there was no significant difference between male and female long term quitting.

A recent study on the impact of restrictive smoking policies on women further highlights the importance of socio-economic status. In a recent analysis of the US Current Population Survey Tobacco Use Supplements, the researchers (Levy et al. 2006) (rating 2+) report that current smoking among low-education females is inversely related to the index of clean air laws, but is *significant* only in the subpopulation of medium-education females – although this group are also more likely to be working in environments subject to clean air laws.

No. 15

Strength of evidence

Although a 2++ American study and a 2+ Australian study have failed to find differences in the effectiveness of workplace smoking bans based on gender, age, and ethnicity, three American studies (one 1+RCT and two 2+ studies) and a 2+ Finnish study indicate that bans may have a reduced impact on the smoking behaviours of people with a lower education and/or women of low socio-economic status. Additionally, one Australian study (2-) found that phased-in smoke-free laws may positively impact young adults more than older adults.

4.2.2 How does the way that workplace policies are implemented influence effectiveness?

A recent US study (Osinubi et al. 2004) (rating 2+) provides some evidence that a full grounds smoking ban is more effective than an indoor smoking ban alone in facilitating smoking cessation and a reduction in cigarette consumption. The researchers found a daily reduction in cigarette consumption of 6.6 cigarettes was associated with the implementation of a full grounds ban. They conclude that the smoke-free grounds policy is associated with a substantial decrease in cigarette consumption among continuing smokers and has incremental benefits over and above indoor smoking bans in tobacco use harm reduction (Osinubi et al. 2004).

No. 16

Strength of evidence

Evidence from a 2+ US study indicates that a total grounds ban may be more effective than an indoor smoking ban in reducing cigarette consumption.

4.2.3 What is the impact of smoke-free workplaces on uptake of smoking cessation resources? For example, NHS Stop Smoking Services, telephone quitlines, etc.

Available evidence indicates that smoke-free legislation has a moderate to substantial impact on the uptake of smoking cessation resources.

a) Quitlines

The key source of evidence on the impact of smoke-free legislation on telephone quitlines is a recent study from New Zealand (Wilson et al. 2005) (rating 2+). This study found that usage of the national Quitline service was influenced by mass media campaigns, publicity, and the implementation of smoke-free legislation. The authors compared routinely collected data on smokers who registered with the Quitline to undertake a quit attempt in the intervention and pre-intervention period. In the pre-intervention period, the caller registration rate was 272 per 100,000 smokers per month, compared to 395 per 100,000 per month in the intervention period (ratio rate 1.44, 95% CI 1.39 to 1.51), although only the increase in the proportion of registrations in the 35-44 year age group was statistically significant (p=0.01). Weekly caller registration rates also increased in the intervention week relative to the average for the 3 weeks preceding it.

Anecdotal reports from Scotland also indicate that Smokeline, the national telephone quitline, also experienced an increase in demand. One newspaper article reports that Smokeline experienced a fourfold increase in calls in the four days following the national ban on 26 March 2006 (Howie et al. 2006).

No. 17

Strength of evidence

According to a 2+ report from New Zealand, smoke-free legislation in conjunction with mass media campaigns does appear to lead to a statistically significant increase in phone calls to telephone quitlines.

Anecdotal evidence

Newspaper reports on the impact of smoke-free legislation in Scotland also indicate an increase in calls to the national telephone in the period following the enactment of the legislation.

b) Smoking cessation services

The only systematic evidence on the effect of smoking bans on the uptake of smoking cessation services comes from studies of hospital bans implemented in the United States. In a study of the experiences of Johns Hopkins Hospital in Maryland with going smoke-free (Waranch et al. 1993) (rating 2+), the researchers report that participation in the group programme nearly quadrupled during the 12 month period following the announcement of the impending ban and returned to near pre-ban levels in the 12 month period after the ban was implemented. However, overall relatively few (13%) smokers took advantage of the free stop smoking services made available to them; the majority of smokers who quit smoking or reduced their cigarette consumption appeared to do so on their own.

Two other research teams report a similar pattern in their studies of hospital smoking bans. When a New Jersey university hospital went smoke-free, researchers (Passannante et al. 1991) (rating 3+) reported that although a substantial percentage (58%) of the surveyed employees who smoked said that 'quit smoking courses given at the hospital' would be helpful if they tried to quit, few employees attended the cessation programmes once they became available. Similarly, another research team (Baile et al. 1991) (rating 2+) also report a "discouragingly" low rate of participation[13] in the free smoking cessation programme offered following the smoking ban at the H. Lee Moffitt Cancer Centre and Research Institute in the USA.

Finally, an Australian study (Borland et al. 1990) (rating 2+) reports that when the Australian public service became smoke-free, all departments provided the opportunity for staff affected by the ban to obtain assistance before and after its implementation – in the form of smoking cessation and smoking regulation courses in the workplace, time off and some financial aid to attend outside programmes, talks and self help literature was available to all smokers. However, there was "considerable diversity" in the extent to which such services were actively promoted and in the extent to which staff availed themselves of the services.[14]

Two studies (Passannante et al. 1991; Waranch et al. 1993) both speculate that most employees wish to stop smoking on their own and that enrolment in formal services is therefore likely to be low. Therefore, both of these studies emphasise the

[13] Unfortunately, the study does not provide any further information on the extent to which staff enrolled in the available smoking cessation services. This point is made merely in passing.

[14] Unfortunately, this study also does not provide any further information on the extent to which staff enrolled in the available smoking cessation services. This point is made merely in passing.

importance of providing self-help and motivational materials for employees of institutions that decide to go smoke-free. Interestingly, Waranch et al. found that smokers tended to choose different options based on their established smoking patterns. Those employees who sought smoking cessation assistance smoked more at baseline than the average smoker. The self/minimal help groups attracted participants who smoked fewer cigarettes and had made more previous attempts to stop smoking than smokers selecting the more formal support programme. The results of this study suggest that different types of smokers may choose different strategies for smoking cessation and the authors conclude that making a variety of smoking cessation strategies available may therefore meet the needs of more smokers and increase participation in stop smoking programmes.

It is unclear how readily the results of these studies exploring the effects of localised workplace bans on smoking cessation services can be translated in the context of wholesale national smoke-free legislation. The limited available evidence on the effects of the national legislation in Scotland indicates that it has substantially increased the demand for services. A recent newspaper article (Ross 2006) reports that the number of people in Fife making a quit attempt has doubled since the smoking ban was imposed in March and that specialist smoking cessation services in Fife have been inundated with referrals from would-be quitters. Similarly, the Grampian Smoking Advice Service reported a 72% rise in the number of people registering with the service in the month leading up to the ban (a 59% rise in the number of people registering compared with the previous year) (Brodie 2006). The NHS Borders cessation services also saw a sharp increase in the number of people trying to stop smoking in the lead up to the ban; 1500 people sought help between January and March 2006, compared with 2000 for the whole of the previous 12 months (BBC News 2006).

However, while it is likely that the national bans have increased the demand for smoking cessation services, such anecdotal evidence should be treated with some caution, as it is unclear how much of the increase in demand is due to the smoking ban and how much is due to the natural growth of the services and/or the substantial publicity given to the services in light of the media campaign surrounding the implementation of the smoking ban in Scotland. Indeed, a recent report on the smoking cessation services in Fife (Bauld and Williams 2006) notes that in some parts of Fife the services are still at a relatively early stage of development. It is worth bearing in mind that the English Stop Smoking Services witnessed a 147% increase in the numbers of people making a quit attempts in their fifth year of operation alone (2003/04 to 2004/05).

No. 18

Strength of evidence

The available evidence from two 2+ US studies, one 3+ US study and one 2+ Australian study of workplace smoking bans indicates considerable variation in the impact of such bans on the demand for smoking cessation programmes. Although the studies indicate that demand for stop smoking programmes increased, overall a relatively small proportion of smokers took advantage of the services that were provided.

Anecdotal evidence

Newspaper reports from Scotland indicate that demand for smoking cessation services has increased substantially since the enactment of the national smoke-free legislation – although it is unclear how much of this demand is a direct result of the ban itself.

c) NRT Sales

One of the key sources of evidence on the effect of smoke-free legislation on NRT sales comes from a recent study (Metzger et al. 2005) (rating 2+) in which researchers examined the impact of sweeping smoke-free legislation in New York City in March 2003 on NRT sales at 200 pharmacies around the city. The research team found that although there was a large nicotine patch giveaway programme in April and May 2003, in the week of the implementation of the legislation there was a 31% increase in nicotine gum sales, even though the free patch programme began the same week. Sales of the patch, but not the gum, declined during the subsequent weeks, corresponding with the duration of the 6-week free patch programme. Gum sales increased by 11% in the fourth week after the legislation was enacted, coinciding with the beginning of the act's enforcement.

Based on anecdotal reports, Scotland appears to have experienced a similar increase in demand. According to a recent newspaper report (MacDonald 2006), Boots pharmacy reported a massive rise in sales of NRT in its Scottish stores in the month following the ban – an increase of 63% over sales in the same period during the previous year. Another newspaper article (Rodrick 2006) reports that Glasgow has seen the biggest increase in Boots sales of NRT, with the number of treatments sold there up 110% on the previous year (in comparison to the rest of the UK where purchases increased by only 15% over the same period). Monitoring data also indicates that there was a significant spike in demand for a number of NRT products in Scotland prior to the introduction of smoke-free legislation, in contrast to the rest of Great Britain.

No. 19

Strength of evidence

A 2+ US study indicates that smoke-free legislation has a significant impact on NRT sales and substantially increases demand for these products.

Anecdotal evidence

Newspaper reports and pharmaceutical monitoring data indicate that this pattern appears to have been repeated in countries that have implemented smoke-free legislation such as Scotland.

4.2.4 What steps could be taken prior to the introduction of smoke-free regulations to maximise the impact? E.g., public information campaigns, increased resources for smoking cessation support.

Although it is difficult to provide direct evidence on this question, there is a clear consensus in the international literature that workplace smoking bans should be carefully planned (and include the input of smokers) and be accompanied by provision of help and support for smokers (Waranch et al. 1993; Anderson et al. 1999; Batlle et al. 1991; Baile et al. 1991; Moher et al. 2005; Strobl and Latter 1998; McNeill and Owen 2005). Public support for bans (from both smokers and non-smokers) can be strengthened by both informing the public about the adverse health effects of passive smoking and by encouraging them to continue thinking about this issue (Borland et al. 2006a). Thus, public information campaigns are crucial to increasing support for smoke-free legislation.

UK-specific material on the implementation of smoke-free legislation largely echoes these international recommendations. According to the *Guidance for Smokefree Hospital Trusts* (McNeill and Owen 2005) there are five crucial steps to implementing smoke-free NHS hospital trusts: 1) commit to the policy; 2) create the policy, 3) ensure that cessation support is widely accessible and available, 4) communicate the policy and 5) consolidate the policy.

The California Department of Health Services (2004) has outlined a series of detailed recommendations for others considering smoke-free workplace laws and provides a comprehensive description of the steps which should be taken prior to the introduction of smoking bans.

1) Gather facts – identify the social profile of target populations. Survey their level of knowledge about the danger of second-hand smoke and their readiness for community wide policies.
2) Focus on workers – focus on the issue as a worker protection law rather than a consumer protection law (which appears to increase support for legislation).
3) Move incrementally – plan the campaign in stages. Begin by making government offices smoke-free, then private industry and finally progress to bars and gaming clubs. It is important to have lead in time to prepare public and key community leaders.
4) Collaborate – cooperative efforts among public health agencies, voluntary health non-profit organisations and community-based organisations are crucial to a successful campaign.
5) Involve business owners and employees – encourage bar owners, managers and employees to work with you, not against you.

6) Advertise – use appropriate paid and unpaid media outlets to reach constituencies. Use diverse advertising mediums such as print and television advertising coupled with billboards, trade journal advertising, etc. Advertising is most effective when focused on the facts surrounding the threat of ETS to public health, rather than focusing on particular outcomes or policy.
7) Cultivate unpaid public relations – identify and educate opinion makers in all forms of public media, such as newspaper editorial boards, TV reporters, radio talk show hosts and magazine publishers.
8) Understand diversity – take the time to gather input from culturally diverse groups. Learn how to communicate messages in the appropriate idiom and context. Tailor materials to each community's customs and interests.
9) Develop a revenue base (California's success was underwritten by the Proposition 99 cigarette tax and the financial base it provided for supporting the implementation of the legislation).
10) Enforce the law – research and collect proven enforcement protocols.

No. 20

Anecdotal evidence

Workplace smoking bans should be carefully planned, include the input of smokers, and be accompanied by provision of help and support for smokers. Public support for bans can be strengthened by using media campaigns to inform the public about the adverse health effects of passive smoking and by treating the issue as a worker protection law rather than a consumer protection law. An effort should be made to understand diversity, and materials and messages should be culturally appropriate. An adequate revenue base is crucial to support the implementation of legislation.

4.2.5 How acceptable is the policy to people affected by it?

- **Based on the setting of the policy (workplace, restaurants, bars)**
- **Based on factors such as age, sex, gender, class or ethnicity**

Workplace

The Cochrane Review on workplace interventions for smoking cessation (Moher et al. 2005) (rating 1++) found consistent evidence of positive behaviour and attitudinal changes following the implementation of workplace bans and restrictions. Only one of the included studies reported continued high smoker disapproval (above 60%) after implementation of a ban – although the study's authors point out that this unusual trend may be related to the workplace's location in North Carolina – a tobacco producing state. The remainder of the studies all reported initial satisfaction with the policy, especially among non-smokers, and found that levels of acceptance (amongst both smokers and non-smokers) increased over time as the workforce became used to the new regimen.

Aside from smoking status and occupation, most studies report that the main factor which appears to be substantially related to people's acceptance of workplace smoking bans is SES. In a study of over 4,000 Australian public service employees in 3 cities, surveyed in the month before the mandated introduction of a total ban on smoking in the workplace and 6 months following implementation, the researchers (Borland et al. 1990) (rating 2+) report that while acceptance of the ban increased amongst all employees (and amongst smokers more than non-smokers), those with higher education levels were significantly more accepting of the ban than those with lower levels of education.

Survey data from the UK (Lader and Goddard 2005) (rating 2+) reveals similar attitudinal differences based on occupation, and it appears that workplace smoking restrictions are less acceptable to people in routine and manual occupations than to people in other occupational categories[15] (see table 3).

Table 3. Percentage agreeing that smoking should be restricted in certain places, 2004

Smoking should be restricted	Socio-economic classification:			
	Managerial and professional occupations	Intermediate occupations	Routine and manual occupations	Never worked and long-term unemployed
…at work	94	91	83	84
…in restaurants	93	91	89	90
…in pubs	71	65	60	61
…in indoor shopping centres*	89	87	85	90
…in indoor sports and leisure centres*	95	93	91	94
…in indoor areas in railway/bus stations*	88	85	78	76
…in other public places	95	94	90	95
Base=100%	*1162*	*706*	*1361*	*301*

Reproduced from (Lader and Goddard 2005)

No. 21

Strength of evidence

A 1++ systematic review on workplace interventions for smoking cessation finds consistent international evidence of positive behaviour and attitudinal changes following the implementation of workplace bans and restrictions. However, a 2+ Australian study and a 2+ UK survey both find that based on indicators such as occupation and education, workplace bans are less acceptable to people of lower SES.

Smoke-free bars/restaurants

Public Attitudes towards bans

The most comprehensive source of evidence on the acceptability of smoking bans in bars and restaurants is a recent study by R. Borland et al. (2006b) (rating 2+) which explores support for and compliance with smoke-free restaurants and bars by smokers in four countries: Australia, USA, Canada, and the United Kingdom. Overall, the researchers found that in each country support for smoke-free bars was far lower than support for restaurant bans, even in contexts where bar bans were in place. These findings are echoed in a recent survey on attitudes towards a smoking ban in the Northeast of England (Ahmed et al. 2004) (rating 2-). Support was greatest for a ban on smoking in restaurants and cafes (83.1%), but there was little support for a ban on smoking in pubs and clubs (37.15).

[15] Although as mentioned in section 2.2, people in these occupational categories are also less likely to be subject to workplace smoking restrictions.

A recent study (2+) examined the acceptance of smokefree bars and restaurants' among the American public (Feigelman, 2006). By comparing tobacco use surveys from 1993 and 1999, the researchers anticipated that the development of many workplace smoking bans across the US would increase acceptance of workplace smoking bans. Findings revealed that by 1999, smokefree workplaces were widely accepted by two-thirds of adults, with half favoring completely smokefree restaurants. From 1993 to 1999 there was a 10% increase (from 58.5% to 68.4%) in respondents who adopted the belief that workplace smoking was not acceptable during the 6 year period. Somewhat fewer (6%) shifted toward wanting restaurant smoking banned altogether. Completely smokefree bars remained less popular, with nearly 30% of respondents feeling it should be fully allowed.

An Australian study (2-) by Miller and Hickling (2006) measured the reported impact of phased-in smoke-free bar laws on bar patronage and smoking behaviour among adults. Findings revealed that in 2005, after the implementation of phase 1 provisions, support for the legislation was high (94.1% for general workplace provisions, 67.9% for bars, 80.3% for gaming rooms). When asked, unprompted, about reasons for agreeing with elements of the law, many cited health reasons (78.8% for general workplaces, 69.1% for bars and or gaming). However, community opinion was divided on the 3 year phase in period. Overall, 52.9% supported it, 40.8% opposed it. When asked to elaborate, 46.1% thought that it would help businesses or the community to adjust. However, 41.1% thought that the laws should come sooner. Only 2.2% thought that venues should never be smoke-free.

Recent monitoring data from New Zealand (Thomson and Wilson 2006) (rating 3+) indicates that although there is more resistance to prohibitions in licensed establishments than in restaurants, once legislation on smoke-free bars and restaurants is introduced, attitudes tend to become more favourable – amongst both smokers and non-smokers. Thus, in New Zealand support for smoke-free policies for pubs and bars almost doubled between 2001 and 2005. Similarly, support for smoke-free legislation in all indoor public places in Italy increased from 83.3% in 2001 to 90% after the smoking ban came into effect (Gallus et al. 2006) (rating 3+). Reports from the Republic of Ireland, also indicate that support for the smoke-free legislation (which included hospitality workplaces) increased from 82% to 95% following its implementation (Office of Tobacco Control - Ireland 2005) (rating 3+).

Interestingly, support for bans in bars and restaurants does appear to be strongly connected to socio-demographic variables such as age, gender and class – although the exact nature of the connection is unclear. Given the large, multinational scope of R. Borland et al.'s (2006b) study, it provides the best source of available evidence on this issue. The researchers found that in relation to smoking restrictions in both bars and restaurants, female smokers and those with greater cigarette consumption were less supportive of bans. On the other hand, support for the bans increased with age and 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.

However, although a number of other studies also point to the influence of factors such as gender, age, ethnicity, class and education on attitudes towards smoking bans in bars and restaurants, their findings do not always echo Borland et al.'s (2006b). For example, in a study on community attitudes to bans on smoking in licensed premises in New South Wales, Australia, Schofield & Edwards (1995) (rating 2+) found that attitudinal differences were connected with gender and class. According to their findings, 21% of females and 18.7% of males supported a total smoking ban in licensed premises; a significantly higher proportion of those who had

greater than 12 years of education supported a smoking ban in licensed premises (26.7% vs 15.7% with 12 years or less). Overall, those in white collar occupations were more likely to support a smoking ban than those in blue collar occupations (22% and 15.6% respectively).

A study which focuses on attitudes towards smoke-free bars laws in Long Beach, California (Friis and Safer 2005) (rating 2-) found that in the year 2000 (2 years following the implementation of the smoke-free legislation), respondents who approved of the Smoke-free Bars Law compared with those who disapproved of the law were more likely to be younger, Latino or other ethnicity, have household incomes over $80,000, be working part-time, have a postgraduate degree, and be non-smokers.

These findings are partly echoed in a recent survey on attitudes towards a smoking ban in the Northeast of England (Ahmed et al. 2004) (rating 2-). Non-smokers were more likely to support a ban in all specified locations than current smokers; however, non-manual classes were also more likely to support bans than those in manual social classes (see also table 3). The researchers did not find any differences in general support for bans according to sex or age.

No. 22

Strength of evidence

There is consistent international evidence from three 2+ studies and two 2- studies that there is less public support for a smoking ban in bars and pubs than in restaurants, although attitudes become more favourable following the implementation of such bans. Based on indicators such as education and occupation, people from lower SES groups appear to be the most opposed to bans in pubs/bars. However, the evidence on how attitudes to bans in restaurants and bars vary based on gender, age and ethnicity is inconclusive.

Findings from one Australian (2-) study revealed that support for smoke-free laws were slightly tempered by differing opinions about the merit of a phase-in period for hospitality venues.

Monitoring data (3+) from countries that have implemented smoke-free legislation in bars and restaurants (New Zealand, Italy and the Republic of Ireland) indicates that support for legislation increases significantly following its implementation.

Restaurant/bar management attitudes towards bans

Restaurant/bar management tend to have particularly negative attitudes towards smoking bans in these establishments. According to an Australian study on the attitudes of restaurateurs to smoking bans (Jones et al. 1999) (rating 2+), managers grossly underestimate the level of public support for restaurant bans in their establishments and overestimate the potential financial impact of bans. A total of 51.7% respondents agreed that a law banning smoking in restaurants and cafes would have a negative effect on the industry, although most agreed that an ‘even playing field’ regarding smoking restrictions would be best for the hospitality industry. However, those managers who had implemented smoking bans were generally very positive, with most reporting no change or an increase in business – which they attributed to the policy. The findings of this study appear to indicate that despite resistance to bans amongst restaurateurs, attitudes towards smoking bans tend to

become more positive once they are implemented and the predicted economic impact largely fails to eventuate.

Another Australian study (2+) by Miller and colleagues (2007) examined the reactions of bar and club managers to the first phase of South Australia's smoke-free workplace laws. Findings revealed that when asked at baseline about licensed venues becoming completely smoke-free in 2005, 51.2% of bar and club managers expressed approval, 39.2% expressed disapproval and 9.6% said that they had no view either way. When asked to elaborate on reasons for supporting the ban, 40% cited staff health. In 2005, support for the ban was marginally higher (59.2% for bans in drinking areas and 57.7% for bans in gaming areas). 75.6% supported the phase-in non smoking areas. The primary reason for supporting the interim phase in was staff comfort (47.6%). Overall, acknowledgement of the importance of providing a smoke-free work environment for staff was high. 83.8% of bar and club managers in 2004 and 90.7% in 2005 thought it was somewhat or very important (x^2=7.28, df=2, p<0.01).

A recent Swedish study (Hammar 2004) (rating 2-) indicates nightclubs and bars believe that they will suffer more than restaurants and cafes from a smoking ban (69.8% expect a decrease in revenues or even bankruptcy). However, reports from New Zealand (Thomson and Wilson 2006) (rating 3+) indicate that support for smoke-free bars increases significantly following the introduction of legislation. Repeat surveys were conducted with a cohort of 346 bar managers (44% were also bar owners) before and after the introduction of smoke-free bars (November 2004 and May 2005). These surveys indicate that support for smoke-free bars increased from 44% to 60% after the smoke-free legislation came into force (an absolute increase of 16%). Only 18% disapproved of smoke-free bars in 2005. Furthermore, in 2004, 53% of bar managers agreed that bar patrons had a right to a smoke-free environment, with the proportion increasing to 65% in 2005. The authors therefore conclude that "Bar managers appear to have been favourably impressed by the reality of smoke-free bars, and their attitudes to the rights of bar workers and patrons to smoke-free environments have become more positive" (p. 6).

Finally, a 2+ Irish study by Pursell and colleagues (2007) examined support for smoke-free workplace legislation among bar workers. Findings revealed that 59.5% of bar workers supported the legislation pre-implementation. Support increased to 76.8% post-implementation. Support for the legislation was more likely among bar workers who were male (65%), over 42 years (71.6%), non-smokers (68.8%), employees (68.1%) and who worked shorter hours per week (69.1%) (p <0.001). With the exception of those aged over 42 years, support increased significantly (p<0.05) in all sub-groups at follow-up, particularly among those working over 40 hours per week, owners and smokers.

No. 23

Strength of evidence

According to one 2+ Australian study and one 2- Swedish study, bar and restaurant managers (the former in particular) appear to have particularly negative attitudes towards smoking bans, substantially overestimating the potential financial impact of bans and underestimating the level of public support for them. However, according to two Australian studies (both 2+) and one Irish study (2+) attitudes become more favourable following the implementation of smoke-free legislation.

3+ monitoring data from New Zealand indicates that support for smoke-free bars amongst managers increases significantly following the introduction of legislation.

4.2.6 What factors affect compliance?

In the countries that have gone smoke-free, compliance with national smoke-free legislation is reported to be extremely high. 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 and licensed premises 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. 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. Moreover, according to the Scottish Health Minister, Andy Kerr, the smoking ban in Scotland saw compliance rates of over 99% in its first month of enactment (Scottish Executive 2006).

However, although compliance rates are generally high, recent research on compliance with smoke-free laws in Californian bars (Moore et al. 2006; Lee et al. 2003) (rating 2++) found that varying degrees of compliance appeared to be associated with the socioeconomic and demographic characteristics of the bars. They report that smoking inside bars was significantly related to the presence of female bartenders – especially in sample bars serving primarily Asian or Irish clientele. Although bars servicing predominantly Latino patrons also tended to have largely female bar staff, these bars were highly compliant with the smoke-free workplace policy. The authors concluded that the weak positions of the waitresses *vis a vis* the male patrons and managerial staff appeared to have direct consequences for female bartenders' abilities to control the environment within which they worked. This research provides important insights into the potentially uneven effects of smoke-free legislation *within* hospitality settings based on the interactions between gender, SES and ethnicity.

No. 24

Strength of evidence

According to monitoring data from the Republic of Ireland (3+), Italy (3+) and New Zealand (3+), compliance with smoke-free legislation is reported to be extremely high. However, research from California (two 2++ studies) indicates that compliance in bars appears to be associated with their socioeconomic and demographic characteristics.

4.2.7 What are the adverse or unintended outcomes of the policy?

The benefits of smoke-free legislation in reducing exposure to ETS are incontrovertible and such legislation has the potential to positively affect smoking behaviours. However, several adverse and unintended outcomes may accompany the introduction of smoking bans – although these adverse consequences are unlikely to outweigh the benefits of the legislation and may be minimised through careful planning.

Unhealthy changes in smoking patterns
A possible side effect of workplace smoking bans is that they may lead to changes in smoking patterns as opposed to a reduction in overall cigarette consumption. Thus, one potential outcome of smoking prohibitions is compensatory smoking – an increase in smoking outside of work or during breaks. In an Australian study on the intersection between workplace smoking restrictions, occupational status and cigarette consumption, the researchers found no difference between consumption levels on work and leisure days where no restriction was in place but found that work day consumption was less than leisure-day consumption among smokers who had total or partial bans on smoking at work (Wakefield et al. 1992) (rating 2+). Baile et al. (1991) (rating 2+), in their discussion of a hospital smoking ban and impact on employees of an American cancer treatment centre (Baile et al. 1991), found that a significant proportion of workers reported increasing their cigarette use before (23.4%) or after (27.8%) work – although a larger proportion of employees reported a decrease in consumption (54.2%).

Compensatory smoking may not only displace cigarette smoke into environments where the exposure of non-smokers to ETS may be increased, it is may also stimulate certain unhealthy smoking behaviours. In an unobtrusive observational study of smokers in two naturalistic settings, the researchers focused on two measures of 'hard' smoking: puff frequency and the time taken to smoke a cigarette (Chapman et al. 1997) (rating 2+). They found that smokers outside central Sydney office buildings in which smoking was banned and those in social settings where smokers would be unconstrained exhibited significant differences on these two measures. Smokers outside office buildings had a higher mean number of puffs per cigarette (taking a puff every 21.8 seconds, compared with every 38.6 seconds) and a 30.4% shorter mean cigarette duration compared to smokers in unconstrained social settings.

Finally, questions have been raised as to whether smoking bans may displace smoking into the home, thereby increasing the exposure of non-smoking family members to ETS in this environment. To date, there has been very little research on this issue. One Australian study (Borland et al. 1999) (rating 2+) reports that people who work in places where smoking is totally banned are more likely to ask their visitors not to smoke compared to those who worked where there was only a partial

ban on smoking or where smoking is allowed; these results remained consistent among homes of non-smokers and homes where at least one smoker lives.

A more recent international study (Borland et al. 2006a) (rating 2+) on the determinants of smoke-free homes also finds an association between smoke-free homes and the length and strength of tobacco control programmes (including smoke-free legislation. The researchers found smoke-free public places facilitate rather than inhibit the introduction of smoke-free homes – a finding that is supported by data from the Health Survey for England, which indicates that the cotinine levels of children from smoking households dropped substantially between 1988 and 2003 (Royal College of Physicians 2005). However, the HSE data also shows that only 9% of households where both parents smoke currently have a smoke-free policy in the home and children from poorer households have consistently higher cotinine levels than those from more advantaged backgrounds.

Similarly, Borland et al. found that the correlation between workplace and home smoking bans was not apparent for homes made up of all smokers (Borland et al. 1999). Indeed, the researchers report that workplace smoking bans do not have a significant impact on where smokers smoke at home (whether inside or outside the dwelling) and they found that while smokers who lived with children were more likely to smoke outside the home, they were less likely than all smokers surveyed to stop smoking entirely when children were around, suggesting that people who are frequently in contact with children modify their smoking behaviour less in response to the presence of children than smokers who have less frequent contact with children.

The only direct evidence on the issue of displaced smoking is a recent discussion paper (Adda and Cornaglia 2006) (rating 2+) comparing saliva cotinine concentrations in people of varying ages in US states with more or less restrictive smoke-free policies. Based on a secondary analysis of data from a series of National Health and Nutrition Examination Surveys between 1988 and 2002 (which measures cotinine concentrations in smokers and non-smokers in a representative sample of US households), the authors argue that although bans on public transport, shopping malls, etc, decrease the exposure of non-smokers, bans in bars, restaurants and recreational facilities appear to increase the exposure of non-smokers, particularly young children from lower socio-economic backgrounds. They interpret this as the 'substitution effect' between leisure activities in public places where regulation can be enforced and in private places where it cannot.

Overall, although compensatory smoking, harder smoking and displaced smoking may accompany workplace smoking bans, it is unclear how applicable these potential side effects are in the context of national smoke-free legislation, as the studies report on localised workplace smoking bans and jurisdictions with partial bans.

No. 25

Strength of evidence

According to four 2+ studies, workplace smoking bans and partial smoke-free legislation may lead to unhealthy smoking patterns such as compensatory smoking, harder smoking and displace smoking into the home. However, two 2+ studies indicate that compensatory smoking is unlikely to reach former levels and two 2+ studies indicate that smoking bans are associated with implementing a smoke-free home.

Effects on the relationship between smokers and non-smokers
Another potential side effect of smoking bans is that they may lead to an increase in tension between smokers and non-smokers. An Australian study (Clarke et al. 1997) (rating 2-) explores the extent to which antagonism may build up between exiled smokers[16] 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.

Similarly, a Brazilian study (2+) examined the contextual factors associated with smoking initiation and cessation among women. Although current and former female smokers reported that recent trends in smoking restrictions had increased social pressure to quit smoking, many felt marginalized and isolated from others (Scarinci et al., 2007). For example, one woman reported that she felt the need to smoke in the corner next to the garbage can.

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). This increased visibility may increase the stigma associated with smoking (Greaves and Jategaonkar 2006), particularly for certain populations: for example, low SES pregnant 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. 26

Strength 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. However, a Brazilian study (2+) found that smoking restrictions made female workers who smoked feel isolated and marginalized.

Inferential evidence

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.

[16] '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.

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. 27

Strength 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.

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. This necessitated patients venturing out of the hospital to smoke, even in poor weather conditions.

No. 28

Strength 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.

The *Health Bill Partial Regulatory Impact Assessment (RIA)* (Department of Health 2006) also lists several other unintended consequences of smoke-free legislation, such as costs to local authorities in cleaning up/providing disposal for cigarette butts in outdoor public places. 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. The RIA also speculates that the legislation may lead to a possible increase in antisocial behaviour from smokers drinking on the streets or at home rather than in licensed premises as well as production losses from those who take smoking breaks. However, it estimates that the overall economic costs of these side effects are likely to be small.

5. Overview and Discussion

Overall, there is a growing body of evidence on the impact of workplace interventions and policies on smoking attitudes and behaviours that provides important insights into many of the research questions – although further research is clearly needed in some areas.

There are very few studies that explore the success of smoking cessation support in the context of work-place smoking bans. Overall, it is clear that cessation programmes aimed at the individual are effective when combined with an institutional approach which provides environmental support (in the form of smoking restrictions and educational campaigns) for stopping smoking. One 2+ study found that a smoking cessation programme delivered in the context of a workplace smoking ban and educational campaign produced long term success rates similar to smoking cessation programmes more broadly. However, a 2- study found that a multi-component approach to smoking cessation (including cessation support, smoking restrictions *and* discouragement) may increase success, at least in the short term. Allen Carr workplace seminars (two 2- studies) and online smoking cessation programmes (report 4+) have also been highlighted as a potentially effective way of facilitating smoking cessation in the workplace.

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.

Financial incentives are frequently added to workplace interventions. According to two 1++ systematic reviews, although they do not increase the success rates of these interventions, they can improve recruitment rates into worksite cessation programmes – thereby leading to a potential increase in the absolute numbers of quitters in the long-term. Social support seems to have a limited effect on workplace interventions and does not appear to improve cessation rates above and beyond a basic programme of group counselling and support offered in the workplace (1++ systematic review). A 1+ study indicates that integrated workplace interventions that combine health promotion and occupational health and safety approaches can be effective in promoting smoking cessation in blue collar workers. Finally, A 1++ systematic review and a 1+ meta-analysis have found that intensity does influence smoking cessation outcomes and more intensive interventions are more effective than minimal interventions in facilitating smoking cessation.

Few studies have set out to explore how the type of workplace and/or nature of employment influences the effectiveness of workplace interventions for smoking cessation. One 2++ study found that the participants who had quit smoking the longest following an intervention at a chemical factory were more likely to have been managers, although this may be partly explained by baseline differences between managers and other smokers (e.g. managers were more likely to have been older and lighter smokers).

It appears that factors such as gender, age, class and ethnicity may influence the effectiveness of smoking cessation interventions – although unfortunately there are few available studies that have focused specifically on these factors. A 2++ study

found no gender differences in short and long-term quit rates following the completion of a workplace smoking cessation programme that included workers from 63 different companies. However, some important gender differences were found in male and female smoking attitudes and behaviours at baseline – which supports large body of research indicating that women have lower levels of confidence in relation to quitting and that there are differences in the meaning and role of tobacco in men and women's lives. Furthermore, there is some evidence that interventions may vary with factors such as socioeconomic and occupational status. According to a 2 (+) study, workplace restrictions may be more effective among women higher above the poverty level. In addition, one 1- Japanese study found that a low- intensity intervention programme for smoking cession was more effective for older white collar workers than younger blue collar workers. However, a 1+ US study found that a tailored intervention can be effective in promoting tobacco use cessation among blue collar construction laborers.

Workplace smoking cessation interventions may have the potential for higher participation rates than other contexts, and also provide the opportunity to access smokers who would otherwise not be accessible. These represent positive, if unintended, potential outcomes of workplace interventions. However, evidence from a 2+ study indicates that people who take part in workplace interventions in the context of smoking bans may enroll in the interventions to better control their cigarette consumption as opposed to intending to quit altogether.

There is very strong evidence from a 1++ systematic review and a 2++ study that workplace policies decrease the incidence of smoking in the workplace, thereby reducing the exposure of non-smoking employees to ETS at work. There is also evidence from a 2+ study that a full grounds ban is more effective than an indoor smoking ban alone in facilitating smoking cessation and a reduction in cigarette consumption. However, the evidence that overall daily cigarette consumption decreases as a result of workplace smoking bans is less consistent – some studies report a significant reduction in cigarette consumption while others report no effect. Early 3+ reports from countries that have implemented smoke-free legislation indicate that an overall reduction in cigarette consumption seems to be occurring. However, given the very recent implementation of this legislation in countries around the world, further research is needed to determine the extent of the reduction (especially in the long term), and how much of it is due to secular factors unconnected with the legislation itself.

Evidence that smoking bans reduce smoking prevalence is also inconclusive. Although there is some 3+ evidence that national smoke-free legislation has reduced smoking prevalence in countries where it has been implemented, it is difficult to distinguish the effects of the legislation from other factors that may have led to change. Thus, further research is needed to determine the long-term effects of smoking bans on smoking prevalence.

However, the impact of workplace smoking bans may be unevenly distributed, as several studies point to the reduced impact of such bans based on factors such as gender, ethnicity and class. Although a 2++ study and a 2+ study have failed to find any differences in the effectiveness of workplace smoking bans based on factors such as gender, age, and ethnicity, the majority of studies have reported differences, particularly in relation to gender and/or socio-economic status. There is some evidence from two 2+ studies that workplace smoking bans may have a slightly larger effect for men, relative to women. Three 2+ studies have also found that smoking bans have a reduced impact on people with a low education. Thus, it is not

clear that smoking restrictions in the workplace *automatically* provide an incentive for smokers to quit.

Available evidence indicates that smoke-free legislation has a moderate to substantial impact on the uptake of smoking cessation resources. One 2+ New Zealand study shows that smoke-free legislation combined with a mass media campaign had a significant impact on calls to the national telephone quitline, and anecdotal reports from Scotland reveal a similar trend. However, the available evidence from three 2+ studies and one 3+ study of workplace smoking bans indicates considerable variation in the impact of such bans on the demand for smoking cessation programmes – although it is unclear how readily the findings of these studies can be translated in the context of national smoke-free legislation. Indeed, anecdotal evidence indicates that the effects of national smoke-free legislation on the uptake of smoking services may be more pronounced. The impact of smoke-free legislation on NRT sales is also very strong. A 2+ study indicates that smoke-free workplace legislation has a significant impact on NRT sales and substantially increases demand for these products – a finding echoed in monitoring data from countries that have recently implemented smoke-free legislation.

It is clear that steps can be taken prior to the introduction of smoke-free legislation to maximise its impact – and its potential for influencing smoking behaviours. Workplace smoking bans should be carefully planned, include the input of smokers, and be accompanied by provision of help and support for smokers. Public support for bans can be strengthened by using media campaigns to inform the public about the adverse health effects of passive smoking and by treating the issue as a worker protection law rather than a consumer protection law. An effort should be made to understand diversity and materials and messages should be culturally appropriate. Finally, an adequate revenue base is crucial to support the implementation of legislation.

Attitudes towards smoke-free legislation appear to vary based on the setting of the policy. A 1++ systematic review finds consistent evidence of positive behaviour and attitudinal changes following the implementation of workplace bans and restrictions. However, it does appear that workplace smoking restrictions are less acceptable to people in routine and manual occupations than to people in other occupational categories. There is consistent evidence from three 2+ studies and two 2- studies that there is less public support for a smoking ban in bars and pubs than in restaurants, although attitudes become more favourable following the implementation of such bans. Indeed, 3+ monitoring data from countries that have implemented national smoke-free legislation indicates that there is a significant increase in support for these policies following their implementation. However, two 2+ studies (one British) have found that based on indicators such as education and occupation, people from lower SES groups appear to be the most opposed to bans in pubs/bars.

According to one 2+ and one 2- study, bar and restaurant managers also appear to have particularly negative attitudes towards smoking bans, substantially overestimating the potential financial impact of bans and underestimating the level of public support for them. However, according to two 2+ Australian studies and one 2+ Irish study, attitudes appear to become more favourable following the implementation of smoke-free legislation, as the predicted financial shortfalls fail to appear.

In general, monitoring data from the Republic of Ireland (3+), Italy (3+) and New Zealand (3+), compliance with smoke-free legislation is reported to be extremely high. However, two 2++ Californian studies indicate that varying degrees of

compliance appear to be associated with the socioeconomic and demographic characteristics of the bars.

The benefits of smoke-free legislation in reducing exposure to ETS are incontrovertible and such legislation has the potential to positively affect smoking behaviours; however, some adverse and unintended outcomes may accompany the introduction of smoking bans. First, according to four 2+ studies, workplace smoking bans and partial smoke-free legislation may lead to unhealthy smoking patterns such as compensatory smoking, harder smoking and displace smoking into the home. Displaced smoking may be a particular issue for low SES groups as the displacement of smoking into the home may negatively affect children and non-smoking partners. However, it is unclear how applicable these potential side effects are in the context of national smoke-free legislation, as the studies report on localised workplace smoking bans and jurisdictions with partial bans. Moreover, two 2+ studies indicate that compensatory smoking is unlikely to reach former levels and two 2+ studies indicate that smoking bans are associated with implementing a smoke-free home.

Another 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. For example in a 2+ Brazilian study, female workers felt isolated and marginalized as a result of increased smoking restrictions at work.

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 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.

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 (Department of Health 2006). The legislation may lead to a possible increase in antisocial behaviour from smokers drinking on the streets or at home rather than in licensed premises as well as production losses from those who take smoking breaks (Department of Health 2006).

Overall, the available evidence does indicate that smoke-free legislation substantially reduces ETS in the workplace. There are also some indications that the legislation provides a unique opportunity to positively impact the smoking behaviours of the population more broadly, as demand for certain forms of smoking cessation support

appears to increase in response to the legislation. Moreover, although the effects of smoking bans on cigarette consumption and smoking prevalence have not been conclusively determined, early reports from countries that have enacted smoke-free legislation look promising.

However, although the net health benefits of smoke-free legislation are incontrovertible, this review also brings together a body of evidence that these benefits may be differentially distributed. Thus, the apparent success of restrictive smoking policies at the population level often masks their reduced impact for many disadvantaged groups (Greaves et al. 2006). What is clear is that smoke-free legislation does not automatically provide an incentive to quit and many of the challenges that disadvantaged groups currently face in attempting to quit smoking will not disappear with the implementation of such legislation. Moreover, given the evidence that compliance with smoke-free legislation is affected by the intersections between class, gender and ethnicity, exposure to ETS may remain high amongst particular sub-populations – particularly low SES women. The side effects that may accompany smoking bans are also likely to disproportionately affect the disadvantaged, who tend to be heavier smokers and are thus more likely to engage in compensatory smoking, 'harder' smoking and displace smoking into the home – although it is unclear whether these effects will be reduced or intensified in the context of national smoke-free legislation.

Clearly, the present voluntary legislation has not worked to improve current smoking-related health inequalities, but smoke-free legislation should not be seen as an automatic panacea for these inequalities. Indeed, it seems possible that these newer tobacco control measures will continue to have a differential impact according to social class (Killoran et al. 2006). As the Acheson Report has noted, "A well intended policy which improves average health may have no effect on inequalities. It may widen them by having a greater impact on the better off" (Killoran et al. 2006). Thus, as Greaves et al. (Greaves et al. 2006) note, policy makers should be encouraged to apply a gender and diversity analysis in assessing the potential impact of tobacco policy. Second, policy makers need to recognise the constellation of disadvantage that confronts most low SES smokers (particularly females), and policy should be constructed in a "broad, ethical and involving manner". These steps will be essential in ameliorating any potentially uneven benefits of smoke-free legislation and will help ensure that the unique opportunity it provides to positively impact smoking behaviours in England is maximised.

6. EVIDENCE TABLE

*Level three and four evidence is listed in Appendix B.

Evidence table						
First author Year Country Study design Quality	Study population (Analytic Sample) Inclusion/exclusion criteria. Number of participants (randomised to each group or otherwise). Age; Sex; S/E status; Ethnicity; Pregnant; Other, e.g. inpatient	Research question Power calculation Funding	Intervention Comparisons Length of follow-up, follow-up rate Exposure measures described	Main results Effect size CI P value Outcome measures described	Applicability to UK populations and settings Relevance to focus of Rapid Review, NHS Stop Smoking Services	Confounders Comments
Adda (2006) USA Cross Sectional 2+	Data from the National Health and Nutrition Examination Survey from 1988 to 1994 and 1999 to 2002 N=29,667 non-smokers Average age was 33.5, 46% of the sample were male, 74% were white.	Evaluates the effects of excise taxes and bans on smoking in public places on the exposure to tobacco smoke on non-smokers as evaluated by the National Health and Nutrition Examination Survey (NHANES). Funding through the ESRC and the British Academy's Postdoctoral Fellowship	Smoking restriction in each state were coded into four categories: zero if no restrictions; one if smoking is restricted to designated areas; two if smoking is restricted to separate areas; three if there is a total ban on smoking. Over the nineties, regulations became more stringent. The proportion of states with no restriction in any places fell from 50% in 1991 to 36% in 2001. In 1991 only 27% of the states had at least a total ban on smoking in one public space, whereas the figure is 51% in 2001. Compared cotinine concentrations of non-smokers using NHANES data from 1988-1994 and from 1999 to 2002.	Excise taxes have a significant effect on passive smoking. Smoking bans have on average no effects on non-smokers. Bans in public transportation or in schools decrease the exposure of non-smokers, bans in recreational public places can increase their exposure by displacing smokers to private places. Bans effect SES groups differently, bans increase exposure to poorer individuals, while they decrease exposure to richer individuals.	This study deals with partial smoking restrictions in US jurisdictions. It is not clear how readily its findings apply to England in the context of national smoke-free legislation.	NHANES survey data drawn on in the study is very well regarded. Findings seem convincing. But the effect only became apparent after a) introducing 'state' & 'year' as co-variates and b) selecting out specific categories of smoking restriction. Logic of introducing these variables not explained in

study.

Ahmed (2004) England Cross Sectional 2-	N= 538 Participants were excluded if they were not residents of the NE and if they were under 16 Non-manual classes were significantly over-represented and there was an associated under representation of manual classes (p<0.01)	To investigate the degree of support for a general ban on smoking in public places (e.g. cafes) and bans on smoking in specific locations (e.g. home) among adults in NE England and the variation, if any, on support by social and demographic factors. Partially funded by BBC North East and Cumbria	No interventions – attitudinal survey Comparisons between those who supported the ban and those who did not and amongst those who did between manual and non-manual class	332 (63%) supported a general ban on smoking in public places. Manual groups were significantly less supportive of a general ban (p<0.05). Non smokers were significantly more supportive (p<0.01). Of those who supported a ban 83.1% supported bans in restaurants and cafes, only 22.8% supported bans in outdoor public spaces. Non-smokers were more likely than smokers to support bans in all locations (pubs and clubs, restaurants and cafes, shopping males, outside, home and workplace; p<0.01 for all). Those in non-manual classes were more likely to support bans in pubs and clubs, shopping malls and in workplace than those in manual classes (p<0.01 for all). The most common reason for supporting a ban was for the health of others (57.5%), the respondents own health benefits (49.1%), and dislike for smoke (40.1%). The most common reasons for not supporting a ban in public places (n=206) were infringement on civil liberties (49%), that the respondent was a smoker (35.9%) and that such bans were not enforceable (13.1%).	English study representing attitudes of adults in the NE of England; therefore, directly applicable to study population.	The sample was not representative (too many young and non-manual workers). No formal power calculation was carried out. Refusal rate not reported; quota sample produced consistently different results vs. ONS National data, may be due to sampling method, missing data not discussed and measures not well discussed. Classification of some verbal responses post-hoc.

Allwright et al. 2004 Ireland Controlled Before and After study 2++	226 at baseline and 213 at follow up provided analyzable saliva sample 329 at baseline and 249 at follow up provided survey data 205 provided analyzable sample in both surveys. 65% were non smokers at baseline, analysed on 158 people who were still non smokers at follow-up. Most were men. Participants from the Republic were older (p<.001) and had been working in the pub longer (p=.002).	Assess the impact on non-smoking bar staff (throughout ban) of a national workplace smoke-free law by using lab assessments of secondhand smoke exposure and by controlling for unrelated secular trends. Funding: Office of Tobacco Control through the Research Institute for a Tobacco Free Society (Republic of Ireland); the National Cancer Institute of the United States (R01 CA90955); Irish Cancer Society; Irish Heart Foundation; Health Service Executive, Western Area, and Western Investing for Health Partnership (Northern Ireland). Mandate Trade Union provided two prizes for a draw.	Compared exposure to 2nd hand smoke and respiratory health in bar staff in rural and urban areas in the Republic before and after the laws and compared these with changes observed in Northern Ireland 1 year follow up Follow up rate of 89% of those eligible and 76% overall in the republic, and 88% of those eligible and 71% overall in the North.	Salivary cotinine concentrations declined significantly in both regions, but greater decline in the Republic. Work related secondhand smoke exposure dropped in the Republic (P<0.001) more than in Northern Ireland (p=0.02). Cotinine concentrations in non-smokers in the Republic dropped by 71%, >twice as much as in the North (34%) Respiratory symptoms: Respiratory symptoms dropped by 25% (P=0.001) in the Republic. In Northern Ireland the proportion reporting respiratory symptoms was lower at baseline and was unchanged after the ban. The adjusted rate ratio (symptoms at follow up relative to symptoms at baseline) for the number of respiratory symptoms in the republic dropped from 1.33 to 0.93, and increased in Northern Ireland by 16% (from 0.67 to 0.83)	UK study and highly applicable considering England's approaching bans in bars and restaurants.	Each participant acted as their own control. Natural experiment of pub staff in places that adopted versus did not adopt smoking bans in restaurants and bars. Used reliable outcome measures (salivary cotinine levels). Using a standard of 60% follow up rate, follow up was high.

Anderson 1999 England Qualitative 2-	N=7 Nurses from one surgical directorate, surgical nurses only were selected 4 non smokers, 2 x-smokers, 1 smoker 6 females, 1 male, all between 26 and 59 years	To explore nurses' views, awareness and perceptions of their hospital Trust's smoking policy, and its effects on staff and patients. Funder not clearly stated.	Hospital smoking policy: staff and patients were not permitted to smoke within the hospital except in a designated area, visitors were not permitted to smoke in the hospital	Interviews revealed that nurses thought policy could help in limiting post-op. complications but could also have negative effects on the mental well being of those dependent on nicotine for stress relief and on the safety of individuals, e.g. those who choose to go outside in bad weather to smoke. They felt that greater provisions for patients who smoked needed to be made (e.g. designated areas, NRT); that all other staff working in the Trust had to share the responsibility for enforcing the policy; that more training should be provided (eg. Smoking cessation techniques); that future policy development could benefit from patient input.	Conducted at an English hospital and relevant to study population. However, the study deals only with a hospital smoking ban, rather than national smoke-free legislation.	Small sample size due to staffing shortage and homogenous sample (all from the same specialty). Only 1 smoker included which may have affected results. Methodological approach to analysis not clear; contexts and variation in responses not explored.
Baile (1991) USA Cross Sectional 2+	Total N= 349 N= 83 smokers. 76% female and 24% male. 34.8 average age. 52% had high school and 39% had college. Avg 14. 5 years as smoker, Avg 13.1 cigarettes per day. N= 266 non smokers. 79% female and 21% male. 32.3 average age. 22% had high school and 55% had college degrees. N=5 Quitters – no analysis done	Impact of a complete smoking ban on 70% of employees at a cancer treatment centre. Asked about decreased rates of smoking, withdrawal symptom, change in other smoking habits, impact on non smokers, and effect on attitude toward the organization.	Complete workplace smoking ban (surveyed at 4 months since implemented) Employees were free to smoke outside the building during meal and breaks, smoking within the building was prohibited Comparisons between smokers, non-smokers, and quitters since the ban. Questionnaires were given over several weeks.	Smokers outcome measures: number of cigarettes smoked, patterns of cigarette use, nicotine dependency, withdrawal symptoms, work performance and attitude. 54.2% reported decrease in cig consumption. 43.8% reported increasing use before or after work, increase before is correlated with increase after (r=.72). Cravings were the most frequent symptom followed by irritability and nervousness, cravings were correlated with compensatory smoking and nicotine tolerance. Non-smokers outcome measures: job performance and satisfaction,	Study deals with smokers at a cancer treatment centre in the US in the context of a hospital smoking ban. It is not clear how applicable these findings are to England in the context of national smoke-free legislation.	Good response rate, missing data probably not introducing bias; reliability and validity of measures not discussed. Retrospective self-report of n cigarettes smoked questionable.

Barbeau et al. (2006) USA Cross Sectional 2+	Iron workers N = 337 Gender (97%) were male (51.7) age 30 years and older Race 71% White 15.7% Black or African American 5.0% Hispanic 8.3% Other Summary or Education & Poverty level 95.2% respondents have not completed 4 years of college 42.8% of the sample had earned a high school degree or its equivalent 64.2% of respondents reported a household income that exceeded 300% of the federal poverty limit Education 7.2% Less than 12th grade 42.8% High school or GED 14.1% Assoc degree or voc/trade school 31.1% Some college 4.8% Bachelors degree or more Poverty level 1.7% Below federal poverty level 12.4% 100-199% above federal poverty level	The objective of this paper is to report on the results of a smoking cessation intervention study called "MassBuilt" for unionized apprentice iron workers. The researchers report on the implementation of the intervention components and the level of participation, and compare the pre-post intervention changes in 7-day smoking prevalence , intention to quit, smoking intensity and self-efficacy to quit Funding through the American Legacy Foundation	4-month intervention drew upon a health promotion-health protection model for smoking cessation among blue collar workers. Conducted pair-wise analysis to access the pre-post intervention differences in 7-day point prevalence smoking abstinence measured 1 month after the intervention was finished. Secondary outcomes such as smoking frequency, intensity, intention and self-efficacy to quit were addressed. Intervention: a 1 hour toxics and tobacco education module, a tobacco use cessation group, nicotine replacement therapy (NRT), posters, articles in a monthly union newsletter, a do-it-yourself quit-kit. Incentives were used to encourage on-going participation in the quit classes.	Baseline smoking prevalence was 41%. The researchers observed a 19.4% post-intervention quit rate among baseline smokers. There were statistically significant positive changes in intensions to quit within 6 months (24.8% p = 0.04), intentions to quit within 30 days (25.9 % p = 0.03), increased self-efficacy at 6 months (38.5% p = 0.02), and increased self-efficacy at 30 days (46.9 % p =0.002). There were also reductions in number of days smoked in the last 30 days (22% p = .006). Finally. those who participated in the intervention were 3 times more likely to quit than those who did not participate (OR = 3.0, 1.15, 7.83)	Study conducted in the US. It is not clear how applicable these findings are to the UK in the context of national smoke-free legislation. The demographics of participants do not likely reflect the UK.	A well conducted study however it relied on self report measures of smoking. There was a lack of information on missing data and eligibility.

	21.7% 200-299% above federal poverty level 64.2% >300% above the federal poverty level					
Borland (1990) Australia Cross sectional survey 2+	Employees of the Australian Public Service from selected work areas in 6 departments spread across three cities and 44 locations. The workforce was predominantly white collar. (N=2113). Mean age: 32.8 years Sex: 53% male, 27% female 25% were smokers 33% had tertiary education and another 39% had either completed secondary school and/or acquired certificate or trade qualifications.	Explores the changes in acceptance of workplace smoking bans following their implementation.	Cross sectional survey administered 6 months after an initial survey (which took place 2-4 weeks before the workplace smoking bans were formally introduced).	Reported compliance with the ban was high (73.9%). 22.8% reported occasional violations and only 3.3% reported regular violations. Before the ban was implemented, most respondents approved (83%). Six months after the implementation of the ban 87% of respondents supported the ban overall. Although smokers were less likely to approve of the ban, smokers increase their level of approval more than did nonsmokers following the implementation of the ban.	Although this study takes place in an Australian setting, its findings support the broader findings found in international studies that compliance with worksite bans is high and that approval for them increase following their implementation. It is therefore likely that the findings of this study are applicable to a UK setting.	Smokers were somewhat less likely to complete both surveys and may not be representative of the attitudes of all smokers (those smokers who completed the survey may have been more positively disposed to the ban than those who didn't).
Borland (1999) Victoria, Australia Cross sectional surveys 2+	N=2500 randomly selected adults each year from 1989 to 1997. Outcome measures: proportion who discourage visitors from smoking; who always smoke outside their homes; behaviour of smokers when around children.	Report on trends in efforts to keep homes smoke-free, and look at influencing factors such as the composition of the household, working in places that are smoke-free, and the belief that passive smoke is harmful.	Evaluating changes in outcome measures over the 7 survey years (1989, 1991, 1992, 1994, 1995, 1996, and 1997). Response rates were available from 1994 onwards and ranged from 33.2% to 36.8%.	In 1989, only 27% (95% CI 24.8 to 28.4) of respondents indicated that they discouraged visitors from smoking, but by 1997 this proportion had nearly doubled to 53% (95% CI 51% to 55%). In 1997, regardless of occupational status and household composition, respondents from workplaces where smoking was banned completely were more likely to discourage their visitors from smoking in their homes than were those from workplaces with partial or no smoking bans (OR = 1.5, 95% CI 1.2 to 2.0). The proportion of smokers who usually smoked outside increased from 20.0% (95% CI 17.4 to 22.6) to 28.0% (95% CI 25.0 to 30.9). Smokers in households with children were 1.6X more likely to always smoke outside than those in households with no children (OR = 1.6, 95% CI 1.3 to 2.0), regardless of year.	Although an Australian study, it does deal with trends in smoke-free homes and its findings echo those of the HSE, so it seems generally relevant.	There is a very low response which is a potential source of bias. The study also relies on self-report, which is a potential source of bias. However, a well conducted study overall.

Workplace smoking bans did not have a significant impact on whether a smoker smoked inside or outside at home.

Borland (2006a) Australia, Canada, UK, US Cross sectional survey 2+	N=9,046 smokers surveyed. Similar sized samples from the U.S. Canada, the UK and Australia. Australia had a greater number of respondents under 24 and the UK over 55. Females were over-represented.	Studied variation in support and compliance for smoke-free policies by country. Also explored whether age, sex, and cigarette consumption affected support for bans.	Smoke free home policies. Cooperation rates were: USA 77%, Canada 78.5%, UK 78.7% and Australia 78.8%.	Restaurants: Reported presence of a total ban and documented extensive restrictions were most strongly related to support. Support of ban was higher among those who believed secondhand smoke is harmful to non-smokers (more in UK and Canadians). Female smokers and those whose consumption was greater were less supportive. Where there was reported ban in a restaurant , sex was no longer related to support, the relation with age was reduced, smokers from the UK were no longer less supportive, and the relation with thinking about the harms of passive smoke became marginal. Support for bans was related to not smoking in situations where there were no reported bans. Compliance to bans was highest in Australia and lowest in the UK. Bars: The same variables related to support for bans in restaurants also applied to bars. Support for bans in bars is lower overall.	Directly applicable to UK as England is going smoke-free in summer 2007. Examples from Australia, Canada and the US with restaurant and bar bans could be predictors.	Self reported attitudinal outcome measure is somewhat unreliable and could bias results in a positive direction. However, a well conducted study overall.

Borland (2006b) Australia, Canada, UK, US Cross sectional survey 2+	N=9,046 smokers surveyed. Similar sized samples from the U.S. Canada, the UK and Australia. Australia had a greater number of respondents under 24 and the UK over 55.	To report on prevalence, trends and determinants of smoke-free home policies in smokers' homes in different countries and to estimate the effects of these policies on smoking cessation. Interested in differences by SES, smoker characteristics, interest in quitting and influence of smoke-free public places.	Cooperation rates were: USA 77%, Canada 78.5%, UK 78.7% and Australia 78.8%.	Australian smokers were most likely to live in smoke-free homes and UK smokers least likely (34% *v* 15% at Wave 1). Levels of smoke-free homes increased between waves. Logistic regressions indicated that the main independent predictors of smokers reporting smoke-free homes or implementation of a smoke-free policy between waves included household factors such as having a child, particularly a young child, and having other non-smoking adults in the household. Positive attitudes to smoke-free public places and/or reported presence of smoke-free public places were independent predictors of having or implementing smoke-free homes, supporting a social diffusion model for smoking restrictions. Intentions to quit at Wave 1 and quitting activity between survey waves were associated with implementing bans between Waves 1 and 2. Presence of bans at Wave 1 was associated with significantly greater proportions of quit attempts, and success among those who tried at Wave 2. There was no significant interaction between the predictive models and country.	UK was a participating country and therefore some results are UK specific and directly relevant.	Self-report of home smoking practices questionable, could bias results in a positive direction. However, well conducted study overall.

Chapman (1997) Australia Observational study 2+	N=143 smokers outside office blocks, N=99 (69.2%) agreed to be interviewed. N=113 smokers were observed in social settings, N=101 (89.4%) of whom were interviewed. Subjects were randomly selected. Subjects smoking outside central Sydney office buildings in which smoking was banned and those smoking in social settings were observed. Subjects were similar in terms of gender, age, years smoking and mean Fagerstrom Tolerance Score.	To investigate whether smokers outside buildings with work-place smoking bans smoke "harder" than those smoking in social settings.	Work-place smoking bans are the intervention. Compared puff parameters: puff frequency and time taken to smoke a cigarette. 69.2% of observed smokers outside of offices agreed to be interviewed. 89.4% of observed smokers in social setting agreed to be interviewed.	Smokers outside their work-place had significantly higher mean number of puffs per cigarette (T=5.58, df 253, p<0.001) and a 30.4% shorter mean cigarette duration than smokers in social settings, setting was the only significant relationship (P<0.0001) for cigarette duration. Smokers leaving work-stations to smoke outside buildings smoked their cigarettes "harder" than cigarettes smoked in social settings.	While this is an Australian study considering England's increasing smoking restrictions it is likely that the differences observed between smoking in restricted and non-restricted settings will be similar. The health benefits often engendered by work-place smoking bans may be lessened by policies which allow smokers to take smoking breaks.	Unclear how random selection of smokers to observe took place; no analysis was done on those smokers who refused to answer questions after being observed. However, otherwise well conducted and may provide more realistic assessment than clinical study.
Clarke (1997) Australia Cross sectional 2-	44% men (38.6 average age) and 56% women (31.1 average age), range from 20 to 74. Males were older than females (p<.0001). Most respondents were clerks, salespeople, or personal service workers (67%). 38% had a university degree or diploma.	Examines the perceptions and beliefs about exiled smoking in non-smoking workers: the extent non-smokers view smokers as a distinct group from themselves; claims that non-smokers see smokers as having a work benefit or not and weather this is a source of antagonism; are there factors that lead non-smokers to join exiled smokers and then to smoke.	Entire sample was subject to workplace smoking restrictions	No relationship between position on exiled smoking and gender, occupation or education. Most non-smokers thought smokers took more time (32%) or a little more time (46%) away from work than non-smokers. No- smokers who would never join had more negative attitudes toward smoke break scores than other positions (F=2.9, P<.05); however non-smokers did see smokers as getting something desirable. Social smokers were more likely to have gone out and smoked than x-smokers or non-smokers (chi2=-29, p<.01) 52% of those who went out with different groups smoked as compared with 28% of those who went out with the same group (chi2=4.9, p<.05). Those who had smoked were more tempted to smoke (chi2= 30.6, p<.05).	This is an Australian study and it is unclear how readily its results translate to an English setting. However, the potential tensions it discusses are likely to be relevant to England once the smoke-free legislation is implemented.	Non-representative sample possibly contributing to the positive view that non-smokers had of smokers. Non-smokers who do not interact with smokers have been under represented and the true number of non-smokers smoking with exiled smokers is likely lower. Good discussion of potential bias.

Dawley (1993) Southern Louisiana, USA RCT 1-	3 chemical plants were randomly assigned to cessation programs: Company 1 was cessation only, N=22. Company 2 and 3 were comprehensive programs, N=48 and N=27 respectively.	To assess the effectiveness of a comprehensive smoking control program over a cessation program alone at chemical plants where smoking is already controlled.	Interventions: Smoking cessation program consisted of a group cessation program that included a stop smoking kit and natural cinnamon "quit sticks". Comprehensive programs also had smoking control and discouragement in the form of posters and bumper stickers. Compared change in smoking status among employees at a worksite with a cessation program alone to employees a worksites with a comprehensive program of smoking control. 4 month follow up. Participation rate varied depending on each element of the program, e.g. employees who attended at least one of the six group session was considered a participant. Participation rate at Company 1 = 7%, at Company 2 = 22%, and company 3 = 13%.	Quit rates of 54% and 48% were achieved at the comprehensive sites compared to 36% at the cessation only site. There was an increase in quit attempts at all sites, however, a greater number of quit attempts was evident among smokers at companies 2 and 3 who did not attend the cessation group in comparison with company 1 ($p<0.05$). Acceptance of health risks associated with smoking was significantly higher among participants at companies 2 and 3 ($p<0.001$)	Although this study assesses workplace bans in the US, its exploration of the effectiveness of workplace interventions in the context of smoking bans may be relevant to future workplace interventions in England.	Company 3 had a very strong smoking policy prior to the initiation of the study in comparison to companies 1 and 2. It is not clear what level of smoking restrictions were in place in companies 1 and 2. Moreover, there were other significant baseline differences between the companies, for example the percentage of smokers.

Farrelly (1999) USA Cross sectional 2+	171680 workers >18 years and 97,882 indoor workers	To assess the impact of workplace restrictions among indoor workers in various industry groups	4 workplace programs: 1) 100% smoke free, 2) work area bans with smoking is allowed in some common areas, 3) bans in some but not all work and common areas 4) minimal or no restrictions.	The results show a slightly larger effect of a complete smoking ban for men relative to women for both the prevalence of smoking and daily smoking (M: reduction of 2.94 cigarettes/day; F: reduction of 2.38 cigarettes/day). Percentage point declines in the prevalence of smoking also different based on education. The largest effects were for workers with a college degree (28.4% decline) and the least for high school drop outs (13.7% decline). However, the opposite is true for the effects of the smoking ban on average daily consumption: those with less than a high school degree had the largest decline in absolute terms (3.9 cigarettes) and as a percentage of average daily consumption (19.4%). Older smokers reduced their cigarettes per day more than younger smokers (3.43 for 40-65 year olds vs 1.72 for 18-24 year olds); non-hispanic whites reduced their cigarette consumption more than all other ethnic groups aside from Hispanics.	This study assesses the effectiveness of workplace bans in the US – which take the form of partial legislations via jurisdiction. It is unclear how well the findings of this study translate to an English setting in the context of national smoke-free legislation.	A well conducted study but relies on self-reported changes in cigarette consumption, and is therefore its findings are subject to potential bias.
Feigelman et al. (2006) USA Cross Sectional 2+	N=90661 American bar and restaurant workers, all other workers, smokers and nonsmokers	Evaluate whether the American public accepts smokefree bars and restaurants Funding: not mentioned	Uses data from the May 1993 and January 1999 Current Population Surveys, Tobacco Use Supplements to compare tobacco-control attitudes among American bar and restaurant workers	By 1999, smokefree workplaces were widely accepted by two-thirds of adults, with half favoring completely smokefree restaurants. From 1993 to 1999 an increase of 10% from 58.5% to 68.4 for workplaces, an increase of 6% from 44.3% to 50.6% for restaurants and 4% increase 22.6% to 26.7% for bars and lounges (no p values available). Completely smokefree bars remained less popular, with nearly equal numbers (about 30%) preferring them or favoring unrestricted bar smoking (All states: 24.5% in 1993 and 28.5% in 1999, OR 1.3, 95% Confidence Intervals 1.2 to 1.3) wanted smoke-Free bars. Among bar and restaurant	This study assesses the effectiveness of workplace bans in the US – which take the form of partial legislations via jurisdiction. It is unclear how well the findings of this study translate to an English setting in the context of national smoke-free legislation.	A well conducted study however would have liked more information on confounders, reliability, and missing data.

				industry workers less than 10% favored unrestricted restaurant smoking. Food and bar service workers lagging behind all other workers in supporting smokefree workplaces. Bartenders were the most permissive (33.6%), waitpersons were somewhat less so (39.8%) and food service managerial personnel were only slightly less inclined (51.6%) to accept smokefree workplace compared to all other workers (58.9%) ($p < 0.001$). In California acceptance rose 15% in six years and 45 % preferred smokefree bars		
Fichtenberg (2002) International Meta-analysis 1-	Employees in unrestricted and totally smoke-free workplaces	To quantify the effects of smoke-free workplaces on smoking in employees and compare these effects to those achieved through tax increases.	Comparison of workplaces with total smoking restrictions and those without restrictions. Comparing the reduction in cigarette consumption caused by totally smoke-free workplaces with reductions caused by tax increases.	Implementation of totally smoke-free workplace policies was associated with a reduction in absolute prevalence of 3.8% (95% CI 2.8% to 4.7%) and a decrease in consumption of 3.1 (2.4 to 3.8) cigarettes per day per continuing smoker.	This is an international review of the literature and is likely to be directly applicable to a UK setting.	There are significant methodological problems with this study. Given the heterogeneity of the included studies, a meta-analysis seems inappropriate. The inclusion criteria for the meta-analysis are also extremely broad and comparison work-places or pre/ post tests not required. The follow-up period range from 1 to 24 months.

Fisher (1990) International Meta-analysis 1+	Inclusion criteria: 1) study of worksite smoking cessation 2) reported long-term follow-up quit rates 3) included a control or comparison condition 20 studies met the inclusion criteria	To determine the effectiveness of worksite interventions for smoking cessation	Types of interventions covered: 1) bibliography (self-help written materials) 2) physician advice 3) multi-component behavioural methods 4) incentives 5) catch-all category 12 months follow-up (minimum) Quit Rate was the key outcome measure and was determined by the number of successful quitters/quitters plus non-quitters who started the program.	An overall weighted mean effect size of .21 ± 0.7 was found, indicating a modest but significant overall effect (P < .01). The weighted average follow-up quit rate from all interventions was 13%. Interventions conducted in smaller worksite (ES = .45 ± .17), which lasted 2 to 6 hours (ES = .42 ± .13), and which contained heavy smokers (ES = .28 ± .07) were associated with the largest effect sizes.	This is a meta-analysis of international studies and its findings that incentives do not increase cessation rates, although they do increase participation rates are likely to be directly applicable to a UK setting.	The authors are clearly aware of some of the potential pitfalls of meta-analyses and have included only controlled studies with at least a year of follow-up. However, it is not clear whether quit rates are based on self-reported success or biochemical validation (it appears both) and the authors do not explicitly discuss how 'successful quitting' was measured.
Friis (2005) USA Cross sectional 2-	All long beach households with a telephone number were eligible. Study Population Characteristics: 40.4 years average age, 44% male, 56% female, 784/ 4270 possible households in 1998 1237/4566 possible households in 2000	1. residents' approval for the 1998 California Smoke-free Bars Law when implemented; 2. changes in approval between baseline and 2 years follow-up	Attitudes towards smoke free bars law at implementation and 2 years after among the general population (in Long Beach, CA) 2 year follow up. Comparison between 1998 and 2000 and between those who approved the law and those who didn't. 52% response rate in 1998; 82% response rate in 2000 18% response rate 1998; 27% response rate in 2000. Exposures: age, gender, ethnicity, self-rated health status (5pt scale), household income (3 categories), martial status, work situation, education (5 categories), current smoker (y/n)	Attitudes measured with 1 dichotomous item: approval or disapproval of Smoke-free bars laws. Outcome measure: attitudinal survey 1998: 65.2% approve. Respondents who approved of the smoke-free bars law were more likely to be younger, Latino or white, have excellent health status, household incomes between 40 and 80 000, not be working, have a post grad or college degree, and be non-smokers. In 2000: 72.6% respondents who approved of the law were more likely to be younger, Latino or other ethnicity (89% more than Other), have household incomes over 80 000, be working part time (72% more than those who did not work at all), have a postgraduate degree (108% more than those with high school), and be non-smokers (499% more than smokers).	Long term attitudes of smoke free bars – UK are going smoke free, can provide guidance. However, this is an American study and it is unclear how transferable its findings are to an English setting.	The missing data is not accounted for. Response rates are extremely low; details of telephone survey not reported. If calling took place in the evening when people who frequent pubs are likely to be out, support for the ban would have been overestimated. Should have asked about this in survey to quantify potential effects.

Gritz (1998) USA Pair-matched RCT 1+	N=4663 female; n=10919 males sampled from 90 blue collar worksites, randomized matched pair design for Working Well Trial. Non-random sample of worksites. 12313 men: 65.2% blue collar; 34.8% white collar; 48.5% high school or less; 51.5% more than high school; 89.9% white, 4.5% Hispanic, 4.0% Black, 1.6% other. 5523 women: 76.4% blue collar, 23.6% white collar; 56.9% high school or less, 43.1% more than high school; 89.4% White, 4.2% Hispanic, 2.8% Black, 3.5% other.	1. To compare characteristics of male and female quitters who were enrolled in Working Well trial (regardless of randomisation) and 2. Effects of intervention on cessation rate among men and women. 80% power to detect 6 % difference in smoking prevalence in cross-sectional study. Funded by the US National Cancer Institute	Intervention activities geared towards individuals, such as posters, interactive events, self-assessments, and to the organization, such as: smoking restrictions or prohibitions. Control sites documented any health promotion actives that took place during the trial; some cites distributed posters and brochures as a minimal intervention. Cross sectional baseline and follow-up data collected from all those present in the workplace at 2 year interval. Attrition not reported.	Outcome: self-reported abstinence from smoking for 6 months Adjusted for occupation and education: Women in intervention vs. women in control group: AOR=1.47, p=0.047, 95%CI: 1.01-2.15. Men in intervention vs. men control: AOR=0.98, 95%CI: 0.77-1.35. Men vs. women in intervention: AOR=1.14, 95%CI: 0.83-1.56. Men vs. women in control: AOR=0.76, 95%CI: 0.54-1.08.	Workplace intervention effective among female blue-collar workers in some blue-collar worksites the US, but not among male employees	Trial methodology, but analysed data from entire workplace staff at baseline and follow-up, thus those who left work between those time points were not included. New employees might smoke less, or heavy smokers more likely to leave work if policy very restrictive—less likely to take job. Could over or underestimate intervention effects depending on movement of smokers in and out of workplace. However, results CO-validated & solid study overall.

Hammar (2004) Gothenburg, Sweden Cross-sectional 2-	Owners/managers of 252 of the 642 bars/nightclubs/restaurants/cafes in downtown Gothenburg; mail survey.	To examine attitudes towards a smoking ban among restaurant owners. No power calculation. Funding source not mentioned.	Cross-sectional survey of attitudes among owners of different establishments about expected revenues after implementation of a hypothetical general smoking ban which restricted smoking to outdoors. Cross-sectional. Exposure: Type of restaurant defined as 1. café, 2. bar, 3. restaurant by authors based on responses to 4 pt question, 'How would you characterize your business'; other variables described	Outcome: Expected revenue measured on a 4 point scale (higher/no change/ lower/ much lower) Largest effects for variables tested: Establishments that have always been smoke free have 0.27 probability of expecting lower revenues versus not always smoke free places. Those that have a larger share of smoking customers p=0.23 of expecting lower revenue vs. smaller share. Type of establishment is not related to owners' expectations of revenue; but those with late night hours expect to lose more money. Those who perceive a general sector decline in business p=0.21 of expecting lower revenues.	Restaurant, café and bar owners in Gothenburg, Sweden are more likely to perceive a loss in revenue if they serve relatively more smokers, have not always been smoke free, and who perceive a general decline in restaurant sector will result from ban.	Measurement scale for expected revenue asymmetric (more on lower side of scale)—could have affected responses, but also could have made more sensitive instrument and picked up differences in area where people respond most; reliability and validity not well described, very low participation rate.
Heloma (2003) Helsinki, Finland Cross-sectional 2+	Eight work-places from the Helsinki area representing both private and public sectors: industry, service sector and offices. Work-places with a total ban on smoking before the enforcement of the revised act were not eligible. Over the 4 years that the 3 surveys were conducted employees in the service sector decreased (from 45.1% to 38.2%), employees working in offices increased (17.4% to 24%). More women in the 3rd survey than 2 previous surveys.	To assess the possible impact of the new legislation on employee exposure to ETS, smoking habits, employee attitudes to work-laces smoking polices. Funded by the Finnish Ministry of Social Affairs and Health, the Finnish Work Environment Fund, and the Finnish Anti-Tuberculosis Association Foundation.	Repeated cross-sectional questionnaire surveys and indoor air nicotine measurements were carried out before, and 1 and 3 years after the law had come into effect. Exposure: new national smoke-free work-place legislation	Employee exposure to ETS for at least 1 hour daily decreased steadily during the 4-year follow-up, from 51% in 1994 to 19% in 1995 and 12% in 1998. Respondents' daily smoking prevalence and tobacco consumption diminished one year after the enforcement of legislation from 30% to 25%, and remained at 25% in the last survey. Long-term reduction in smoking was confined to men. Both smokers' and non-smokers' attitudes shifted gradually towards favouring a total ban on smoking at work. Median indoor air-borne nicotine concentrations decreased from 0.9µg/m^3 to 0.1µg/m^3 in 1995-96 and 1998.	In Finland, a smoke-free work-law is associated with reducing ETS exposure at work. It also seemed to encourage smokers to accept a non-smoking work-place as the norm.	Most repeated cross sectional studies in this area of research survey smoking behaviours once pre-ban and once post-ban, this study surveyed both immediately post-ban and one year post-ban for information on longer term effects; this increases reliability of reported ban effectiveness. Self-report of smoking behaviour questionable, could bias results.

Hey (2005) International Structured review 1++	Adult smokers, either gender, in any setting. The authors did not include trials aimed exclusively at adolescent smokers or trials aimed at pregnant smokers.	To assess the effects of competitions and incentives as aids to smoking cessation. The following questions were addressed: 1. Do competitions, contests and incentives reduce the prevalence of smoking and relapse? 2. Does the amount and type of incentive affect cessation and relapse prevention? 3. Do incentives improve recruitment to smoking cessation programs, both within the community and within the workplace? 4. Does the amount and type of incentive affect recruitment? 5. Are incentives and competitions more or less effective in combination with other aids to recruitment, cessation and relapse prevention? 6. How great is the risk of disbenefits arising from the use of competitions and incentives, e.g. false claims, ineligible participants?	Contests, competitions, incentive schemes, lotteries, raffles, and contingent payments, to reward cessation and continuous abstinence in smoking cessation programs.	None of the studies demonstrated significantly higher quit rates for the incentives group than for the control group beyond the six-month assessment. There is no clear evidence that participants who committed their own money to the program did better than those who did not, or that different types of incentives were more or less effective. There is some evidence that although cessation rates have not been shown to differ significantly, recruitment rates can be improved by rewarding participation, which may be expected to deliver higher absolute numbers of successful quitters.	This is an international review of the literature and its findings are likely to be directly applicable to a UK setting.	Although the Cochrane review fails to consider the differential effectiveness of workplace interventions based on factors such as sex, gender, ethnicity, age, etc, aside from this there are no methodological concerns regarding the review.
Hutter (2006) Austria	308 smokers who attended an Allen Carr Easyway seminar from a variety of Austrian workplaces.	To find an effective but less time-consuming method of smoking cessation, Allen Carr' seminars were	Intervention consists of one six hour long seminar where a trainer provides structured talk and open	The one-year self-reported quit rate was 40% (worst case assumption) to 55% (best case assumption). In 96% of quitters an intensive counseling for six hours without pharmaceutical aid	This is an Austrian study and it is unclear whether its results are directly applicable to a	There are some problems with this study. First, the study relies on self-reported

Cross sectional survey 2-	Median age was 40 year (range 33-46 years), 238 (77%) were males. 63% of participants had finished vocational school.	performed at Austrian workplaces and evaluated. The authors indicate no financial or other competing interests, but acknowledge that Easyway Austria agreed to distribute the questionnaires, to obtain written consent and to cover the costs of the interviews performed by an independent company.	group discussion to help participants discover why they smoke and in order to remove their fears about quitting. During this process, participants are encouraged to smoke so that they can consciously analyze why they engage in this activity amidst the act of smoking itself. At the end of the coaching period, participants are called upon to extinguish their last cigarette in a ritualistic act. Follow up: 3 months (87% gave computer-aided telephone interview); one year (72% gave computer-aided telephone interview).	thereafter was sufficient to maintain abstinence for 12 months.	UK setting.	cessation outcomes, which are subject to desirability bias. The fact that the telephone surveys were conducted by a marketing company whose costs were paid by Easyway Austria also raises questions about the independence of the results. It would have been preferable for the interviews to be conducted by the researchers.

Jones (1999) Adelaide, Australia Cross-sectional 2+	Owners/managers of establishments listed under 'restaurants' in the 1996 Adelaide area phone book. 276 of 457 restaurants participated in phone survey.	To examine attitudes towards smoking restrictions and compliance with a voluntary restrictions. No power calculation. Funded by the South Australian Health Commission.	Cross-sectional survey of attitudes towards smoking restrictions, effects on business and compliance with voluntary code of restrictions. Descriptive analysis.	As size of restaurant increases, more likely to have only some provision for non-smokers vs. be smoke free ($p<0.001$). 15% used voluntary code of practice to develop smoking policy; of those, 50% adhered to it as outlined. 26.8% of restaurants had a total ban, 40.6% had some routine provision for non-smoking customers. Most restaurants with some provision or a total ban reported that the introductions of the non-smoking policy had no effect on business, 84.4% and 78.4% respectively. Of 90 restaurants without a policy, explanations for why: 43% feared loss of business, 39% structural constraints, 27% perceived no demand. 52% agreed at a total ban would have negative effect on industry; view strongest in places without restrictions.	Although an Australian study, it is likely that the concerns of restaurateurs are likely to be similar in a UK setting. Therefore its findings seem generally applicable to an English setting.	Good participation rate and solid study overall. However, measurement of variables not well described and missing data and potential effects not addressed.
Lader (2005) Cross-sectional 2+	Approximately 3500 adults aged 16 and over in Great Britain. A representative sample of British adults, based on gender, ethnicity, and class. Generated by a random probability sample of 3,000 private households in Great Britain. Selected using the Postcode Address File as a sampling frame. Covers smokers, non-smokers and ex-smokers.	To examine smoking behaviours and attitudes in UK adults.	Face to face cross-sectional survey of present smoking behaviours and attitudes,	Support for smoking restrictions has been increasing since 1996. The percentage in favour of restrictions increased from 85% to 91% in restaurants, 81% to 88% at work and from 82 to 93% in other public places. The largest increase was support for restrictions in pubs, which has risen from 48% in 1996 to 65% in 2004.	This is a well regarded national survey that is used to generate data about current smoking prevalence in Great Britain as well as providing information about current attitudes towards smoking and smoking bans. It is directly relevant to the English setting.	Information on behaviours and attitudes is subject to desirability bias (especially as interviews are conducted face to face) and is based on self-report only.

Lee (2003) California Qualitative 2++	N=121 bars Random sample of stand alone bars was taken from a list of all bars in the city based on alcohol beverage control licenses.	To identify patterns of behaviour, norms, and beliefs that may impact the reasons why some bars comply with the non-smoking ordinance and others do not.	California Assembly Bill 13 -smoking in bars is prohibited	Smoking was observed in 33.4% of observations and at least one time in 49.6% of bars. Two types of smoking were recorded, incidental and endemic (where the majority of persons smoked).14.9% of bars had endemic smoking, 50.4% were characterized as non-smoking. Some of the observed conversation revealed that some smokers felt like criminals for being sent outside to smoke. In many bars where endemic smoking was observed, staff exhibited an ironic attitude of formal recognition but effective undermining of the law.	Considering England's imminent smoke free restaurant and bars legislation this seems generally relevant, particularly in terms of factors affecting compliance.	No methodological concerns. Researchers conducting observations were trained and tested in data recording methods, creating good inter-rater reliability. Random sampling of bars.
Levy (2006) United States Cross Sectional 2+	N=777,713 Study population: female self-respondents ages 18 and older who report less than a completed high school education consist of 75,130 individuals. The probability sample for each wave is based on stratified clusters of households drawn from an initial sampling frame that covers the civilian non-institutionalized population ages 15 and older.	To examine the role of tobacco control policies associated with smoking among women of low socioeconomic status.	Interventions included increased cigarette prices, varying levesl of bans at worksites, restaurants and other public places, and media interventions. Multivariate logistic models of smoking prevalence among low education female adults were estimated to examine the role of cigarette prices, clean air regulations, and tobacco control media campaigns.	Relevant results: Over the period 1992-2002, the index of clean air laws is negative for current smoking among low education fmelaes (OR 0.88) but is clearly signficant only in the subpopulation of medium education females (OR 0.90).	Although this is an American study and looks at jurisdictions with partial legislation, its findings regarding the connection between SES and policy effect seem broadly applicable to UK setting.	A good secondary analysis of existing survey. However, self-report of smoking behaviour questionable, could bias results in a positive direction. Missing data is not well accounted for.

Metzger (2005) New York, USA Cross sectional 2+	N=166 pharmacies 4 geographic areas were defined by median income: above 55,000, between 37, 812 and 55,000, below 37, 000, and the 4th region was considered to be occupied primarily by commuters.	Examined trends in over-the-counter pharmacy sales of NRT products as a proxy measure to assess the impact of smoking policies on smoking cessation in New York City. Funded by Centers for Disease Control and Prevention Cooperative Agreement.	Weekly sales and product promotions of 12 over-the-counter NRT products from July 2001 to January 2004. Assessed changes in sales during the weeks of implementation of the state tax increase, the city tax increase, the Smoke-Free Air Act, New York's free patch program, and changes in sales during the weeks encompassing New Year's Day.	Significant increases in nicotine patch sales and sig. decreases in gum sales during New Year's. 27% increase in nicotine patch sales during the week of the state tax increase, 50% increase during week of city tax increase, 31% increase during implementation of SFAA. Increase in sales after taxes were larger in lower-income area pharmacies.	Although an American study, given that smoke-free legislation in New York is similar to the national legislation to be implemented in England, the findings of this study seem broadly applicable to an English setting.	Sampling method was not defined, while it is reported that 30% of all pharmacies in New York were represented we do not know if this was random or quota or which type of sampling. Reference given also did not explain.
Miller (2007) Australia Cross Sectional 2+	N=500 (baseline- November 2004) N=357 (survey phase 1) N=2,004 community support telephone surveys	Investigate the opinions and experience of representative samples of licensed venue managers before and after the first phase of South Australia's laws.	Two surveys were conducted with bar and club managers of randomly selected licensed venues in South Australia. The first survey (baseline) was conducted in November 2004. The second survey was conducted in May 2005. Community support was assessed with a phone survey in 2005.	Acknowledgement of the importance of providing a smoke-free work environment for staff was high. Overall, 83.8% in 2004 and 90.7% in 2005 thought it was somewhat or very important (x^2=7.28, df=2, p<0.01). When asked at baseline about licensed venues becoming completely smoke-free in 2005, 51.2% expressed approval, 39.2% expressed disapproval and 9.6% said that they had no view either way. When asked to elaborate on reasons for supporting the ban, 40% cited staff health. In 2005, support for the ban was marginally higher (59.2% for bans in drinking areas and 57.7% for bans in gaming areas). 75.6% supported the phase in non-smoking areas. The primary reason for supporting the interim phase in was staff comfort (47.6%). No p-values provided.	This study was conducted in Australia. It is not clear if findings are directly applicable to the UK since results are in relation to Australia-specific laws.	There was a lack of information on data analysis, the measurement method or reliability. Furthermore, no p-values or confidence intervals were reported.
Miller (2006) Australia	N=2,004 South Australian Adults	Measure the reported impact of phased-in smoke-free bar laws on	Data was collected in March and April 2005 in a representative phone	In 2005 (after the implementation of phase 1), support for the legislation was high (94.1% for general workplace provisions, 67.9% for bars,	This study was conducted in Australia. It is not	There was a lack of information on missing data, data analysis,

Cross Sectional 2-		bar patronage and smoking behaviour, particularly among young adults. Funded by the South Australian Department of Health.	survey. Survey was conducted 4 months into the new laws.	80.3% for gaming rooms). When asked, unprompted, about reasons for agreeing with elements of the law, many cited health reasons (78.8% for general workplaces, 69.1% for bars and or gaming). Community opinion was divided on the 3 year phase in period. Overall, 52.9% supported it, 40.8% opposed it. When asked to elaborate 46.1% thought that it would help businesses or the community to adjust. However, 41.1% thought that the laws should come sooner. Only 2.2% thought that venues should never be smoke-free. In 2005 17.7% of young adult smokers reported that they were already smoking less because of the phase 1 laws and 31.5% said that they were more inclined to quit (vs. 14.9% in older ages; x^2=18.9, df=2, p<0.001). When asked about the 2007 smoking bans, 54.7% predicted that they would smoke less overall (vs. 31.5% of older ages; x^2=20.4, df=s, p<0.001) and 31.5% predicted they would be more likely to quit altogether (vs. 16.5% in older ages; x^2=6.7, df=2, p<0.05).	clear if findings are directly applicable to the UK since results are in relation to Australia-specific laws.	eligibility, and reliability.
Moher (2005) International Structured Review 1++	Adults over the age of 18, in employment, who smoked.	1. To categorize workplace interventions. 2. To assess the extent to which different kinds of workplace smoking programs help smokers to reduce or stop cigarette consumption. The authors also wished to determine whether workplace smoking programs reduce the exposure of non-	1. Smoking cessation interventions aimed at individuals in the workforce. 2. Interventions aimed at the workforce as a population.	Group programs, individual counselling and NRT increased cessation rates in comparison to no treatment or minimal intervention controls. Self-help materials were less effective. Tobacco bans decreased cigarette consumption during the working day but their effect on total consumption was less certain. There was a lack of evidence that comprehensive programs reduced the prevalence of smoking. Competitions and incentives increased attempts to stop smoking, though there was less evidence that they increased the rate of actual quitting.	This is an international review of the literature and its findings are likely to be directly applicable to a UK setting.	Although the Cochrane review fails to consider the differential effectiveness of workplace interventions based on factors such as sex, gender, ethnicity, age, etc, aside from this there are no methodological concerns regarding the review.

		smoking employees to ETS. 3. To compare the effectiveness of different kinds of workplace smoking programs in helping employees to stop or reduce smoking.				
Moore (2006) San Francisco, USA Qualitative 2++	Study One: N=121 bars. Random sample of stand alone bars was taken from a list of all bars in the city based on alcohol beverage control licenses. Study two: N=90 bars. Selected based on ethnic make up of patrons: 28 Asian patron bars, 25 Latino patron bars, and 37 Irish patron bars.	To assess the relationship between bartender gender and smoke-free workplace compliance in bars.	California Assembly Bill 13 -smoking in bars is prohibited	Smoke-free policy noncompliance was associated with bars in which women were bartenders. Asian and Irish dominated bars were positively related to patron noncompliance, but Latino bars were not.	Considering England's imminent smoke free restaurant and bars legislation this seems generally relevant, particularly in terms of factors affecting compliance.	No methodological concerns. Researchers conducting observations were trained and tested in data recording methods, creating good inter-rater reliability. Random sampling of bars.
Moshammer (2006) Austria Longitudinal study 2-	N= 515 employees of a steel plant: 28% female, 72% male aged 18-67 years (mean age 42.23) 42% blue collar workers Average years smoking: 20.35 Age at initiation: 21.91 Daily # cigarettes: 26.21	To determine predictors of long-term abstinence (3 years) in employees at a steel plant after participation in Allen Carr seminars. Funding from the Austrian Society for Occupational Medicine.	Intervention consists of one six hour long seminar where a trainer provides structured talk and open group discussion to help participants discover why they smoke and in order to remove their fears about quitting. During this process, participants are encouraged to smoke so that they can consciously analyse why they engage in this activity amidst the act of smoking itself. At the end of the coaching	51.4% of respondents (N=262) reported continuing abstinence at 2-4.5 years (mean 3 years) and 48.4% reported relapse to smoking.	This is an Austrian study and it is unclear whether its results are directly applicable to a UK setting.	There are substantial problems with this study. First, the study relies primarily on self-reported cessation outcomes, which are subject to desirability bias. The attempt to biochemically validate a random selection of smokers and non-smokers is problematic – especially given the extremely high cut offs used to distinguish them (the authors

			period, participants are called upon to extinguish their last cigarette in a ritualistic act. 3 year follow up. Follow up rate: 75%. Smoking status ascertained in computer aided phone interviews based on standardised form. Urinary cotinine samples were taken from a random sample of 30 smokers and 31 non-smokers to verify smoking status.			justify this cut off by indicating that they have taken into account exposure to ETS but the cut off of 600 ng/ml is still more than ten-fold higher than the cut off used in a number of studies. The only source of bias the authors address is possible selection bias in the study.
Moskowitz (2000) California, USA Cross sectional study 2++	N=4,680 Used a stratified, digit dialing technique.	To assess the effect of workplace smoking laws in California on increasing smoking cessation.	Looked at correlations between worksite smoking policy and cessation. Worksite smoking policy was assessed as if the respondent answered yes to "Does your employer have an official policy that restricts smoking in any way?" Response rate for the screener interview was 75.1% and for the extended interview was 75.3%.	Smokers who worked in localities with a strong workplace ordinance (compared with no workplace ordinance) were more likely to report quitting smoking in the prior 6 months (OR = 1.5; 95% CI = 1.1, 1.7). In communities with strong ordinances, an estimated 26.4% of smokers quit smoking within 6 months of the survey and were abstinent at the time of the survey, compared with an estimated 19.1% in communities with no ordinance. The interactions of ordinance strength with race, Hispanic status, age, sex, educational status and type of workplace area were not significant. T	Although this study assesses California's workplace bans, where bans are more stringent and have been in effect for longer than England, there may be a similar effect in England. Smoking ordinances increased smoking cessation among employed smokers, indicating that these laws may benefit smokers as well as nonsmokers.	No methodological concerns. Very high completion rate of phone survey. Participants were randomly selected. Explained procedure used for variance estimation and accounted for sampling error. Exposure (workplace policy and community ordnance) was measured on a point system based on restrictiveness, unlike most studies that do not attempt to measure

exposure.

Mulcahy et al. (2005) Ireland 2+	Hotel workers in Galway city, Republic of Ireland 35 workers in a sample of 15 hotels participated (non-randomised selection of sites and participants) 19 F & 17 M Ages ranged between 18-50 Work duties consisted of waiting, management and a mixture of activities	To investigate whether the Irish smoking ban has had an impact on secondhand smoke exposures for hospitality workers. Funding: Health Service Executive Western Area, Irish Cancer Agency, Irish Heart Foundation.	Measurement of salivary cotinine concentrations to secondhand smoke before and after implementation if Irish smoking ban. Saliva samples obtained 2-3 weeks before the ban and 4-6 weeks after the ban.	Cotinine concentrations reduced by 69% from 1.6 ng/ml to 0.5 ng/ml median (SD 1.29; p, 0.005). Overall 74% of subjects experienced decreases (range 16-99%), with 60% showing a halving of exposure levels at follow-up. Self reported exposure to SHS at work showed a significant reduction from a median 30 hours a week to zero ($p < 0.001$). At baseline, three bars (16%) were below 6.8 ug/m^3 air nicotine significant risk level of cancer alone; at follow-up this increase to 10 (53%).	Directly applicable to English setting and upcoming smoke-free legislation	Although the study uses a reliable outcome measure and its results seem solid, it included a small non-randomised sample of sites and participants. Moreover, samples were taken from shifts at different times of day, which makes two surveys less directly comparable.

Olsen (1991) Texas, USA Cohort study 2++	N=1,097 participants of Smoking Cessation Incentive Program (SCIP) N=1,174 non-participants SCIP participants were more often females, whites, managers, professionals, smokers of one or less than one pack per day, and smokers who had tried to quit at least 2 times or more. Eligibility for participants: a) smokers who responded to the 1984 questionnaire, b) smokers who were misclassified or did not respond to the 1984 questionnaire, c) smokers who were either newly hired or transferred employees during the 1-year-long SCIP program. Non-participants represented those employees who identified themselves as smokers in the 1984 questionnaire but did not participate in SCIP. Non-participants were used a controls.	To compare the long-term smoking cessation rates over a 5-year time period between SCIP participants and non-participants. Demographic, tobacco habits before SCIP and SCIP methods were also evaluated.	Intervention: Smoking Cessation Incentive Program (SCIP). Included a buddy program, nicotine-containing chewing gum, American Lung Association self-help materials and group clinics, and incentive prizes. Compared smoking cessation rates between 1984 and 1989 of SCIP participants and non-participants. 7,516 employees in total were surveyed in 1984; 28.3% identified as smokers. 1,204 SCIP non-participants were identified in the 1984 questionnaire, 1,174 were re-evaluated in 1989. 1,113 SCIP participants were identified in 1984, 1,097 were re-evaluated in 1989. Follow-up: a total of 79% of the participants and 76% of the non-participants were remained employed with the company.	SCIP participants who had quit the longest were more likely to be manager ($p<0.01$), older ($p<0.01$), have quit smoking for at least 30 days sometime prior to the worksite program ($p<0.05$), have used the buddy system ($p<0.05$). The interaction highlighted that 66% of managers who quit smoking >5 years had quite for >30 days prior to SCIP compared to with 23% of those managers who did not quit. Cotinine analysis was used to verify ex-smokers of a year or more: Participants were 2.3 times more likely to be long-term nonusers of tobacco than non-participants. However, cessation rates for those who had been smoke-free for under 4 years were similar for participants who remained smokers at the end of SCIP and non-participants.	Smoking cessation interventions at the workplace have some effect on smoking cessation. Results demonstrate heterogeneity of employee participation and success.	No methodological concerns. There is a very high response rate and they used reliable outcome measures (salivary cotinine testing).

Osinubi 2004 USA Interrupted Time Series 2+	N=128 employees enrolled in tobacco treatment, 30% of those eligible for treatment (smokers). 114 at the large complex, 14 at the small complex. N=21 participated in treatment and had quit dates post ban. The larger complex had more females than the smaller complex (p=0.01)	What is the impact of the smoke-free grounds policy on abstinence among 128 employees who participated in a tobacco dependence treatment program. Cox's Proportional Hazards Model used to calculate risk of relapse	Comparing time to relapse among those in a smoking cessation program who set target quit dates before and after a smoke-free grounds ban at 2 office buildings in NJ, USA Follow up at 2 weeks following their quit date (CO validated) and 6 months (mailed and telephone questionnaire) 89% follow up at 2 weeks and 83.6% follow up at 6 months.	Quit rates: 53.1% at 2 weeks; 44.5% at 6 months. Post ban participants had higher abstinence rates (57.1% at 2 weeks; 52.4% at 6 months) compared to pre-ban (52.3% at 2 weeks; 43% at 6 months. Probability of abstinence after 6 months was significantly higher for post ban participants (p=0.03). Daily cigarette consumption decreased from 16.9 to 10.4 (95% CI 3.2, 10) among those who continued to smoke at 6 months, 39.1% decrease. Post ban participants were 80% less likely to relapse compared to pre-ban participants. Those using NRT were less likely to relapse. Those scoring 17 or above on the Beck's Depression Inventory were more likely to relapse(RR=2.5; CI: 1, 6.2)	Although an American study, it is likely that its findings are broadly applicable to a UK setting because it deals with the effect of indoor vs outdoor bans, which are presumably translatable across countries.	Small sample size in post-ban group (but effect still significant so must be large); abstinence measured in 2 different ways at beginning, 2 weeks (exhaled CO) and 6 months (self-report)—they should have used self report at earlier to time points to check validity of self-report at later time point; attrition seems low; missing data not discussed. Does not have as many time points as methods checklist would like, but is generally ok.
Owen (1997) Australia Longitudinal 2+	107 smokers from 46 worksites who continued to smoke 6 months and 2 years after implementation of a workplace ban in Australian Government Offices.	To evaluate the impact of workplace smoking bands on cigarette consumption among continuing smokers over 2 years.	Total workplace ban implemented in 1988 for all Australian Commonwealth Government Offices. ANOVA.	Outcome: number of cigarettes smoked per day on workdays From the period 1 month before to 6 months after the ban, consumption decreased 5.2 cigarettes per day (other paper). From 6 months to 2 years, consumption increased 1.7 cigarettes per day (p<0.01). No differences found in consumption changes between men and women or by age.	This is an Australian study dealing with a localized smoking ban. It is not clear how translatable its findings are to an English setting in the context of national smoke-free legislation.	Attrition seems very low, missing data also seems minimal. Heav y smokers could be more likely to leave work—attrition bias potentially. In current paper, no mention of selection of cohort (see referenced papers for full description).

Parry (2000) Scotland Cross-sectional 2+	N=3592 46.9% (1675) were male and 53.1% (1898) were female. Males smoked significantly less than the females (P=0.005). Manual staff contained the highest percentage of smokers (44% vs. 17.3% among all staff) (p<0.001)	To investigate if and how smoking bans may have the unintended consequence of relocating smoking elsewhere and consider implications for smoker and non-smokers. Funded by the Research Unit in Health and Behavioural Change in Scotland.	Total ban on smoking in University buildings and in University vehicles except on University grounds (avoiding obstruction of entrances to buildings. 61% of total sample returned completed questionnaires. Response rates among staff varied: 62.8% among academic staff; 74.4% among clerical staff; 60.6% among technical staff; and 46.5% among manual staff.	Changes in smoking behaviour differ according to whether the focus is upon daytime consumption or smoking outside work. Day time smokers were more likely to cut down or stop while at work while outside of work smokers claiming an increase in consumption is greater than the combined percentage of those claiming a reduction or quitting. This suggests compensatory smoking. 76.8% reported an increase of smoking on University property and 80.2% indicated an increase in entrances and steps. The main objection by non-smokers is the increase in passive smoking at entrances.	Although dealing with a localized smoking ban, this is a Scottish study and its findings appear to be directly applicable to an English setting in the context of national smoke-free legislation.	Results from only the surveys were presented. While findings seem valid, people who were disgruntled with the ban may have been more likely to fill out surveys in order to express their dissatisfaction.
Pursell et al. (2007) Ireland Cross-Sectional 2+	N = 220 Participants from a largely non-random selection, 288 bar workers volunteered for the baseline surveys, 220 were followed up one year later (76.4%) Public houses (pubs) in three areas of Ireland	Examine support for the smoke-free workplace legislation among bar workers and compared their perceptions of the impacts of the legislation before and after implementation of the law. Funding by the Office of Tobacco Control through the Research Institute for a Tobacco Free Society (Republic of Ireland); the National Cancer Institute of the United States; Irish Cancer Society, Irish Health Foundation, Health Service Executive, Western	Cross sectional survey administered at baseline and a year later. Outcome measures: level of support for the legislation, attitudes statements concerning potential impacts of the law modeled predictors of support for the legislation.	Pre-implementation 59.5% of participants supported the legislation, increasing to 76.8 post-implementation. Support among smokers increased from 39.4% to 66.7% (p < 0.001) and support among non-smokers increased by 68.8% to 81.2% (p = 0.003). Support for the legislation was more likely among bar workers who were male (65%,) over 42 years (71.6%), non-smokers (68.8%), employees (68.1), and who workers shorter hours per week(69.1%) (p <0.001). With the exception of those aged over 42 years, support increased significantly (p<0.05) in all sub-groups at follow-up, particularly among those working over 40 hours per week, owners and smokers. Pre-implementation 75% of participants agreed that the legislation would make bars more comfortable and was needed to protect workers' health while post-legislation these proportions increased to 90% (p<0.001).	Directly applicable to UK setting and upcoming smoke-free legislation	A well conducted study that used bio-chemical validation. However, there was a lack of information on eligibility, missing data and the measurement method.

		Area, Ireland and the Department of Epidemiology and Public Health, University of College Cork, Ireland. Mandate Trade Union provided two prizes for a draw.		Participants believed that the legislations would have a negative impact on business (from 50.9% to 62.7%, p = 0.008) and fewer people would visit pubs (41.8% to 62.7%, p < 0.001). The authors conclude that bar workers have complex sets of both positive and negative perspectives. Negative economic perceptions did not diminish the perception that the ban is needed to protect workers health.		
Reilly (2006) Australia Cross Sectional 2-	N=18 staff at Alma Street Mental Health Service, Free Mantle Hospital 61%= female 55% over the age of 45	Implement a staff smoking cessation support group to allow individual staff members to address their smoking behaviour and to enable staff to produce recommendations to influence a change in the smoking culture within mental health care service. Funder not mentioned.	Smoking cessation support groups over a 9 week period. NRT was made available to staff through the hospital pharmacy. Intervention consisted of supportive discussions, motivational theory, reflection, peer group support, education sessions, and cognitive behavioural strategies.	The pre-intervention survey revealed that 11 participants were smoking daily but were trying to quit and 4 had quit in the previous three months. At the conclusion of the programme, 8 participants had stopped smoking, 2 individuals were still smoking daily and 2 were still smoking but trying to quit. Three individuals who did not complete the post intervention survey had indicated that they had quit. Overall, 11 participants had stopped smoking by the end of the programme and 7 remained non-smoking three months later. (No-p-values provided).	Study conducted in Australia. Not clear whether the findings would be directly applicable to the UK.	This was a poorly conducted study that provided no information on the measurement method, analysis, confounders, or missing data.
Scarinci (2007) Brazil Qualitative 2+	N=108 women participated in 22 focus groups.	Examined the contextual factors associated with smoking initiation and cessation among women in Brazilian worksites with the intention of developing culturally relevant, gender-specific smoking prevention and cessation programmes. Funded by the Research	Participants engaged in focus groups that used open ended questions and probes. A questionnaire addressing demographics and smoking related variables was also implanted. Data was analyzed in 4 stages: identify themes, discuss themes, re-read transcripts to compare themes, and compare	Current and former smokers indicated that recent trends in smoking restrictions had increased social pressure to quit smoking. However, they also reported feeling isolated from others and feeling marginalized. Participants identified workplace restrictions as an important environmental factor that contributed to decreasing or quitting smoking. Most participant supported workplace smoking policies.	This study was conducted in Brazil. Due to trends and patterns of smoking and the demographics of participants, the findings are not relevant to the UK.	There was a lack of information on the role of the researcher and the characteristics of the context. There was a lack of rich data (very few direct quotes from the participants were provided).

		for International Tobacco Control (Canada).	themes with conceptual framework.			
Schofield (1995) Australia Cross-sectional 2-	816 NSW residents from 52 electoral districts; probability sample. 76% were Australian born. 52% male, 53% main household earners had white collar jobs, 47% blue collar. 26.3% were smokers.	To determine level of support for legislative action to introduce smoke-free areas or total bans in licensed premises. Funded by NSW Cancer Council and NSW Cancer Council Cancer Education Research Program.	Cross-sectional survey of attitudes towards smoking restrictions and thoughts on whether frequency of visits to premises would change. Descriptive analysis.	20% supported total ban (CI 17-23), 65% supported providing special smoking areas (CI 62-69), 15% (CI 12 to 17) thought there should be no restrictions. People with >12 yrs education were more likely to support a total ban (26.7 % vs. 15.7, p<0.001). Blue collar workers were more likely than white collar workers to support having no restrictions (23.2% vs. 10.2%, p=0.001), as were. Support did not differ according to sex, age, or location. 17.3% (CI 15-20) said they would go less often, 71.2% (CI 68-74) said there would be no change, 11.5% (CI 9-14) said they would go more to the licensed premise if there was a ban. Smokers, those who went more than weekly, and those with less than 12 years of education were most significantly likely to report going less often (<0.001).	This is an Australian attitudinal survey and it is not clear how readily its findings translate to an English setting.	Lack of information about those who refuse the survey (average of 22% of households). Majority of participants went to licensed premises less than weekly, less likely to be concerned with the ban, thus significant bias potential.

Shavers et al. (2006) USA Cross Sectional 2+	N=82966 employed female participants in the 1998-1999 and 2001-202 TUS-CPS surveys US women ages 18-64 who were self respondents to the 1998-1999 or 2000-2001 tobacco use supplement to the current population survey supplements. 78.5 were non-Hispanic white 10.2% African American 7.0% Hispanic 3.1% Asian/Pacific Islanders 1% American Indian/Alaska Native Class 7.1% below the poverty level 3.1% were 100%-124% above the poverty level 2.9% were 125%-149% above the poverty level 86.9% were 150% above the poverty level	Examine the association of workplace smoking policies and home smoking restrictions with current smoking among women from diverse backgrounds Funding: none mentioned	Cross tabulations and multivariate logistic regression analyses examine the association of selected demographic characteristics, occupation, income, workplace and home smoking policies/restrictions with current smoking, consumption patterns, and quit attempts among women by poverty level for five race/ethnic groups.	The prevalence of either having an official workplace or home smoking policy that completely banned smoking increased with increased distance form the poverty level threshold. Workplace smoking policies were significantly associated with current smoking among white and AA/PI women only. The adjusted odds of current smoking was lower (OR .79, 95% CI 0.73, 0.85) for white women who reported a workplace policy that permitted smoking in the work area compared with white women who reported no official workplace smoking policy. (p values not reported0 Among AA/PI women, the adjusted odds of current smoking was higher for women who had workplace smoking policies that permitted smoking anywhere compared with same race/ethnic group women in workplace without an official smoking policy (OR 1.79, 95% 1.03, 3.10) (p values not reported) Compared with not having an official smoking policy, workplace policies that permitted smoking in some areas were significantly associated with an increase odds of current smoking for women at or below the poverty level (OR 1.75, 95% CI 1.14, 2.68) only while policies that prohibited smoking in the work area were significantly associated with a lower odds of current smoking among women 150% or more above the poverty level only (OR 0.81, 95% CI 0.743, 0.90) (p values not reported)	This is a US study. It is not clear whether the findings would be directly applicable to the UK due to the demographics of participants.	A well conducted study that had a good response rate and outlined missing data and eligibility criteria. However, relied on self report measures of smoking.
Sorensen et al. (2007) USA	N = 582 Union members (LIUNA) 29% general laborer 19% concrete worker	Test a behavioral intervention among construction laborers Funded by the National	Tested the efficacy of a tailored telephone-delivered and mailed intervention to promote smoking cessation and	At baseline, 40 % of control group participants and 45 % of intervention group participants reported using any tobacco in the last seven days. P-values not reported.	Study was conducted in the US. Due to the nature of restrictions and participants it is not clear if findings	A well conducted study however there was no mention of concealment and a lack of information on

Randomized Control Trial 1+	19% heavy construction worker 12% demolition worker 12% jackhammer Race (control, intervention) 18%, 14% Latino 63%, 70% White 10%, 11% Black 9%, 6% All others Gender(control, intervention) 95%, 94% male and 5%, 6% female Education (control, intervention) 22%, 19% no high school 47%, 45% high school 25%, 32% some post-high school 6%, 4% Baccalaureate or more Class Over half (52%) or respondents were below the 185% of poverty threshold that permits eligibility for food stamps	Cancer Institute	increased fruit and vegetable consumption Intervention: (1) one-to-one motivational interviewing counseling sessions, delivered by telephone with a health advisor, (2) a mailed tailored feedback report, and (3) written educational materials, targeted to the specific need and work experiences of the construction laborer, mailed across the intervention period in six separate mailings. Control: the control group did not receive any material or other support during the intervention period.	At final, 8% of baseline cigarettes smokers in the control group had quit, compared to 19% in the intervention group (p = 0.03). Similar results for cessation from any form of tobacco use (7% versus 19%, respectively, p = 0.005). There were group differences in quit attempts (data missing for 29 or 188 baseline smokers). Of those who responded, 35% of control smokers (28 out of 79) compared to 53% of intervention smokers (42 out of 80) made at least one quit attempt (p = 0.03).	will be directly applicable to the US.	whether the subjects of investigators were kept blind. Based on self report measures of smoking.
Sorensen (2006) USA Review 1+	N= not clear how many academic articles were reviewed.	Present the rationale and scientific evidence for coordinating and integrating worksite health promotion and occupational health and safety as means for enhancing the effectiveness of efforts to promote and protect worker health. Recommendation and	Review of literature drawing mainly on findings from the USA and Europe.	Evidence indicates that integrating workplace health promotion (WHP) and occupational health and safety (OSH) intervention models promotes smoking cessation among blue collar workers. One study found that smoking quit rates among blue collar workers in more than doubled in the WHP/OSH condition relative to those in the WHP condition (11.8% vs. 5.9%; p=0.04) and were comparable to quit rates among white collar workers.	Findings are relevant to the UK since international (USA and Europe) articles were reviewed.	A well conducted review however it is not a Cochrane review which is the benchmark for evidence-based medicine and reviews.

		future directions are also considered. Funder not mentioned.				
Strobl (1998) Britain Cross-sectional 2-	31 smoking and ex-smoking nurses in a British teaching hospital; convenience sample	To examine changes in smoking behaviour 9 months after the introduction of a workplace restriction	Workplace ban on all indoor smoking at the hospital, except for the 'social club' where nurses could smoke indoors. Wilcoxon test.	Reduction in number of cigarettes consumed per day while at work as a result of the restriction was not significant (p=0.07). 52% reported not being fully compliant with ban. 20% would challenge someone breaching ban.	Conducted at an English hospital and relevant to study population. However, the study deals only with a hospital smoking ban, rather than national smoke-free legislation.	Extremely small convenience sample, seemingly high amount of missing data, measures not well described.
Stockton (2000) USA Interrupted time series 2++	N=844 individuals from 63 companies (out of 400 contacted by letter). 532 female participants and 312 male participants. Male and female participants were about the same age at baseline (38), higher percentage of men were married and had college degrees than the women.	To identify gender-specific patterns in smoking behavior and examine gender differences in order to facilitate our understanding of how men and women quit smoking. Funded by the National Institute of Heart, Lung, and Blood	3 tobacco cessation interventions: a) self-help manuals, b) self-help manuals and incentives, c) self help manuals, incentives and support groups Smoking status was collected before the intervention, 3-weeks posttest the intervention, 6 months, 12 months, 18 months and 24 months following the intervention. Missing data rates across conditions were significantly different at all assessments except 6 months: posttest p<0.024, 12 months p<0.002, 18 months p<0.001, and 24 months p<0.001.	At 2 year assessment 14.3% (532) of females and 13.5% (312) of males reported abstinence. Male participants smoked cigarettes with a higher nicotine content and smoked a greater number of cigarettes per day. Females reported having made more previous attempts to quit, less confidence about quitting, greater effort to quit, greater worry about smoking-related illness, and that they would be less likely to quit on their own if this program were not offered. Females did tend to report receiving higher levels of general social support, as well as partner support for quitting smoking; however, greater support did not lead to higher quit rates.	This is a US study but given broad cultural similarities between the US and England, its findings may be broadly applicable to an English setting.	No methodogical concerns. Well conducted study, uses CO validation to confirm self-reported smoking status.

Tanaka et al. (2006) Japan Non-RCT 1-	N = 2307 Japanese smokers Over three year period N=1017 in intervention N =1290 in control groups Six intervention worksites Six control worksite	Tests the effectiveness of a low- intensity intervention programme for smoking cession targeting the worksite environment in employees who had a low readiness to quit. Funding by Ministry of Health and Welfare, Japan, Ministry of Health, Labour and Welfare Japan, and Japan Arteriosclerosis Prevention Fund 2004.	Multi-component intervention programme at the worksites consisted of (1) presenting information on the harms of tobacco smoking and the benefits of cessation by posters, websites, newsletters, (2) smoking cessation campaigns for smokers (3) advice on designation of smoking areas(4) periodic site visits of the designated smoking areas by an expert researcher. Control: no smoking cessation intervention	The smoking cessation rate, assessed at 36 months after the baseline survey by a self-administered questionnaire was significantly higher in the intervention group than the control group (12.1% vs. 9.4%, p = 0.02) The intervention programme had a significant effect on the smoking cessation rate after multiple logistic regression analysis adjusted for sex, age, type of occupation, age or starting smoking, quit attempts in the past, number of cigarettes per day and readiness to quit (Odds ratio: 1.38, 95% confidence interval: 1.05-1.81, p = 0.02). Multiple logistic regression analysis showed that age (50 years or older)(OR=2.49, p<0.001), white collar occupation (OR=1.74, p=0.024), having attempted to quit in the past (OR=1.60, p<0.001), and having higher readiness to quit (stages of contemplation and preparation) (OR=2.75, p=0.002) were significantly associated with higher smoking cessation rate at 36 months after study entry.	This is a Japanese study and it is unclear whether its results are directly applicable to a UK setting.	Lack of information on whether control and intervention groups were similar, participants were not randomly assigned, no information on concealment method and self report data was used to determine smoking status.
Wakefield (1992) Australia Cross sectional	Representative sample of South Australian workers. N=1929 58.4% were in some form of paid work	Examination of the relative level of smoking on weekdays (compared with leisure days) for	Cross sectional survey on the effects of workplace smoking restrictions on workday and leisure cigarette	A ban on smoking at a person's usual work station is associated with a reduced level of reported workday cigarette consumption, compared with the amount smoked on a	Although the study was conducted in Australia, it is one of the few to focus on the differential effects of smoking bans	Solid overall. But it is not clear that leisure-day consumption did not increase following the ban, thus exaggerating the

survey 2+	41,6% were engaged in home duties, were in receipt of a pension, were unemployed, or were engaged in full-time study No exclusion criteria were noted	workers of different levels of occupational status who were exposed to different types of restrictions on smoking in their place of work.	consumption.	leisure day. No significant differences were seen in the workday and leisure day cigarette consumption of workers who experienced a total smoking ban, based on occupational status.	on workers based on their occupational status. It is unknown how applicable the study's findings are to an English setting.	workday leisure-day difference. The authors claim that other studies have shown that leisure day consumption does not increase, but their own study does not prove this.
Waranch (1993) Johns Hopkins Hospital, USA Cohort study 2+	262 participants in hospital-sponsored smoking cessation programs. Self selected into programs. Those in the multi-component and *Life Signs* groups smoked sig. more than those in the *Freedom…* group at baseline. Those in the multi-component group had sig. fewer quit attempts than those in the *Freedom…* or *Life Signs* groups.	To assess the influence of the smoking ban on the participation of employees in different types of worksite-sponsored stop-smoking programs. Funding not mentioned.	5 smoking cessation programs: groups, 2 types of manuals (*Freedom from smoking for you and your family* - American Lung Association and *Life Signs* - Health Innovations Inc.), one-hour clinics, brief individual counselling 1 year follow-up; 71% follow up rate for all participants (186/263). Follow up rates by intervention: groups = 65/88, manuals = 33/59 for *Freedom…* and 34/59 for *Life Signs.* One hour clinics=22/23, brief counselling 32/33. Brief counselling had best follow up at 96%.	One year CO validated cessation rate of 8.4% in total across all cessation programs. No sig. decrease in the number of cigarettes smoked from baseline to final follow-up (P=<0.001). Attendance at a group program quadrupled during the 12 months following the announcement of the impeding ban and returned to near per-ban levels in the subsequent 12 months.	Among a small percentage of employees who smoke, participation in hospital sponsored stop smoking programs increased in the year following the announcement of a smoking ban. Although this is a U.S. study there could be similar effect on England's Stop Smoking Services after the implementation of the bar and restaurant bans.	Of the estimated 2000 smokers in the hospital only 13.1% chose to participate in smoking cessation programs. No analysis was done to compare those who chose to participate and those who did not.

Wilson (2005) New Zealand Cross sectional 2+	N=3945 during the "pre-intervention period". N= 5713 during the "intervention period". Smokers who registered with the Quitline to undertake a quit attempt were eligible.	The call rate to New Zealand's national Quitline service appears to be influenced by mass media campaigns, media publicity on the risks of smoking, and even international events. They examined the usage of this Quitline before and after the time that new smoke-free environments legislation became operational in New Zealand on 10 December 2004. Funding not mentioned.	Compared routinely collected data on smokers who registered with the Quitline to undertake a quit attempt, comparing the period from 1 December 2004 to 31 January 2005 (the "intervention period") with the same period 12 months previously (the "pre-intervention period"), before and after the ban. Media exposure: in the "pre-intervention period" the Factiva database recorded 271 newspaper articles with the words "smoking" or "smoke-free", compared to 376 in the "intervention period". In contrast, television advertising expenditure promoting the Quitline number was lower in the intervention period but there was some paid advertising to inform the public of the new legislation.	In the "pre-intervention period" the caller registration rate was 272 per 100 000 smokers (aged 15+ years) per month, compared to 395 per 100 000 per month in the "intervention period" (rate ratio (RR) 1.44, 95% confidence interval (CI) 1.39 to 1.51). There was an increase in the proportion of registrations in the 35–44 year age group (p = 0.01), but no other significant changes in the distribution of callers by sex or ethnic group. Weekly caller registration rates also increased in the "intervention week" (that is, when the law became operational) relative to the average for the three weeks preceding this week (944 *v* 558 callers, respectively) (RR 1.69, 95% CI 1.52 to 1.88). This increase persisted into the following week, even though it was the week preceding Christmas day (RR 1.27, 95% CI 1.14 to 1.42).	Although this ban was an extension of previous legislation and New Zealand has more extensive smoking policies, that fact that this portion of the ban was for bar and restaurants and England is facing such a ban in 2007 this information is relevant to the UK and UK quitlines.	This is presented as a Post Script in the journal Tobacco Control and is not presented as a study, rather, it reports on number of quitline registrants directly. While they report exact Confidence intervals they do not explicitly describe the type of analysis conducted.

7. APPENDIX A – Excluded Studies

Paper	*Reason for exclusion*
Aakko, E., Schafer, E., Gyarmathy, A., Narita, E. and Remington, P. (2001) Smoking policies in manufacturing and assembly workplaces, Wisconsin, 1999. *Wisconsin Medical Journal,* 100(3); 67.	No relevant outcomes. Does not report on the effectiveness of workplace policies or interventions.
Bauer, J.E., Hyland, A., Li, Q., Steger, C. and Cummings, K.M. (2005) A Longitudinal Assessment of the Impact of Smoke-Free Worksite Policies on Tobacco Use, American Journal of Public Health, 95(6): 1024-1029	Covered by the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Brenner, H. and Mielck, A. (1992) Smoking prohibition in the workplace and smoking cessation in the Federal Republic of Germany. *Preventive Medicine*, 21(2): 252-61.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Brigham, J., Gross, Jl, Stitzer, M.L. and Felch, L. (1994) Effects of a restricted work-site smoking policy on employees who smoke. *American Journal of Public Health*, 84(5); 773.	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. *Occupational Medicine,* 51(8): 501-506.	No relevant outcomes.
Darling, H., Reeder, A.I., Williams, S. and McGee, R. (2006) Is there a relation between school smoking policies and youth cigarette smoking knowledge and behaviors? *Health Education Research,* 21(1); 108-115.	No relevant outcomes.
Dawley, H.H., Jr. (1991) A comprehensive worksite smoking control, discouragement, and cessation program. *International Journal of the Addictions,* 26(6): 685-96.	A more recent publication (1993) of this study was included.
Gottlieb, N.H., Eriksen, M.P., Lovato, C.Y., Weinstein, R.P. and Green, L.W. (1990) Impact of a restrictive work site smoking policy on smoking behavior, attitudes, and norms. *Journal of Occupational Medicine*, 32(1): p. 16-23.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Longo, D.R., Brownson, R.C. and Kruse, R.L. (1995) Smoking bans in US hospitals: Results of a national survey. *Journal of the American Medical Association,* 274(6): 488-491.	No relevant outcomes.
Longo, D.R., Johnson, J.C., Kruse, R.L., Brownson, R.C. and Hewett, J.E. (2001) A prospective investigation of the impact of smoking bans on tobacco cessation and relapse. *Tobacco Control,* 10(3): p. 267-72.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Parrott, S., Godfrey, C. and Raw, M. (2000) Costs of employee smoking in workplace in Scotland. *Tobacco Control*, 9: 187.	The review does not focus on cost

	effectiveness.
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. *American Journal of Community Psychology,* 22(2): p. 257-271.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Scollo, M., Lal, S., Hyland, A. and Glantz, S. (2003) Review of the quality of studies on the economic effects of smoke-free policies on the hospitality industry. *Tobacco Control*, 12(1): p. 13-20.	The review does not focus on cost effectiveness.
Shopland, D.R., Hartman, A.M., Repace, J.L. and Lynn, W.R.(1995) Smoking behavior, workplace policies, and public opinion regarding smoking restrictions in Maryland. *Maryland Medical Journal*, 44(2): 99-104.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Smedslund, G., Fisher, K.J., Boles, S.M. and Lichtenstein, E. (2004) The effectiveness of workplace smoking cessation programmes: a meta-analysis of recent studies. *Tobacco Control,* 13(2):197-204.	Included in the Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Sussman, S., Pentz, M.A. and Hahn, G. (1990) The relationship of a worksite no-smoking policy to employee smoking behavior and attitudes. *Progress in Clinical & Biological Research,* 339: p. 119-31.	Covered by Cochrane Review on workplace interventions. No other outcomes of interest are reported.
Willemsen, M.C., De Vries, H., Oldenburg, B. and Van Breukelen, G. (1999) Impact of a comprehensive worksite smoking cessation programme on employees who do not take part in cessation activities. *Psychology & Health,* 14: 887-895.	Covered by Cochrane Review on workplace interventions. No other outcomes of interest are reported.

8. APPENDIX B – Level 3 & 4 Evidence

Paper	*Rating*	*Rationale for incorporation as level 3 evidence and reason for rating*
Allwright, S. (2004). Republic of Ireland's indoor workplace smoking ban. *British Journal of General Practice, 54,* 811-812.	3+	Summary of the reception of the Republic of Ireland's smoking ban and description of history. Evidence quality could not be evaluated but logical and coherent report that seems grounded in data.
Directorate for Health and Social Affairs (2005) *Norway's ban on smoking in bars and restaurants. A review of the first year.* Oslo: Department for Tobacco Control.	3-	Overview of monitoring data, data collection methods not described. However, misleading claims are made about effects of legislation that do not appear to be grounded in evidence.
Etter J-F (2006). The internet and the industrial revolution in smoking cessation counselling. *Drug and Alcohol Review, 25,* 79-84.	4+	Report that indicates that Allen Carr workplace seminars may be an effective way of facilitating smoking cessation in the workplace.
Gallus, S; Zuccaro, P; Apolone, G; Pacifici, R; Garattini, S; La Vecchia, C (2005) Effects of new smoking regulations in Italy. *Annals of Oncology*, 17: 346-347.	3+	Summary of the reception of Italy's smoking ban and its effects on smoking behaviours. Although some methodological information is provided, this is largely a short report on current monitoring data. It seems to be of a reasonable quality.
Office of Tobacco Control (2005) *Smoke-free workplaces in Ireland: one year review.* 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.

Thomson, G. & Wilson, N. (2006). One year of smokefree bars and restaurants in New Zealand: Impacts and responses. *BioMed Central Public Health, 6*.	3+	Summary of the reception of the New Zealands ban on smoking in bars and restaurants. Evidence quality could not be evaluated but logical and coherent report that seems grounded in data.
Passannante,M.R.; Espendshade,J; Reichman,L.B; Hymowitz,N.; Sia,A (1991) The making of a smoke-free hospital may not be as easy as you think, *American Journal of Preventive Medicine*, 7(4): 214-218.	3+	A report on the experience of one hospital with going smoke-free. Seems to be of good quality.

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 identifed.

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 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$).TI.
37. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
38. ((SYNTHESIS OR SYNTHESES OR SYNTHESIS$ 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 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$).TI,AB.
24. ((SYNTHESIS OR SYNTHESES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
25. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
26. (DATA NEXT POOL$).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$).TI,AB.
13. 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12
14. 1 AND 13
15. OCCUPATIONAL-EXPOSURE.DE.
16. OCCUPATIONAL-HEALTH.DE.
17. OCCUPATIONAL-HAZARDS.DE.
18. OCCUPATIONAL-SAFETY.DE.
19. OCCUPATIONAL-HEALTH-SERVICES.DE.
20. EMPLOYEE-ASSISTANCE-PROGRAMMES.DE.
21. WORK-ENVIRONMENT#.DE.
22. OCCUPATIONAL-HEALTH-NURSING.DE.
23. WORK.DE.
24. (WORK OR WORKERS OR WORKER OR WORKPLACE$ 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$).TI,AB.
33. LITERATURE-REVIEW#.DE.
34. LITERATURE-SEARCHING#.DE.
35. COMPUTERIZED-LITERATURE-SEARCHING#.DE.
36. ((SYNTHESIS OR SYNTHESES OR SYNTHESIS$ 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 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$.TI.
25. (REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS).TI.
26. META-ANALYSIS.MD.
27. LITERATURE-REVIEW.MD.
28. ((SYNTHESIS OR SYNTHESES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI.
29. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
30. (DATA NEXT POOL$).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 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 SYNTHESES 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

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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$).ti,ab. (10460)
12     or/1-11 (167389)
13     occupational health/ (11980)
14     workplace/ (5690)
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15     work/ (6583)
16     occupational health services/ (8368)
17     occupational health nursing/ (3623)
18     (work or workers or worker or workplace$ 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)
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EMBASE strategy

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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$).TI,AB.
15. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13
OR 14
16. YEAR=2006 OR YEAR=2005 OR YEAR=2004 OR YEAR=1995 OR YEAR=2003 OR
YEAR=2002 OR YEAR=2001 OR YEAR=2000 OR YEAR=1999 OR YEAR=1998 OR
YEAR=1997 OR YEAR=1996
17. 15 AND 16
18. OCCUPATIONAL-HEALTH.DE.
19. OCCUPATIONAL-EXPOSURE.DE.
20. OCCUPATIONAL-CARCINOGENESIS.DE.
21. OCCUPATIONAL-HAZARD.DE.
22. OCCUPATIONAL-HEALTH-NURSING.DE.
23. OCCUPATIONAL-HEALTH-SERVICE.DE.
24. OCCUPATIONAL-SAFETY.DE.
25. QUALITY-OF-WORKING-LIFE.DE.
26. WORKROOM-AIR.DE.
27. WORK.DE.
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28. WORK-ENVIRONMENT.DE.
29. WORKPLACE.DE.
30. (WORK OR WORKERS OR WORKER OR WORKPLACE$ 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$).TI.
37. (META-ANALYSIS OR META-ANALYSES OR METAANALYSIS OR METAANALYSES OR META ADJ ANALYSIS OR META ADJ ANALYSES).TI.
38. ((SYNTHESIS OR SYNTHESES OR SYNTHESIS$ 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$).TI,AB.
24. ((SYNTHESIS OR SYNTHESES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
25. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
26. (DATA NEXT POOL$).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 SYNTHESES 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$.TI.
25. (REVIEW OR REVIEWS OR OVERVIEW OR OVERVIEWS).TI.
26. META-ANALYSIS.MD.
27. LITERATURE-REVIEW.MD.
28. ((SYNTHESIS OR SYNTHESES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI.
29. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
30. (DATA NEXT POOL$).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$).TI,AB.
36. ((SYNTHESIS OR SYNTHESES OR SYNTHESISING OR SYNTHESIZING) NEXT (LITERATURE OR LITERATURES OR RESEARCH OR STUDIES OR DATA)).TI,AB.
37. (POOLED ADJ ANALYSIS OR POOLED ADJ ANALYSES).TI,AB.
38. (DATA NEXT POOL$).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

10. APPENDIX D:

Workplace policies: search process 2007

Search for reviews in reviews/guidelines and project databases.

Database	Date searched	Records retrieved
Cochrane Database of Systematic Reviews	31/08/07	2
DARE	31/08/07	1
National Research Register (including CRD ongoing reviews database)	11/09/07	76
Health Technology Assessment Database	31/08/07	2
SIGN Guidelines	31/08/07	0
National Guideline Clearinghouse	31/08/07	0
HSTAT	11/09/07	0

Database	Date searched	Records retrieved
MEDLINE (Ovid)	11/09/07	27
EMBASE	30/08/07	12
British Nursing Index	11/09/07	3
CINAHL	31/08/07	6
PsycINFO	31/08/07	15
DH-Data	11/09/07	0
King's Fund	11/09/07	0

Figure after deduplication	103

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)				Medline other
EMBASE (Datastar 1974 to date)				Embase other
British Nursing Index (Datastar 1994 to date)				Bni other
CINAHL (Datastar 1982 to date)				Cinahl other
PsycINFO (Datastar 1806 to date)				Psycinfo other
DH-Data (Datastar 1983 to date)				Dh other
King's Fund (Datastar 1979 to date)				Kings fund other
CENTRAL				Central other

Workplace policies: search process

Search for publications other than reviews:

Database	Date searched	Records retrieved
MEDLINE	07/09/07	290
EMBASE	07/09/07	180
British Nursing Index	11/09/07	34
CINAHL	07/09/07	110
PsycINFO	11/09/07	62
DH-Data	11/09/07	39
King's Fund	11/09/07	18

Figure after deduplication	557

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)				Medline other
EMBASE (Datastar 1974 to date)				Embase other
British Nursing Index (Datastar 1994 to date)				Bni other
CINAHL (Datastar 1982 to date)				Cinahl other
PsycINFO (Datastar 1806 to date)				Psycinfo other
DH-Data (Datastar 1983 to date)				Dh other
King's Fund (Datastar 1979 to date)				Kings fund other
CENTRAL				Central other

11. APPENDIX E

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 *Include author, title, reference, year of publication*	
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	Not addressed Not reported

	addressed Poorly addressed	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	Not addressed Not reported Not applicable

	addressed	
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 not 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 -		

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