

A REVIEW OF THE EFFECTIVENESS OF MASS MEDIA INTERVENTIONS WHICH BOTH ENCOURAGE QUIT ATTEMPTS AND REINFORCE CURRENT AND RECENT ATTEMPTS TO QUIT SMOKING

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September 2006

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Acknowledgements:

This report was prepared by researchers in the Cancer Care Research Centre and The Centre for Social Marketing, University of Stirling and The Alliance for Self Care Research, University of Abertay.

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Executive Summary

1. Background

The aim of this review was to synthesise evidence evaluating the effectiveness of mass media interventions on helping people to quit smoking/tobacco use and/or to prevent relapse. These interventions were considered for both the effectiveness of the channel of communication and also for the effectiveness of message content, and this is reported under six research questions. Particular emphasis was placed on evaluating relevance to the UK setting and effectiveness within population groups such as young people, pregnant smokers and hard to reach communities.

2. Methodology

This review follows the processes recommended in the NHS National Institute for Health and Clinical Excellence methods manual 'Methods for the development of NICE public health guidance' (March, 2006). This manual also prescribes a reporting structure that is followed here.

Literature Search

Nineteen databases/internet sources were searched for systematic reviews and other studies, which identified 8226 references. A further 11 references were identified from other sources (e.g. bibliographies). 80 records were selected for full text retrieval, and after assessment, a final total of 44 studies/reviews met the inclusion criteria.

Inclusion/exclusion criteria

The included papers focus on mass media interventions that both encourage quit attempts and reinforce current and recent attempts to quit smoking among all population groups. These interventions include mass media events and community interventions (limited to community interventions which have a mass media component). This review excluded studies with a prevention focus, studies set in developing countries, papers in a language other than English, and mass media campaigns whose impact has been assessed only in terms of intermediate outcomes (e.g. intentions to quit, motivation to quit and confidence, attitudes to smoking, and knowledge about smoking).

Quality appraisal

Potentially relevant papers were assessed for quality using a checklist adapted from Appendix A.1 of the NICE 'Manual'. Papers were graded both for the quality of the review or study (e.g. likelihood of bias; methodological rigour) and for the type of evidence it was reviewing (e.g. RCTs or non-RCTs). Reviews were graded for the likelihood of bias as ++ (high quality, lowest level of bias), + (good quality, low level of bias) or – (variable quality with greater degree of bias). Systematic reviews were categorised according to the study types which they included as follows: RCTs only (1), other study types (2), or a mixture of both (1&2). Following the NICE guidance, studies categorised as 'level 3' were not given a quality score, although we indicate where the study limitations or quality may affect the reliability of results.

3. Results Summary

The following tables provide a summary of the results in the form of evidence statements. The first set of statements are organised by the research questions below.

3.1. What is the effectiveness of non targeted mass media interventions in promoting smoking cessation and relapse prevention?

Here we present the results related to interventions that simply target the whole population, organising the material around different approaches (e.g. educational, competitions and incentives, no smoking days and so on) and within these, the different media channels (e.g. TV, internet etc).

3.2. Are there any differences in intervention effects (smoking cessation and relapse prevention) among subgroups of the population?

In this section we *compare* the effectiveness of the interventions reported under the first research question for particular population characteristics such as ethnicity, gender, educational level and so on. This involves comparative work rather than simply being interventions that *target* particular groups – which are reported in the following section.

3.3. What is the evidence for the effectiveness of targeted interventions?

As stated above, this section reports results from interventions that target particular groups. As before, they are ordered by intervention approach and then channel of mass media.

3.4. What is the evidence for interventions evaluating the duration, reach, calls to quit lines, dose-response or message style?

3.5. How acceptable and/or appropriate is the mass media and/or community intervention to the intended recipients?

3.6. What are the unintended outcomes of the intervention (both adverse and beneficial)?

We then present the data in a format that organises the results by channel of mass media. Where the intervention draws on two or more forms of the media (such as newspaper, TV and billboard advertising) we call this ‘multi-channel’ mass media. This is not to be confused with ‘multi-component’ interventions, which are mass media interventions that use two or more components, such as self-help, advice and counselling.

Although we present the results of 44 papers, many of the studies are subject to the limitation that they are not controlled studies and are therefore rated as level 3 evidence. This means that it is difficult to attribute cause and effect to the interventions themselves, particularly since it is often not possible to determine whether the intervention recruited participants who would have quit anyway without any intervention. Nevertheless, despite what might appear to be a hierarchy of evidence (levels 1 to 3) according to the NICE ‘Guidelines’, there are some well conducted studies among these non controlled studies.

Overall, there appears to be evidence that mass media interventions can have a positive effect on quit rates. However the size of effect is difficult to determine given the lack of a control group in many of the studies. In addition, many of the studies used multiple types of media combined with other interventions, which makes it difficult to evaluate which particular component is effective or ineffective. There is

evidence that mass media can increase the number of calls to quitlines, but whether this translates into an increase in cessation rates is less clear.

There is also some good quality evidence that the use of technology such as mobile phones can be effective, and offers the potential to deliver culturally specific materials to targeted groups. There is also evidence that internet can be an effective way of delivering interventions, and may be a particularly appealing channel of communication for young people.

Developing culturally appropriate advertising materials, which target particular ethnicities of communities, has been shown to be effective by a number of studies. These generally drew on a combination of previous research in the field to determine barriers to successful quit attempts and then used focus groups to test message style and content for advertisements. These ranged from targeting rural Nebraskan oral tobacco users with cowboy images, using gospel, jazz music and images appropriate to African American communities, or targeting the community with own language materials in the case of Vietnamese Americans.

Having some control over when advertising might be aired could also have an important role to play in addressing the needs of consumers. For instance, a study in the USA found that the take up of the advertising message was much higher when media time was paid for rather than relying on public service announcements. Although this might not apply in the UK, where there is access to publicly funded television and radio, another take home message we might infer from this is that if there were some control over when a message was aired, it might better target the intended audience. For instance, by airing smoking cessation or prevention messages at appropriate times of day/evening to suit the lifestyles of the target market.

Despite the overall decline in cigarette smoking prevalence, social class inequalities in smoking are likely to persist, or even to widen. Few of the studies in the review evaluated the differential effectiveness in subgroups of the sample (e.g. different age groups and educational level), or assessed the characteristics of those people who participated in the intervention. Therefore, at the present time, little is known about the effect such interventions have on health inequalities. The few studies that did look at differential effects or characteristics of participants did indicate that there are likely to be differences in both these areas. For example there is some evidence that interventions may be more effective for women than men. Although some interventions did target women, further mass media studies may need to be developed which target particular sub groups such as heavy male smokers, or lower income groups.

EVIDENCE STATEMENTS

3.1. What is the effectiveness of non targeted mass media interventions in promoting smoking cessation and relapse prevention?

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
EDUCATIONAL INTERVENTIONS/ COUNTER MARKETING					
	Multi-channel mass media				
1	Three level 3 studies, probably relevant to the UK population, found an effect of multi channel mass media on smoking cessation, but there is no evidence about which of the mass media components of the interventions were most effective (or most ineffective).	Australia, Finland and US	Level 3 Level 3 Level 3	Korhonen, 1998 Pierce, 1990 Popham, 1993	30, 86 31, 90 31, 91
	TV only				
2	One review (level 1&2+), probably relevant to the UK population, found that there is insufficient evidence to assess the effectiveness of serialized TV cessation programmes in reducing tobacco use. There is level 2+ evidence, directly relevant to UK adult populations, that found that TV anti-tobacco advertising is more effective than control for the outcome of not smoking (pooled adjusted OR 1.53 (95% CI: 1.02 to 2.29, p = 0.04)). Such interventions are as effective as interventions which include advertising and a local campaign (pooled adjusted OR 1.15, 95% CI 0.74 to 1.78, p = 0.55).	'Industrialised nations' (review); UK	Systematic review (level 1&2+) Level 2+	Hopkins, 2001 McVey, 2000	31, 38, 67, 83 32, 61, 88
	Internet/computer only				
3	There is level 2+ evidence, probably relevant to the UK population, indicating that the addition (to a Web-based self-help style smoking cessation intervention) of an automated email educational messaging system was associated with an increase in the 30-day intent-to-treat quit rates (7.5% vs. 13.6%, p = 0.035).	USA	Level 2+	Lenert, 2004	33, 87
QUITLINES					
4	There is level 2- evidence, probably relevant to the UK population, that there is insufficient evidence of the effectiveness of electronic message strips for advertising a quit line and impacting on quit rates. There is also insufficient evidence from this study that positive messages are less effective than negative messages.	USA	Level 2-	Johnson, 1995	33, 63, 85
NO SMOKING DAYS					
5	There is level 3 evidence, directly relevant to the UK population, that a quit rate at three months in the range of 11% (0.7% of UK smokers) can be achieved following No Smoking Day. Other level 3 evidence reported a quit rate at three months in the range of 0.3 to 1.8 % following No Smoking Day in Wales. Another level 3 study, possibly relevant to the UK population, indicated that the 'Great American Smokeout' may reduce smoking on the	England, Wales, USA, Switzerland	Level 3 Level 3 Level 2- Level 3	Owen, 2006 Frith, 1997 Etter & Laszlo, 2005 Hantula, 1992	34, 60, 90 35, 80 35, 58, 77 35, 81

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
	day, but subsequently return to previous levels. In addition, there is level 2- evidence, probably relevant to the UK population, that showed no effect of a poster campaign against passive smoking for World No-Tobacco Day on cigarette consumption or intention to quit.				
COMPETITIONS AND INCENTIVES					
	Quit and win contests				
6	There is evidence from one level 1&2+ review, probably relevant to the UK population, that shows a small effect of 'Quit and Win' contests on community prevalence of smoking. Less than one smoker in 500 quits because of the contests.	USA, Canada and Russia	Systematic review (level 1&2+)	Hey, 2005a	36, 46, 48, 81
	Competitions and incentives in the community (e.g. workplace, clinics)				
7	There is evidence from one level 1&2+ review, directly relevant to the UK population, which shows that competitions and incentives in the community (e.g. workplace, clinics) are not effective beyond six months. There is level 3 evidence that they achieve significant effects in the short term, as 35% of the participants self-reported that they had quit two months after the contest.	Most in USA, UK (3), Australia (1), and one in USA and Canada.	Systematic review (level 2-) Level 3	Hey, 2005b Elder, 1991	37, 49, 82 37, 48, 76
MULTICOMPONENT INTERVENTIONS (e.g. a combination of two or more of the following: self help, quit lines, education, advice, counselling etc)					
	Multi-channel mass media				
8	There is evidence from a level 1&2+ review, probably relevant to the UK population, that multi channel mass media campaigns (combined with other interventions) are effective in increasing tobacco use cessation. Cessation rates in the intervention groups ranged from 3.9% (confirmed) to 50% (self-reported), with a median of 7% in follow-up periods of 6 months to 5 years. There is evidence from another review (level 2-), possibly relevant to the UK population, that shows that media campaigns and concurrently implemented tobacco control programmes (or policies) are associated with a reduction in the net smoking prevalence of between 6-12%. Other level 2- and 3 evidence reported either inconclusive results, or estimated the follow-up point prevalence abstinence rate attributable to the campaign was 4.5% after control for test effects and secular trends. There is level 1+ evidence, probably relevant to UK workplaces, which found that adding peer group support and lottery incentives to mass media-based self help interventions led to abstinence levels of 19.5% in control group compared with 30% in intervention group at 2 years.	'Industrialised nations' (review); USA The Netherlands	Systematic review (level 1&2+) Level 2- Level 2- Level 1+ Level 3	Hopkins, 2001 Friend, 2002 McAlister, 2004 Salina, 1994 Mudde, 1999	31, 38, 67, 83 38, 78 39, 88 40, 60, 69, 92 39, 60, 89
	TV only				
9	There is level 3 evidence, probably relevant to the UK population, which reported quit rates of 17% at	USA	Level 3	Valois, 1996	41, 96

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
	one year following a community cable television smoking cessation programme 'CableQuit'.				
	Computer and /or Internet only				
10	<p>There is level 1++ evidence, probably relevant to the UK population, which found that a web-based smoking cessation programme using more extensive information on coping strategies and health risks is more effective at the contemplation stage than shorter programmes with less health-related information at 3 months. There were statistically significant differences in quit rates in smokers using the more extensive programme (OR=1.54, 95% CI: 1.18-2.02, p=.002).</p> <p>There is level 1+ evidence, probably relevant to the UK population, that a behavioural intervention for smoking cessation delivered via an internet website can achieve a quit rate of 12.3% at 3 months (compared with 5% of controls).</p> <p>There is level 2- and 3 evidence, probably relevant to the UK population, which reported that other web-based smoking cessation sites can achieve quit rates of up to 18%.</p>	Switzerland, USA, Canada	Level 2- Level 1+ Level 2- Level 3 Level 3	Etter, 2005 Swartz, 2006 Feil, 2003 Thieleke, 2005 Lenert, 2003	22, 41, 71, 77 42, 65, 94 22, 23, 42, 65, 71, 77 42, 95 42, 61, 87
	Mobile phone only				
11	There is level 1++ evidence, probably relevant to the UK population, that a text message based intervention can increase smoking cessation rates (28% vs 13%, RR 2.20, 95% CI: 1.79 to 2.70, p < 0.0001) at 6 weeks	New Zealand	Level 1++	Rodgers, 2005	43, 67, 91
	COMMUNITY INTERVENTIONS				
12	One 1&2+ review, probably relevant to the UK population, found limited evidence of an effect of community interventions for reducing smoking among adults.	Europe (including UK), North America, South Africa and Australia and India	Systematic review (level 1&2+)	Secker-Walker, 2002	44, 46, 93

3.2. Are there any differences in intervention effects (smoking cessation and relapse prevention) among subgroups of the population?

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
	Gender				
13	There is a small amount of evidence from two level 1&2 + reviews that 'quit and win' contests, and community interventions may be more effective for women than men.	USA, Canada, Russia Europe, UK, USA, South Africa, Australia and India	Systematic review (level 1&2+) Systematic review (level 1&2+)	Secker-Walker, 2002 Hey, 2005a	44, 46, 93 36, 46, 48, 81
	Ethnic group or culture				
14	There is level 1++ evidence, possibly relevant to the UK population, that a culturally specific phone-based cessation programme is successful in recruiting young Maori, and was shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates.	New Zealand	Level 1++	Bramley, 2005	46, 56, 74
	Educational level				
15	There is level 3 evidence, probably relevant to the UK population, that presents conflicting results on whether the effectiveness of a nation-wide visual mass media campaigns differs according to educational level.	Australia	Level 3	Macaskill, 1992	47, 87
PARTICIPATION AND ACCESS					
16	There is evidence from a level 1&2+ systematic review that suggests that people who enter quit and win contests tend to be predominantly female, younger, better educated, smoking more cigarettes per day, in the contemplation or preparation stage of change, and to have made more previous quit attempts than those smokers who do not enter the contests. The picture for socio-economic status was not consistent, but a level 3 study reported a link between participation in smoking cessation interventions and income levels (e.g. higher income was associated with greater participation). There is level 3 evidence, probably relevant to the UK adult population, that televised smoking cessation programmes are effective in reaching an ethnically diverse population of smokers.	Europe (including UK), North America, South Africa and Australia and India	Systematic review (level 1&2+) Level 3 Level 3	Hey, 2005a Elder, 1991 Sussman, 1994	36, 46, 48, 81 37, 48, 76 48, 94

3.3 What is the evidence for the effectiveness of targeted interventions?

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
GENDER SPECIFIC: PREGNANT WOMEN, AND WOMEN WITH CHILDREN					
17	<p>There is level 3 evidence, directly relevant to UK pregnant women and their partners from lower socio-economic groups, which shows that multi-channel mass media advertising has no evidence of effect on changing smoking behaviour but calls to quit lines increased by 14%.</p> <p>There is level 1- evidence, possibly relevant to UK women, that designed to encourage women cigarette smokers with young children to call for information on quitting have no significant effect on quit rates, but 29% of calls received from intervention sites were from the target audience compared with 10% from the control sites.</p>	UK and USA	Level 3 Level 1-	Campion, 1994 Cummings, 1993	50, 74 50, 59, 69, 75
GENDER SPECIFIC: HIGH RISK MALES					
18	There is level 3 evidence, possibly relevant to the UK population, which show a positive effect of campaigns developed to target rural male oral tobacco users with culturally appropriate materials. The point prevalence quit rate was 11.5%.	USA	Level 3	Boyle, 1999	51, 68, 74
YOUNG PEOPLE (<25 YEARS)					
School based mass media interventions					
19	There is level 1++ evidence, possibly relevant to UK children, that found no consistent programme effects on smoking intentions, or behaviour of a social-influences based, school and media-based project.	USA	Level 1++	Flay, 1995	52, 78
Multi-channel interventions					
20	<p>There is level 3 evidence, probably relevant to UK teens, that indicates that dissonance arousing messages specifically targeting girls can have positive short term effects on quit rates. 12.1% (7.4% boys and 14.6% girls, $p=0.019$) of the sample reported quitting smoking.</p> <p>There is level 3 evidence, probably relevant to UK teens, that indicates that graphic mass media messages about negative consequences of smoking among adults has a positive effect on quit attempts among young people (18% of smokers attempted to quit (95% CI: 14% to 22%)).</p> <p>There is level 3 evidence, probably relevant to UK teens, that indicates that media campaigns advertising internet websites can increase quit attempts.</p>	Norway, Australia, USA	Level 3 Level 3 Level 3	Hafstad, 1996 White, 2003 Klein, 2005	52, 58, 63, 80 53, 63, 96 53, 86
Internet/computer					
21	There is level 2- evidence, probably relevant to UK college and university students, which shows a positive effect of an internet based smoking cessation intervention on smoking cessation.	USA	Level 2-	Escoffery, 2005	22, 54, 66, 76

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
	<p>There is level 3 evidence, possibly relevant to young people in the UK, that reports reductions in smoking and quit attempts in rural teens after using an internet-based virtual reality “world” for smoking cessation.</p> <p>There is level 3 evidence, probably relevant to young people in the UK that an integrated Web and text-messaging programme may result in quit rates of 17%.</p>		<p>Level 3</p> <p>Level 3</p>	<p>Woodruff, 2001</p> <p>Obermayer, 2004</p>	<p>22,55, 97</p> <p>55, 89</p>
ETHNICITY /CULTURALLY SPECIFIC					
22	There level 1++ evidence, possibly relevant to the UK setting, that a phone-based cessation programme is successful in increasing quit rates in Maoris at 6 weeks (26.1% vs 11.2%; RR 2.34, 95% CI: 1.44–3.79). It was also shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates.	New Zealand	Level 1++	Bramley, 2005	46, 56, 74
23	There is level 2+ evidence that multi-component interventions including mass media materials in the Vietnamese language are effective (the odds of being a quitter were significantly higher (OR = 1.65, 95% CI = 1.27, 2.15) for intervention participants) in achieving smoking cessation in Vietnamese American men.	USA	Level 2+	Jenkins, 1997	57, 68, 84

3.4 What is the evidence for interventions evaluating the duration, reach, calls to quit lines or message style?

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
24	There is level 2- and 3 evidence, probably relevant to the UK population, that posters or printed media can be an effective way of increasing awareness of campaigns. No studies were identified which evaluated the effectiveness of interventions of different duration.	Norway and Switzerland	Level 3 Level 2-	Hafstad, 1996 Etter and Laszlo, 2005	52, 58, 63, 80 41, 71, 77
25	There is level 1- evidence, possibly relevant to the UK, that advertising campaigns targeting mothers of small children are effective in increasing their calls to a quit line (adverts increased calls in general fivefold in the intervention markets, and 29% of these calls were from the target audience). There is level 2+ evidence, possibly relevant to UK populations (particularly disadvantaged groups), that targeted advertising using culturally appropriate material, with radio as the primary channel, has a significant positive effect on increasing calls to information services. In addition, there is level 3 evidence that calls to national smokers' help lines on No Smoking Day are typically four times those received on an average day	USA and UK	Level 1- Level 2+ Level 3	Cummings, 1993 Boyd, 1998 Owen, 2006	50, 59, 69, 75 59, 68, 73 22, 34, 60, 90
26	There is level 1+ evidence, probably relevant to UK workplaces, that television message recall is associated with increased smoking cessation rates. There is level 3 evidence, probably relevant to the UK, which indicates that the more TV episodes watched or recalled the higher the incidence of self reported quitting or abstinence from smoking. There is level 3 evidence, probably relevant to the UK, which indicates that the effectiveness of a web-based cessation programme is increased according to the amount of exposure to educational materials. There is level 3 evidence, probably relevant to the UK adult population, that the relative risk for quitting was estimated to be 10% higher for every 5000 units of exposure to state anti-tobacco television advertising over a 2-year period. However, these results did not achieve statistical significance. There is level 2+ evidence, directly relevant to the UK population that varying the intensity of TV adverts does not have an effect on smoking cessation.	UK, The Netherlands, USA	Level 1+ Level 3 Level 3 Level 3 Level 2+	Salina, 1994 Mudde, 1999 Lenert, 2003 Hyland, 2006 McVey, 2000	40, 60, 69, 92 39, 60, 89 42, 61, 87 61, 67, 84 32, 61, 88
27	There is level 2- evidence, which is probably relevant to the UK population, which suggests that		Level 3	Biener, 2000	62, 73

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
	<p>advertisements depicting suffering as a result of tobacco use may be instrumental in promoting cessation or reinforcing the decision to quit.</p> <p>There is level 3 evidence, probably relevant to UK teens, that indicates that dissonance arousing messages specifically targeting girls can have positive short term effects on quit rates. There is also level 3 evidence that shows that graphic mass media messages about negative consequences of smoking among adults has a positive effect on quit attempts among young people (18% of smokers in the sample attempted to quit (95% CI: 14% to 22%)). Finally, there is level 2- evidence providing insufficient evidence that longer positive messages are less effective than short, negative messages.</p>		<p>Level 3</p> <p>Level 3</p> <p>Level 2-</p>	<p>Hafstad , 1996</p> <p>White, 2003</p> <p>Johnson, 1995</p>	<p>52, 58, 63, 80</p> <p>53, 63, 96</p> <p>33, 63, 85</p>

3.5 How acceptable and/or appropriate is the mass media and/or community intervention to the intended recipients?

No.	Statement	Country/ countries where studies undertaken	Type and level of evidence	First author(s) and year of studies/ reviews	Pgs in text & tables
28	<p>Four studies (both qualitative and quantitative) evaluated outcomes such as the acceptability and usage of web based interventions. One qualitative study reported that participants sought online smoking cessation resources for reasons of convenience, timeliness, anonymity and because their current information needs were unmet. Another level 1+ study, probably relevant to the UK population, found that the optional sections of an intervention most used/viewed were setting a quit date, and the descriptions of pharmacological aids. A level 2- study reported that the Ask-an-Expert section was rated most highly. The fourth study (level 2-) reported that the intervention helped to raise consciousness about quitting, encouraged behavioural goals, provided stages of change feedback, and offered interactivity in presenting information and strategies about quitting.</p> <p>No studies were identified which evaluated the views of those delivering the intervention.</p> <p>No studies were identified which assessed inequalities of access.</p>	Australia, USA	<p>Qualitative study (level 3)</p> <p>Level 1+</p> <p>Level 2-</p> <p>Level 2-</p>	<p>Frisby, 2002</p> <p>Swartz, 2006</p> <p>Feil, 2003</p> <p>Escoffery, 2004</p>	<p>65, 79</p> <p>42, 65, 94</p> <p>22, 23, 42, 65, 71, 77</p> <p>22, 54, 66, 76</p>

SUMMARY OF EVIDENCE BY TYPE OF MASS MEDIA

The following tables bring together the evidence from the evidence statements in a slightly different way. They summarise the evidence for each type of media (e.g. multi-channel, TV only etc.) rather than by the content of the intervention. The evidence statement is given in brackets (e.g. evidence statement 2).

Multi-channel mass media (e.g. a combination of two or more of the following: newspapers, billboards, TV, internet, mobile phones, etc.)

CONTENT OF INTERVENTION						
Educational interventions	No smoking days	Quitlines (for targeted populations)	Competitions and incentives	Multi component interventions/ community interventions	Interventions targeting young people	Interventions targeting ethnic/cultural groups
Three level 3 studies, probably relevant to the UK population, found an effect of multi channel mass media on smoking cessation, but there is no evidence about which of the mass media components of the interventions were most effective (or most ineffective). (Evidence statement 1)	There is level 3 evidence, directly relevant to the UK population, that a quit rate at three months in the range of 11% (0.7% of UK smokers) can be achieved following No Smoking Day. Other level 3 evidence reported a quit rate at three months in the range of 0.3 to 1.8 % following No Smoking Day in Wales. Another level 3 study,	There is level 3 evidence, directly relevant to UK pregnant women and their partners from lower socio-economic groups, which shows that multi-channel mass media advertising has no evidence of effect on changing smoking behaviour but calls to quit lines increased by 14% (Evidence statement 17). .	There is evidence from one level 1&2+ review, probably relevant to the UK population, that shows a small effect of 'Quit and Win' contests on community prevalence of smoking. Less than one smoker in 500 quits because of the contests (Evidence statement 6).	There is evidence from one level 1&2+ review, probably relevant to the UK population, that that multi mass media campaigns (combined with other interventions) are effective in increasing tobacco use cessation. Cessation rates in the intervention groups ranged from 3.9% (confirmed) to 50% (self-reported), with a median of 7% in follow-up periods of 6 months to 5 years. There is evidence from a level 2- review, possibly relevant to the UK population, that shows that media campaigns and concurrently implemented tobacco control programmes are associated with a reduction in the net smoking prevalence of between 6-12%. Other level 2-	There is level 3 evidence, probably relevant to UK teens, that indicates that dissonance arousing messages specifically targeting girls can have positive short term effects on quit rates. 12.1% (7.4% boys and 14.6% girls, p=0.019) of the sample reported quitting smoking (Evidence statement 20).	There is level 3 evidence, possibly relevant to the UK population, which show a positive effect of campaigns developed to target rural male oral tobacco users with culturally appropriate materials. The point prevalence quit rate was 11.5% (Evidence statement 18).
There is level 1++ evidence, possibly relevant to UK children, that found no consistent		There is level 1- evidence, possibly relevant to UK women, that designed	There is		There is level 3 evidence, probably relevant to UK teens, that indicates that graphic mass media	There is level 2+ evidence that multi-component interventions

CONTENT OF INTERVENTION						
Educational interventions	No smoking days	Quitlines (for targeted populations)	Competitions and incentives	Multi component interventions/ community interventions	Interventions targeting young people	Interventions targeting ethnic/cultural groups
programme effects on smoking intentions, or behaviour of a social-influences based, school and media-based project (Evidence statement 19).	possibly relevant to the UK population, indicated that the 'Great American Smokeout' may reduce smoking on the day, but subsequently return to previous levels (Evidence statement 5).	to encourage women cigarette smokers with young children to call for information on quitting have no significant effect on quit rates, but 29% of calls received from intervention sites were from the target audience compared with 10% from the control sites (Evidence statement 17). In addition, there is level 3 evidence that calls to national smokers' help lines on No Smoking Day are typically four times those received on an average day mass media (Evidence statement 5)	evidence from one level 1&2+ review, directly relevant to the UK population, which shows that competitions and incentives in the community (e.g. workplace, clinics) are not effective beyond six months. There is level 3 evidence that they achieve significant effects in the short term, as 35% of the participants self-reported that they had quit two months after the contest (Evidence statement 7).	and 3 evidence reported either inconclusive evidence, or estimated the follow-up point prevalence abstinence rate attributable to the campaign was 4.5% after control for test effects and secular trends Evidence statement 8). There is level 1 + evidence, probably relevant to UK workplaces, that found that adding peer group support and lottery incentives to mass media-based self help interventions led to abstinence levels of 19.5% in control group compared with 30% in intervention group at 2 years (Evidence statement 8). One level 1&2+ review, probably relevant to the UK population, found limited evidence of an effect of community interventions for reducing smoking among adults (Evidence statement 12)	messages about negative consequences of smoking among adults has a positive effect on quit attempts among young people (18% of smokers attempted to quit (95% CI: 14% to 22%)) (Evidence statement 20). There is level 3 evidence, probably relevant to UK teens, that indicates that media campaigns advertising internet websites can increase quit attempts (Evidence statement 20).	including mass media materials in the Vietnamese language are effective (the odds of being a quitter were significantly higher (OR = 1.65, 95% CI = 1.27, 2.15) for intervention participants) in achieving smoking cessation in Vietnamese American men (Evidence statement 23).

TV only

CONTENT OF INTERVENTION	
Educational interventions/ Counter marketing (non-targeted populations)	Multi component interventions
<p>One review (level 1&2+), probably relevant to the UK population, found that there is insufficient evidence to assess the effectiveness of serialized TV cessation programmes in reducing tobacco use (Evidence statement 2).</p> <p>There is level 2+ evidence, directly relevant to UK adult populations, that found that TV anti-tobacco advertising is more effective than control for the outcome of not smoking (pooled adjusted OR 1.53 (95% CI: 1.02 to 2.29, $p = 0.04$)). Such interventions are as effective as interventions which include advertising and a local campaign (pooled adjusted OR 1.15, 95% CI 0.74 to 1.78, $p = 0.55$) (Evidence statement 2).</p>	<p>There is level 3 evidence, probably relevant to the UK population, which reported biochemically validated quit rates of 17% at one year following a community cable television smoking cessation programme (CableQuit). However, there was no control group and the sample was small (Evidence statement 9).</p>

Internet only

CONTENT OF INTERVENTION		
Educational interventions	Multi component interventions	Interventions targeting young people
<p>There is level 2+ evidence, probably relevant to the UK population, indicating that the addition (to a Web-based self-help style smoking cessation intervention) of an automated email educational messaging system was associated with an increase in the 30-day intent-to-treat quit rates (7.5% vs. 13.6%, $p = 0.035$) (Evidence statement 3).</p>	<p>There is level 1++ evidence, probably relevant to the UK population, which found that a web-based smoking cessation programme using more extensive information on coping strategies and health risks is more effective at the contemplation stage than shorter programmes with less health-related information at 3 months. There were statistically significant differences in quit rates in smokers using the more extensive programme (OR=1.54, 95% CI: 1.18-2.02, $p=.002$) (Evidence statement 10).</p> <p>There is level 1+ evidence, probably relevant to the UK population, that a behavioural intervention for smoking cessation delivered via an internet website can achieve a quit rate of 12.3% at 3 months (compared with 5% of controls) (Evidence statement 10).</p> <p>There is level 2- and 3 evidence, probably relevant to the UK population, which reported that other web-based smoking cessation sites can achieve quit rates of up to 18% (Evidence statement 10).</p>	<p>There is level 2- evidence, probably relevant to UK college and university students, which shows a positive effect of an internet based smoking cessation intervention on smoking cessation (Evidence statement 21).</p> <p>There is level 3 evidence, possibly relevant to young people in the UK, that reports reductions in smoking and quit attempts in rural teens after using an internet-based virtual reality “world” for smoking cessation (Evidence statement 21).</p> <p>There is level 3 evidence, probably relevant to young people in the UK that an integrated Web and text-messaging programme may result in quit rates of 17% (Evidence statement 21).</p>

Mobile phone only

CONTENT OF INTERVENTION	
Multi component interventions	Interventions targeting ethnic/cultural groups
There is level 1++ evidence, probably relevant to the UK population, that a text message based intervention can increase smoking cessation rates (28% vs 13%, RR 2.20, 95% CI: 1.79 to 2.70, $p < 0.0001$) at 6 weeks (Evidence statement 11).	There level 1++ evidence, possibly relevant to the UK setting, that a phone-based cessation programme is successful in increasing quit rates in Maoris at 6 weeks (26.1% vs 11.2%; RR 2.34, 95% CI: 1.44–3.79). It was also shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates (Evidence statement 22).

Posters only

CONTENT OF INTERVENTION	
No smoking days	Competitions and incentives
There is level 2- evidence, probably relevant to the UK population, that showed no effect of a poster campaign against passive smoking for World No-Tobacco Day on cigarette consumption or intention to quit (Evidence statement 5).	There is level 2- and 3 evidence, probably relevant to the UK population, that posters or printed media can be an effective way of increasing awareness of campaigns. No studies were identified which evaluated the effectiveness of interventions of different duration (Evidence statement 24).

Radio only

CONTENT OF INTERVENTION	
Quitlines	
There is level 2+ evidence, possibly relevant to UK populations (particularly disadvantaged groups), that targeted advertising using culturally appropriate material, with radio as the primary channel, has a significant positive effect on increasing calls to information services (Evidence statement 25).	

Electronic message strips only

CONTENT OF INTERVENTION	
Quitlines	
There is level 2- evidence, probably relevant to the UK population, that there is insufficient evidence of the effectiveness of electronic message strips for advertising a quit line and impacting on quit rates. There is also insufficient evidence from this study that positive messages are less effective than negative messages (Evidence statement 4)	

MAIN REPORT

1. Background

Smoking remains the leading cause of preventable morbidity and premature death in England, leading to an estimated annual average of 86,500 deaths between 1998 and 2002 (Twigg et al. 2004). Cigarette smoking causes a wide range of diseases, including: cancers; respiratory disease; coronary heart and other circulatory disease; stomach/duodenal ulcer; impotence, infertility and so on. Furthermore, breathing second hand smoke ('passive smoking') can also have both immediate and long-term health consequences for non-smokers. In the short term it can exacerbate respiratory symptoms and trigger asthma attacks. Longer term, it increases the risk of lung cancer, respiratory illnesses, heart disease and stroke (International Agency for Research on Cancer 2002; Scientific Committee on Tobacco and Health report 2004; US Environmental Protection Agency 1993).

Although cigarette smoking is by far the most dangerous way to use tobacco, use of some forms of oral or 'smokeless' tobacco may have serious health consequences. Use of smokeless tobacco (apart from chewing tobacco) is not widespread in the UK since sales of tobacco products 'for oral use' are banned by European Union Directive. Nevertheless, chewed tobacco products are widely used in some ethnic minority communities.

In addition to the serious risk to health that smoking poses to the British public, smoking is also estimated to cost the NHS £1.5 billion a year (Raw et al. 1998). This estimate does not include other costs to government such as payment of sickness or invalidity benefits. Nor does it include costs to industry or the individual smoker.

Smoking prevalence has dropped sharply from the 1970s, however, this decline has been much less pronounced in the last decade. Current estimates suggest that the decline in smoking prevalence is now 0.4% a year (Sproston and Primatesta 2004; West 2005). There is, moreover, a clear social class gradient in smoking, which accounts for over half of the difference in risk of premature death between social classes (Jarvis and Wardle 1999). The target of reducing smoking prevalence in manual working groups to 26% or less by 2010 will be challenging since as of 2002, prevalence among manual workers was about 31%. Smoking prevalence is also high among some ethnic groups (Erens et al. 2000). Prevalence of smoking is also age related and is highest among 20–34 year olds. This group includes some women who continue to smoke throughout pregnancy (Penn and Owen 2002; Sproston and Primatesta 2004).

The effectiveness of most health prevention and promotion measures are affected by social and economic factors that often encourage the adoption (and continuation) of unhealthy or cancer-causing behaviours. What is not clear is whether current health promotion schemes are effective in improving the health of those who might benefit most. It has been argued that the inverse care law is not always considered in relation to local provision for health promoting activities (McIntyre, 2000). Indeed, it has been suggested that health promotion interventions frequently increase, rather than decrease, socioeconomic inequalities in health (Acheson, 1998), since health

promotion messages and interventions have a differential take-up within different social class groups. For example, those who are more affluent and have a higher level of formal education are more likely to modify their diets, give up smoking, and take up healthy physical activities than are the less affluent with lower levels of formal education (Vetter, 2005). A common problem of mass media campaigns to change health behaviours is that the target audience (that is, those with the highest prevalence of the particular behaviour) are often the least likely to participate in the intervention. For instance, a mass media campaign to increase walking in Scotland ('Fitline') found that it had less appeal for those in the lower socioeconomic groups, despite higher awareness levels for these groups. Furthermore, one-third of those who telephoned 'Fitline' to obtain further information were regular exercisers. These individuals were not the ones being targeted by the campaign nor were they the ones likely to confer any additional benefit (Wimbush et al, 1998).

A recent critique of the present organisation of the UK government's smoking cessation programme, examined the impact of policy on smoking cessation services. Using a case study of a new cessation service that was set up as a Health Action Zone (HAZ) programme, it argued that HAZ-based cessation services that have developed in light of the White Paper 'Smoking Kills', fail to prioritise the needs of the most disadvantaged in society and, hence, may actually serve to exacerbate health inequalities (Woods et al 2003). For this reason, we paid particular attention to any data that might inform the question of differential access, recruitment and loss to follow-up related to socio-economic differences as well as any reported differences in quit rates or relapse prevention within the interventions.

It is often assumed that the barriers to the take up of health promotion messages lie in personal factors such as lack of motivation, fatalism, short-termism, or lack of personal resources such as money, time, equipment, or knowledge (McIntyre, 2000). What is important is that research is carried out to understand attitudes, health beliefs, and the social context of different socio-economic groups in order to develop successful health promoting interventions.

While mass media is an important channel of communication as it has the ability to reach a wide audience, there are several challenges in evaluating interventions in this area. Firstly, mass media interventions are less easily controlled than targeted interventions. There is less control over who receives the preventive messages conveyed by the mass media, and how well the messages are understood (Wellings and Macdowell 2000). Secondly, because there are numerous influences on quitting in a population it is difficult to measure success and to know whether the effects can be causally attributed to the intervention or to some other environmental factors (Chapman et al., 1993).

Wellings and Macdowell (2000) described several aspects of mass media work which are problematic for evaluation. Firstly, the observed effects will be smaller as such broad spectrum interventions do not target high-risk individuals who have greater scope for change. Achieved change at the undifferentiated general population level is therefore likely to be smaller. This may lead to criticism that campaigns have not achieved their objectives. Secondly, it is more difficult to attribute effects to mass media interventions. For example, an effective campaign may have an effect far beyond its original remit, creating media discussion, providing the impetus for local

efforts, and so on. This means that it is not easy to separate the effects of the intervention from the effects of other events and interventions, which are either running in parallel or are triggered by the mass media intervention (Chapman et al., 1993).

Study types included within the review

In this review, evaluation studies generally fitted into one of the following categories:

1) Randomised Controlled Trials (RCTs)

The most robust methods for attributing the effects (e.g. quit rates) to a mass media campaign is by using a randomised controlled trial design (usually cluster). However, controlled designs are not always possible or practical when assessing the effectiveness of mass media interventions. The success of the experimental approach depends on being able to ensure that outcome differences between treatment and control group do not arise from any factors other than the intervention under investigation. This is more difficult in the case of mass media (Wellings and Macdowell 2000).

2) Controlled trials

Some studies used a controlled design, but the intervention and controlled group were not randomised. The problem with this design (which can also apply to cluster RCTs) is that differences at baseline between control and intervention communities makes it difficult to conclude that any differences at follow-up were due to the intervention alone.

3) Interrupted Time Series (ITS)

Another robust method of measuring the effect of the intervention, when identification of a control group is impractical (e.g. No Smoking Days), is the interrupted time series (ITS) design. In the ITS design, multiple data points are collected before and after the intervention from a cohort of individuals. The intervention effects are measured against the pre-intervention trend.

4) Non controlled before and after studies

Non-controlled before and after designs are less robust methods for collecting data on effectiveness. They rely on data collected once pre-intervention and again after the intervention is completed (or use different panels of individuals before and after the intervention). The problem with these designs are:

- There is no control or comparison group by which to interpret changes (e.g., changes may have occurred without the intervention). This means that it is impossible to attribute the effect to the intervention itself.
- With no data on pre-intervention trends (as in the ITS design) it is impossible to see the effect that the intervention has over time.

5) Other designs

Other designs included non controlled studies, formative and process evaluations and cross sectional studies. The problems with these designs are similar to those of the non controlled before and after studies.

6) Qualitative studies

Finally, we also included a small number of qualitative studies that employed focus group or semi-structured interview techniques to evaluate interventions. However, many of the studies drawing on the methodologies listed above, also included minor study components that drew on qualitative methods. For instance, many studies used focus groups and/or semi-structured interviews with a target population in order to refine and develop mass media materials, message styles or message content. The acceptability of the particular forms of intervention or mass media approach were also explored in this way.

Many of the included studies were non-controlled before and after designs and therefore of poor methodological quality. Several used a before and after cross-sectional panel design (i.e. those interviewed before the intervention were not the same as those interviewed after). Some did undertake a longitudinal design (the same panel before and after the intervention) but very few used an interrupted time series design.

Other limitations of the studies

Although web-based smoking cessation support may be easily available to those with access to the internet, Etter (2006) warns that there are a plethora of sites, many of which are commercial and of dubious quality. This author also laments the fact that little scientific evidence is available on their efficacy and it is also unclear what components of these websites are most effective in motivating and helping smokers to quit smoking and avoid relapse. As the studies included here reveal, internet based smoking cessation programmes tend to be multi-component interventions, containing combinations of self help, peer support, advice, and contact with experts and evaluations do not attempt to unravel the impact of individual components. Indeed given the problems inherent in evaluating internet based interventions in general, it is questionable whether evaluating separate components is either realistic or desirable.

Some of the studies of internet sites were limited by the small proportion of people that signed up for the studies. It was acknowledged that these people may also be those who are most motivated to quit (Feil et al, 2003). Furthermore, as some authors acknowledge, the small numbers of participants can make it difficult to generalise the results (Escoffery et al, 2004). Another author commented that the one-group research design does not answer the question of whether the positive changes were attributable to the intervention content, the novelty of the medium, or other factors. Indeed, other interactive strategies (e.g., teleconferencing or interactive computer-assisted instruction) may be equally effective (Woodruff et al, 2001).

Another problem encountered by those evaluating mass media related interventions is in verifying smoking status. Clearly there are limitations to data reliant on self reported quit attempts or smoking cessation, and biochemically validated smoking cessation such as the measurement of saliva cotinine levels or expired air carbon monoxide levels represents the 'gold standard' in validating smoking status (see Owen and Youdan, 2006). However, according to the Society for Research on Nicotine and Tobacco Subcommittee on Biochemical Verification, the decision to use biochemical validation of tobacco use depends on three issues: demand characteristics, type of study, and type of population. The Committee states that biochemical verification is not warranted in population-based interventions with

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limited face-to-face contact. As to the impact of inaccurate self-report, the Subcommittee states that while it is likely that self-report will inflate quit rates, the magnitude of such inflations is small (Feil, 2004)

2. Methods

Our aim was to systematically collate, rate and synthesise findings on the effectiveness of interventions to promote smoking cessation and relapse prevention, to provide researchers, policy and decision-makers, and practitioners with accessible, good quality evidence in this topic area. This includes both primary intervention studies and secondary data via systematic reviews of interventions.

2.1. Literature Search

A worldwide search identified relevant systematic reviews from 1995 onwards. A search for RCTs, controlled non-randomised studies, before and after studies, qualitative studies and case study evaluations was conducted from 1990 onwards.

Databases searched included reviews and other studies from the following resources:

Cochrane Database of Systematic Reviews

DARE

National Research Register (including CRD ongoing reviews database)

Health Technology Assessment Database

SIGN Guidelines

National Guideline Clearinghouse

HSTAT

TRIP

MEDLINE

EMBASE

CENTRAL

British Nursing Index

CINAHL

PsycINFO

King's Fund

DH-Data

NICE web pages (published appraisals) <http://www.nice.org.uk/nice-web/>

Sociological Abstracts

ASSIA

AMED was not searched as it was not appropriate to the topic of this review.

Search strategy:

The search strategy below was prepared for Ovid MEDLINE and then adapted to run separately on each of the databases:

smoking concepts

AND

mass media/community interventions

AND

smoking cessation/quitting concepts

AND

English language

AND

1990-2006

Full search histories are listed in Appendix 2.

2.2. Selection of papers for inclusion

This review includes mass media interventions which both encourage quit attempts and reinforce current and recent attempts to quit smoking.

Population: People who use tobacco products (children or adults). Particular attention was paid to pregnant women, ethnic minorities, and the ‘disadvantaged’ or ‘hard to reach groups’.

Interventions: mass media events and community interventions (limited to community interventions which have a mass media component). The following mass media interventions will be considered for both the effectiveness of the channel of communication and also for the effectiveness of message content:

Mass media interventions: channels of communication

Mass media is defined as channels of communication which are not dependent on person to person contact such as:

- Television
- Radio
- Newspapers
- Bill boards
- Posters
- Leaflets or booklets intended to reach large numbers of people
- The Internet
- SMS
- Podcasts
- Unpaid publicity through these media; local and national

Mass media interventions: purposes and content

The purpose and content of the mass media campaign must be primarily to encourage users of tobacco products to quit, or prevent relapse prevention. However the media campaigns do not necessarily have to be cessation-focused: print and broadcast media efforts may refer the audience to quit lines. These interventions may be held at both the population level or take place as more targeted, ‘community’ level interventions (such as ‘Quit and Win’ contests promoted via the mass media). The channels of mass media (described above) may include the following content (but it is important to note that only those interventions listed below, promoted by or through mass media, are included):

- Counter marketing (where it targets smoking cessation or relapse prevention rather than the uptake of smoking)
- Telephone counselling and quitlines; pro-active and reactive calling (where they are promoted through the channel of mass media).
- ‘No smoking’ days

- Competitions and incentives (e.g. 'Quit and Win') for stopping smoking (where they are promoted through the channel of mass media).
- Self help materials (where they are a component of, or promoted by, a mass media intervention)
- Activities of regional and local tobacco control alliances

Study designs: RCTs, controlled clinical trials, interrupted time series, controlled or non-controlled before and after studies, case study or process evaluations and qualitative studies are included in this review.

Outcomes: For evaluation studies the primary outcome measures are successful quit attempts defined as follows:

- a) Abstinence from smoking after the intervention.
 - Duration of abstinence:
 - short term: at least 1 month after the intervention
 - medium term: at least 3 months after the intervention
 - long term: at least 1 year after the intervention
- a) Studies are given greater weight if data pertaining to quitting is biochemically validated (for example, CO, cotinine in blood and or urine) although self report measures are also included.
- b) Self reported motivation and confidence to quit
- c) Relapse prevention

Where quit/relapse studies include intermediate measures of motivation and confidence, these measures are also reported.

Exclusion criteria:

The following studies are not included:

- Studies of mass media interventions to prevent the uptake of tobacco use
- Primary studies set in developing countries
- If sufficient up to date evidence is found for a specific question, older studies and/or those using weaker designs will not be examined. Areas covered by Cochrane systematic reviews will not be explored further unless the primary study adds a further dimension not included within the review.
- Papers in a language other than English
- Mass media campaigns whose impact has been assessed only in terms of intermediate outcomes (e.g. intentions to quit, motivation to quit and confidence, attitudes to smoking, and knowledge about smoking).
- Interventions such as counselling or self help which do not use mass media as a channel of communication
- Brief interventions and referral for smoking cessation in primary care and other settings
- Workplace interventions
- NHS stop smoking services and treatment in primary and secondary care

Applying the inclusion/exclusion criteria

All references retrieved from the searches were downloaded into Reference Manager (v11). Applying the inclusion/exclusion criteria was undertaken in stages. Appendix 3 details the results at each stage in this process.

Stage 1. Titles were screened by one reviewer. Reviews or studies were excluded if they did not primarily meet the inclusion criteria.

Stage 2. Papers selected from this first sift were screened by title and abstract by two reviewers. Any discrepancies in selections were discussed and an agreement reached. Full copies of any reviews or studies which appeared to meet the inclusion criteria were obtained, and re-screened for relevance.

Stage 3. Another stage of screening was pursued during a mapping exercise, where references were mapped into categories of evidence and two reviewers agreed to include or exclude further references based on the quality of the reviews and the date of publication. Since Cochrane reviews are usually the most comprehensive and of high quality, they were selected where possible if they were one of several reviews in a particular area. Where studies simply replicated the results of systematic reviews, these were not included in the data synthesis.

A total of 8226 references were identified from the database search with an additional 11 references identified from other sources (e.g. bibliographies). One reviewer screened all these references to eliminate records that were clearly not relevant (n=7969). Two reviewers assessed abstracts of 272 records for possible inclusion (stage 2) and 80 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, 44 met the inclusion criteria for this rapid review (stage 3). A list of excluded studies (n=36) with reasons for exclusion is presented in Appendix 5.

2.3. Quality appraisal

Potentially relevant papers were assessed for quality using checklists adapted from Appendix A.1 of the NICE 'Methods for the development of NICE public health guidance'. Papers were graded both for quality (e.g. likelihood of bias or methodological rigour) and for the type of evidence it was reviewing (e.g. RCTs or non-RCTs). Where studies were of level 3 evidence, checklists were not completed.

Scoring

Once data had been extracted on quality criteria, the quality of the papers was classified into three levels using guidance in the NICE 'Methods for the development of NICE public health guidance manual' (section A.2.10).

++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the paper are thought very unlikely to alter.
+	Some of the criteria have been fulfilled. Where they have not been fulfilled, or described the conclusions are thought unlikely to alter.
–	Did not fulfil the criteria for a very high quality paper, and are of variable quality. Where they have not been fulfilled, or described, the conclusions are possibly likely to alter.

2.4. Study categorisation

Forty-four papers were included in this review: 39 primary studies with study designs ranging from RCTs to uncontrolled before and after studies and five systematic reviews. Studies were categorised according to study designs following the table below, extracted from the NICE methods manual (35: 2006). Where systematic reviews included more than one study type, we reported this as a combined score. For

instance, a good quality review including both RCTs and other study types (including qualitative studies) would be scored as a 1&2+. Systematic reviews were only given a ++ rating if they included non-English languages studies and had more than one assessor. Primary study designs not fitting into level 1 or 2, were categorised as level 3. These included cross sectional studies, non controlled studies, before and after studies without a ITS design, qualitative studies and other types of evaluations.

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-	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs (including cluster RCTs) with a low 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
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-	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
1&2 (++/+/ -)	Systematic reviews that include evidence from study types 1 and 2. For example, may include RCTs, controlled studies and non controlled studies.
3	Non-analytic studies (for example, case reports, case series). Cross sectional studies, non controlled studies, before and after studies without a ITS design, qualitative studies and other types of evaluations.
4	Expert opinion, formal consensus

2.5. Assessing applicability

Each paper was scored according to its likely relevance and applicability to the UK setting (see table below).

Relevance to the UK scoring

Score (A-D)	Description
A (directly relevant)	Includes UK studies or was based in the UK
B (probably relevant)	Included non-UK studies / was not based in the UK but would be most likely to equally apply to UK settings
C (possibly relevant)	Includes non-UK studies that may have some application to UK settings but should be interpreted with caution. There may be strong cultural or institutional differences that would have impact on the effectiveness of the intervention if applied in the UK
D (not relevant)	Includes non-UK studies that are clearly irrelevant to UK settings (e.g. legislation which would be unlikely to be implemented)

The final score of each paper combines study type, quality of the evidence and relevance to the UK.

2.6. Data extraction & synthesis

Data were extracted from the reviews into an Access database by one of four people, and a sample checked by another member of the team. Data extraction was guided by the data extraction forms in Appendix D of the NICE 'Methods for the development of NICE public health guidance manual' (see example in Appendix 7). The wide range of study designs and interventions explored within this review meant that meta-analysis was not appropriate. Instead the results are presented as a narrative synthesis.

Evidence statements

Evidence statements were drawn up based on the level of evidence, the efficacy of the intervention and the applicability of the research question to the UK. They were based on the guidance in the NICE 'Methods for the development of NICE public health guidance manual' (section 4.4).

3. Summary Of Findings Based On Research Questions

The results are grouped under the headings below. Some of the reviews and studies are reported more than once as they contain results that inform other sections.

3.1. What is the effectiveness of non targeted mass media interventions in promoting smoking cessation and relapse prevention?

In this section both the content of interventions and the channels of mass media that were used are explored. For instance, the effectiveness of mass media led educational interventions or counter-marketing which are promoted either through interventions that employ a combination of mass media channels (multi-channel) or through single channels, such as television only, computer or internet only and so on. The interventions in this section did not target specific populations (although they tended to be aimed at adult populations), or high risk groups. Section 3.3 evaluates interventions targeting specific groups such as pregnant women, young people and people from different ethnic or cultural groups.

3.1.1. MASS MEDIA EDUCATION / COUNTER-MARKETING

Multi-channel (e.g. a combination of two or more of the following: newspapers, billboards, TV, internet, mobile phones, radio etc.)

Three non controlled before and after studies (level 3) were identified. However the results of these studies should be interpreted with caution due to their poor methodological quality.

A non controlled before and after study (level 3) in Finland evaluated the impact of exposure to mass media health promotion messages about smoking (the North Karelia Project) on smoking behaviour (Korhonen et al, 1998). Rather than a discrete intervention, this was an evaluation of long term measures in place since 1979. This included cessation services provided by health professionals, mass media ads, smoke free policies, and quit and win contests. The channels of mass media included posters, leaflets, local TV and radio, and local newspapers. The study analysed results of annual surveys over a seven year period with 1694 participants (1088 men and 606 women). Outcome measures included self-reported attempts to quit. Weekly exposure to mass media health messages was significantly associated with cessation attempts among men only. In contrast, interpersonal health communication, or social influence, was a significant determinant of cessation attempts among both sexes. Exposure to both mass media and interpersonal health communication had an even stronger impact on cessation attempts. However, mass media exposure alone was not significant. Interpersonal communication appears to be an important catalyst of community programmes, and its inclusion should be emphasized to obtain a higher impact with community programs. The authors suggest that more research is required to explore cessation attempts and relapses over time; and should be compared with another area of the country outwith the programme. Limitations of this study include the fact that it is difficult to ascertain exactly what influences on smoking behaviour are being measured because of the long history of anti-smoking interventions in this region. It is also impossible to measure something like 'interpersonal health communication' as one would expect differential impact according to the nature of the communication

and the relationship between the communicators. Furthermore, this is a difficult area for participants to recall reliably.

A non-controlled before and after study (level 3) in two large Australian cities evaluated the effectiveness of a mass media campaign for smoking cessation over a period of six years (Pierce et al, 1990). Television commercials were developed to motivate smokers to quit smoking and to set the agenda for professionals whom the campaign team hoped to involve in promoting non-smoking. All of the mass media advertising was conducted around a central theme connected to the message in the major television commercial being run at the time. Other mass media channels included advertising on billboards, in newspapers, and commercials and anti-smoking sketches by major personalities on the radio. In addition, the campaign generated many news releases and events that resulted in substantial news coverage in all the mass media.

During the years before the antismoking campaigns, there was no observable trend in smoking prevalence in either city. At the beginning of the campaigns, there was an immediate drop of more than 2% in male and female smoking prevalence in both cities. Thereafter, a decline of about 1.5 % per year was observed among males. No post campaign trend was observed in smoking prevalence for women in either city. The authors concluded that co-ordinated mass media antismoking campaigns (using purchased television time) are an effective way to reduce smoking prevalence among adults.

Lastly, a non controlled before and after study (level 3) undertaken in the USA evaluated the impact of a media campaign on decisions to quit smoking (Popham et al, 1993). Participants (n=417) were adults over 18 years of age who were randomly selected from those who had stopped smoking during the mass media campaign. The campaign used a variety of anti smoking messages including the dangers of second-hand smoke and the impact of smoking on one's social desirability as well as messages aimed to stimulate public debate about the role of tobacco companies in encouraging people to smoke. The authors reported that 6.7 % of participants said the media campaign had influenced their decision to stop smoking in response to an uncued question. In response to a direct question about the media campaign, 34.3 % of respondents indicated it had played a part in their decision to quit. However the latter should be interpreted with caution as it was undoubtedly a leading question.

No 1

Evidence statement

Three level 3 studies, probably relevant to the UK population, found an effect of multi channel mass media on smoking cessation, but there is no evidence about which of the mass media components of the interventions were most effective (or most ineffective).

TV only

One systematic review (level 1&2+) aimed to summarise the effectiveness, applicability, and barriers to the use of selected population-based interventions intended to reduce tobacco use and increase tobacco use cessation (Hopkins et al, 2001). Mass media interventions were included as part of this review, but were not the sole focus. All types of evaluation studies (e.g. RCTs, before and after studies) were

included if they were undertaken in 'industrialised nations' (total number of participants not stated). Outcomes in the studies included cessation, prevalence, and changes in state-wide sales of cigarettes. Some of the studies reported biochemical validation of outcomes, whereas others only used self reported smoking cessation. The review summarised the results of studies evaluating 'Mass Media Education Cessation Series.' These are mass media interventions that use TV to show recurring instructional segments to recruit, inform, and motivate tobacco product users to initiate and to maintain cessation efforts. Nine studies were identified in this area. People who recalled watching the cessation series were more likely to report sustained cessation at interview (OR, 1.36; 95% CI, 1.13, 1.65). In five studies, smokers in both the intervention and comparison groups were exposed to the cessation series, with participants in the intervention group receiving additional interventions, such as small group sessions. These studies reported absolute percentage differences in cessation that ranged from 14 to 18 percentage points (median, 15) with follow-up periods of 4 to 24 months (median, 12). However, these studies share a potential limitation in comparing smokers motivated to quit (enrolled or offered cessation group support) with smokers potentially less motivated to quit. The included studies provided insufficient evidence of effectiveness of the broadcast series in increasing tobacco use cessation. The differences in cessation observed in these studies might be the result of (1) baseline differences in motivation to quit between intervention and comparison smokers and (2) the small-group cessation sessions provided to the intervention group participants.

A non-randomised controlled trial (level 2+) evaluated the effectiveness of the Health Education Authority for England's anti-smoking television advertising campaign to motivate smokers to give up, and to prevent ex-smokers to relapse (McVey and Stapleton, 2000). Participants were adult smokers (over 16 years of age) and ex-smokers living in four TV regions in central and northern England. Of a total of 5468 participants (2997 smokers; 2471 ex-smokers), approximately 58% of the smoking group were female, and in ex-smokers this was approximately 51%. The mean age of smokers was approximately 44 years; ex-smokers were approximately 55 years. Around 68% of smokers and 54% of ex-smokers were manual workers. One region received no intervention (control), two regions received TV anti-smoking advertising, and one region received TV anti-smoking advertising plus locally organised anti-tobacco campaigning (TV media + LATC). The TV advertisements were screened in two phases over 18 months. During the first phase, the intensity of the advertising was varied between TV regions. Self reports of cigarette smoking at the 18 month follow up were compared between the three levels of intervention.

After 18 months, 9.8% of smokers had stopped and 4.3% of ex-smokers had relapsed. The pooled adjusted OR for not smoking in the TV media only condition compared to controls was 1.53 (95% CI: 1.02 to 2.29, $p = 0.04$), and for TV media + LATC versus controls, 1.67 (95% CI: 1.0 to 2.8, $p = 0.05$). There was no evidence of an extra effect of the local tobacco control network when combined with TV media (OR: 1.15, 95% CI: 0.74 to 1.78, $p = 0.55$). There was also no evidence of any intervention effects after the first phase of the TV media campaign, including no effect of varying the intensity of the advertisements. The authors claim that these results translate into an overall reduction in smoking prevalence of around 1.2%.

No 2***Evidence statement***

One review (level 1&2+), probably relevant to the UK population, found that there is insufficient evidence to assess the effectiveness of serialized TV cessation programmes in reducing tobacco use.

There is level 2+ evidence, directly relevant to UK adult populations, that found that TV anti-tobacco advertising is more effective than control for the outcome of not smoking (pooled adjusted OR 1.53 (95% CI: 1.02 to 2.29, $p = 0.04$)). Such interventions are as effective as interventions which include advertising and a local campaign (pooled adjusted OR 1.15, 95% CI 0.74 to 1.78, $p = 0.55$).

Computer and /or internet only (see also sections 3.1.1, 3.1.5 and 3.3.2)

A controlled before and after study undertaken in the USA (level 2+) aimed to determine whether an automated email messaging system that sends individually timed educational messages (ITEMs) increased the effectiveness of an internet smoking cessation intervention (Lenert et al, 2004). Using two consecutive series of participants, the authors compared two Web-based self-help style smoking cessation interventions: a single-point-in-time educational intervention and an enhanced intervention that also sent ITEMs timed to participants' quit efforts. Outcomes were compared in 199 participants receiving the one-time intervention and 286 receiving ITEMs. The education-only website offered an intervention with tailored and untailored educational materials. The one-time and ITEMs groups differed in some demographics and some relapse risk factors but not in factors associated with 30-day quit rates. ITEMs appeared to increase the rate at which individuals set quit dates (97% vs. 91%, $p = 0.005$) and, among the respondents to follow-up questionnaires ($n = 145$), the rate of reported 24-hour quit efforts (83% vs. 54%, $p = 0.001$). The 30-day intent-to-treat quit rates were higher in the ITEMs group: 7.5% vs. 13.6%, $p = 0.035$. In multivariate analyses controlling for differences between groups, receiving ITEMs was associated with an increase in the OR for quitting of 2.6 (95% CI: 1.3-5.3).

No 3***Evidence statement***

There is level 2+ evidence, probably relevant to the UK population, indicating that the addition (to a Web-based self-help style smoking cessation intervention) of an automated email educational messaging system was associated with an increase in the 30-day intent-to-treat quit rates (7.5% vs. 13.6%, $p = 0.035$).

3.1.2. QUIT LINES FOR SMOKING CESSATION

This section is organised around the channels of mass media that are used to advertise quit lines, although to be included in this section all studies must report outcomes relating to smoking cessation and/or relapse prevention. The effectiveness of mass media for increasing calls to quit lines is reported in section 3.3.2

Electronic message strips

One controlled study (level 2-) in a USA hospital evaluated electronic message strips advertising a quit line (Johnson et al, 1995). The study measured calls to the quit line, smoking cessation rates and also compared the effectiveness of two different styles of

message. Participants included hospital staff, patients, visitors to the hospital and referrals from health professionals. In total there were 74 self-referrals/callers (88% male, 77% patients) and 318 referrals to the programme. The intervention involved the use of electronic message strips in the hospital waiting area, which were scrolled 480 times per day (10 months for each message), in 14 locations within the hospital. One message was positive and the other negative in style. For instance, the positive message was “Smokers, join the 1.5 million who will quit smoking this year. Call ...” compared to “Smoking causes cancer. To quit smoking, call”. The authors found that a shorter, more negative message was more effective than a longer, more positive message. The data also showed that this approach increased the number of subjects who enrolled in a smoking-cessation programme and the number of subjects who actually quit smoking. They suggested that this is an almost cost free and effective means of recruiting to a smoking cessation programme. However, there are severe limitations to this study. Firstly it is poorly reported and the results are not clearly presented. Secondly, the numbers of callers to the quit line responding at different periods to the different messages were too small to draw any reliable conclusions. Despite these limitations, the study is worth reporting as it is a novel approach not reported elsewhere. (See also section 3.4.3).

No 4

Evidence statement

There is level 2- evidence, probably relevant to the UK population, that there is insufficient evidence of the effectiveness of electronic message strips for advertising a quit line and impacting on quit rates. There is also insufficient evidence from this study that positive messages are less effective than negative messages.

3.1.3 NO SMOKING DAYS

‘No Smoking Days’ and public awareness days create news stories and events to attract media coverage. A network of people supports the campaign at a local level by running events and helping smokers who want to stop smoking. The campaign supports these activities with the provision of materials and training. As No Smoking Days are generally long standing National public awareness days, it is not usually possible for an experimental design (e.g. RCT) to be used to evaluate effectiveness. Evaluations look at the impact of No Smoking Day retrospectively, unlike some other evaluations that utilise “pre” and “post” measures (Owen and Youdan, 2006). However, it is difficult to isolate the impact of No Smoking Day from other contemporaneous interventions.

One non controlled longitudinal study (level 3) undertaken in the UK evaluated the impact and relevance of the national awareness day ‘No Smoking Day’ 22 years after it was launched (Owen and Youdan, 2006). The outcomes were self reports of awareness and smoking behaviour changes one week and three months after No Smoking Day. Volume of media coverage, visits to a No Smoking Day website, and volumes of calls to smokers’ help lines were also reported. The number of participants was 2000 in a tracking survey; and 4928 on-street interviews based on quota principles. The authors reported that follow up at one week indicated that awareness of No Smoking Day was lower in 2004 than in 1986 but still high at 70% for all smokers. The decline in participation from 18% of aware smokers in 1994 to 7% in 2001 was reversed and in 2005 19% quit or reduced their smoking on No Smoking Day. Three months after No Smoking Day, awareness was 78% in 2004, which was

lower than in previous studies but still high and equivalent to 9,965,000 smokers when applied to the population estimate of UK smokers. Likewise participation decreased but at 14% in 2004 was equivalent to an estimated 1,840,000 (1 in 7 of UK smokers) claiming to quit or reduce their consumption on the Day. Among those who participated, 11% were still not smoking more than three months after the Day, which was equivalent to an estimated 85,000 smokers (0.7% of UK smokers).

A non-controlled before and after study (level 3) also evaluated the impact that 'No Smoking Day' had on smokers in Wales in 1996, and to what extent the day met its main objectives (Frith et al, 1997). Eight hundred and twenty nine smokers were included in the study and the outcome was self reported smoking cessation at 3 months. The findings indicated a quit rate at three months in the range of 0.3 to 1.8 per cent. Further analysis suggests that certain groups of smokers, and smokers at certain stages of quitting, are more likely to be motivated by the Day, in particular those who had firm plans to quit at the time of the interviews. The findings also indicated a high level of awareness of No Smoking Day and an encouraging level of participation. However, when asked directly about how important they felt No Smoking Day had been in their decision to give up smoking (n=15) only two participants responded that it had been fairly important, the remainder stated that it had been of little or no importance.

One controlled before and after study (level 2-) in Switzerland evaluated the effectiveness of a poster campaign against passive smoking for World No-Tobacco Day (Etter and Laszlo, 2005). Four hundred posters on passive smoking were placed on billboards in the streets of Geneva and also on tramways. 6000 smaller posters (size A3) were mailed to schools, leisure centres, kindergartens, paediatric clinics, obstetrics clinics and pharmacies. After the press launch, the campaign poster was shown on TV, in newspapers and also mentioned on the radio. They conducted baseline and follow-up surveys with 400 participants and outcomes included both recall of the poster (see section 3.3) and smoking outcomes. A control town (which was not exposed to the poster) was also surveyed. The poster had no effect on cigarette consumption or intention to quit.

Finally, an observational study undertaken in the USA (level 3) evaluated the 'Great American Smokeout' and whether it could modify smoking in a large organisation (a hospital) (Hantula et al, 1992). The Great American Smokeout Day is a mass media campaign, held annually before Thanksgiving. It is intended to encourage smokers to 'take a day off from smoking' and re-evaluate smoking behaviour. The major goal of the 'Smokeout' is that smokers refrain from smoking for one day, and it is hoped that this period of non-smoking will turn into permanent abstinence for many smokers. In order to promote the 'Smokeout', the American Cancer Society produces and distributes advertisements, posters, smoking cessation guides and an annual promotion guide. The outcomes were the number of people observed smoking in the hospital canteen and carbon monoxide (CO) levels from volunteers during the day and the day after. The study found that the number of people observed sitting in the smoking section of the cafeteria, the number of people observed smoking, and the mean expired CO levels taken from volunteers were reduced *only* on the day of the 'Smokeout' as compared with data collected during a baseline period during the month prior to the 'Smokeout'. The volunteers returned to their previous levels the day after the 'Smokeout'. The authors concluded that results provided empirical

support that a mass-media based campaign such as the 'Smokeout' may reduce smoking temporarily, but additional strategies for maintenance of smoking reduction and cessation are needed. However, the study is very poor quality, and the conclusions should be interpreted with caution.

No 5

Evidence statement

There is level 3 evidence, directly relevant to the UK population, that a quit rate at three months in the range of 11% (0.7% of UK smokers) can be achieved following No Smoking Day. Other level 3 evidence reported a quit rate at three months in the range of 0.3 to 1.8 % following No Smoking Day in Wales. Another level 3 study, possibly relevant to the UK population, indicated that the 'Great American Smokeout' may reduce smoking on the day, but subsequently return to previous levels.

In addition, there is level 2- evidence, probably relevant to the UK population, that showed no effect of a poster campaign against passive smoking for World No-Tobacco Day on cigarette consumption or intention to quit.

3.1.4. COMPETITIONS & INCENTIVES

Quit and win population based contests (see also sections 3.2.1 and 3.2.6)

Quit and Win contests were developed in the 1980s by the Minnesota Heart Health Program, and have been widely used since then as a population-based smoking cessation intervention at local, national and international level (Hey and Perera 2005a). The contests are advertised using mass media, posters and brochures distributed to schools, workplaces and medical facilities. Some of the key features of the contests include:

1. Smoking status is validated prior to entry, and quitting is biochemically validated among potential winners.
2. Smokers are adults (18+), and must pledge to quit for 30 days on the target quit date.
3. A large grand prize is offered, e.g. a family holiday, plus several smaller prizes
4. Contests are heavily promoted through the media

Quit and Win competitions have subsequently been developed and extended to national and international applications. Since 1994 an international contest has been held every two years in as many as 80 countries.

A Cochrane review (level 1&2+) evaluated population-based quit and win contests at local, national and international levels (Hey and Perera, 2005a). Only RCTs or controlled studies which had at least six months follow-up were considered for inclusion. Four studies with a total of 2102 participants met the study criteria. Outcomes included cessation rates, point prevalence and sustained abstinence, for a minimum of six months from the start of the intervention, whether or not they were biochemically validated. Three studies undertaken in the USA, Canada and Russia demonstrated significantly higher quit rates (8% to 20%) for the quit and win group than for the control group at the 12-month assessment and the fourth study found no differences. However, the population impact measure, where available, suggested that the effect of contests on community prevalence of smoking was small, with less than one in 500 smokers quitting because of the contest. In the discussion section of this

review, the authors also provide data from non-controlled studies or evaluations, which had less than four months follow-up, including some which were undertaken in the UK (e.g. the Heartbeat Wales quit and win contest). These studies suggest that smokers who are thinking about quitting, and who might well have quit anyway, may bring forward their quit attempt to coincide with the running of a contest.

The authors concluded that Quit and Win contests at local and regional level appear to deliver quit rates above baseline community rates, although the population impact of the contests was relatively low. Contests may be subject to levels of deception which could compromise the validity of the intervention. International contests may prove to be an effective mechanism, particularly in developing countries, but a lack of well-designed comparative studies precludes any firm conclusions. (See also section

No 6

Evidence statement

There is evidence from one level 1&2+ review, probably relevant to the UK population, that shows a small effect of 'Quit and Win' contests on community prevalence of smoking. Less than one smoker in 500 quits because of the contests.

Competitions and Incentives: Community Level

A Cochrane review (level 1&2+) of 15 studies evaluated whether competitions and incentives led to higher long-term quit rates (Hey and Perera, 2005b). Interventions included contests, competitions, incentive schemes, lotteries, raffles, and contingent payments to reward cessation and continuous abstinence in smoking cessation programmes. Participants in the studies were recruited from workplaces, community settings, clinics and via newspaper advertisements. None of the studies demonstrated significantly higher quit rates for the incentives group than for the control group beyond the six-month assessment. There was no clear evidence that participants who committed their own money to the programme did better than those who did not, or that different types of incentives were more or less effective. There was some evidence that although cessation rates did not differ significantly, recruitment rates could be improved by rewarding participation, which may be expected to deliver higher absolute numbers of successful quitters.

A USA based non controlled before and after study (level 3) not included in the above Cochrane review, explored the effectiveness of a community-sponsored smoking cessation contest (Elder et al, 1991). A large recruitment campaign was mounted through a variety of channels including TV, radio, local press and through registration forms in schools, health facilities, worksites, restaurants and so on. Participants were given a listing of smoking cessation programs in the county and a 'quit tips' brochure. The lottery drawing was held eight weeks after the official 'Quit Day'. Smokers had to quit for eight weeks and return a quit card to be eligible for the drawing. Prizes ranged from trips to Hawaii, athletic equipment, and cinema tickets. 35% of the participants self-reported that they had quit two months after the contest.

No 7*Evidence statement*

There is evidence from one level 1&2+ review, directly relevant to the UK population, which shows that competitions and incentives in the community (e.g. workplace, clinics) are not effective beyond six months. There is level 3 evidence that they achieve significant effects in the short term, as 35% of the participants self-reported that they had quit two months after the contest.

3.1.5 MULTICOMPONENT INTERVENTIONS

Interventions included in this section include a combination of two or more of the following approaches: self help, quit lines, education, advice, counselling etc. This is not to be confused with multi-channel interventions, which use more than one mass media channel such as newspapers, TV, radio and so on – although, as reported below, multi-channel mass media may also be multi-component in approach.

Multi-channel (e.g. a combination of two or more of the following: newspapers, billboards, TV, internet, mobile phones, radio etc.)

One systematic review (level 1&2+) aimed to summarise the effectiveness, applicability, and barriers to the use of selected population-based interventions intended to both reduce tobacco use and increase cessation (Hopkins et al, 2001). Mass media interventions were included as part of this review, but were not the sole focus. The review identified 15 relevant studies aimed at the general population. All types of evaluation studies (e.g. RCTs, before and after studies) were included but studies in ‘non-industrialised nations’ were excluded. All of the included studies evaluated the effectiveness of a mass media campaign either coordinated with or concurrent with other interventions. Outcomes in the studies included cessation, prevalence, and changes in state-wide sales of cigarettes. Some of the studies reported biochemical validation of outcomes, whereas others only used self reported smoking cessation.

In five studies evaluating cessation, the review found that the duration of the interventions ranged from less than 1 year to 5 years. Cessation rates in the intervention group ranged from 3.9% (confirmed) to 50% (self-reported), with a median of 7% in follow-up periods of 6 months to 5 years (median, 14 months). All seven of the studies that evaluated mass media campaigns of 2 or more years’ duration observed a reduction in tobacco use prevalence in the intervention group when compared to the control group. The observed differences were more consistent and slightly greater in magnitude of effect for both tobacco use prevalence (range, 22.4 to 211; median, 28.0 percentage points) and in the ORs (range of outcomes, 0.49 to 0.74, median result, 0.74).

Another poor quality systematic review (level 2-) evaluated mass-media campaigns and associated reductions in smoking prevalence and cigarette consumption in both the general population and young people (Friend and Levy, 2002). The included studies were of state-wide or community-wide campaigns aimed at the general population and youths in the USA; and of media campaigns and concurrently implemented tobacco control programmes (or policies) aimed at decreasing or stopping smoking, reducing exposure to environmental tobacco smoke, reducing

youth access to cigarettes, and countering pro-tobacco messages. Two well-funded and implemented state-wide campaigns plus concurrent coordinated tobacco control programmes reduced smoking rates in the general population; there was a reduction in net smoking prevalence of 6 to 12%. Two smaller state wide campaigns of shorter duration in less populated counties found smaller reductions in smoking (net decline 4% and 5%, respectively). It is unclear whether all relevant studies were discussed and used in the review.

Three other studies not included in the reviews, also evaluated multi channel interventions for multicomponent interventions. A controlled before and after study (level 2-) in the USA evaluated the effects on adult smokers in Texas of a comprehensive tobacco-use prevention and cessation programme (McAlister et al, 2004). The media campaign combined television, radio, newspaper and billboard advertisements featuring messages and outreach programmes to help adults avoid or quit using tobacco products. The advertisements also promoted quitting assistance programmes from the American Cancer Society smokers quit line. The cessation component of the intervention focussed on increasing availability of and access to cessation counselling services and pharmacological therapy to reduce nicotine dependence. Both clinical and community based cessation programmes were offered, including quit and win contests. In total, there were 14 different combinations of intervention types and one area which received only the media campaign without the cessation activities was compared with an area which received neither a media campaign nor cessation services at seven months follow up. The authors report that the group receiving high level media and community cessation programmes had significantly greater change scores than the other groups combined for radio and television exposure. There were significant correlations between follow-up media exposure variables and processes involved in smoking cessation variables. The authors concluded that reductions in cigarette smoking can be achieved through community-level campaigns combining high level media campaigns with cessation programmes or comprehensive programmes including cessation and community activities. Treatment areas which combined cessation activities with high level media campaigns saw a rate of smoking reduction that almost doubled rates in areas with media campaigns alone. Similarly, the area with high-level media combined with all programme components saw a reduction in tobacco-use prevalence when compared with areas with no media campaign or programme components. However, these results are inherently flawed as the original primary outcome measure of smoking cessation was discarded as there were too few quitters (only 2%) to allow a statistical analysis. This would suggest that the intervention was either not effective or that there was insufficient evidence of effectiveness, despite the authors' assertions to the contrary.

A non controlled before and after study (level 3) in the Netherlands examined the reach, effectiveness, and cost-effectiveness of a mass media-led smoking cessation campaign called 'Quit Smoking Together' (Mudde and de Vries, 1999). This was a mass media-led smoking cessation campaign that included television shows, a television clinic, a quit line, local group programmes, and a comprehensive publicity campaign. Participants were Dutch smokers over 15 yrs, numbering 1338 for the full study and 508 participants who were included at post-test and follow-up only. The latter group was compared with the group that received pre-test contact. Groups were followed up at four months, 10 months and one year to measure recall of the

campaign. The follow-up point prevalence abstinence rate attributable to the campaign was estimated to be 4.5% after control for test effects and secular trends. The authors concluded that the campaign may have substantially increased normal cessation rates.

A cluster randomised controlled trial in the USA (level 1+) evaluated a media-based, worksite smoking cessation intervention and this paper reports on the results at the two year follow-up (Salina et al, 1994). The workplaces were in Chicago, USA and there were 419 participants. In the initial level 3 week phase, all participants in both conditions (control and intervention groups) received self-help manuals and were instructed to watch a 20-day televised series designed to accompany the manual. In addition, participants in the intervention group (G) received six sessions emphasising quitting techniques and social support. In the second phase, which continued for 12 months, employees in G participated in monthly, peer-led support groups and received incentives, while participants in the non-group (NG) condition received no further treatment. At three weeks there was a significant group effect ($p < .006$) as a result of the increased recall of campaign messages in the full intervention group (66%) compared to 50% of the control group. Over the course of the study, those recalling the television messages had significantly higher cessation rates than those who did not. Two years after pre-test, 30% of employees in G were abstinent compared to only 19.5% in NG. The study shows that there was an effect of providing peer group support and lottery incentives in addition to the media-based self help materials. The authors state that their data reveals that lay persons may be effective as peer support in preventing relapse as they form social networks based on a shared social identity.

No 8

Evidence statement

There is evidence from a level 1&2+ review, probably relevant to the UK population, that multi channel mass media campaigns (combined with other interventions) are effective in increasing tobacco use cessation. Cessation rates in the intervention groups ranged from 3.9% (confirmed) to 50% (self-reported), with a median of 7% in follow-up periods of 6 months to 5 years. There is evidence from another review (level 2-), possibly relevant to the UK population, that shows that media campaigns and concurrently implemented tobacco control programmes (or policies) are associated with a reduction in the net smoking prevalence of between 6-12%. Other level 2- and 3 evidence reported either inconclusive results, or estimated the follow-up point prevalence abstinence rate attributable to the campaign was 4.5% after control for test effects and secular trends.

There is level 1+ evidence, probably relevant to UK workplaces, which found that adding peer group support and lottery incentives to mass media-based self help interventions led to abstinence levels of 19.5% in control group compared with 30% in intervention group at 2 years.

There is evidence of good quality (level 1+) probably relevant to UK workplaces, that found that adding peer group support and lottery incentives to mass media-based self help interventions led to abstinence levels of 19.5% in control group compared with 30% in intervention group at 2 years.

TV only

A non-controlled before and after study (level 3) in the USA evaluated a 6 week community cable television smoking cessation programme 'CableQuit' (Valois et al, 1996). The programme had 13, 30 minute 'live' sessions, each followed by a 30-min 'live' phone-in support segment. Telecasts were hosted by a public health educator with postdoctoral training in smoking cessation. Five smokers from Austin, Texas, were selected to participate 'live' in the studio, while registrants followed step by step at home. Outcomes (measured at baseline, 6 weeks, 6 months and 12 months) were quit attempts and quit rates; expectancy of remaining abstinent; and levels of social support. Quit attempts were biochemically validated. Ninety eight people registered for the programmes and the final sample of participants in the study was 53.

A 1-year quit rate of 17% exceeded those of previous televised programmes (5-15%). Non-smokers at 1 year had significantly greater levels of self-efficacy ($p < .004$) and significantly lower levels of depression ($p < .03$) than smokers. There was no significant correlation between social support and smoking status. There was also no correlation between the response towards the studio participants and quit rates. The authors concluded that self-efficacy and levels of depression were both shown to have an effect on quitting smoking.

*No 9**Evidence statement*

There is level 3 evidence, probably relevant to the UK population, which reported quit rates of 17% at one year following a community cable television smoking cessation programme 'CableQuit'.

Computer and /or internet only

Five studies evaluated whether the use of the internet or computer was effective at delivering multi-component interventions to non targeted populations. However, the three highest quality studies only reported follow-up at 3 months or less, which is too short to reveal any lasting change in smoking behaviour. Other studies evaluated computer or internet interventions for targeted groups (e.g. young people) are reported under section 3.3. (See also other studies in sections 3.1.1 and 3.3.2).

An RCT undertaken in Switzerland (level 1++) compared the efficacy of two internet-based, computer-tailored smoking cessation programmes including self-help materials and targeted counselling (Etter, 2005). A baseline survey was conducted with 11,969 participants (74% current smokers; 26% former smokers), and a follow-up survey with 4,237 people. Visitors to the smoking cessation website were randomly assigned to either an original online, interactive smoking cessation programme or to a modified programme. Both programmes consisted of tailored, personalised counselling letters based on participants' characteristics, followed by email reminders, one and two months later. Follow-up was at seven days and 2.5 months, and outcomes measured were self reported smoking cessation/abstinence. In an intention to treat analysis, abstinence rates in baseline current smokers were respectively 10.9% and 8.9% (OR=1.24, 95% CI: 1.08-1.43, $p=.003$) in the original and modified programmes, and 25.2% and 15.7% (OR=1.81, 95% CI: 1.51-2.16, $p<.001$) in baseline former smokers.

An RCT undertaken in the USA (level 1+) evaluated the short term (90 days) efficacy of an automated behavioural intervention for smoking cessation, the '1-2-3

Smokefree' programme, delivered via an internet website (Swartz et al, 2006). The intervention consisted entirely of a website programme designed to be an automated approximation of the experience a smoker would receive when working with a live smoking cessation counsellor, including behavioural interventions and support. The intervention group had access to the programme, and the control group received access to the programme after a waiting period of 90 days. 351 participants were recruited, primarily through large worksites, and the primary outcome measure was self reported abstinence from smoking at 90 day follow up. At follow up, the cessation rate at 90 days was 24.1% (n = 21) for the treatment group and 8.2% (n = 9) for the control group (p = 0.002). In an intention to treat analysis, 12.3% (n = 21) of the treatment group were abstinent, compared to 5.0% (n = 9) in the control group (p = 0.015). The authors concluded that these evaluation results suggest that a smoking cessation programme, with at least short term efficacy, can be successfully delivered via the internet.

A controlled before and after study (level 2-) was undertaken in the USA and Canada to both develop and evaluate a smoking cessation website (Feil et al, 2003). The study explored recruitment approaches, patterns of website use (see section 3.5), alternative retention incentives and re-contact modes, satisfaction, and cessation rates. The cessation programme included motivational material, guidance in avoiding/dealing with cravings, promoted the value of enlisting social support while quitting, and the programme concluded with motivational self help messages. The website encouraged users to set a specific quit date and to use a quit calendar. The control group received a related intervention: they were randomised to receive either \$10 or \$20 incentive payment and follow-up reminders randomised to email or post. 606 participants were included in the study. There was a cessation rate of 32% (30% for women and 34% for men) at 3 months post intervention. Using intent-to-treat criterion (non-respondents were considered to be smokers), the cessation rate was 18%. Gender differences were non-significant. However, these results must be regarded with caution since only a small proportion of site traffic signed up for the study, and it is possible that this included only those most motivated to quit.

A non controlled before and after study (level 3) set in the USA evaluated 'The Freedom From Smoking Online' cessation programme (Thieleke et al, 2005). This programme incorporated the components of the 'Freedom From Smoking' clinic based programme such as self assessments, developing individual action plans, interacting with others through message boards, and relaxation techniques. The online cessation programme included seven modules (each with about four lessons) for participants to work through. Eighty people who had signed up for the programme were included in the evaluation, and the outcome was self reported smoking cessation. Sustained abstinence or whether they had smoked in the previous three month period ranged between 28.8% (3 months after programme completion) and 16.3% (1 year after programme completion). The authors concluded that quit rates compared favourably to current clinic-based smoking cessation programmes, but since this was a non controlled study, results should be interpreted with caution.

A pilot non controlled study (level 3) undertaken in the USA assessed the effectiveness of an internet based multiple contact cognitive behavioural intervention designed to help people in the USA to quit smoking (Lenert et al, 2003). The programme allowed participants to work at their own pace through the materials on

the website within the 30 day study period. Only 10 of the 49 participants in the study completed all eight modules. Follow-up data was only available for 26 of the 49 participants and of these, 92% had made a serious quit attempt. The overall quit rate after 30 days was 18%. An additional 16% had a 50% reduction in overall cigarette consumption. The authors concluded that one third of people who used the intervention successfully quit or significantly reduced their cigarette use within a 30 day study period. However, a relatively low proportion of the web users actually completed the educational materials on the website. Clearly, the very small sample size makes these results highly unreliable.

No 10

Evidence statement

There is level 1++ evidence, probably relevant to the UK population, which found that a web-based smoking cessation programme using more extensive information on coping strategies and health risks is more effective at the contemplation stage than shorter programmes with less health-related information at 3 months. There were statistically significant differences in quit rates in smokers using the more extensive programme (OR=1.54, 95% CI: 1.18-2.02, p=.002).

There is level 1+ evidence, probably relevant to the UK population, that a behavioural intervention for smoking cessation delivered via an internet website can achieve a quit rate of 12.3% at 3 months (compared with 5% of controls).

There is level 2- and 3 evidence, probably relevant to the UK population, which reported that other web-based smoking cessation sites can achieve quit rates of up to 18%.

There is evidence of good quality (level 1+), probably relevant to the UK population, that a behavioural intervention for smoking cessation delivered via an internet website can achieve a quit rate of 12.3% at 3 months (compared with 5% of controls).

There is evidence of poor quality (level 2- and 3), probably relevant to the UK population, which reports that other web-based smoking cessation sites can achieve quit rates of up to 18%, but the effects may not all be attributed to the intervention.

Mobile phone only

A New Zealand RCT (level 1++) aimed to determine the effectiveness of a mobile phone text messaging smoking cessation programme (Rodgers et al, 2005).

Participants included 1705 smokers from throughout New Zealand who wanted to quit who were aged over 15 years and owned a mobile phone. Participants were allocated to either a control group or to a group that received a support programme. Participants allocated to the intervention group received a programme of interventions, based around setting a quit date within 30 days of randomisation. They were sent regular, personalised text messages providing smoking cessation advice, support, and distraction. This content covered information relevant to quitting, tips to cope with craving; advice on avoiding smoking triggers; instructions on breathing exercises to perform instead of smoking; motivational support and distraction. About half the messages related to quitting and about half were of general interest. The main outcome of the trial was the prevalence of current non-smoking (that is, not smoking in the past week) six weeks after randomisation. Secondary outcomes included:

biochemically verified abstinence at six weeks; self reported current non-smoking at 12 and 26 weeks; and continuous abstinence at 26 weeks—that is, 24 week continuous abstinence. Potential adverse outcomes measured were rates of car crash and of ‘text thumb’, defined as ever having pain in the thumb or finger joints when texting during the six months (see sections 3.2.3, 3.3 and 3.6).

More participants had quit at six weeks in the intervention compared to the control group: 239 (28%) v 109 (13%), RR 2.20 (95% CI: 1.79 to 2.70), $p < 0.0001$. This treatment effect was consistent across subgroups defined by age, sex, income level, or geographic location (p homogeneity > 0.2). The relative risk estimates were similar in sensitivity analyses adjusting for missing data and salivary cotinine verification tests. Reported quit rates remained high at six months, but there was some uncertainty about the between-group differences because of incomplete follow up. The authors concluded that a text message based intervention can increase smoking cessation rates. The programme offers potential for a new way to help young smokers to quit, being affordable, personalised, age appropriate, and not location dependent.

No 11

Evidence statement

There is level 1++ evidence, probably relevant to the UK population, that a text message based intervention can increase smoking cessation rates (28% vs 13%, RR 2.20, 95% CI: 1.79 to 2.70, $p < 0.0001$) at 6 weeks.

3.1.6 COMMUNITY INTERVENTIONS (with a mass media component)

A Cochrane review (level 1&2+) evaluated community interventions for reducing smoking among adults (Secker-Walker et al, 2002). Community intervention are any co-ordinated, multidimensional programme aimed at changing adult smoking behaviour, involving several segments of the community and conducted in a defined geographical area (e.g. town, city, country or other administrative district). Thirty seven studies were included, of which seventeen included only one intervention and one comparison community. The studies took place in a range of countries including Europe, North America, South Africa and Australia and one in India. Only four studies used random assignment of communities to either the intervention or comparison group. The population size of the communities ranged from a few thousand to over 100,000 people. Mass media were used in 31 studies (84%): 30 (81%) used newsprint, 15 (41%) news stories and another 15 (41%) also used paid advertisements; 22 (59%) used radio, of which 15 (41%) used news stories and seven (19%) news stories and paid advertisements or radio slots, 22 (59%) used television; ten (27%) news stories and 12 (32%) news stories and paid advertisements or television slots. Posters/billboards were used in 22 studies (59%), newsletters or mailings in 10 (27%), and decals or bumper stickers in seven (19%).

Interventions specifically for smoking included self-help materials such as quit-kits in 18 (49%), cessation groups in 17 (46%), both cessation and support groups in three (8%), brochures or booklets about smoking in 16 (43%), individual counselling in ten (27%), audiotapes, videotapes, or slide shows in nine (24%), quit contests in eight (22%), and a quit-line in four (11%).

Change in smoking prevalence was measured using cross-sectional follow-up data in 27 studies. The estimated net decline ranged from -1.0% to 3.0% for men and women combined (10 studies). For women, the decline ranged from -0.2% to + 3.5% per year (n=11), and for men the decline ranged from -0.4% to +1.6% per year (n=12). Cigarette consumption and quit rates were only reported in a small number of studies. The two most rigorous studies showed limited evidence of an effect on prevalence. In the USA COMMIT study there was no differential decline in prevalence between intervention and control communities, and there was no significant difference in the quit rates of heavier smokers who were the target intervention group. In the Australian CART study there was a significantly greater quit rate for men but not women. The authors concluded that the failure of the largest and best conducted studies to detect an effect on prevalence of smoking is disappointing. A community approach will remain an important part of health promotion activities, but designers of future programmes will need to take account of this limited effect in determining the scale of projects and the resources devoted to them. (See also section 3.2.1)

No 12

Evidence statement

One 1&2+ review, probably relevant to the UK population, found limited evidence of an effect of community interventions for reducing smoking among adults.

3.2. Are there any differences in intervention effects (smoking cessation and relapse prevention) among subgroups of the population?

In this section we present evidence from the studies above, plus some additional studies that undertake analysis to *compare* the effectiveness of different interventions according to gender, age, ethnicity, and so on. Under the final heading in this section we explore data on recruitment and access to interventions relative to different population groups.

3.2.1. GENDER

In the review of 'quit and win' contests (level 1&2+) the reviewers reported that there appear to be clear differences among the participants between those who succeeded in quitting and those who didn't (Hey and Perera, 2005a). While several studies found no correlation between gender and quitting success, higher quit rates among men than among women were reported in two studies (16% versus 11%; 30% versus 25%). One study also found that male quitters tended to be younger (35 to 54) than female quitters (55 to 85). (See also sections 3.1.4 and 3.2.6).

In the review of community interventions (level 1&2+) the change in smoking prevalence was measured using cross-sectional follow-up data (Secker-Walker et al, 2002). For women, the decline ranged from -0.2% to + 3.5% per year (n=11), and for men the decline ranged from -0.4% to +1.6% per year (n=12). (See also section 3.1.6)

No 13

Evidence statement

There is a small amount of evidence from two level 1&2 + reviews that 'quit and win' contests, and community interventions may be more effective for women than men.

3.2.2. AGE

No studies which reported effectiveness of interventions in different age groups were identified.

3.2.3. ETHNICITY

One New Zealand RCT (level 1++) evaluated whether a smoking cessation service using mobile phone text messaging was as effective for Maori as non-Maori (Bramley et al, 2005) (see also sections 3.1.5, 3.3 and 3.6). The intervention consisted of regular, personalised text messages providing smoking cessation advice, support, and distraction. Maori text messages related to Maori language, support messages (in Maori and English) and information on Maori traditions. The control was no intervention. The main outcome of the trial was the prevalence of current non-smoking (i.e. not smoking in the past week) at 6 weeks. Rates were validated by cotinine level in a random sample of quitters. There was no significant difference between the RR for Maori and that for non-Maori (RR: 2.16, 95%CI: 1.72–2.71). The authors concluded that a mobile phone-based cessation programme was shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates. This shows clear potential as a new public health initiative.

No 14*Evidence statement*

There is level 1++ evidence, possibly relevant to the UK population, that a culturally specific phone-based cessation programme is successful in recruiting young Maori, and was shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates.

3.2.4. RELIGIOUS BACKGROUND

No studies evaluated differential effectiveness of interventions in groups from different religious backgrounds

3.2.5. EDUCATIONAL / OCCUPATION LEVEL

A before and after study (level 3) set in two Australian cities explored whether a national anti-smoking campaign using visual mass media showed differences in effectiveness across educational levels (Macaskill et al, 1992). Selected participants were adults aged 25 to 54 years living in Melbourne or Sydney, with sample sizes at 12,851 before the intervention and 11,609 afterwards. Although the usual smoking prevalence rate in the the general population related to lower educational levels is generally 70% greater than it is in the most educated group, for both Sydney and Melbourne men and for Sydney women, the rate ratios for the four levels of education were not significantly different. This means that after controlling for age, the relative decrease in smoking of the least educated group was not significantly different from that of the most educated group. However this was not the case for Melbourne women, who displayed a significant difference between the age-adjusted rate ratios of the four educational levels, which ranged from 96% (in the least educated group) to 77% (most educated group). Smoking prevalence decreased by 23% in the most educated group (the largest decrease among any of the groups). The 5% to 9% decreases in smoking among the other educational groups of Melbourne women were the lowest rates of decline of all the groups studied. The authors claim that these results provide unique data on a behaviour change intervention that did not lead to an increase in the gap between educational levels. They suggest therefore, that the much larger decreases in smoking prevalence seen among those with higher educational levels in previous studies may have been related to differences in the amount of exposure to motivational material rather than to differences in motivation or skills related to changing behaviour. These findings are limited by the fact that the authors made no attempt to account for the discrepancy in the results between the two cities, which may have been caused by another smoking cessation intervention targeting female smokers in Melbourne during the period of this study.

No 15*Evidence statement*

There is level 3 evidence, probably relevant to the UK population, that presents conflicting results on whether the effectiveness of a nation-wide visual mass media campaigns differs according to educational level.

3.2.6. PARTICIPATION AND ACCESS

Characteristics of participants/non participants

The review (level 1&2+) of Quit and Win contests (Hey and Perera, 2005a) evaluated the characteristics of participants in both the included studies, and also in studies of a lesser quality (See sections 3.1.4 and 3.2.1). The review found that smokers who enter a quit and win contest are usually a self-selected group, and may share different characteristics from smokers who choose not to join the contest. From the included and excluded studies in the review, people who registered for a contest tended to be predominantly female, younger, better educated, smoking more cigarettes per day, in the contemplation or preparation stage of change, and to have made more previous quit attempts than those smokers who did not enter the contests. The picture for socio-economic status was not consistent with some studies finding a preponderance of professional and semi-professional participants signing up for the contest, while others reported a higher proportion of manual or blue-collar workers.

Among the included studies in the review, one commented that members of the control group who did not enter the quit and win contest tended to be older, of lower socio-economic status, and unemployed or retired. This group is especially vulnerable to chronic illness and mortality, and to smoking-related diseases in particular. Another study used quit and win contestants as the experimental group and assembled the control group by random digit dialling (but outside the intervention community), and found similar baseline differences, with the control subjects being significantly older and with fewer college graduates (27% versus 53%). There is further evidence (level 3), that influences on participation in smoking cessation interventions are linked to income levels. In another study of community level quit and win contests reported above (Elder et al, 1991), joiners and non-joiners were categorised according to income group. The most effective media source for advertising the contest across all of the groups was television, with a higher influence among participants with a lower income. People with lower incomes were also significantly more influenced by friends and relatives on decisions to join the contest ($p < .05$) than were those from higher income brackets.

A cross-sectional survey (level 3) of 1,985 adult smokers in urban locations in USA investigated participant versus non-participant characteristics in a state-wide self-help media-enhanced intervention (Sussman et al, 1994). The 'Freedom From Smoking' program in California involved airing a televised programme and provision of self-help manuals in Sunday newspaper supplements in seven cities. The evaluation consisted of identification and recruitment of a multi-ethnic sample (Whites, African-Americans, Asian/Pacific Islanders, and English-speaking Latinos) of smokers prior to the programme, a baseline evaluation, and follow-up surveys at three days (for a small subset of subjects), three months, and 12-months post-broadcast. At baseline, 16 predictor variables were measured. Participation in any aspect of the programme was highest for Whites (29%), followed by Asians (23%), African-Americans (21%), and English-speaking Latinos in the English programme (18%). The logistic regression analyses revealed that no variables were predictors for both participation and for reading the self-help manuals. The authors concluded that a televised cessation programme can reach ethnically diverse smokers.

No 16*Evidence statement*

There is evidence from a level 1&2+ systematic review that suggests that people who enter quit and win contests tend to be predominantly female, younger, better educated, smoking more cigarettes per day, in the contemplation or preparation stage of change, and to have made more previous quit attempts than those smokers who do not enter the contests. The picture for socio-economic status was not consistent, but a level 3 study reported a link between participation in smoking cessation interventions and income levels (e.g. higher income was associated with greater participation).

There is level 3 evidence, probably relevant to the UK adult population, that televised smoking cessation programmes are effective in reaching an ethnically diverse population of smokers.

The review (level 1&2+) of community level incentive based smoking cessation programs reported above (Hey and Perera 2005b) demonstrated a link between differential drop-out from studies and socio-economic factors (see also sections 3.1.4 and 3.2.1). Two-by-two analysis of variance showed that those lost to follow up had been smoking for fewer years ($F=6.2$, $P < 0.01$ at two-year follow up) and tended to be less educated ($F=3.5$, $P < 0.10$ at one- and two-year follow ups).

3.3. What is the evidence for the effectiveness of targeted interventions?

Whereas the previous section explored whether some forms of intervention or channels of mass media were more effective than others for different population sub-groups, in this section we explore the effectiveness of interventions that *target* particular groups. Therefore the intervention is specific to, for instance, pregnant women or manual workers.

3.3.1 GENDER SPECIFIC

Pregnant women

A before and after study (level 3) of a UK intervention evaluated a campaign targeting pregnant smokers and their partners (Campion et al, 1994). Participants included pregnant women and their partners between 15-24 years of age, from the C2DE socioeconomic groups (lower middle and working classes). The campaign highlighted the hazards of smoking during pregnancy and the importance of quitting via three advertisements aired in tabloid newspapers that acknowledged the difficulty of stopping smoking in pregnancy, highlighted the dangers of smoking for the unborn child and encouraged readers to call the 'Quit line'. Quit line offered individual counselling, information packs and referral to counselling services. The advertisements received 11 placements over 10 days and the campaign was also reported on national TV, radio and in newspapers. Although this was a before and after study, the group followed up at 10 weeks were not the same as the group interviewed prior to the intervention, therefore results should be interpreted with caution. The majority of the post-campaign sample recalled having seen at least one of the campaign's series of press advertisements. Among the target group, spontaneous awareness of advertising and publicity on smoking and pregnancy was significantly higher after the campaign (49%) than before the campaign (33%; $z = 2.92$; $p < 0.01$). Over the campaign there were no significant changes in smoking prevalence and consumption among pregnant women or partners or in the numbers of partners offering suggestions to pregnant women about their smoking behaviour. There were non-significant increases in those cutting down (from 35% to 41%; $p > 0.05$) and in those giving up altogether (from 26% to 29%; $p > 0.05$). However, among ABC1 pregnant women who smoked, there was a significant increase (from 52% to 69%; $p < 0.05$) in the numbers receiving suggestions from partners about their smoking behaviour.

Women with young children

An RCT (level 1-) undertaken in the USA tested the value of using targeted communications (Cummings et al, 1993). Young adult women (18-34 years) with young children under 6 years living in one of the 14 media market areas in the USA were targeted with an advertising campaign using broadcast and print materials to encourage smokers to telephone the Cancer Information Service (CIS) for information on quitting smoking. Materials were developed by an advertising company with input

from researchers, who then used storyboards to discuss them in focus groups with young mothers. They found that the message regarding the dangers of second-hand smoke was most likely to have an effect so the campaign slogan was: "Give them breathing room". The campaign was of 46 weeks duration, and involved three, 30 second advertisements over three periods of bought time and others as public service announcements. At the six month follow-up, 63% of women reported a quit attempt and these were slightly higher among the intervention group compared to controls (64% versus 46%; $p=0.06$). 13% reported they had quit for at least a week at the time of the follow-up compared to 15% from control groups ($P=0.89$).

No 17

Evidence statement

There is level 3 evidence, directly relevant to UK pregnant women and their partners from lower socio-economic groups, which shows that multi-channel mass media advertising has no evidence of effect on changing smoking behaviour but calls to quit lines increased by 14%.

There is level 1- evidence, possibly relevant to UK women, that interventions designed to encourage women cigarette smokers with young children to call for information on quitting have no significant effect on quit rates, but 29% of calls received from intervention sites were from the target audience compared with 10% from the control sites.

Men only

Another study (level 3) evaluated an advertising campaign 'Ready to Quit Chew?', which targeted males aged 19 to 34 in rural Nebraska who used smokeless tobacco including chewing tobacco or snuff (Boyle et al, 1999). The study objective was to promote the cessation of oral tobacco products and to increase calls to quit lines or sources of further help. Although the research design was not clearly reported, this appeared to be a non-controlled before and after study, also using focus groups to determine the barriers to quitting and to develop targeted advertising. This led to the development of advertising which used a cowboy image in paid outdoor billboards, TV and radio appearances, and newspaper reports. Harvest staff (a health department cancer project) and several visiting smokeless tobacco researchers also appeared on television and radio news programmes to talk about chewing tobacco. Self help materials such as leaflets for chewers and also for partners to encourage support were also made available. All participants were referred to the phone line for further help, where callers were offered a quit pack, including a chew substitute, information etc. Twelve months after the campaign ended, follow-up contact was completed with 104/205 (51%) of chewers who received the quit kits. A majority (70%) reported making some change, such as using less or switching brands, and 49% had made a quit attempt. The point prevalence quit rate was 11.5%. Of the respondents who made a quit attempt, the length of quit time ranged from 2 days to 12 months.

No 18

Evidence statement

There is level 3 evidence, possibly relevant to the UK population, which show a positive effect of campaigns developed to target rural male oral tobacco users with culturally appropriate materials. The point prevalence quit rate was 11.5%.

3.3.2. YOUNG PEOPLE

Seven studies were identified that evaluated interventions to increase smoking cessation amongst young people (prevention of smoking in young people did not fall within the remit of this review).

School based programmes with a multimedia component

One cluster RCT (level 1++) evaluated student outcomes of a large-scale, social-influences-based, school and media-based tobacco use prevention and cessation project in Southern California (Flay et al, 1995). The interventions were a social resistance classroom curriculum; a media (TV) intervention; health information based attention control curriculum; a social resistance classroom curriculum combined with a media (TV) intervention. Participants were 7351 7th grade pupils attending 35 Los Angeles and 12 San Diego schools. Outcomes were tobacco use (mainly prevalence but also look at cessation; no biological validation); secondary measures included intention to smoke, treatment assigned, tobacco and health knowledge; resistance skills and coping/refusal skills; attitudes to parental smoking. Length of follow-up was 2 years. There were no consistent programme effects on refusal/self-efficacy, smoking intentions, or behaviour. The authors concluded that previous reports demonstrated successful development and pilot testing of programme components and measures and high acceptance of the programme by students and parents. The lack of behavioural effects may have been the result of imperfect programme implementation or low base rates of intentions and behaviour.

No 19

Evidence statement

There is level 1++ evidence, possibly relevant to UK children, that found no consistent programme effects on smoking intentions, or behaviour of a social-influences based, school and media-based project.

Multi-channel mass media

A non-controlled before and after study undertaken in Norway (level 3+) evaluated the short-term effects of the second of three consecutive mass media campaigns designed to explore new and untested strategies to prevent smoking among adolescents (Hafstad et al, 1996). The mass media campaign consisted of three different full page newspaper advertisements, one poster, and one TV and cinema slot. TV and cinema slots were shown 167 times over 3 weeks. The three newspaper advertisements appeared once in each of the five newspapers during the same period. Posters mailed to all schools, youth organisations, sports clubs, etc., in the intervention county. The campaign was based on messages designed to produce dissonance using Festinger's Theory¹ on cognitive dissonance which asserts that people's mental representations of their beliefs, attitudes, decisions and commitments tend to co-exist in harmony (consonance) with one another, and that disharmony (dissonance) motivates cognitive changes that are designed to restore harmony. In this

¹ Festinger J.U. (1957) *A Theory of Cognitive Dissonance*. Row, Peterson, Evanston, IL.

study the intervention pointed out inconsistencies between popular opinions and values, on the one hand, and being a smoker, on the other (e.g. the inconsistency between being very concerned about appearance and being a smoker - foul breath, ruining one's skin and one's health). The participants were Norwegian adolescents (1747 boys and 1923 girls) aged 14-15 years. The outcome of smoking was assessed using self report at 14 days. Penetration of the campaign through cinema and local TV stations was estimated at 63% of the whole study cohort.

The campaign (which targeted girls in particular) obtained the best short-term effects among girls and among smokers. 12.1% (7.4% boys and 14.6% girls $P=0.019$) of the sample reported quitting smoking. Having discussed the campaign with someone predicted positive behavioural outcome among smokers. The authors concluded that the present campaign, based on dissonance-arousing messages specifically targeting girls, showed positive short-term effects among girls in particular.

A non controlled before and after study (level 3) was conducted to examine awareness of and response to an adult focused anti-smoking advertising campaign among 12-17 year olds in Australia (White et al, 2003). This was a cross-sectional survey, consisting of two population based surveys with different groups interviewed at the two time points. Adolescents from all state jurisdictions of Australia participated, totalling 400 in the first survey, and 3714 in the second. The adult targeted campaign used mass media advertising (predominantly television) to highlight some of the health consequences of smoking and aimed to get smokers to put quitting on today's agenda. To achieve this, new information about the health consequences of smoking relevant to smokers aged 18-40 years was presented in graphic television advertisements designed to evoke a negative visceral response. The first phase of the campaign ran between June and December 1997, when three main advertisements were broadcast. The second phase of the campaign ran between January and December 1998 and two new advertisements were added during this phase. The third phase of the campaign ran from January 1999 to December 2000, with another two new advertisements broadcast during 2000. Data was collected whilst the campaign was ongoing. The campaign generated quitting activity among current established smokers, with 22% (95% CI 8% to 36%) of ex-established smokers and 10% (95% CI 8% to 12%) of non-recent experimenters indicated they gave up smoking in response to the campaign. Only those adolescents who were current smokers in the national evaluation survey were asked if they thought the campaign had made them more or less likely to quit smoking. There were 49 current smokers, and around two thirds (67% (95% CI 54% to 80%)) indicated that the campaign had made it more likely they would quit. These findings suggest that using graphic messages about the negative consequences of smoking in adults may have been successful in promoting anti-smoking attitudes among adolescents. However, these findings should be interpreted with caution as the study was severely limited by a lack of control group and by using data from two different cross sectional studies, with no baseline data.

Another non-controlled before and after study (level 3) undertaken in the USA evaluated the impact of a smoking-cessation media campaign for teens on utilisation of a cessation Web site, GottaQuit.com (Klein et al, 2005). The mass media campaign advertised an internet smoking cessation site and a telephone quit helpline 'GottaQuit.com'. The campaign involved paid TV slots, radio, billboards and bus advertisements. The website included motivational material and opportunities for live

webchat with a quit coach. The advertisements talked about the website as a place to get help and advertisements featured teenagers talking about the negative effects on their life of smoking. Length of the intervention was not stated, but follow-up was one year after the intervention. Outcomes measured included self reported media use and smoking prevalence and behaviour (quit attempts). Participants were a random sample of 1000 households from school enrolment; contacted 675 and gained consent for 418 (62%). 78% of parents of this sample did survey of TV habits, attitudes etc. Follow-up was with another sample of households (same county) and a survey of 1688 school pupils.

Most teen smokers reported that they wanted to quit smoking. Quit attempts were reported as never tried to quit: - 31.7% pre-campaign v 11.8% after. Post campaign white teens were more likely to be current smokers than black teens or ethnic minorities.

No 20

Evidence statement

There is level 3 evidence, probably relevant to UK teens, that indicates that dissonance arousing messages specifically targeting girls can have positive short term effects on quit rates. 12.1% (7.4% boys and 14.6% girls, $p=0.019$) of the sample reported quitting smoking.

There is level 3 evidence, probably relevant to UK teens, that indicates that graphic mass media messages about negative consequences of smoking among adults has a positive effect on quit attempts among young people (18% of smokers attempted to quit (95% CI: 14% to 22%)).

There is level 3 evidence, probably relevant to UK teens, that indicates that media campaigns advertising internet websites can increase quit attempts.

Internet and/or computer

Three studies (two level 3 and one 2-) all undertaken in the USA evaluated the effectiveness of internet based interventions to help young people to quit smoking. (See also sections 3.1.1 and 3.1.5).

A controlled before and after study (level 2-) undertaken in the USA, conducted a process evaluation of a web-based smoking cessation intervention for college smokers entitled “Kick It!” (Escoffery et al, 2004). The process evaluation included usage, acceptability of the web-based programme, and qualitative feedback through in-depth interviews (see section 3.5). The programme involved four web-based sessions (each available for two weeks) with two to seven screens of smoking cessation information. Within each session, smokers could read stage-matched messages, submit postings to stage-matched discussion boards, tell personal stories, read common questions and answers about quitting, ask an expert questions, or take interactive quizzes. 70 participated in a baseline survey, 35 of whom were intervention participants; and in-depth interviews were conducted with six participants. Only 19 post-test surveys and 17 process evaluation surveys were completed. At the end of the intervention, five participants (14.3%) reported quitting. At six month follow-up, nine participants (25.7%) reported quitting. Although the authors acknowledge that the small numbers of participants, make it difficult to generalise from these results, perhaps the study

would have been more informative if statistical analysis was not attempted on such a small sample.

One non-controlled before and after study (level 3) undertaken in the USA evaluated the impact of a pilot study to evaluate the acceptability and efficacy of an internet-based virtual reality “world” for teen smoking cessation (Woodruff et al, 2001). Participants were 26 high-risk youth smokers attending six small rural alternative schools owing to poor academic performance or behavioural problems or both. Participants interacted (i.e., “chatted”) in real-time in an internet-based three dimensional virtual world with a trained cessation facilitator and other teen smokers. Using school computers, participants interacted over a 2-month period in seven 1-hour intervention chat sessions (one session per week), the first of which was an introductory session designed to familiarise the participant with the virtual world. Motivational interviewing, a “client-centered” non-confrontational approach to behaviour change was used. The length of the intervention was two months, and follow-up was one month post intervention. Outcomes were self reported smoking behaviour. By the 1-month follow-up, one third of the students reported abstaining from smoking during the previous week ($p=n.s$). There were significant and positive shifts in the percentage that categorized themselves as former smokers. At post-test, 39% of participants reported they were former smokers, a percentage that was maintained at 1-month follow-up ($p=0.007$). There was a significant reduction in the average amount participants reported smoking per day in the past month, a change that showed even further reductions at the 1-month follow-up (from 4.4 (SD 3.2) at baseline to 2.4 (SD 2.1) at one month post follow up, $p=0.023$). The average number of recent quit attempts at baseline was 1.61 attempts during the past year compared with 1.9 attempts at post-test and 2.2 attempts at follow-up (not significant). Intentions to quit increased significantly from baseline to post-test, an increase that was maintained at the follow-up.

A non-controlled USA study (level 3) aimed to develop and test the feasibility of an integrated Web and text-messaging programme for smoking cessation based on behavioural self-regulation theory (Obermayer et al, 2004). The intervention was a prototype programme targeting college students that integrates Web and cell phone technologies to deliver a smoking-cessation intervention. The programme guides the user through the creation and initialisation of an individualised quitting programme delivered by means of cell phone text messaging. The programme also uses assessment tools delivered with the programme Web site. The length of the intervention was six weeks. Participants were 46 USA college students aged 18 to 25 years. The outcomes were quit attempts and self reported and biochemically validated quit rates at six weeks. During the 6-week study period, 29 of the 46 participants registered on the Web site. The more conservative criterion of reported quits with validated saliva cotinine samples were used, the quit rate was 17% at six weeks (8/46). Of those who actually initiated the treatment programme and received text messages, however, the validated quit rate was 28% (8/29). The authors concluded that the apparent preference for text messaging over Web delivery suggests that text messaging should be the predominant modality of treatment delivery for this programme, and that predominantly Web-based programmes may suffer from participants' inadequate regular programme interactions. Despite the preference for text messaging interventions, it remains unclear what aspects of text messaging were beneficial in supporting the quit attempts of these college smokers.

No 21*Evidence statement*

There is level 2- evidence, probably relevant to UK college and university students, which shows a positive effect of an internet based smoking cessation intervention on smoking cessation.

There is level 3 evidence, possibly relevant to young people in the UK, that reports reductions in smoking and quit attempts in rural teens after using an internet-based virtual reality “world” for smoking cessation.

There is level 3 evidence, probably relevant to young people in the UK that an integrated Web and text-messaging programme may result in quit rates of 17%.

3.3.3. ETHNICITY /CULTURALLY SPECIFIC**Maori**

One New Zealand RCT (level 1++) evaluated whether a smoking cessation service using mobile phone text messaging was as effective for Maori as non-Maori (Bramley et al, 2005). Higher incidence of smoking related morbidity in Maori population led the researchers to focus on this ethnicity. The intervention consisted of regular, personalised text messages providing smoking cessation advice, support, and distraction. Maori text messages related to Maori language, support messages (in Maori and English) and information on Maori traditions. The control was no intervention. The main outcome of the trial was the prevalence of current non-smoking (i.e. not smoking in the past week) 6 weeks after randomisation. Secondary outcomes included self-reported non-smoking at 12 and 26 weeks. Rates were validated by cotinine level in random sample of quitters. Participants were adults aged 16 years or more, currently smoking cigarettes daily, interested in quitting, able to send and receive text messages, current owner of a Vodafone mobile phone (total number of participants 1705 (including 355 or 21% Maori)). Maori in the intervention group were more likely to report quitting (no smoking in the past week) at 6 weeks (26.1%) than those in the control group (11.2%) (RR 2.34, 95% CI: 1.44–3.79). There was no significant difference between the RR for Maori and that for non-Maori (RR: 2.16, 95%CI: 1.72–2.71). The authors concluded that a mobile phone-based cessation programme was successful in recruiting young Maori, and was shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates. This shows clear potential as a new public health initiative (see also sections 3.1.5, 3.2.3 and 3.6).

No 22*Evidence statement*

There level 1++ evidence, possibly relevant to the UK setting, that a phone-based cessation programme is successful in increasing quit rates in Maoris at 6 weeks (26.1% vs 11.2%; RR 2.34, 95% CI: 1.44–3.79). It was also shown to be as effective for Maori as non-Maori at increasing short-term self-reported quit rates.

Vietnamese American

A cohort study using a quasi-experimental control group design (level 2+) evaluated an anti-tobacco campaign targeting Vietnamese men in California (Jenkins et al, 1997). This intervention responded to the high prevalence of smoking among Vietnamese men which have been reported as ranging from 35% to 56%. Vietnamese American women were not included as participants in this intervention as their rates of smoking were so small. The intervention lasted for two years and was preceded by a pilot intervention of 15 months duration. This was a multi-component intervention involving articles in Vietnamese language newspapers, broadcasts in Vietnamese language TV, health promotion materials including a calendar, bumper stickers, lapel buttons, three posters, two brochures, and a quit kit. There was also an anti-tobacco Vietnamese-language counter-advertising campaign that included three different billboards, newspaper and TV advertisements; presentations at community events; training sessions for Vietnamese physicians; anti-tobacco activities in Vietnamese language schools; and also, Vietnamese restaurants and businesses were given Vietnamese language no smoking signs.

At post-test, the odds of being a smoker were significantly lower (OR = 0.82, 95% CI: 0.68, 0.99), and the odds of being a quitter were significantly higher (OR = 1.65, 95% CI : 1.27, 2.15), in San Francisco than in a comparison community. Smoking declined in San Francisco between the pre and post-test period, while the rate in Houston increased, resulting in a net change of -3.5 percentage points. The odds of being a smoker at post-intervention were lower for respondents who were 18 to 24 years of age or 45 years of age or older than for those who were 25 to 44 years old; odds were also lower for respondents who had at least a college education, those with good or fluent English-language proficiency, and students. The odds of being a smoker were greater for more recent immigrants and the unemployed. However, these results should be interpreted with caution as it is difficult to separate out the effectiveness of this intervention from the effects of a state-wide campaign targeting the total population that was taking place at the same time.

No 23

Evidence statement

There is level 2+ evidence that multi-component interventions including mass media materials in the Vietnamese language are effective (the odds of being a quitter were significantly higher (OR = 1.65, 95% CI = 1.27, 2.15) for intervention participants) in achieving smoking cessation in Vietnamese American men.

3.3.4. RELIGIOUS BACKGROUND

No studies were identified

3.3.5. EDUCATIONAL/OCCUPATIONAL LEVEL

No studies were identified

3.4 What is the evidence for interventions evaluating the duration, reach, calls to quit lines, dose-response or message style?

Some of the studies of effectiveness also reported on awareness, reach, exposure, weight and penetration of the interventions. Dose response refer to the relationship between exposure to (or recall of) an intervention and behaviour. Weight is used to describe a measure of the percentage of the population that will be reached by a particular communication through a particular channel. For example weight of TV advertising can be defined in terms of television ratings (one TVR is equivalent to 1% of the area population capable of accessing the commercial) and OTSs (number of opportunities to see the advert).

3.4.1 DURATION AND/OR REACH OF ADVERTISING

Awareness and penetration of different types of mass media

Two studies evaluated awareness and/or penetration of the intervention. An evaluation was undertaken (level 2-) in Switzerland of a poster campaign against passive smoking for World No-Tobacco Day (Etter and Laszlo, 2005). Four hundred posters on passive smoking were placed on billboards in the streets of Geneva and also on tramways. They did a baseline survey, then a follow-up survey and found that 36% of respondents in Geneva reported having seen posters about smoking prevention, compared to 18% beforehand ($P < 0.001$). Corresponding figures in the control town (which had not been exposed to the passive smoking poster campaign) were 18% (after) and 13% (before). The difference in before–after change between the target and control groups was significant ($p < 0.001$). The authors conclude that the poster was widely seen and remembered by the target audience, but the campaign was probably too short and isolated to have an impact on smoking behaviour.

A non-controlled before and after study undertaken in Norway (level 3) evaluated the short-term effects of the second of three consecutive mass media campaigns designed to explore new and untested strategies to prevent smoking among adolescents (Hafstad et al, 1996). The mass media campaign consisted of three different full page newspaper advertisements, one poster, and one TV and cinema slot. TV and cinema slots were shown 167 times over 3 weeks. The three newspaper advertisements appeared once in each of the five newspapers during the same period. Posters mailed to all schools, youth organisations, sports clubs, etc., in the intervention county. The participants were Norwegian adolescents (1747 boys and 1923 girls) aged 14-15 years. Penetration of the campaign through cinema and local TV stations was estimated at 63% of the whole study cohort. Altogether, more than 60% recalled having been exposed to the campaign; of these, significantly more were smokers than non-smokers among both genders and significantly more were girls than boys (68.3 versus 52.1%). Overall, adolescents had been exposed more through printed media than through electronic media. Posters had been seen the most, followed by newspaper advertisements, TV slots and then cinema slots.

Duration of the interventions

No studies were identified which evaluated the effectiveness of interventions of different duration.

No 24*Evidence statement*

There is level 2- and 3 evidence, probably relevant to the UK population, that posters or printed media can be an effective way of increasing awareness of campaigns. No studies were identified which evaluated the effectiveness of interventions of different duration.

3.4.2 RELATIONSHIP BETWEEN EXPOSURE TO MASS MEDIA AND CALLS TO QUIT LINES OR INFORMATION SERVICES

Three studies reported on the effectiveness of mass media on getting people to call quit lines or information services.

An RCT (level 1-) tested the value of using targeted communications (Cummings et al, 1993). Young adult women (18-34 years) with young children under 6 years living in one of 14 media market areas in the USA were targeted with an advertising campaign using broadcast and print materials to encourage smokers to telephone the Cancer Information Service (CIS) for information on quitting smoking. The campaign was of 46 weeks duration, and involved three, 30 second advertisements over three periods of bought time and others as public service announcements. At the six month follow-up, the number of calls for smoking cessation information was five times greater from intervention markets than from control markets. The campaign was also successful in reaching the target audience of mothers of young children. 29% of calls received from intervention markets were from the target audience compared with 10% from the control markets and 44% percent of all calls received from intervention markets came during a five week period when time was purchased to air television slots.

A controlled before and after study conducted in the USA within 14 communities (level 2+) evaluated whether a targeted communications campaign using strategically placed radio and television advertisements as well as community outreach could lead more adult African American smokers to call the Cancer Information Service for smoking cessation information and materials (Boyd et al, 1998). 'Quit Today!' was a 10 week campaign with radio as the main component backed up by some TV advertisements in a format specifically designed to reach African American audiences. This format was developed with reference to previous research on the barriers to quitting within African American communities, and focus groups to determine appropriate message content and format. Advertising was complemented by a motivational video, which was disseminated at community level. The call volume from African American smokers was significantly higher in the experimental communities than in the control communities ($p < 0.008$). The call rate from African American men was higher than expected. Before the intervention, smoking-related calls to the CIS averaged 1.9 per week from African American callers whereas during the intervention there was an average of 86 in the first wave and 40 in the second. Overall, African Americans in the experimental communities reported radio more

often than television as the way they heard about the CIS. 55% calls were from women and 45% men. Although it was hoped that this intervention might increase calls from those with lower educational levels, in fact most callers had completed high school or beyond, and only 20% had not finished high school. The authors conclude that paid targeted advertising, using radio as a primary channel, is an effective method of reaching an underserved population at risk. However, since the outcomes are related to increasing calls to a quit line rather than quit rates or relapse rates, it is impossible to say how this intervention might translate into changed smoking behaviour.

A study evaluating No Smoking Day (level 3) reported that calls to national smokers' help lines on No Smoking Day are typically four times those received on an average day (Owen and Youdan, 2006). In 2004 this increased to 5 times the average calls. Visitors to a related website also increased in the run up to the campaign.

No 25

Evidence statement

There is level 1- evidence, possibly relevant to the UK, that advertising campaigns targeting mothers of small children are effective in increasing their calls to a quit line (adverts increased calls in general fivefold in the intervention markets, and 29% of these calls were from the target audience).

There is level 2+ evidence, possibly relevant to UK populations (particularly disadvantaged groups), that targeted advertising using culturally appropriate material, with radio as the primary channel, has a significant positive effect on increasing calls to information services.

In addition, there is level 3 evidence that calls to national smokers' help lines on No Smoking Day are typically four times those received on an average day.

Relationship between exposure and smoking behaviour (dose-response)

Five studies evaluated the relationship between exposure and smoking behaviour.

A cluster randomised controlled trial (level 1+) evaluating a media-based, worksite smoking cessation, also found data related to dose response (Salina et al, 1994). In the initial 3-week phase, all participants in both conditions (intervention and related intervention groups) received self-help manuals and were instructed to watch a 20-day televised series designed to accompany the manual. At three weeks there was a significant group effect ($z=2.73$, $p<.006$) as a result of the increased recall of campaign messages in the full intervention group (66%) compared to 50% of the control group. Over the course of the study, those recalling the television messages had significantly higher cessation rates than those who did not.

A before and after study (level 3) examined the reach, effectiveness, and cost-effectiveness of a mass media-led smoking cessation campaign called 'Quit Smoking Together' (Mudde and de Vries, 1999). This was a mass media-led smoking cessation campaign based in the Netherlands that included television shows, a television clinic, a quit line, local group programmes, and a comprehensive publicity campaign. Participants were Dutch smokers 15+ yrs, numbering 1338 for the full study and 508 participants who were included at post-test and follow-up only. The latter group were

compared with the group that received pre-test contact. Groups were followed up at four months, 10 months and one year to measure recall of the campaign. Results of the study showed that most smokers were aware of the campaign, although active participation rates were low. There was a higher recall of the TV advertisements among the pre-tested group: 88% versus 48% of non pre-tested group (OR=2.34, CI= 95%), indicating that this enhanced their awareness of the campaign. Dose-response relationships were found between exposure to the campaign and quitting: the more episodes watched or recalled the higher the incidence of self reported quitting or abstinence from smoking. The follow-up point prevalence abstinence rate attributable to the campaign was estimated to be 4.5% after control for test effects and secular trends. The authors concluded that the campaign may have substantially increased normal cessation rates.

A non-randomised controlled trial (level 2+) evaluated the effectiveness of the Health Education Authority for England's anti-smoking television advertising campaign to motivate smokers to give up, and to prevent ex-smokers to relapse (McVey and Stapleton, 2000). Participants were adult smokers (over 16 years of age) and ex-smokers living in four TV regions in central and northern England. Of a total of 5468 participants (2997 smokers; 2471 ex-smokers), approximately 58% of the smoking group were female, and in ex-smokers this was approximately 51%. The mean age of smokers was approximately 44 years; ex-smokers were approximately 55 years. Around 68% of smokers and 54% of ex-smokers were manual workers. One region received no intervention (control), two regions received TV anti-smoking advertising, and one region received TV anti-smoking advertising plus locally organised anti-tobacco campaigning (TV media + LATC). The TV advertisements were screened in two phases over 18 months. During the first phase, the intensity of the advertising was varied between TV regions. There was no evidence of any intervention effects after the first phase of the TV media campaign, including no effect of varying the intensity of the advertisements.

Another study (level 3) undertaken in the USA discussed a multi-component internet based smoking cessation programme (Lenert et al, 2003). The authors found a link between the amount of exposure to educational materials and the chances of quitting. Exposure to educational materials appeared to have increased the chances of quitting as those viewing zero, one or two lessons had a 29% chance; those viewing three or four lessons had an 82% chance; and those viewing five or more lessons had a 45% chance of quitting ($p=0.012$).

A before and after panel study conducted in the USA (level 3) evaluated the relationship between exposure to state-sponsored anti-tobacco advertising and smoking cessation (Hyland et al, 2006). Participants ($n=2061$) were current smokers recruited from the COMMIT study, aged between 25-64 years. Little detail was provided by the authors regarding the intervention itself, which appeared to consist of televised anti-smoking advertising, as well as whatever interventions were associated with the COMMIT programme. Results were reported as the relative risk for quitting, which was estimated to be 10% higher for every 5000 units of exposure to state anti-tobacco television advertising over the 2-year period. However these results should be interpreted with caution as the authors report that this did not achieve statistical significance. The association was even larger among those who reported that the level of information in the media about the dangers of smoking had increased 'a lot'

between 1993 and 2001 (RR = 1.19, 95% CI: 1.03-1.38). The authors note the following limitations: the study did not use individual level media exposure but used aggregate data for the entire media market and applied it to individuals. This should lead to an underestimate of effects in the general population of smokers. Furthermore, other factors may account for the observed findings. For example, state-level tobacco control policies often accompany state control media campaigns and are liable to confuse the impact of any one intervention.

No 26

Evidence statement

There is level 1+ evidence, probably relevant to UK workplaces, that television message recall is associated with increased smoking cessation rates. There is level 3 evidence, probably relevant to the UK, which indicates that the more TV episodes watched or recalled the higher the incidence of self reported quitting or abstinence from smoking.

There is level 3 evidence, probably relevant to the UK, which indicates that the effectiveness of a web-based cessation programme is increased according to the amount of exposure to educational materials.

There is level 3 evidence, probably relevant to the UK adult population, that the relative risk for quitting was estimated to be 10% higher for every 5000 units of exposure to state anti-tobacco television advertising over a 2-year period. However, these results did not achieve statistical significance.

There is level 2+ evidence, directly relevant to the UK population that varying the intensity of TV adverts does not have an effect on smoking cessation.

3.4.3. MESSAGE STYLE (SUPPORTIVE, FEAR AROUSING, 'HOLISTIC' ETC.)

Some mass media campaigns adopt a particular message or theme intended to produce a desired response among the target audience. The content of the messages can range from the negative health consequences of smoking; health benefits of quitting; social and peer norms messages which challenge perceptions of the normality and acceptability of smoking; and predatory practices of the tobacco industry. The messages can be presented in a way that evokes fear or humour. Four studies evaluated the effectiveness of different types of messages.

Multiple messages

One USA non controlled before and after study (level 2-) of 1544 people aged over 18 years assessed adults' receptivity to the Massachusetts television anti-tobacco campaign (Biener et al, 2000). Reactions were examined as a function of respondents' demographics, baseline tobacco control attitudes, changes in smoking status during the campaign, and advertisements' affective qualities. The advertisements ranged in content from dangers of environmental tobacco smoke; tips on quitting; health benefits of quitting; and predatory practices of the tobacco industry. Outcomes were reported exposure to television advertisement; perceived effectiveness of nine specific advertisements each. 56% of respondents reported seeing anti-tobacco advertisements

at least once a week during the preceding three years. The average effectiveness level for all advertisements recalled on a 0–10 scale was 7.29, and did not differ by smoking status group. Advertisements eliciting strong negative emotions (sadness and fear) were rated most effective by quitters, non-smokers, and by smokers who at baseline were planning to quit soon. Humorous, entertaining advertisements were seen as ineffective by all groups. The authors concluded that The Massachusetts anti-tobacco campaign achieved high levels of penetration into the population and was well received by both smokers and non-smokers. The results suggest that advertisements depicting suffering as a result of tobacco use may be instrumental in promoting cessation or reinforcing the decision to quit.

Messages to produce dissonance

A non-controlled before and after study undertaken in Norway (level 3) evaluated three consecutive mass media campaigns including both printed and electronic material (Hafstad et al, 1996). It consisted of three different full page newspaper advertisements, one poster, and one TV and cinema slot. The messages were designed to produce dissonance, by clearly pointing out inconsistencies between attitudes that were believed to be widespread among the target population on one hand, and being a smoker, on the other. For instance, the inconsistency between being very concerned about appearance and being a smoker, which produces a foul breath, and is detrimental to the skin and health in general. Overall, smokers had stronger affective reactions towards the campaign than non-smokers, and girls reacted more strongly than boys. Positive affective reactions were the most important predictor of positive behavioural outcome. Furthermore, having discussed the campaign with someone predicted a positive behavioural outcome among smokers. 12.1% (7.4% boys and 14.6% girls $p=0.019$) of the sample reported quitting smoking. However, there was no control group, so it is not possible to conclude that these messages are more effective than others.

Negative, graphic images of smoking

A non controlled before and after study (level 3) was conducted to examine awareness of and response to an adult focused anti-smoking advertising campaign among 12-17 year olds in Australia (White et al, 2003). To achieve this, new information about the health consequences of smoking relevant to smokers aged 18–40 years was presented in graphic television advertisements designed to evoke a negative visceral response. The campaign generated quitting activity among current established smokers, with 18% (95% CI, 14% to 22%) saying they had tried to give up smoking, 27% (95% CI, 23% to 31%) saying they had cut down the number of cigarettes they smoked, and 26% (95% CI, 22% to 30%) saying they had thought about quitting. These findings suggest that using graphic messages about the negative consequences of smoking in adults may have been successful in promoting anti-smoking attitudes among adolescents. However, as the authors acknowledge, these findings should be interpreted with caution as the study was severely limited by a lack of control group and by using data from two different cross sectional studies, with no baseline data.

Negative versus positive messages & short versus long messages

One study (level 2-) evaluated the use of electronic message strips advertising a quit line in a USA hospital (Johnson et al, 1995). This study measured calls to a quit line, smoking cessation rates and also compared the effectiveness of two different styles of message – one negative and one positive. For instance, the positive message was

“Smokers, join the 1.5 million who will quit smoking this year. Call ...” compared to “Smoking causes cancer. To quit smoking, call”. The authors found that a shorter, more negative message is more effective than a longer, more positive message. As discussed earlier, there are severe limitations to this study, indicating that the results presented are insufficient evidence of effect. (See also section 3.1.2).

No 27

Evidence statement

There is level 2- evidence, which is probably relevant to the UK population, which suggests that advertisements depicting suffering as a result of tobacco use may be instrumental in promoting cessation or reinforcing the decision to quit.

There is level 3 evidence, probably relevant to UK teens, that indicates that dissonance arousing messages specifically targeting girls can have positive short term effects on quit rates. There is also level 3 evidence that shows that graphic mass media messages about negative consequences of smoking among adults has a positive effect on quit attempts among young people (18% of smokers in the sample attempted to quit (95% CI: 14% to 22%)). Finally, there is level 2- evidence providing insufficient evidence that longer positive messages are less effective than short, negative messages.

3.5 How acceptable and/or appropriate is the mass media and/or community intervention to the intended recipients?

Four studies undertook some process evaluation and assessed usage and acceptability of the interventions. All of these evaluations were of web based interventions.

One qualitative study (semi-structured telephone or face-to-face interviews) undertaken in Australia aimed to determine the feasibility of a method to examine the online behaviour of consumers seeking smoking cessation resources (Frisby et al, 2002). The reasons and methods consumers use to access and assess the quality of these resources were of particular interest. The Victorian Quit Programme is the major Australian state agency providing a range of support to smokers wanting to quit and to health professionals whose roles include encouraging smoking cessation. It produces a range of written materials, mostly reproduced on its Web site, and has an extensive state-wide telephone service. Callers to that service are offered a set of printed cessation resources and/or access to trained cessation counsellors. The study included 13 participants of whom 4 were males and 9 were females, and were aged 19 to 64 years (median 30-39 years). All participants were recruited via the Quit web site and all participants were currently trying to stop smoking. Participants sought online smoking cessation resources for reasons of convenience, timeliness, and anonymity — and because their current information needs were unmet. They employed simple search strategies and could not always find information in an efficient manner and used several different strategies to assess the quality of online health resources. The authors concluded that consumer online behaviour can be studied using a combination of survey, observation, and online surveillance. However, further qualitative and observational research is required to harness the full potential of the internet to deliver public health resources.

An RCT undertaken in the USA (level 1+) evaluated the short term (90 days) efficacy of an automated behavioural intervention for smoking cessation, the '1-2-3 Smokefree' programme, delivered via an internet website (Swartz et al, 2006). The intervention consisted entirely of a website programme designed to be an automated approximation of the experience a smoker would receive when working with a live smoking cessation counsellor and included behavioural interventions and support. A substantial majority of users viewed at least one optional section within modules (70.2%; n = 120). Fifty six per cent of users (n = 96) viewed the quit plan module and set an actual quit date; the same percentage of users viewed the descriptions of pharmacological aids. However, only a minority of subjects viewed optional sections within each of the five major content modules: overcoming barriers to cessation (viewed by 48.5% (n = 83) of users); avoiding situations that prompt cravings (viewed by 42.1% (n = 72) of users); dealing with cravings (viewed by 42.1% (n = 72) of users); and benefits of quitting smoking (viewed by 34.5% (n = 59)). None of the demographic or cigarette use variables predicted use of specific programme sections.

A controlled before and after study (level 2-) was undertaken in the USA and Canada to both develop and evaluate a smoking cessation website (Feil et al, 2003). The programme was rated as easy to use, and the social support group component was used most frequently. Among a variety of traditional and internet-based recruitment strategies, the most successful made use of internet user groups and search engines.

On a six-point scale from very easy (0) to very difficult (5), 63% rated the web site as easy or very easy to use (mean=1.11±1.00). The Ask-an-Expert section was rated most highly (.80±1.30).

A controlled before and after study (level 2-) undertaken in the USA, conducted a process evaluation of a web-based smoking cessation intervention for college smokers entitled 'Kick It!' (Escoffery et al, 2004). The process evaluation included usage, acceptability of the web-based programme, and qualitative feedback through in-depth interviews. Formative research was conducted with the target community to determine smoking patterns and to develop web-based materials, supplemented by interviews with experts/researchers. The programme involved four web-based sessions (each available for two weeks) with two to seven screens of smoking cessation information. Within each session, smokers could read stage-matched messages, submit postings to stage-matched discussion boards, tell personal stories, read common questions and answers about quitting, ask an expert questions, or take interactive quizzes. 70 participated in a baseline survey, 35 of whom were intervention participants; and in-depth interviews were conducted with six participants. Only 19 post-test surveys and 17 process evaluation surveys were completed. The smokers reported high usage of the intervention and satisfaction with the intervention in that it helped to raise their consciousness about quitting, encouraged them to set behavioural goals, provided stages of change feedback, and offered interactivity in presenting information and strategies about quitting.

No studies were identified which evaluated the views of those delivering the intervention.

No studies were identified which assessed inequalities of access

No 28

Evidence statement

Four studies (both qualitative and quantitative) evaluated outcomes such as the acceptability and usage of web based interventions. One qualitative study reported that participants sought online smoking cessation resources for reasons of convenience, timeliness, anonymity and because their current information needs were unmet. Another level 1+ study, probably relevant to the UK population, found that the optional sections of an intervention most used/viewed were setting a quit date, and the descriptions of pharmacological aids. A level 2- study reported that the Ask-an-Expert section was rated most highly. The fourth study (level 2-) reported that the intervention helped to raise consciousness about quitting, encouraged behavioural goals, provided stages of change feedback, and offered interactivity in presenting information and strategies about quitting.

No studies were identified which evaluated the views of those delivering the intervention. No studies were identified which assessed inequalities of access.

3.6 What are the unintended outcomes of the intervention (both adverse and beneficial)?

While the effectiveness of interventions is an important consideration, it is also necessary to consider the unintended consequences or potential adverse effects of any intervention and we report this where data is available. Adverse effects might include for instance:

- Social consequences such as stigmatisation of smokers or increased conflict between smokers and non-smokers
- Increase in awareness of the effects of involuntary smoking
- Increases in smoking experimentation among children and young people

The review of interventions including mass media (Hopkins et al, 2001) found no reports of adverse effects in the twelve included studies.

In a Norwegian study of adolescents (Hyland et al, 2006), media campaigns found that although 12.1% of smokers reported quitting smoking, approximately 0.5% non-smokers of both genders reported that the campaign had led to a decision to start smoking.

A New Zealand RCT (level 1++) aimed to determine the effectiveness of a mobile phone text messaging smoking cessation programme. During the 26 week study period there was no difference in the rate of pain in the thumb or finger joints during texting; 52 (6.1%) in the active group compared to 48 (5.6%) in the control group (RR 1.08, 95% CI 0.74 to 1.59; $p = 0.7$). There was also no difference in car crash rates: 38 (4.5%) in the active group versus 43 (5.0%) in the control group (RR 0.88, 95% CI 0.56 to 1.35; $p = 0.6$). Overall, a total of five crashes occurred during or after sending a text message and three occurred while smoking (Rodgers et al, 2005).

4. Discussion

In this section we bring together much of the preceding evidence to offer the reader an overview of the effectiveness of mass media led interventions in smoking cessation and relapse prevention. Where possible, we shall explore both channels of mass media and intervention components or approaches to reflect on questions of effectiveness. Finally, we discuss the limitations and gaps in the current evidence base, which require further research.

As discussed earlier, mass media interventions are those that do not rely on face to face contact and are developed for a large population. As is evident from this review, mass media are often one component of multifaceted interventions (including self help interventions, education and legislation). As well as encouraging people to quit, they can reinforce the socially unacceptable character of tobacco use through information on the health, social and economic consequences of smoking.

Although some of the interventions reviewed in this document do not target a specific population, lessons from the field of social marketing indicate that the effectiveness of an intervention may be increased by targeting the needs of consumers (Kotler et al 2001). Targeting the needs of consumers might ideally mean that every individual should receive their own uniquely targeted message, but given the nature of mass communications, this is neither practical nor desirable in either the use of time or resources. Another method of speaking to the specific needs of consumers is by grouping people according to the similarity of their needs (Brassington and Pettitt, 1997). This segment of the population is then separated into 'target markets' (Devlin et al, 2004 citing Frain, 1986; Wilson and Gilligan, 1997; Brassington and Pettitt, 1997; Evans 2001) and this approach is used by some of the interventions reviewed here.

Developing culturally appropriate advertising materials, which target particular ethnicities or communities has been showed to be effective by a number of studies. These generally drew on a combination of previous research in the field to determine barriers to successful quit attempts and then used focus groups to test message style and content for advertisements. These ranged from targeting rural Nebraskan oral tobacco users with cowboy images (Boyle et al, 1999), using gospel, jazz music and images appropriate to African American communities (Boyd et al, 1998), or targeting the community with own language materials as in the case of Vietnamese Americans (Jenkins et al, 1997). However those designing interventions should be mindful that ethnicity is also crosscut by different income and educational levels and should be sensitive to the pitfalls of developing campaigns that may simply reproduce social or cultural stereotypes.

There is also some good quality evidence that the use of technology such as mobile phones can be effective, and offers the potential to deliver culturally specific materials to targeted groups. There is also evidence that the internet can be an effective way of delivering interventions, and may be a particularly appealing channel of communication for young people. Although there are difficulties of evaluating web-based smoking cessation sites, the anarchic nature of the internet may actually represent one of its strengths. What researchers might express in terms of 'loss to

follow-up' may actually represent smokers who dip in and out of these interventions, accessing the components that are most useful and relevant to them. This may constitute a potentially more empowering means for smokers to approach cessation, drawing on the services that are most appropriate to their own individual needs.

Having some control over when advertising might be aired could also have an important role to play in addressing the needs of consumers. For instance, a study in the USA found that the take up of the advertising message was much higher when media time was paid for rather than relying on public service announcements (Cummings et al, 1993). Another take home message we might infer from this is that if there were some control over when a message was aired, it might better target the intended audience. For instance, by airing smoking cessation or prevention messages at appropriate times of day/evening to suit the lifestyles of the target market. However, audiences are not passive recipients of mass media messages, but are complex, sophisticated and active in the communications process, attending to communications that are relevant and of interest to them and their lifestyles (Devlin et al, 2004 citing Hedges, 1974; Lannon and Cooper, 1983; Duckworth, 1995). In order to maximise effectiveness then, media campaigns have to be of relevance and interest to the target group. This has particular significance for the style of message used in counter-marketing and has an impact on recruitment to smoking cessation interventions.

It is also important to note that although mass media campaigns are often assumed to be synonymous with 'social marketing', in fact they are just one of the tools that social marketers consider using when devising attractive offerings (Hastings & McDermott 2006). Other approaches reviewed here include education and information provision, providing or encouraging social support to quit smoking, the use of expert advice and counselling and so on, often appearing as one or more components of a mass media intervention. However due to the paucity of controlled trials (and indeed the difficulty of designing and conducting them for mass media, population level interventions) it is not possible to unravel what components of these interventions might be more effective than others.

There is some evidence that social support may be an important component of some mass media interventions. For instance, Hey and Perera (2005a) found that one of the elements that seemed to lead to success in a quit and win contest were supportive others such as family, friends, or workmates. Many of the studies reviewed here include social support in some form as a component of the intervention and there are some interesting links to be drawn to studies that involve community networks for support as well as those that involve peer group support. For instance, Salina et al (1994) found that in a controlled study of workplace smoking cessation, adding peer group support as a component to the mass media cessation materials increased the success of the program compared to the control group that did not receive the peer group support. Furthermore, as Hastings and McNeil (2006) argue, the ideal approach to improving cessation success is relationship marketing built on networking with successful quitters. They argue that the most effective recruitment to smoking cessation services could be done by maintaining relationships with successful quitters (the 'delighted customers') as either paid helpers or volunteers: recruiting, disseminating, marketing the smoking cessation intervention and/or leading self help cessation groups.

Finally, there is some evidence that mass media can increase calls to quit lines, or request for self help manuals. What is less clear, however, is whether the increase in calls results in an increase in cessation rates.

Gaps in the evidence

Although this review was wide-ranging in scope and included a total of 44 papers (reviews and primary studies), nevertheless we were unable to find high quality evidence of effectiveness in a number of areas. However, as discussed in the background, the use of experimental designs (e.g. RCTs) in the evaluation of mass media interventions is often neither appropriate nor feasible. Therefore the evidence is not as high quality as in other areas of healthcare and the relationship between cause (intervention) and effect is not always able to be proved. Given that mass media interventions are hard to evaluate using traditional experimental methods, it was disappointing that the use of other types of evidence was not employed more fully. For example, only one interrupted time series was identified, and little formative process evaluation using qualitative methods (or mixed methods) were undertaken. Evaluation of mass media interventions such as No Smoking Days may be more appropriate by using countries as quasi controls. For example, a study was recently undertaken to investigate the impact of the UK's comprehensive ban on tobacco promotion on adult smokers' awareness of tobacco marketing in the UK relative to Canada, the United States and Australia (Harris et al, 2006).

The tables in section 5 summarise the evidence included within this review, and below we discuss the gaps in this evidence base in more detail.

Although interventions are often described as if they occur as a single strand within a homogenous population, in fact, a mass media intervention may be multi-faceted and involve more than the highly visible television, radio or other form of campaign (Hastings & McDermott, 2006). Furthermore, there is a need to situate any interpretation of the results of a mass media intervention within the socio-economic profiles of participants – so that, for instance, an RCT that was found to be effective is not blindly transferred to another population group without giving due consideration to how this might be received by that group or indeed found to be appropriate to their needs (Bonnell et al, 2006). The inclusion of qualitative studies may therefore illuminate the finer, contextual detail of the process of the intervention that may not be captured by RCTs, reveal more data regarding the socio-economic backgrounds of participants and also provide data on the processes of the particular intervention. Unfortunately, we found little in the way of qualitative studies that might inform how an intervention was implemented, or components of the intervention that were most effective. Presumably qualitative studies have indeed been undertaken but were not captured within our search strategy as they are either unpublished reports or haven't been indexed in a way that would be picked up by our search strategy. Clearly there is a need for mixed methods evaluations that integrate the qualitative components of the study more fully with effectiveness data. At present, the qualitative components of studies are mostly reported as focus group work that informs the development of mass media advertising but is not followed through into the evaluation.

Effectiveness of the different components of mass media interventions

Many of the studies use multiple forms of mass media and also include different types of information and interventions (e.g. quit lines plus community interventions plus tobacco-advertising bans). The problem with these complex interventions is that little evaluation is carried out to assess which components are effective, ineffective, or perhaps even harmful. For example, mass media is often the channel by which information about interventions was conveyed to the public (e.g. quit lines, self help manuals) but little is known about which type of mass media is most effective in getting the message across. However, it is acknowledged that a mix of media (e.g. posters and television) may work synergistically to effectively support the different objectives of each campaign and therefore it is not possible to separate out individual component effects.

Computer/internet based smoking cessation sites

Although growing numbers of studies now focus on smoking cessation via the internet, little is known about what components of these sites are more successful than others. Etter (2006) suggests that there are many of dubious quality and their popularity has yet to be proven with rigorous evaluation. Furthermore, as groups of current and former smokers form spontaneously in discussion forums on the internet, this is a new feature in the field of addiction treatment. These discussion forums have not yet been the object of much scientific research (Etter, 2006). Determining the relative contribution of a specific website presents difficult challenges, given that typical internet users appear to sample various sites. Future research on web-based interventions also must include component-level analyses to determine which aspects of web-based intervention are effective for specific kinds of people. For example, does an effective programme require human moderation or can it be effective if it is fully automated (thus potentially having a much lower cost) (Feil et al, 2003).

Assessing health inequalities and targeting high risk groups

It has been argued that despite the overall decline in cigarette smoking prevalence, social class inequalities in smoking are likely to persist, or even to widen. A path analysis suggested that smokers from a high social class are likely to use effective resources (e.g., booklets, pamphlets, quit line, nicotine replacement therapy) for smoking cessation, which leads to a relatively higher smoking cessation rate compared to those from a low social class (Honjo et al 2006). Therefore, as mentioned in the background to this report, health promotion interventions may inadvertently increase health inequalities. This may happen in several ways. Firstly, the mass media intervention may be designed in a way so that the content or presentation is not appropriate for every smoker. For example, it might be written in a way which is difficult for everyone to understand, or is culturally inappropriate for certain groups. Targeted interventions can overcome some of these issues. Secondly the mass media intervention may not address issues such as access and barriers to use (particularly in interventions which use new or expensive technologies). Thirdly the intervention itself may be more effective in some groups than others (for example in highly educated people). Very few studies actually evaluated the differential effectiveness in subgroups of the sample, or assessed the characteristics of those people who participated in the intervention. Therefore, at the present time, little is known about the effect such interventions have on health inequalities. The few studies that did look at differential effects or characteristics of participants did indicate that there are likely to be differences in both these areas. For example there is some evidence that

interventions may be more effective for women than men. Although some interventions did target women, further mass media studies may need to be developed which target particular sub groups such as heavy male smokers, or lower income groups. As stated above, where there has been successful targeting of lower income smokers, this should be capitalised on by extending contact with those embedded in the communities with the highest degrees of health inequalities (Hastings and McLean, 2006).

Message style

Although a few studies evaluated different message styles (e.g. fear arousing), there was not enough evidence to determine which messages were more effective than others. Furthermore, as Hastings and MacFadyen (2002) argue, in fact smokers and reasons for smoking are complex and smokers are not simply compelled to quit because of fear/negative messages. Most, if not all, smokers are well aware of the health and social consequences of smoking and are represented by a range of social and cultural groups. We should not expect any one style of message to resonate effectively with all regardless of age, gender and so on.

Duration of interventions

No studies were identified which evaluated effectiveness of different durations of interventions. Given the longevity of the tobacco brands and the ongoing success of tobacco companies however, a degree of continuity would seem to be desirable.

Barriers

No studies were identified which evaluated barriers to the delivery of an intervention.

Other outcomes

None of the included studies evaluated outcomes such as motivation and confidence to make a quit attempt. In addition few of the studies evaluated adverse effects such as stigmatisation of smokers or increased conflict between smokers and non-smokers

5. Evidence Tables

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Study details	Methods and quality score	Population	Objective	Intervention	Results
Biener 2000 USA	Design Before and after (non-controlled) Follow-up 3 years Validation Self Report Quality Level 3	Adults (over 18 years old); TV viewers; living in Massachusetts.	To assess adults' receptivity to the Massachusetts television anti-tobacco campaign. Reactions were examined as a function of respondents' demographics, baseline tobacco control attitudes, changes in smoking status during the campaign, and advertisements' affective qualities.	Anti-smoking media campaign involving TV advertising.	56% of respondents reported seeing anti-tobacco advertisements at least once a week during the preceding three years. The average effectiveness rating for all advertisements recalled on a 0–10 scale was 7.29, and did not differ by smoking status group. Advertisements eliciting strong negative emotions (sadness and fear) were rated most effective by quitters, non-smokers, and by smokers who at baseline were planning to quit soon. Humorous, entertaining advertisements were seen as ineffective by all groups.
Boyd 1998 USA	Design Controlled before and after Follow-up 1 year Validation Not stated Quality Level 2+	African Americans in 14 USA communities	To evaluate whether a targeted communications campaign utilising strategically placed radio and television advertisements in combination with community outreach could lead more adult African American smokers to call the Cancer Information Service for smoking cessation information and materials.	Quit Today! Targeted radio and TV advertisements encouraging calls to a quitline. Mostly radio with limited TV ads, plus a motivational video disseminated at community level.	The call volume from African American smokers was significantly higher in the experimental communities than in the control communities ($P < 0.008$). The call rate from African American men was higher than typically observed. Before the intervention, smoking-related calls to the CIS was an averaged of 1.9 per week from African American callers - during the intervention it was an average of 86 in wave 1 and 40 in the 2nd. Overall, African Americans in the experimental communities reported radio more often than television as the way they heard about the CIS. 55% calls were from women and 45% men. Although it was hoped to increase calls from lower educated groups, in fact most calls were from those who had completed high school or beyond; only 20% had not finished high school.

Study details	Methods and quality score	Population	Objective	Intervention	Results
Boyle 1999 USA	Design Before and after Follow-up 1 year Validation Self Report Quality Level 3	Rural Nebraskan oral tobacco users.	To promote the cessation of oral tobacco products and to increase calls to quitlines / sources of further help.	“Ready to Quit Chew?” used a cowboy image as a part of a targeted campaign including paid outdoor billboards, TV and radio appearances, and newspaper reports referring to a quitline. Also self help materials.	Twelve months after the campaign ended, follow-up contact was completed with 104/205 (51%) of chewers who received the quit kits. A majority (70%) reported making some change, such as using less or switching brands, and 49% had made a quit attempt. The point prevalence quit rate was 11.5%. Of the respondents who made a quit attempt, the length of quit time ranged from 2 days to 12 months.
Bramley 2005 NZ	Design RCT (Individual) Follow-up 26 weeks Validation Biochemically validated Quality Level 1++	New Zealand Maori and non-Maori	To determine whether a smoking cessation service using mobile phone text messaging is as effective for Maori as non-Maori.	Regular, personalised text messages providing smoking cessation advice, support, and distraction in both Maori and English.	Participants included 355 Maori and 1350 non-Maori. Maori in the intervention group were more likely to report quitting (no smoking in the past week) at 6 weeks (26.1%) than those in the control group (11.2%) RR 2.34, 95% CI: 1.44–3.79. There was no significant difference between the RR for Maori and that for non-Maori (RR: 2.16, 95%CI: 1.72–2.71).
Campion 1994 UK	Design Before and after (non-controlled) Follow-up 10 weeks	Pregnant women (and partners); 15-24 years, in the C2DE socioeconomic groups (lower	The research was designed to measure awareness of the campaign and to measure changes in knowledge and beliefs relating to smoking and pregnancy, smoking prevalence and	Three advertisements were aired in tabloid newspapers that acknowledged the difficulty of stopping smoking in pregnancy, highlighted the dangers of smoking for the unborn child and encouraged	Two surveys were conducted among pregnant women throughout England, before (n = 625) and after (n = 607) a mass media campaign on smoking and pregnancy. The majority of the post-campaign sample recalled having seen at least one of the campaign's series of press advertisements. Among the target group, spontaneous awareness of advertising and publicity on smoking and pregnancy was significantly higher after the campaign (49%) than before the campaign (33%; $z = 2.92$; $p <$

Study details	Methods and quality score	Population	Objective	Intervention	Results
	Validation Self Report Quality Level 3	middle and working classes)	consumption, the number of callers to a cessation helpline and in the role played by partners.	readers to call Quitline. Quitline offered individual counselling, information packs and referral to counselling services.	0.01). Among smokers there was a significant increase in knowledge of the dangers to pregnant women from smoking, from 10% to 19%, ($2 = 2.29$; $p < 0.05$). There was also a significant increase (from 59% to 66%; $z = 2.54$; $p < 0.01$) among the total sample in those considering smoking to be very dangerous to the unborn child; a significant increase from 74% to 80% ($z = 2.50$; $p < 0.05$) in those showing an understanding of the term passive smoking and in those considering passive smoking to be very dangerous (from 17% to 25%; $z = 3.45$; $p < 0.05$). During the campaign there was a 14% increase in the number of calls to a cessation helpline from pregnant women. Over the campaign there were no significant changes in smoking prevalence and consumption among pregnant women or partners or in the numbers of partners offering suggestions to pregnant women about their smoking behaviour. There were non-significant increases in those cutting down (from 35% to 41%; $z = 1.36$; $p > 0.05$) and in those giving up altogether (from 26% to 29%; $z = 0.74$; $p > 0.05$). However, among ABCI pregnant women who smoked, there was a significant increase (from 52% to 69%; $2 = 1.99$; $p < 0.05$) in the numbers receiving suggestions from partners about their smoking behaviour.
Cummings 1993 USA	Design RCT (Cluster) Follow-up 6 months Validation Not stated Quality Level 1-	Young adult women (18-34 years) with young children	To test the value of using targeted communications to motivate and assist cigarette smokers to stop smoking.	Advertising campaign using broadcast and print materials to encourage smokers to telephone the Cancer Information Service (CIS) for information on quitting smoking.	<p>Results from the 46-week campaign show that the number of calls for smoking-cessation information was five times greater from intervention markets than from control markets. The campaign was also successful in reaching the target audience of mothers of young children. Twenty-nine percent of calls received from intervention markets were from the target audience compared with 10% from the control markets. Forty-four percent of all calls received from intervention markets came during a 5-week period when time was purchased to air television spots.</p> <p>63% of women followed up reported a quit attempt and these were slightly higher among the intervention group compared to controls</p>

Study details	Methods and quality score	Population	Objective	Intervention	Results
					(64% versus 46%; $P=0.06$). 13% of all followed up reported they had quit for at least a week at the time of the follow-up. The quit rate was 13% from the intervention group compared to 15% from control groups ($P=0.89$).
Elder 1991 USA	Design Before and after (non-controlled) Follow-up 8 weeks Validation Self Report Quality Level 3	Residents of San Diego County, California.	To describe and evaluate a community-sponsored smoking cessation contest. Adapted from previous efforts, 'Quit-to-win' relied solely on community resources.	A large recruitment campaign was mounted through TV and radio, press and registration forms in schools, health facilities, worksites, restaurants etc to advertise the quit lottery. Smokers had to quit for 8 weeks and return a quit card to be eligible.	284 (35%) self-reported they had quit two months after the contest. Joiners and non-joiners were categorised according to income group: most effective media source across the groups was TV with higher influence linked to lower income. People with lower incomes were significantly more influenced by friends and relatives on decisions to join the contest ($p<.05$).
Escoffery 2005 USA	Design Controlled before and after Follow-up End of intervention and 6 months Validation Not stated Quality Level 2-	Young adult smokers attending college	The purpose of this study was to develop and conduct a process evaluation of a web-based smoking cessation intervention, Kick It!, for college smokers.	'Kick it!' involved a web-based cessation programme including information, discussion boards, ask an expert questions, stage matched messages, and interactive quizzes.	The smokers reported high usage of the intervention and satisfaction with the intervention in that it helped to raise their consciousness about quitting, encouraged them to set behavioural goals, provided stages of change feedback, and offered interactivity in presenting information and strategies about quitting. At the end of the intervention, five participants (14.3%) reported quitting. At 6-month follow-up, nine participants (25.7%) reported quitting.

Study details	Methods and quality score	Population	Objective	Intervention	Results
Etter & Laszlo 2005 Switzerland	Design Before and after (non-controlled) Follow-up Approx 2 weeks - 2 months Validation Not stated Quality Level 2-	Residents of Geneva	To evaluate a poster campaign aimed at raising awareness of ETS.	Posters on passive smoking were placed on billboards and also on tramways. A3 posters were mailed to schools, leisure centres, kindergartens, paediatric clinics, obstetrics clinics and pharmacies.	Following the poster campaign, 36% of respondents in Geneva reported having seen posters about smoking prevention, compared to 18% beforehand ($P < 0.001$). Corresponding figures in Neuchâtel were 18% (after) and 13% (before). The difference in before–after change between the target and control groups was significant ($P < 0.001$). The poster had no effect on cigarette consumption or intention to quit.
Etter 2005 Switzerland	Design RCT (Individual) Follow-up 7 days and 2.5 months Validation Self Report Quality Level 2-	People buying over the counter NRT and visitors to the website.	To compare the efficacy of two Internet-based, computer-tailored smoking cessation programmes.	An original online, interactive smoking cessation programme with tailored, personalised counselling letters based on participant characteristics, followed by monthly email reminders. Followed by tailored email 1 and 2 months later.	The baseline questionnaire was answered by a total of 11969 current (74%) and former (26%) smokers, and the follow-up survey by 4237 people (35%). In an ITT analysis, abstinence rates in baseline current smokers were respectively 10.9% and 8.9% ($OR=1.24$, 95% CI 1.08-1.43, $P=.003$) in the original and modified programmes, and 25.2% and 15.7% ($OR=1.81$, CI 1.51-2.16, $P<.001$) in baseline former smokers. They found statistically significant differences in quit rates in smokers in the contemplation stage favouring the original programme ($OR=1.54$, CI 1.18-2.02, $P=.002$), no between-group differences in quit rates were observed in smokers in the pre-contemplation ($OR=1.07$, CI 0.36-3.14, $P=.91$) and preparation ($OR=1.15$, CI 0.97-1.37, $P=.10$) stages of change.
Feil 2003 Internet based - but participants	Design Controlled before and after	People with internet access over 18 years	To develop a cessation web site and conduct a short-term evaluation of it, examining recruitment approaches, web site use	Internet-based smoking cessation website including: motivational material, guidance in dealing with cravings, and the value of	There was a cessation rate of 32% (30% for women and 34% for men). Using intent-to-treat criterion, the cessation rate was 18%. Gender differences were nonsignificant. The only baseline variable predictive of cessation was the way in which the participant learned of the web site. Participants recruited via the

Study details	Methods and quality score	Population	Objective	Intervention	Results
resident USA or Canada	Follow-up 3 months Validation Self report Quality Level 2-		patterns, alternative retention incentives and re-contact modes, satisfaction, and cessation rates.	enlisting social support while quitting. Social support was provided via an online forum and also 'Ask an Expert' email contact.	<p>Internet were significantly more likely to quit than those recruited through other means, $n=140$ 67% vs. $n=69$ 33%, $x^2=9.60$, $df=1$, $p<.01$. None of the remaining baseline or process variables, including gender, smoking rate, or frequency of participation were significant predictors of cessation.</p> <p>The programme was rated as easy to use, and the social support group component was used most frequently. Among a variety of traditional and Internet-based recruitment strategies, the most successful made use of Internet user groups and search engines. On a six-point scale from very easy (0) to very difficult (5), 63% rated the web site as easy or very easy to use ($mean=1.11\pm1.00$). The Ask-an-Expert section was rated most highly ($.80\pm1.30$).</p>
Flay 1995 USA	Design Cluster RCT Follow-up Post-test followed by 1 year and 2 year Validation Not stated Quality 1++	Pupils in US schools	To present the student outcomes of a large-scale, social-influences-based, school and media-based tobacco use prevention and cessation project in Southern California.	A social resistance classroom curriculum; a media (TV) intervention; health information based attention control curriculum; a social resistance classroom curriculum combined with a media (TV) intervention.	Observed significant effects on mediating variables such as knowledge. Post test ($n=213310$, $x^2=42.3$; $df=1$; $P<0.00001$; 1 year follow-up ($n=1765$; $x^2=25.9$; $df=1$; $P<0.00001$); and 2 year follow-up ($n=12146$, $x^2=14.5$; $df=1$; $P<0.00014$)) and prevalence estimates, and coping effort. The knowledge and prevalence estimates effects decayed partially but remained significant up to a 2-year follow-up. The coping effort effect did not persist at follow-up. There were significant main effects of both classroom training and TV programming on knowledge and prevalence estimates and significant interactions of classroom and TV programming on knowledge (negative), disapproval of parental smoking, and coping effort. There were no consistent programme effects on refusal/self-efficacy, smoking intentions, or behaviour.
Friend 2002 USA only	Design Systematic review (non-RCT) Follow up	General population and young people.	The objective was to evaluate the effect of state and local mass-media campaigns on smoking prevalence and cigarette consumption.	The included studies were of state-wide or community-wide campaigns and of media campaigns and concurrently implemented tobacco control	<i>Mass-media campaigns directed at the general population.:</i> Two well-funded and implemented state-wide campaigns plus concurrent coordinated tobacco control programmes reduced smoking rates in the general population; there was a reduction in net smoking prevalence of 6 to 12%. In California, the tax increase was not offset by lower prices as occurred in Massachusetts. These

Study details	Methods and quality score	Population	Objective	Intervention	Results
	Length of follow-up varied between studies Validation Self report Quality Level 2-			programmes. Elements considered were: increased excise cigarette taxes; school-based prevention programmes; health care provider education; restrictions on advertising and the promotion of smoking; clean indoor air laws; school- and community-based education programmes; school-based health centers; education and training initiatives; enhanced youth access enforcement; and laws penalising youth for possession	two campaigns had mixed effects on youths. Some studies of the Californian campaign found no significant difference between youths exposed to the campaign and unexposed youths in terms of the rates of thinking about stopping smoking, while other studies found that exposure significantly reduced smoking prevalence and rates of starting smoking. Two studies of the Massachusetts campaign found that fewer exposed youths took up smoking compared with youths in other states: smoking prevalence among eighth graders was reduced by 2% in Massachusetts, compared with an increase of 26% in other states, while among tenth graders, the increase in smoking was 16% in Massachusetts versus 23% in other states. Two smaller state wide campaigns of shorter duration in less populated areas found smaller reductions in smoking (net decline 4% and 5%, respectively). The studies suggested that the greatest reductions were to be achieved in the first 3 years of the campaigns, with decreasing reductions over time thereafter. <i>Mass-media campaigns directed at youth.</i> Two youth-orientated state-wide campaigns were associated with reductions in smoking rates (Arizona PCC declined by 8% but no baseline rates were reported; Florida net reduction estimated as 5%). These appeared to be more successful than smaller community- level programmes. Community-level programmes that reduced smoking tended to be longer and more intensive than campaigns having less effect.
Frisby 2002 Australia	Design Semi-structured interviews / process evaluation. Follow-up	13 participants of whom 4 were males and 9 were females, aged 19 to 64 years	To determine the feasibility of a method to examine the online behaviour of consumers seeking smoking cessation resources.	The Victorian Quit programme provides support to smokers and health professionals including a range of written materials (also on website), and a telephone service offering access to cessation	Participants sought online smoking cessation resources for reasons of convenience, timeliness, and anonymity and because their current information needs were not met. They employed simple search strategies and could not always find information in an efficient manner. Participants employed several different strategies to assess the quality of online health resources.

Study details	Methods and quality score	Population	Objective	Intervention	Results
	Not applicable Validation Not applicable Quality Not applicable	(median 30-39 years).		counsellors.	
Frith 1997 Wales	Design Before and after (non-controlled) Follow-up 1 day and 3 months Validation Self Report Quality Level 3	Smokers in Wales	To evaluate the impact that No Smoking Day 1996 had on smokers in Wales and to what extent the day met its main objectives.	No Smoking Day is a major UK-wide mass-media programme seeking to achieve a reduction in smoking.	The results indicate a quit rate at three months in the range of 0.3 to 1.8 per cent. Further analysis suggests that certain groups of smokers, and smokers at certain stages of quitting, are more likely to be motivated by the day, in particular those who had firm plans to quit at the time of the interviews. There is a high level of awareness of No Smoking Day and an encouraging level of participation on the day. When asked directly about how important they felt No Smoking Day had been in their decision to give up smoking (n=15) only two responded that it had been fairly important, the remainder stated that it had been of little or no importance
Hafstad 1996 Norway	Design Possibly a cohort study (poorly reported) Follow-up 14 days Validation Self Report	Norwegian adolescents aged 14-15 years in Buskerud county	The short-term effects of the second of three consecutive mass media campaigns designed to explore new and untested strategies to prevent smoking among adolescents.	Three consecutive mass media campaigns including three different full page newspaper advertisements, one poster, and one TV and cinema spot.	The campaign (targetting girls) obtained the best short-term effects among girls and among smokers. Overall, smokers had stronger affective reactions towards the campaign than non-smokers, and girls reacted more strongly than boys. Positive reactions were the most important predictor of positive behavioural outcome. Having discussed the campaign with someone predicted positive behavioural outcomes among smokers. 12.1% (7.4% boys and 14.6% girls P=0.019) of the sample reported quitting smoking.

Study details	Methods and quality score	Population	Objective	Intervention	Results
	Quality Level 3				
Hantula 1992 USA	Design Observation/ ethnography Follow-up 2 months Validation Some biochemically validated Quality Level 3	People visiting a hospital cafeteria	To evaluate the Great American Smokeout's effect on smoking in a large urban hospital	Great American Smokeout Day (an annual mass media campaign), intended to encourage smokers to 'take a day off from smoking and re-evaluate one's smoking behavior.' Promoted via ads, posters, smoking cessation guides and an annual promotion guide.	The number of people observed sitting in the smoking section of the cafeteria, the number of people observed smoking, and the mean expired CO levels taken from volunteers were reduced only on the day of the smokeout as compared with data collected during a baseline period during the month prior to the smokeout. The volunteers returned to their previous levels the day after the smokeout.
Hey 2005a USA, Canada and Russia	Design Cochrane systematic review (RCTs and non- RCTs) Follow up Length of follow-up varied between studies Validation Self-reported tobacco use behaviours;	All populations	To determine whether quit and win contests can deliver higher long-term quit rates than baseline community quit rates. Considered both the quit rates achieved by participants, and the population impact, taking into account the proportion of the target population entering the contest	Population-based quit and win contests at local, national and international levels.	Four studies met the inclusion criteria. Three demonstrated significantly higher quit rates (8% to 20%) for the quit and win group than for the control group at the 12-month assessment. However, the population impact measure, where available, suggests that the effect of contests on community prevalence of smoking is small, with fewer than one in 500 smokers quitting because of the contest. Levels of deception, where they could be quantified, were high. Although surveys suggest that international quit and win contests may be effective, especially in developing countries, the lack of controlled studies precludes any firm conclusions from this review.

Study details	Methods and quality score	Population	Objective	Intervention	Results
	biochemically validated where available Quality Level 1&2+				
Hey 2005b Most in USA, UK (3), Australia (1), and one in USA and Canada	Design Cochrane systematic review (RCTs and non-RCTs) Follow up Length of follow-up varied between studies Validation Self-reported tobacco use behaviours and biochemically validated where available Quality Level 2-	Recruited from workplaces, community and newspaper readers (adverts). 5 in clinics or health centres and 10 in workplaces	To determine whether competitions and incentives lead to higher long-term quit rates. The authors also set out to examine the relationship between incentives and participation rates.	Contests, competitions, incentive schemes, lotteries, raffles, and contingent payments, to reward cessation and continuous abstinence in smoking cessation programmes.	Fifteen studies met the inclusion criteria. None of the studies demonstrated significantly higher quit rates for the incentives group than for the control group beyond the six-month assessment. There was no clear evidence that participants who committed their own money to the programme 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.

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Hopkins 2001 Industrialised nations	<p>Design Systematic review (RCT and non-RCT)</p> <p>Follow up Length of follow-up varied between studies</p> <p>Validation Self-reported tobacco use</p> <p>Quality Level 1&2+</p>	General population	This report presents the results of a systematic review of effectiveness, applicability, other effects, economic evaluations, and barriers to use of selected population-based interventions intended to reduce tobacco use and exposure to environmental tobacco smoke (ETS).	<p>Included interventions to reduce exposure to ETS, to prevent uptake of smoking and smoking cessation.</p> <p>Mass Media Education Cessation Series: use recurring instructional segments to recruit, inform, and motivate tobacco product users to initiate and to maintain cessation efforts. Cessation series can be coordinated with pre-series broadcast or print promotion, community education such as distribution of self-help cessation materials, and organization of cessation groups in the community.</p>	<p>All seven of the studies that evaluated mass media campaigns of 2 or more years' duration observed a reduction in tobacco use prevalence in the intervention group when compared to the control group. The observed differences were more consistent and slightly greater in magnitude of effect for both tobacco use prevalence (range, 22.4 to 211; median, 28.0 percentage points) and in the odds ratios (range of outcomes, 0.49 to 0.74, median result, 0.74). The contributions of individual components to the overall effectiveness of the interventions cannot be attributed. No other positive or negative effects were identified in this review.</p> <p>All of the qualifying studies evaluated the effectiveness of a mass media campaign either coordinated with or concurrent with other interventions. In 5 studies evaluating cessation: The duration of the interventions ranged from less than 1 year to 5 years. Cessation rates in the intervention group ranged from 3.9% (confirmed) to 50% (self-reported), with a median of 7% in follow-up periods of 6 months to 5 years (median, 14 months). The absolute percentage differences in cessation between intervention group participants and comparison group participants (who were potentially exposed to the media component in 3 studies) ranged from 22 percentage points to 135 percentage points, with a median difference of 12.2 percentage points.</p> <p>Mass Media Education Cessation Series: People who recalled watching the cessation series were more likely to report sustained cessation at interview (odds ratio, 1.36; 95% CI, 1.13, 1.65). In five studies, smokers in both the intervention and comparison groups were exposed to the cessation series, with participants in the intervention group receiving additional interventions, such as small group sessions. These studies reported absolute percentage differences in cessation that ranged from 14 to 18 percentage points (median, 15) with follow-up periods of 4 to 24 months (median, 12). However, these studies share a potential limitation</p>

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					in comparing smokers motivated to quit (enrolled or offered cessation group support) with smokers potentially less motivated to quit. The included studies provided insufficient evidence of effectiveness of the broadcast series in increasing tobacco use cessation. The differences in cessation observed in these studies might be the result of (1) baseline differences in motivation to quit between intervention and comparison smokers and (2) the small-group cessation sessions provided to the intervention group participants.
Hyland 2006 USA	Design Before and after (non-controlled) Follow-up Not relevant Validation Self Report Quality Level 3	Smokers who participated in the Community Intervention Trial for Smoking Cessation and completed a follow-up survey in 2001	To assess the relationship between exposure to state-sponsored anti-tobacco advertising and smoking cessation.	Televised anti-tobacco advertising	The relative risk for quitting was estimated to be 10% higher for every 5000 units of exposure to state anti-tobacco television advertising over the 2-year period, although this did not quite achieve statistical significance. The association was even larger among those who reported that the level of information in the media about the dangers of smoking had increased 'a lot' between 1993 and 2001 (RR = 1.19, 95% CI = 1.03-1.38).
Jenkins 1997 USA	Design Before and after (non-controlled) Follow-up Not stated Validation	Vietnamese men in California	This study evaluated an anti-tobacco campaign targeting Vietnamese men in San Francisco, California.	The intervention was set in the context of a state-wide tobacco control initiative that included an increased cigarette excise tax, a mass education campaign, and new ordinances restricting smoking.	At post-test, the odds of being a smoker were significantly lower (OR = 0.82, 95% CI: 0.68, 0.99), and the odds of being a quitter were significantly higher (OR = 1.65, 95% CI: 1.27, 2.15), in San Francisco than in a comparison community. Between pre-test and post-test, smoking declined in San Francisco, while the rate in Houston increased, resulting in a net change of —3.5 percentage points. The odds of being a smoker at post-intervention were lower for

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	Self Report Quality Level 2+			<p>This was a multi-component intervention involving articles in Vietnamese language newspapers, broadcast on Vietnamese language TV, health promotion materials including a calendar, bumper stickers, lapel buttons, three posters, two brochures, and a quit kit.</p> <p>Also conducted an anti-tobacco Vietnamese-language counter-advertising campaign that included three different billboards, newspaper and TV advertisements.</p>	respondents who were 18 to 24 years of age or 45 years of age or older than for those who were 25 to 44 years old; odds were also lower for respondents who had at least a college education, those with good or fluent English-language proficiency, and students. The odds of being a smoker were greater for more recent immigrants and the unemployed. The strongest predictor of quitting was being a student (OR = 2.19, 95% CI: 1.45, 3.33); other predictors included more recent year of immigration (OR = 1.03, 95% CI: 1.00, 1.05), each additional year of age (OR = 1.03, 95% CI: 1.02, 1.04), and having at least a high school education (OR = 1.33, 95% CI: 1.04, 1.70).
Johnson 1995 USA	Design Controlled study Follow-up Not stated Validation Self Report Quality Level 2-	Staff and patients / visitors to St Louis VA Medical Centre	This study compared the impact of alternative messages on electronic message strips on the outcome measures.	Use of electronic message strips in a hospital waiting area - compared a positive message against a negative one. E.g. Positive message was 'Smokers, join the 1.5 million who will quit smoking this year. Call ...' compared to 'Smoking causes cancer. To quit smoking, call'	A shorter, more negative message yields better results than a longer, more positive message. The data also show that this approach increases the number of subjects who enrol in a smoking-cessation programme and the number of subjects who actually quit smoking.

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Klein 2005 USA	Design Cross sectional survey Follow-up 1 year Validation Self Report Quality Level 3	Adolescents and parents	To evaluate the impact of a smoking-cessation media campaign for teens on utilisation of a cessation Web site, GottaQuit.com.	Mass media campaign to advertise an internet smoking cessation site and a telephone quit helpline 'GottaQuit.com'. Involved paid TV slots, radio, billboards and bus advertisements. The website included motivational material and opportunities for live webchat with a quit coach. The advertisements talked about the website as a place to get help and advertisements featured teenager telling negative affect on their life of smoking.	Most teen smokers reported that they wanted to quit smoking. Almost all teens reported exposure to GottaQuit.com advertisement and accurately identified GottaQuit.com as a Web site that offers cessation help for youths. Nearly 1 in 4 smokers who were trying to quit had visited GottaQuit.com or another Web site for cessation assistance. Quit attempts were reported as never tried to quit - 31.7% pre-campaign v 11.8% after; Tried 1 or 2 times - 60.3% before v 47.1% after. Tried ≥ 3 times - 7.9 v 41.2 Post campaign white teens were more likely to be current smokers than black teens or ethnic minorities. In terms of accessing help for smoking cessation - some have concerns around confidentiality.
Korhonen 1998 Finland	Design Before and after study (non-controlled) Follow-up 7 year period Validation Self Report Quality Level	Finnish adults	This article summarises an impact evaluation of the North Karelia Project (Finnish CINDI programme) on smoking cessation attempts. Evaluating exposure to mass media health promotion messages about smoking to assess their impact on smoking behaviour.	Not an experimental intervention long term measures in place since 1979 - including cessation services provided by health professionals, mass media advertisements, smoke free policies, quit and win contests. Mass media has included posters, leaflets and local TV and radio, local newspapers.	Weekly exposure to mass media health messages was significantly associated with cessation attempts among men only. In contrast, interpersonal health communication, or social influence, was a significant determinant of cessation attempts among both sexes. Exposure to both mass media and interpersonal health communication had an even stronger impact on cessation attempts. However, mass media exposure alone was not significant.

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Lenert 2003 USA	Design Non controlled pilot study Follow up 30 days Validation Self Report Quality Level 3	Adult smokers screened for their willingness to quit.	A pilot study to evaluate the effectiveness of an internet based multiple contact cognitive behavioural intervention designed to help people to quit smoking.	A website was developed to deliver an online cognitive behavioural intervention. The intervention consisted of 8 modules which included components such as : monitoring mood; replacing positive reinforcement from nicotine; and challenging negative thoughts.	Follow-up data only available for 26 individuals. 92% made serious quit attempt. Overall quit rate after 30 days was 18%. An additional 16% had a 50% reduction in overall cigarette use. Exposure to educational materials appeared to increase chances of quitting. Those viewing zero, 1 or 2 lessons had a 29% chance; those viewing 3 or 4 lessons had an 82% chance; those viewing 5 or more lessons a 45% chance ($\chi^2= 8.9$ p=0.012). 78% of respondents reported that the site had increased their intention to quit; 94% felt the site had enhanced their quit effort.
Lenert 2004 USA	Design Controlled before and after Follow up 30 days post quit date Validation Self Report Quality Level 2+	Adults (average age mid to late thirties) - majority female, white, married. Less than half in full time employment . About half had some college education.	To determine whether an automated email messaging system that sends individually timed educational messages (ITEMs) increased the effectiveness of an internet smoking cessation intervention.	Automated email messaging system that sends individually timed educational messages (ITEMs) related to stopping smoking.	The one-time and ITEMs groups differed in some demographics and some relapse risk factors but not in factors associated with 30-day quit rates. ITEMs appeared to increase the rate at which individuals set quit dates (97% vs. 91%, p = 0.005) and, among the respondents to follow-up questionnaires (n = 145), the rate of reported 24-hour quit efforts (83% vs. 54%, p = 0.001). The 30-day intent-to-treat quit rates were higher in the ITEMs group: 7.5% vs. 13.6%, p = 0.035. In multivariate analyses controlling for differences between groups, receiving ITEMs was associated with an increase in the odds ratio for quitting of 2.6 (95% CI= 1.3-5.3).
Macaskill 1992 Australia	Design Before and after (non controlled)	Adult population of two large Australian cities.	This study investigated whether the effective mass media-led antismoking campaigns in Australia had the	National antismoking campaign using visual mass media.	Smoking prevalence and rate ratios for men and women, indicate a clear gradient for smoking prevalence across educational levels: smoking prevalence in the least educated group was generally 70% greater than it is in the most educated group. The rate ratios showed an overall decline in prevalence as they were consistently

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	Follow up 5 years Validation Not stated Quality Level 3		traditional differential effect across educational levels.		below 100%. For both Sydney and Melbourne men and for Sydney women, the rate ratios for the four levels of education were not significantly different; i.e., after controlling for age, the relative decrease in smoking of the least educated group was not significantly different from that of the most educated group. The pattern differed, however, for Melbourne women, for whom there was a significant difference between the age-adjusted rate ratios of the four educational levels. The rate ratios vary from 96% (least educated group) to 77% (most educated group); the 23% decline in prevalence in the most educated group was the greatest seen among any group in either city, and the 5% to 9% declines among the other educational groups of Melbourne women were the lowest rates of decline of all groups studied.
McAlister 2004 USA	Design Controlled before and after Follow up 7 months Validation Self Report Quality Level 2-	622 adult daily smokers recruited from an original cross-sectional study.	To report on the effects on adult tobacco cessation of a comprehensive tobacco-use prevention and cessation programme in Texas.	The media campaign combined television, radio, newspaper and billboard advertisements featuring messages, outreach programmes and a quitline to help adults avoid or quit using tobacco products.	The group receiving high level media and community cessation programmes had significantly greater change scores than the other groups combined for radio and television exposure. Significant correlations between follow-up media exposure variables and processes involved in smoking cessation variables.
McVey 2000 England, UK	Design Controlled study Follow up 18 months	Adult smokers and ex-smokers living in four TV regions in	To evaluate the effectiveness of the Health Education Authority for England's anti-smoking television advertising campaign in	One region received no intervention (controls), two regions received TV anti-smoking advertising (TV media), and one region received TV anti-smoking	After 18 months, 9.8% of re-interviewed smokers had stopped and 4.3% of ex-smokers had relapsed. The pooled adjusted odds ratio for not smoking in the TV media only condition compared to controls was 1.53 (95% CI: 1.02 to 2.29, $p = 0.04$), and for TV media + LTCN versus controls, 1.67 (95% CI: 1.0 to 2.8, $p = 0.05$). There was no evidence of an extra effect of the local

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	Validation Self Report Quality Level 2+	central and northern England	motivating smokers to give up and preventing relapse in those who had already given up.	advertising plus locally organised anti-tobacco campaigning (TV media + LTCN).	tobacco control network when combined with TV media (OR 1.15, 95% CI: 0.74 to 1.78, p = 0.55). There was also no evidence of any intervention effects after the first phase of the TV media campaign, including no effect of varying the intensity of the advertisements. Applying these results to a typical population where 28% smoke and 28% are ex-smokers, and where there would be an equal number of quitters and relapsers over an 18 month period without the campaign, suggests that the campaign would reduce smoking prevalence by about 1.2%.
Mudde 1999 Netherlands	Design Before and after (non controlled) Follow up Pre-test, 4 months, 10 months and 1 year Validation Not stated Quality Level 3	Dutch smokers 15+ yrs	This study examined the reach, effectiveness, and cost-effectiveness of a mass media-led smoking cessation campaign including television shows, a television clinic, a quit line, local group programmes, and a comprehensive publicity campaign.	'Quit Smoking Together': A mass media-led smoking cessation campaign including television shows, a television clinic, a quit line, local group programmes, and a comprehensive publicity campaign.	Most smokers were aware of the campaign, although active participation rates were low. There was a higher recall of the TV advertisements among the pre-tested group - 88% v 48% of non pre-tested group (OR=2.34, CI= 95%), indicating that this enhanced their awareness of the campaign. Dose-response relations between exposure and quitting were found - the more episodes watched / recalled the higher the incidence of quitting / abstinence. The follow-up point prevalence abstinence rate attributable to the campaign was estimated to be 4.5% after control for test effects and secular trends.
Obermayer 2004 Washington USA	Design Pilot non controlled study Follow up 6 weeks	US college students aged 18 to 25 years	To develop and test the feasibility of an integrated Web and text-messaging programme for smoking cessation that is based on behavioural self-regulation theory.	A prototype programme targeting college students that integrates web and cell phone technologies to deliver a smoking-cessation intervention. Involves an individualised quitting	During the 6-week study period, 29 of the 46 participants registered on the Web site. Twenty participants (65% of those contacted, 43% of the total) reported that they had made a 24-hour quit attempt during the study period, but 12 of these participants reported a relapse. The number of days of relapse varied between 1 day and 14 days. Fewer than half (5) of these participants then attempted another 24-hour quit; 2 of them had quit at the end of

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	Validation Self report and biochemical validation Quality Level 3			programme delivered by mobile phone text messaging; and self-assessment tools.	treatment call, whereas 2 had stopped smoking for a few days but did not meet the 7-day criterion. Therefore, 10 of the 46 (22%) intent-to-treat participants met the 7-day quit point criteria at the 6-week study point. When the more conservative criterion of reported quits with validated saliva cotinine samples were used, the quit rate was 17% (8/46). Of those who actually initiated the treatment programme and received text messages, however, the validated quit rate was 28% (8/29).
Owen 2006 UK	Design Evaluation using surveys and data from a variety of sources Follow up 1 week and 3 months annually over a 22 year period Validation Self Report Quality Level 3	UK over 16yrs	To evaluate the impact and relevance of the national 'No Smoking Day' 22 years after it was launched.	No Smoking Day - creates news stories and events to attract media coverage. Supported by local area organisers who run events to promote smoking cessation. The campaign supports these activities with the provision of materials and training.	Follow up at one week indicates awareness of No Smoking Day is lower in 2004 than in 1986 but still high at 70% for all smokers. The decline in participation from 18% of aware smokers in 1994 to 7% in 2001 has been reversed and in 2005 19% quit or reduced their smoking on No Smoking Day. Three months after No Smoking Day awareness was 78% in 2004, lower than in previous studies but still high and equivalent to 9 965 000 smokers when applied to the population estimate of UK smokers. Likewise participation has decreased but at 14% in 2004 is equivalent to an estimated 1 840 000 (1 in 7 of UK smokers) claiming to quit or reduce their consumption on the Day. Among those who participated, 11% were still not smoking more than three months after the Day, equivalent to an estimated 85 000 smokers (0.7% of UK smokers). Media volume has increased even though campaign spend has remained relatively constant and calls to national smokers' helplines on No Smoking Day are typically four times those received on an average day. In 2004 this increased to 5 times the average calls. Visitors to a related website also increase in the run up to the campaign.
Pierce 1990 Melbourne and Sydney, Australia	Design Before and after (non controlled) study	Adults in two large Australian cities	To examine the effectiveness of a long-term mass media campaign for smoking cessation	Television commercials to motivate smokers to quit smoking, and to set the agenda for professionals whom the campaign team hoped to involve in	Smoking prevalence in both cities from 1981 were fitted with a statistical model to identify any underlying trend, to assess any immediate impact, and to assess the longer term effect of continuing to conduct such campaigns, i.e. to identify any change in the underlying trend. During the years before the antismoking campaigns, there was no observable trend in smoking prevalence

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	Follow up Prevalence rates within a six year period Validation Self Report Quality Level 3			promoting nonsmoking. Also involved billboard advertising, newspaper ads, and, in Sydney, a section was purchased for journalistic coverage of smoking-related events and issues. Also, antismoking sketches by major personalities and many news releases and events that resulted in substantial news coverage in all the mass media.	in either city. At the beginning of the campaigns, there was an immediate drop of more than two percentage points in male and female smoking prevalence in both cities. Thereafter, a decline of about 1.5 percentage points per year was observed among males. No post campaign trend was observed in smoking prevalence for women in either city
Popham 1993 USA	Design Before and after (non controlled) study Follow up One year post intervention Validation Self Report Quality Level 3	417 participants aged 18+ randomly selected. No other sample details stated.	This study evaluated the impact of a media campaign on decisions to quit smoking during the campaign.	The campaign used a variety of anti smoking messages including the dangers of SHS and the impact of smoking on one's social desirability as well as messages aimed to stimulate public debate about the role of tobacco companies in encouraging people to smoke.	6.7 % of the responders said the media campaign had influenced their decision to stop smoking in response to an uncued question. In response to a direct question about the media campaign, 34.3 % of respondents indicated it had played a part in their decision to quit.
Rodgers 2005 New	Design RCT (individual level)	1705 smokers from throughout	To determine the effectiveness of a mobile phone text messaging smoking cessation	This trial tested the addition of mobile phone based services to existing practice. Participants received a	More participants had quit at six weeks in the intervention compared to the control group: 239 (28%) v 109 (13%), relative risk 2.20 (95% confidence interval 1.79 to 2.70), $p < 0.0001$. This treatment effect was consistent across subgroups defined by age,

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Zealand	Follow up 26 weeks Validation Self report and biochemical validation Quality Level 1++	New Zealand who wanted to quit, who were aged over 15 years and owned a mobile phone.	programme.	programme of interventions, were sent regular advice support, and distraction via personalised text messages. About half the messages related to quitting and about half were of general interest.	sex, income level, or geographic location (p homogeneity > 0.2). The relative risk estimates were similar in sensitivity analyses adjusting for missing data and salivary cotinine verification tests. Reported quit rates remained high at six months, but there was some uncertainty about between group differences because of incomplete follow up.
Salina 1994 USA	Design Cluster RCT Follow up 3 weeks, 6 months, 12 months;report here on 24mths Validation Self Report Quality Level 1+	Worksites in Chicago, USA	An evaluation of data collected 2 years following the onset of a media-based, worksite smoking cessation intervention.	Initially, all participants received self-help manuals and asked to watch a 20-day televised series designed to accompany the manual. In addition, participants in the group (G) condition received six sessions emphasising quitting techniques and social support. In the second phase, which continued for 12 months, employees in G participated in monthly peer-led support groups and received incentives, while participants in the nongroup (NG) condition received no further treatment. Also held a monthly lottery for ex-smokers; and another for nominated friends/family	Twenty-four months after pre-test, 30% of employees in G were abstinent compared to only 19.5% in NG. The study shows that there was an effect of providing peer group support and lottery incentives in addition to the media-based self help materials.

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				co-workers who had supported them to stop smoking.	
<p>Secker-Walker, 2002</p> <p>A range of countries including Europe, North America, South Africa, Australia and one in India.</p>	<p>Design Cochrane systematic review (RCTs and non-RCTs)</p> <p>Follow up Follow-up varied between studies</p> <p>Validation Biochemical confirmation of self-reported quit status was preferred, but did not exclude studies without this measurement.</p> <p>Quality Level 1&2+</p>	Adults, 18 years or older.	To carry out a systematic review to assess the effectiveness of community interventions in reducing the prevalence of smoking.	Community intervention: co-ordinated, multidimensional programme aimed at changing adult smoking behaviour, involving several segments of the community and conducted in a defined geographical area e.g town, city, country or other administrative district.	<p>Thirty two studies were included, of which seventeen included only one intervention and one comparison community. Only four studies used random assignment of communities to either the intervention or comparison group. The population size of the communities ranged from a few thousand to over 100,000 people. Change in smoking prevalence was measured using cross-sectional follow-up data in 27 studies. The estimated net decline ranged from -1.0% to 3.0% for men and women combined (10 studies). For women, the decline ranged from -0.2% to + 3.5% per year (n=11), and for men the decline ranged from -0.4% to +1.6% per year (n=12). Cigarette consumption and quit rates were only reported in a small number of studies. The two most rigorous studies showed limited evidence of an effect on prevalence. In the US COMMIT study there was no differential decline in prevalence between intervention and control communities, and there was no significant difference in the quit rates of heavier smokers who were the target intervention group. In the Australian CART study there was a significantly greater quit rate for men but not women.</p>

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Sussman 1994 USA	Design Cross sectional survey Follow up 3 months and 12 months Validation Self Report Quality Level 3	Ethnically heterogeneous sample of participants and nonparticipants of a self-help media-enhanced smoking cessation programme.	To investigate participant versus non-participant characteristics in a state-wide self-help media-enhanced intervention	This state-wide self-help media-enhanced intervention, the 'Freedom From Smoking' program involved airing a televised programme and provision of self-help manuals in Sunday newspapers as supplements in seven California cities.	Participation in the Freedom From Smoking Program varied with sample ethnicity. Different ethnic groups showed different preferences for the televised and printed components of the programme. Participation in any aspect of the programme was highest for Whites (29%), followed by Asians (23%), African-Americans (21%), and English-speaking Latinos in the English programme (18%). Both intention to quit in the next 3 months and tendency to use self-help materials were univariate predictors of viewing and reading. This result might be expected since, presumably, intention to quit soon would be a pre-requisite to becoming involved in cessation programming, and a tendency to use self-help materials in the past would define a familiar programme modality. However, the logistic regression analyses revealed that no variables were predictors of both participation in the TV broadcast and in reading the self-help manuals.
Swartz 2006 USA	Design RCT (Individual level) Follow up 90 days Validation Self Report Quality Level 1+	Working smokers aged 18 years	To test the short term (90 days) efficacy of an automated behavioural intervention for smoking cessation, the '1-2-3 Smokefree' programme, delivered via an internet website.	The intervention consisted entirely of a website programme designed to be an automated approximation of the experience a smoker would receive when working with a live smoking cessation counsellor.	For the sample of 197 subjects who returned to complete the 90 day follow up survey, the cessation rate among treatment group subjects (n = 87) was 24.1% (n = 21). The cessation rate for control condition subjects (n = 110) was 8.2% (n = 9). Logistic regression analysis was carried out to determine if there were differential condition effects across age, sex, race/ethnicity, self efficacy, and number of cigarettes smoked per day at baseline (that is, interactions with condition). There were no significant interactions between condition and the other main effects (that is, age, sex, race/ ethnicity, self efficacy, and number of cigarettes smoked per day at baseline). Thus, these terms were dropped from the model and a simple χ^2 test was carried out. The χ^2 test indicated that there was a significant difference across condition ($\chi^2 = 9.58$, 1df, $p = 0.002$; odds ratio 3.57, 95% confidence interval 1.54 to 8.27). No specific aspect of programme use (for example, number of optional screens viewed) predicted abstinence at follow up. Bivariate comparisons of baseline data for those lost to follow up at 90 days and those who were retained did not result

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					<p>in any significant differences that could be used to explain the observed attrition. Intent-to-treat outcomes The cessation rate among all treatment group subjects (n = 171) was 12.3% (n = 21) and among control condition subjects (n = 180) was 5.0% (n = 9). As with the follow up sample, logistic regression analysis indicated that there were no significant interactions between condition and the other main effects (that is, age, sex, race/ethnicity, self efficacy, and number of cigarettes smoked per day at baseline). Thus, these terms were dropped from the model and a simple χ^2 test was carried out. The χ^2 test indicated that there was a significant difference across condition ($\chi^2 = 5.95$, 1df, p = 0.015; odds ratio 2.66, 95% confidence interval 1.18 to 5.99). No specific aspect of programme use (for example, number of optional screens viewed) predicted abstinence at follow up.</p> <p>A substantial majority of users viewed at least one optional section within modules (70.2%; n = 120). Fifty six per cent of users (n = 96) viewed the quit plan module and set an actual quit date; the same percentage of users viewed the descriptions of pharmacological aids. However, only a minority of subjects viewed optional sections within each of the five major content modules: overcoming barriers to cessation (viewed by 48.5% (n = 83) of users); avoiding situations that prompt cravings (viewed by 42.1% (n = 72) of users); dealing with cravings (viewed by 42.1% (n = 72) of users); and benefits of quitting smoking (viewed by 34.5% (n = 59)). None of the demographic or cigarette use variables predicted use of specific programme sections.</p>
Thieleke 2005 USA	Design Before and after (non controlled) Follow up	Wisconsin residents who signed up for the American Lung	To study the effectiveness of the American Lung Association's Freedom From Smoking Online cessation programme in assisting Wisconsin	The Freedom From Smoking Online cessation programme incorporates the components of the Freedom From Smoking clinic based programme such as self	Initial point prevalence rates or whether participants reported that they had smoked in the previous 24-hour period revealed a quit rate of 55%. Sustained abstinence or whether they reported that they had smoked in the previous 3-month period ranged between 28.8% (3 months after programme completion) and 16.3% (1 year after programme completion).

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	3,6,9 and 12 month follow-up Validation Self Report Quality Level 3	Association's Freedom From Smoking Online cessation programme	residents to quit smoking	assessments, developing individual action plans, interacting with others through message boards, interacting with the local Lung Association, relaxation techniques. The online cessation programme includes 7 modules (each with about 4 lessons) through which participants work.	
Valois 1996 USA	Design Time series post intervention Follow up Baseline then 6 weeks, 6 months and 12 months Validation Biochemically validated Quality Level 3	Cable TV viewers	To evaluate a 6-week, community cable television smoking cessation programme called 'CableQuit'.	A 6 week community cable television smoking cessation programme (CableQuit) with 13 x 30-min "live" sessions, each followed by a 30-min "live" telephone call-in support segment. Telecasts were hosted by a public health educator with postdoctoral training in smoking cessation. Five smokers from Austin, Texas, were selected to participate "live" in the studio, while registrants followed step by step at home.	Participants were followed-up at 6 weeks, 6 months, and 12 months. Non-smokers at 1 year had significantly greater levels of self-efficacy ($p < .004$) and significantly lower levels of depression ($p < .03$) than smokers. There was no significant correlation between social support and smoking status. There was also no correlation between the response towards the studio participants and quit rates. A 1-year quit rate of 17% exceeded those of previous televised programmes (5-15%).
White 2003 Australia	Design Cross sectional survey	12-17 year olds	To examine adolescents' awareness of and response to an adult focused anti-smoking	A campaign targetting smokers aged 18-40 and promoted a cessation message. Used mass media	The campaign generated quitting activity among current established smokers, with 18% (95% CI: 14% to 22%) saying they had tried to give up smoking, 27% (95% CI: 23% to 31%) saying they had cut down the number of cigarettes they smoked, and 26%

Study details	Methods and quality score	Population	Objective	Intervention	Results
	Follow up Data collected whilst campaign was ongoing Validation Self Report Quality Level 3		advertising campaign.	advertising (predominantly television) to present information about the health consequences of smoking relevant to smokers aged 18–40 years in graphic television advertisements designed to evoke a negative visceral response.	(95% CI: 22% to 30%) saying they had thought about quitting. Twenty two per cent (95% CI: 8% to 36%) of ex-established smokers and 10% (95% CI: 8% to 12%) of non-recent experimenters indicated they gave up smoking in response to the campaign. Although 6% (95% CI: 4% to 8%) of current established smokers indicated they had given up smoking in response to the campaign, as they had smoked in the month prior to the survey these students must have relapsed. Only those adolescents who were current smokers in the national evaluation survey were asked if they thought the campaign had made them more or less likely to quit smoking. There were 49 current smokers, and around two thirds (67% (95% CI: 54% to 80%)) indicated that the campaign had made it more likely they would quit. Non-smokers who had seen the campaign were asked if the advertisements had made it easier for them to stay a non-smoker and 86% (95% CI: 82% to 90%) indicated this was the case.
Woodruff 2001 Rural Australia	Design Before and after (non controlled) Follow up One month post intervention Validation Self Report Quality Level 3	Participants were 26 high-risk youth smokers attending six small rural alternative schools owing to poor academic performance or behavioural problems or	Pilot study to evaluate the acceptability and efficacy of an Internet-based virtual reality “world” for teen smoking cessation.	Chat Room allowed interaction in real-time in an Internet-based 3-dimensional virtual world with a trained cessation facilitator and other teen smokers. Included motivational interviewing. Breathing Room was a private world that used powerful interactive software, known as Active Worlds. The software allowed life-like animated figures (or avatars) to move around in a virtual shopping	By the 1-month follow-up, one third of the students reported abstaining from smoking during the previous week ($p=n.s$). There were significant and positive shifts in the percentage that categorized themselves as former smokers. At post-test, 39% of participants reported they were former smokers, a percentage that was maintained at 1-month follow-up ($p=0.007$). There was a significant reduction in the average amount participants reported smoking per day in the past month, a change that showed even further reductions at the 1-month follow-up (from 4.4 (SD 3.2) at baseline to 2.4 (SD 2.1) at one month post follow up, $p=0.023$). The average number of recent quit attempts at baseline was 1.61 attempts during the past year compared with 1.9 attempts at post-test and 2.2 attempts at follow-up (not significant). Intentions to quit increased significantly from baseline to post-test, an increase that was maintained at the follow-up. The attitudes toward quitting scores were more positive over time, although the change was not

Study details	Methods and quality score	Population	Objective	Intervention	Results
		both.		mall, amphitheatre, and teen dance club. Inside the world, personalised billboards were created during the counselling sessions to address teens' reasons to quit smoking, difficult situations, and coping strategies. Another interactive technology that was incorporated within the amphitheatre and the shopping mall was the use of links to other tobacco sites. With the technology of the Active Worlds, it was possible to chat within the session while simultaneously looking at a web site link.	<p>statistically significant.</p> <p>On a scale ranging from 1 to 5 with 5 indicating a more positive rating, participants found the approach easy to use, appealing in terms of technology and interaction with counsellor and other smokers, useful, and relevant. The majority reported dropping in during unscheduled sessions and visiting other tobacco-related web sites. Most found the time requirements appropriate and almost all would recommend Breathing Room to another smoker. In addition, interviews with teachers after the study revealed unexpected benefits, such as increases in students' interest in correct spelling, better vocabulary and grammar and in using the Internet.</p>

Appendix 1: Background References

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Appendix 2: Search strategies

Search Results

Database	Dates covered/ date searched	Records retrieved	Records retained after deduplication	User defined field 4 code
Cochrane Database of Systematic Reviews (Cochrane Library 2/2006)	Issue 2/2006	30	30	Cdsr 10/7/6
DARE (Cochrane Library 2/2006)	Issue 2/2006	11	10	Dare 10/7/6
National Research Register Issue 2/2006	Issue 2/2006	159	149	Nrr 11/7/6
Health Technology Assessment Database (Cochrane Library 2/2006)	Issue 2/2006	3	2	HTA 10/7/6
SIGN Guidelines (http://www.sign.ac.uk/)	5/7/6	0	N/A	N/A
National Guideline Clearinghouse	5/7/6	15	15	Ngc 6/7/6
HSTAT	6/7/6	16	16	Hstat 6/7/6
TRIP	11/7/6	8	8	Trip 11/7/6
MEDLINE (Ovid)	1966 to date (5/7/6)	4239	4143	Medline 6/7/6
EMBASE (Datastar 1974 to date)	6/7/6	3746	2178	Embase 6/7/6
British Nursing Index (Datastar 1994 to date)	7/7/6	175	73	Bni 7/7/6
CINAHL (Datastar 1982 to date)	7/7/6	1704	784	Cinahl 7/7/6
PsycINFO (Datastar 1806 to date)	7/7/6	1104	390	Psycinfo 7/7/6
DH-Data (Datastar 1983 to date)	10/7/6	399	195	Dh 10/7/6
King's Fund (Datastar 1979 to date)	10/7/6	94	35	Kf 10/7/6
CENTRAL (Cochrane Library 2/2006)	10/7/6	788	109	Central 10/7/6
ASSIA (CSA)	5/7/6	336	54	Assia 7/7/6
Sociological Abstracts (CSA)	6/7/6	68	35	Socabs 7/7/6

Cochrane Library strategy (Cochrane Library 2006/2)

The following strategy was used to identify relevant records in the following databases:
Cochrane Database of Systematic Reviews (CDSR)

DARE
Central
HTA

ID	SEARCH TERMS
#1	"smoking" or "antismoking" or "anti smoking":ti or "smoking" or "antismoking" or "anti smoking":ab
#2	MeSH descriptor Smoking, this term only
#3	smoker" or "smokers":ti or "smoker" or "smokers":ab
#4	(tobacco):ti or (tobacco):ab
#5	MeSH descriptor Tobacco explode all trees
#6	MeSH descriptor Tobacco Use Disorder, this term only
#7	(nicotine):ti or (nicotine):ab
#8	MeSH descriptor Nicotine, this term only
#9	(cigar*):ti or (cigar*):ab
#10	(bidi or bidis or kretek or paan or gutkha or snuff or snus or betel or (hand next roll*)):ti or (bidi or bidis or kretek or paan or gutkha or snuff or snus or betel or (hand next roll*)):ab
#11	(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10)
#12	MeSH descriptor Mass Media explode all trees
#13	MeSH descriptor Cellular Phone, this term only
#14	MeSH descriptor Electronic Mail, this term only
#15	MeSH descriptor Radio, this term only
#16	MeSH descriptor Television, this term only
#17	MeSH descriptor Telephone, this term only
#18	MeSH descriptor Advertising, this term only
#19	MeSH descriptor Hotlines, this term only
#20	MeSH descriptor Information Dissemination, this term only
#21	MeSH descriptor Persuasive Communication, this term only
#22	MeSH descriptor Nonverbal Communication, this term only
#23	MeSH descriptor Reminder Systems, this term only
#24	MeSH descriptor Motion Pictures, this term only
#25	MeSH descriptor Multimedia, this term only
#26	MeSH descriptor Communications Media, this term only
#27	MeSH descriptor Tape Recording explode all trees
#28	MeSH descriptor Serial Publications explode all trees
#29	MeSH descriptor Pamphlets, this term only
#30	MeSH descriptor Health Education explode all trees
#31	MeSH descriptor Counseling, this term only
#32	MeSH descriptor Internet, this term only
#33	MeSH descriptor Health Promotion, this term only
#34	MeSH descriptor Self-Help Groups, this term only
#35	MeSH descriptor Telecommunications, this term only
#36	"mass media":ti or "mass media":ab
#37	(advert* or campaign* or program*) near/3 (tv or television or cable or cinema or cinemas or theatre or theatres or theater or theaters or movies or media or newspaper* or journal* or magazine*):ti or (advert* or campaign* or program*) near/3 (tv or television or cable or cinema or cinemas or theatre or theatres or theater or theaters or movies or media or newspaper* or journal* or magazine*):ab
#38	(advert* or campaign* or program*) near/3 (dvd or dvds or video* or (motion next picture*) or film or films or broadcast* or televised):ti or (advert* or campaign* or program*) near/3 (dvd or dvds or video* or (motion next picture*) or film or films or broadcast* or televised):ab
#39	(community next intervention*):ti or (community next intervention*):ab
#40	(phone or telephone or mobile or cellular) near/3 (counsel* or hotline* or (hot next line*) or quitline* or (quit next line*) or helpline* or (help next line*)):ti or (phone or telephone or mobile or cellular) near/3 (counsel* or hotline* or (hot next line*) or quitline* or (quit next line*) or helpline* or (help next line*)):ab
#41	(internet near/3 (advert* or campaign* or information or program*)):ti or (internet near/3 (advert* or campaign* or information or program*)):ab
#42	(sms or text messag* or texting):ti or (sms or text messag* or texting):ab

ID	SEARCH TERMS
#43	(pod next cast*) or podcast*:ti or (pod next cast*) or podcast*:ab
#44	(smoking next day) or (smoking next days):ti or (smoking next day) or (smoking next days):ab
#45	(competition* or compete or incentive*):ti or (competition* or compete or incentive*):ab
#46	(selfhelp or self help or (counter next marketing) or (consumer next advocacy)):ti or (selfhelp or self help or (counter next marketing) or (consumer next advocacy)):ab
#47	(tobacco next control next alliance*):ti or (tobacco next control next alliance*):ab
#48	(tobacco next control next program*):ti or (tobacco next control next program*):ab
#49	(commit):ti or (commit):ab
#50	(quit near/3 win) or smokeout or (smoke next out):ti or (quit near/3 win) or smokeout or (smoke next out):ab
#51	(smoke next free next cities):ti or (smoke next free next cities):ab
#52	(advert* or campaign* or program* or intervention*) near/3 (nationwide or statewide or countrywide or citywide or national or "nation wide" or "state wide" or "country wide" or "city wide"):ti or (advert* or campaign* or program* or intervention*) near/3 (nationwide or statewide or countrywide or citywide or national or "nation wide" or "state wide" or "country wide" or "city wide"):ab
#53	(#12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #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 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 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52)
#54	(#11 AND #53)
#55	(#54), from 1990 to 2006
#56	MeSH descriptor Tobacco Use Cessation, this term only
#57	MeSH descriptor Smoking Cessation, this term only
#58	(quit* or cease* or stop* or cessation or motivat* or confidence):ti or (quit* or cease* or stop* or cessation or motivat* or confidence):ab
#59	(uptake or prevent* or (chang* near/3 behavior*) or (chang* near/3 behaviour*)):ti or (uptake or prevent* or (chang* near/3 behavior*) or (chang* near/3 behaviour*)):ab
#60	(#56 OR #57 OR #58 OR #59)
#61	(#55 AND #60)

30 CDSR records were downloaded.

11 DARE records were downloaded.

3 HTA records were downloaded.

788 Central records were downloaded.

SIGN (<http://www.sign.ac.uk/>) Searched 5/7/6

The list of guidelines was scanned and no relevant guidelines were 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 5/7/6

Search string:

smok* or tobacco* or cigarette* or nicotine or bidi* or kretek or paan or gutkha or snuff or snus or betel or antismoking

428 records were returned and of these 15 were selected as relevant and added to the library.

HSTAT (<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat>) searched using Bookshelf (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books>) 5/7/6

Hyphenated terms are captured by phrases searched, e.g. “anti smoking” captures both “anti smoking” and anti-smoking.

ID	SEARCH TERMS
#1	(smoking OR antismoking OR “anti smoking” OR smoker OR smokers OR tobacco OR nicotine OR cigar* OR bidi OR bidis OR kretek OR paan OR gutkha OR snuff OR snus OR betel OR “hand roll”) AND hstat[book]
#2	(“mass media” OR phone OR phones OR “electronic mail*” OR “e mail”) AND hstat[book]
#3	(radio OR televise* OR telephone* OR advert* OR hotline* OR “information dissemination” OR communication OR reminder) AND hstat[book]
#4	(“motion picture*” OR multimedia OR tape OR tapes OR serials OR pamphlets OR “health education” OR counselling) AND hstat[book]
#5	(internet OR www OR web OR “health promotion” OR “self help” OR selfhelp OR telecommunications) AND hstat[book]
#6	(campaign* OR program* OR tv OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theatres) AND hstat[book]
#7	(movies OR newspaper* OR journal* OR magazine*) AND hstat[book]
#8	(dvd OR dvds OR video* OR film OR films OR broadcast* OR “community intervention”) AND hstat[book]
#9	(mobile OR cellular OR “hot line*” OR quitline* OR “quit line*” OR helpline* OR “help line”) AND hstat[book]
#10	(sms OR “text messag*” OR texting OR “pod cast*” OR podcast* OR “smoking day”) AND hstat[book]
#11	(competition* OR compete OR incentive* OR “counter marketing” OR “consumer advocacy”) AND hstat[book]
#12	(“tobacco control alliance*” OR “tobacco control program*” OR commit OR win OR smokeout OR “smoke out”) AND hstat[book]
#13	(“smoke free cities”) AND hstat[book]
#14	#1 AND (#2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13)

173 references were identified and assessed. 16 were relevant and were added to the library.

ID	SEARCH TERMS
#1	(smoking or antismoking or (anti next smoking))
#2	SMOKING single term (MeSH)
#3	(smoker or smokers)
#4	tobacco
#5	TOBACCO explode all trees (MeSH)
#6	TOBACCO USE DISORDER single term (MeSH)
#7	NICOTINE single term (MeSH)
#8	nicotine
#9	cigar*
#10	(bidi or bidis or kretek or paan or gutkha or snuff or snus or betel or (hand next roll*))
#11	(#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10)
#12	MASS MEDIA explode all trees (MeSH)
#13	CELLULAR PHONE single term (MeSH)
#14	ELECTRONIC MAIL single term (MeSH)
#15	RADIO single term (MeSH)
#16	TELEVISION single term (MeSH)
#17	TELEPHONE single term (MeSH)
#18	ADVERTISING single term (MeSH)
#19	HOTLINES single term (MeSH)
#20	INFORMATION DISSEMINATION single term (MeSH)
#21	PERSUASIVE COMMUNICATION single term (MeSH)
#22	NONVERBAL COMMUNICATION single term (MeSH)
#23	REMINDER SYSTEMS single term (MeSH)
#24	MOTION PICTURES single term (MeSH)
#25	MULTIMEDIA single term (MeSH)
#26	COMMUNICATIONS MEDIA single term (MeSH)
#27	TAPE RECORDING explode all trees (MeSH)
#28	SERIAL PUBLICATIONS explode all trees (MeSH)
#29	PAMPHLETS single term (MeSH)
#30	HEALTH EDUCATION single term (MeSH)
#31	COUNSELING single term (MeSH)
#32	INTERNET single term (MeSH)
#33	HEALTH PROMOTION single term (MeSH)
#34	SELF-HELP GROUPS single term (MeSH)
#35	TELECOMMUNICATIONS single term (MeSH)
#36	(mass next media)
#37	((advert* or campaign* or program*) and (tv or television or cable or cinema or cinemas or theatre or theatres or theater or theaters or movies or media or newspaper* or journal* or magazine*))
#38	((advert* or campaign* or program*) and (dvd or dvds or video* or (motion next picture*) or film or films or broadcast* or televised))
#39	(community next intervention*)
#40	((phone or telephone or mobile or cellular) and (counsel* or hotline* or (hot next line*) or quitline* or (quit next line*) or helpline* or (help next line*)))
#41	((internet near advert*) or (internet near campaign*) or (internet near information) or (internet near program*))
#42	(sms or (text next messag*) or texting)
#43	((pod next cast*) or podcast*)
#44	((smoking next day) or (smoking next days))
#45	(competition* or compete or incentive*)
#46	(selfhelp or (self next help) or (counter next marketing) or (consumer next advocacy))
#47	(tobacco next control next alliance*)
#48	(tobacco next control next program*)
#49	commit
#50	((quit near win) or smokeout or (smoke next out))
#51	(smoke next free next cities)

ID	SEARCH TERMS
#52	((advert* or campaign* or program* or intervention*) and (nationwide or statewide or countrywide or citywide or national or (nation next wide) or (state next wide) or (country next wide) or (city next wide)))
#53	(#12 or #13 or #14 or #15 or #16 or #17 or #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 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 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52)
#54	(#11 and #53)
#55	TOBACCO USE CESSATION explode all trees (MeSH)
#56	(quit* or cease* or stop* or cessation or motivat* or confidence)
#57	(uptake or prevent* or (chang* near behavior*) or (chang* near behaviour*))
#58	(#55 or #56 or #57)
#59	(#54 and #58)

159 records were retrieved and loaded into the database.

TRIP Plus (<http://www.update-software.com/trip/athens/>) Searched 11/7/6.

smoking OR antismoking OR “anti smoking” or smoker OR smokers OR tobacco OR nicotine cigar* OR bidi OR bidis OR kretek OR paan or gutkha OR snuff OR snus OR betel OR “hand roll”
#1 or #2

117 evidence-based synopses, 66 clinical queries and 161 systematic reviews were returned by this search. There was a great deal of duplication with studies already retrieved. 8 records were added to the database.

Medline strategy (Ovid): Ovid MEDLINE(R) In-Process, Other Non-Indexed Citations, Ovid MEDLINE(R). Searched 5/7/6

ID	SEARCH TERMS
#1	(smoking OR antismoking OR anti-smoking).ti,ab. (82176)
#2	smoking/ (78528)
#3	(smoker OR smokers).ti,ab. (32588)
#4	tobacco.ti,ab. (37317)
#5	tobacco/ OR tobacco, smokeless/ (16603)
#6	"Tobacco Use Disorder"/ (3602)
#7	nicotine.ti,ab. (16926)
#8	nicotine/ (14419)
#9	cigar\$.ti,ab. (31241)
#10	(bidi OR bidis OR kretek OR paan OR gutkha OR snuff OR snus OR betel OR hand roll\$).ti,ab. (1704)
#11	or/1-10 (159476)
#12	exp mass media/ (27762)
#13	cellular phone/ (639)
#14	electronic mail/ (575)
#15	radio/ OR television/ OR telephone/ (15520)
#16	advertising/ OR hotlines/ (10733)
#17	information dissemination/ (3163)
#18	persuasive communication/ (1743)
#19	nonverbal communication/ (2423)
#20	reminder systems/ (960)
#21	motion pictures/ (4616)
#22	multimedia/ (885)
#23	communications media/ (235)
#24	exp tape recording/ (10874)
#25	exp serial publications/ (21538)
#26	pamphlets/ (2156)
#27	health education/ (38963)
#28	counseling/ (19318)

ID	SEARCH TERMS
#29	internet/ (20312)
#30	health promotion/ (27517)
#31	self-help groups/ (5600)
#32	telecommunications/ (2499)
#33	mass media.ti.ab. (1592)
#34	((advert\$ OR campaign\$ OR program\$) adj3 (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper\$ OR journal\$ OR magazine\$)).ti.ab. (2165)
#35	((advert\$ OR campaign\$ OR program\$) adj3 (dvd OR dvds OR video\$ OR motion picture\$ OR film OR films OR broadcast\$ OR televised)).ti.ab. (552)
#36	community intervention\$.ti.ab. (705)
#37	((phone OR telephone OR mobile OR cellular) adj3 (counsel\$ OR hotline\$ OR hot line\$ OR quitline\$ OR quit line\$ OR helpline\$ OR help line\$)).ti.ab. (599)
#38	(internet adj3 (advert\$ OR campaign\$ OR information OR program\$)).ti.ab. (1239)
#39	(sms OR text messag\$ OR texting).ti.ab. (1754)
#40	(pod cast\$ OR podcast\$).ti.ab. (7)
#41	(smoking day OR smoking days).ti.ab. (44)
#42	(competition\$ OR compete OR incentive\$).ti.ab. (57296)
#43	(selfhelp OR self help OR (counter adj marketing) OR counter-marketing OR consumer advocacy).ti.ab. (2855)
#44	tobacco control alliance\$.ti.ab. (0)
#45	tobacco control program\$.ti.ab. (208)
#46	commit.ti.ab. (2110)
#47	((quit adj3 win) OR (smokeout OR smoke-out OR smoke out)).ti.ab. (74)
#48	smoke free cities.ti.ab. (1)
#49	((advert\$ OR campaign\$ OR program\$ OR intervention\$) adj3 (nationwide OR statewide OR countrywide OR citywide OR national OR nation wide OR state wide OR country wide OR city wide)).ti.ab. (9769)
#50	or/12-49 (249792)
#51	11 and 50 (10455)
#52	limit 51 to (english language and yr="1990 - 2006") (7165)
#53	"tobacco use cessation"/ OR smoking cessation/ (9678)
#54	(quit\$ OR cease\$ OR stop\$ OR cessation OR motivat\$ OR confidence).ti.ab. (288259)
#55	(uptake OR prevent\$ OR (chang\$ adj3 behavior\$) OR (chang\$ adj3 behaviour\$)).ti.ab. (716420)
#56	or/53-55 (980149)
#57	52 and 56 (4239)

4239 records were downloaded.

Embase strategy (Datastar). Searched 6/7/6

ID	SEARCH TERMS
#1	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).TI,AB.
#2	SMOKING-AND-SMOKING-RELATED-PHENOMENA#.DE.
#3	TOBACCO-DEPENDENCE.DE.
#4	TOBACCO.TI,AB.
#5	NICOTINE.DE.
#6	NICOTINE.TI,AB.
#7	TOBACCO-SMOKE.DE.
#8	SMOKELESS-TOBACCO.DE.
#9	TOBACCO.DE.
#10	CIGARETTE-SMOKE.DE.
#11	BETEL-NUT.DE.
#12	CIGAR\$.TI,AB.
#13	(BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLL\$).TI,AB.
#14	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
#15	Mass-Medium.DE.
#16	Mobile-Phone.DE.
#17	E-Mail.DE.
#18	Wireless-Communication.DE. OR Telephone.W..DE. OR Television.W..DE.
#19	Advertizing.W..DE.
#20	Information-Dissemination.DE.
#21	Persuasive-Communication.DE.
#22	Nonverbal-Communication.DE.
#23	Reminder-System.DE.
#24	Multimedia.W..DE.
#25	Recording#.W..DE.
#26	Publication.W..DE.
#27	Health-Education.DE.
#28	Counseling.W..DE.
#29	Internet.W..DE.
#30	Health-Promotion.DE.
#31	Telecommunication#.W..DE.
#32	(mass ADJ media).TI,AB.
#33	((advert\$ OR campaign\$ OR program\$) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper\$ OR journal\$ OR magazine\$)).TI,AB.
#34	(community ADJ intervention\$).TI,AB.
#35	((phone OR telephone OR mobile OR cellular) NEAR (counsel\$ OR hotline\$ OR hot ADJ line\$ OR quitline\$ OR quit ADJ line\$ OR helpline\$ OR help ADJ line\$)).TI,AB.
#36	(internet NEAR (advert\$ OR campaign\$ OR information OR program\$)).TI,AB.
#37	(sms OR text ADJ messag\$ OR texting).TI,AB.
#38	(pod ADJ cast\$ OR podcast\$).TI,AB.
#39	(smoking ADJ day OR smoking ADJ days).TI,AB.
#40	(competition\$ OR compete OR incentive\$).TI,AB.
#41	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer ADJ advocacy).TI,AB.
#42	(tobacco ADJ control ADJ alliance\$).TI,AB.
#43	(tobacco ADJ control ADJ program\$).TI,AB.
#44	commit.TI,AB.
#45	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#46	(smoke ADJ free ADJ cities).TI,AB.
#47	((advert\$ OR campaign\$ OR program\$ OR intervention\$) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#48	((advert\$ OR campaign\$ OR program\$) NEAR (dvd OR dvds OR video\$ OR motion ADJ picture\$ OR film OR films OR broadcast\$ OR televised)).TI,AB.

ID	SEARCH TERMS
#49	15 OR 16 OR 17 OR 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 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 OR 45 OR 46 OR 47 OR 48
#50	14 AND 49
#51	limit set 50 YEAR > 1989
#52	51 AND LG=EN
#53	Smoking-Cessation.DE.
#54	(quit\$ OR cease\$ OR stop\$ OR cessation OR motivat\$ OR confidence).TI,AB.
#55	(uptake OR prevent\$ OR chang\$ NEAR behavior\$ OR chang\$ NEAR behaviour\$).TI,AB.
#56	53 OR 54 OR 55
#57	52 AND 56

3746 records were downloaded.

BNI (Datastar interface) 1994 to date. Searched 7/7/6

ID	SEARCH TERMS
#1	SMOKING.DE.
#2	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).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	Mass-Media.DE.
#8	Telephone-Use.DE.
#9	Literature-and-Writing.DE.
#10	Counselling.W..DE.
#11	Health-Promotion.DE.
#12	Self-Help-Groups.DE.
#13	(mass ADJ media).TI,AB.
#14	((advert\$ OR campaign\$ OR program\$) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper\$ OR journal\$ OR magazine\$)).TI,AB.
#15	((advert\$ OR campaign\$ OR program\$) NEAR (dvd OR dvds OR video\$ OR motion ADJ picture\$ OR film OR films OR broadcast\$ OR televised)).TI,AB.
#16	(community ADJ intervention\$).TI,AB.
#17	((phone OR telephone OR mobile OR cellular) NEAR (counsel\$ OR hotline\$ OR hot ADJ line\$ OR quitline\$ OR quit ADJ line\$ OR helpline\$ OR help ADJ line\$)).TI,AB.
#18	(internet NEAR (advert\$ OR campaign\$ OR information OR program\$)).TI,AB.
#19	(sms OR text ADJ messag\$ OR texting).TI,AB.
#20	(pod ADJ cast\$ OR podcast\$).TI,AB.
#21	(smoking ADJ day OR smoking ADJ days).TI,AB.
#22	(competition\$ OR compete OR incentive\$).TI,AB.
#23	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer ADJ advocacy).TI,AB.
#24	(tobacco ADJ control ADJ alliance\$).TI,AB.
#25	(tobacco ADJ control ADJ program\$).TI,AB.
#26	commit.TI,AB.
#27	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#28	(smoke ADJ free ADJ cities).TI,AB.
#29	((advert\$ OR campaign\$ OR program\$ OR intervention\$) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#30	7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29

ID	SEARCH TERMS
#31	6 AND 30
#32	(quit\$ OR cease\$ OR stop\$ OR cessation OR motivat\$ OR confidence).TI,AB.
#33	(uptake OR prevent\$ OR chang\$ NEAR behavior\$ OR chang\$ NEAR behaviour\$).TI,AB.
#34	32 OR 33
#35	31 AND 34

175 records were downloaded.

CINAHL (Datastar interface). Searched 7/7/6

ID	SEARCH TERMS
#1	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).TI,AB.
#2	SMOKING#.DE.
#3	NICOTINE.DE.
#4	TOBACCO-SMOKELESS.DE.
#5	TOBACCO.DE.
#6	PASSIVE-SMOKING.DE.
#7	BETEL-PALM.DE.
#8	(TOBACCO OR NICOTINE).TI,AB.
#9	CIGAR\$.TI,AB.
#10	(BIDIS OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLL\$).TI,AB.
#11	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10
#12	Communications-Media.DE.
#13	Electronic-Mail.DE.
#14	Radio.W..DE. or Television.W..DE. or Telephone.W..DE.
#15	Advertising.W..DE.
#16	TELEPHONE-INFORMATION-SERVICES.DE.
#17	Nonverbal-Communication.DE. OR Reminder-Systems.DE.
#18	Motion-Pictures.DE.
#19	Multimedia.W..DE.
#20	Posters.W..DE.
#21	Videorecording.W..DE. OR Videodiscs.W..DE.
#22	Wireless-Communications.DE.
#23	Electronic-Publications.DE.
#24	Pamphlets.W..DE.
#25	Serial-Publications#.DE.
#26	Health-Education.DE.
#27	Counseling.W..DE.
#28	Internet.W..DE.
#29	Health-Promotion.DE.
#30	Support-Groups.DE.
#31	Telecommunications.W..DE.
#32	(mass ADJ media).TI,AB.
#33	((advert\$ OR campaign\$ OR program\$) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper\$ OR journal\$ OR magazine\$)).TI,AB.
#34	((advert\$ OR campaign\$ OR program\$) NEAR (dvd OR dvds OR video\$ OR motion ADJ picture\$ OR film OR films OR broadcast\$ OR televised)).TI,AB.
#35	(community ADJ intervention\$).TI,AB.
#36	((phone OR telephone OR mobile OR cellular) NEAR (counsel\$ OR hotline\$ OR hot ADJ line\$ OR quitline\$ OR quit ADJ line\$ OR helpline\$ OR help ADJ line\$)).TI,AB.
#37	(internet NEAR (advert\$ OR campaign\$ OR information OR program\$)).TI,AB.
#38	(sms OR text ADJ messag\$ OR texting).TI,AB.
#39	(pod ADJ cast\$ OR podcast\$).TI,AB.
#40	(smoking ADJ day OR smoking ADJ days).TI,AB.
#41	(competition\$ OR compete OR incentive\$).TI,AB.
#42	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer

ID	SEARCH TERMS
	ADJ advocacy).TI,AB.
#43	(tobacco ADJ control ADJ alliance\$).TI,AB.
#44	(tobacco ADJ control ADJ program\$).TI,AB.
#45	commit.TI,AB.
#46	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#47	(smoke ADJ free ADJ cities).TI,AB.
#48	((advert\$ OR campaign\$ OR program\$ OR intervention\$) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#49	12 or 13 or 14 or 15 OR 16 OR 17 OR 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 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 OR 45 OR 46 OR 47 OR 48
#50	11 and 49
#51	limit set 50 YEAR > 1989
#52	51 AND LG=EN
#53	Smoking-Cessation.DE.
#54	(quit\$ or cease\$ or stop\$ or cessation or motivat\$ or confidence).ti,ab.
#55	(uptake or prevent\$ or (chang\$ adj3 behavior\$) or (chang\$ adj3 behaviour\$)).ti,ab.
#56	53 OR 54 OR 55
#57	52 and 56

1704 records were downloaded.

PsycINFO (Datastar interface) Searched 7/7/6

ID	SEARCH TERMS
#1	nicotine.DE. OR tobacco-smoking.DE.
#2	smokeless-tobacco.DE.
#3	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).TI,AB.
#4	TOBACCO.TI,AB.
#5	NICOTINE.TI,AB.
#6	(cigar OR cigars OR cigarette OR cigarettes).TI,AB.
#7	(BIDIS OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
#8	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7
#9	Communications-Media.DE.
#10	Mass-Media.DE.
#11	Electronic-Communication.DE. OR Computer-Mediated-Communication.DE.
#12	Radio.W..DE. OR Television-Advertising.DE. OR Telephone-Systems.DE.
#13	Advertising.W..DE. OR Hot-Line-Services.DE.
#14	Information-Dissemination.DE.
#15	Persuasive-Communication.DE.
#16	Nonverbal-Communication.DE.
#17	Films.W..DE.
#18	Videotapes.W..DE.
#19	News-Media.DE. OR Newspapers.W..DE. OR Magazines.W..DE.
#20	Health-Education.DE.
#21	Counseling.W..DE. OR Group-Counseling.DE.
#22	Internet.W..DE.
#23	Health-Promotion.DE.
#24	Support-Groups.DE.
#25	Telecommunications-Media.DE.
#26	(mass ADJ media).TI,AB.
#27	((advert OR advertises OR advertise OR advertises OR advertize OR advertizes OR advertisement OR advertisements OR advertizement OR advertizements OR advertising) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper OR newspapers OR journal OR journals OR magazine OR magazines)).TI,AB.
#28	((campaign OR campaigns OR campaigning) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper OR newspapers OR journal OR journals OR magazine OR magazines)).TI,AB.
#29	((program OR programs OR programme OR programmes) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper OR newspapers OR journal OR journals OR magazine OR magazines)).TI,AB.
#30	((advert OR advertises OR advertise OR advertises OR advertize OR advertizes OR advertisement OR advertisements OR advertizement OR advertizements OR advertising) NEAR (dvd OR dvds OR video OR videos OR videotape OR videotapes OR videorecording\$ OR motion ADJ picture OR pictures OR film OR films OR broadcast\$ OR televised)).TI,AB.
#31	((campaign OR campaigns OR campaigning) NEAR (dvd OR dvds OR video OR videos OR videotape OR videotapes OR videorecording\$ OR motion ADJ picture OR pictures OR film OR films OR broadcast\$ OR televised)).TI,AB.
#32	((program OR programs OR programme OR programmes) NEAR (dvd OR dvds OR video OR videos OR videotape OR videotapes OR videorecording\$ OR motion ADJ picture OR pictures OR film OR films OR broadcast\$ OR televised)).TI,AB.
#33	(community ADJ (intervention OR interventions)).TI,AB.
#34	((phone OR telephone OR mobile OR cellular) NEAR (counselling OR counseling OR hotline\$ OR hot ADJ line OR hot ADJ lines OR quitline\$ OR quit ADJ line OR quit ADJ lines OR helpline\$ OR help ADJ line OR help ADJ line)).TI,AB.
#35	(internet NEAR (advert OR advertises OR advertise OR advertises OR advertize OR advertizes OR advertisement OR advertisements OR advertizement OR advertizements OR advertising OR campaign OR campaigns OR campaigning OR information OR program OR programs

ID	SEARCH TERMS
	OR programme OR programmes)).TI,AB.
#36	(sms OR text ADJ message OR text ADJ messages OR text ADJ messaging OR texting).TI,AB.
#37	(pod ADJ cast OR pod ADJ casts OR pod ADJ casting OR podcast\$).TI,AB.
#38	(smoking ADJ day OR smoking ADJ days).TI,AB.
#39	(competition OR competitions OR compete OR incentive OR incentives).TI,AB.
#40	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer ADJ advocacy).TI,AB.
#41	(tobacco ADJ control ADJ alliance OR tobacco ADJ control ADJ alliances).TI,AB.
#42	(tobacco ADJ control ADJ (program OR programs OR programme OR programmes)).TI,AB.
#43	commit.TI,AB.
#44	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#45	(smoke ADJ free ADJ cities).TI,AB.
#46	((advert OR adverts OR advertise OR advertises OR advertize OR advertizes OR advertisement OR advertisements OR advertizement OR advertizements OR advertising) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#47	((campaign OR campaigns OR campaigning) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#48	((program OR programs OR programme OR programmes) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#49	((intervention OR interventions) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#50	9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 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 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 OR 45 OR 46 OR 47 OR 48 OR 49
#51	8 AND 50
#52	limit set 51 YEAR > 1989
#53	52 AND LG=EN
#54	smoking-cessation.DE.
#55	(quit OR quits OR quitting OR quitted OR cease\$ OR stop OR stops OR stopping OR stopped OR cessation OR motivate OR motivates OR motivating OR motivated OR confidence).TI,AB.
#56	(uptake OR prevent OR prevents OR preventing OR prevented).TI,AB.
#57	((change OR changes OR changing OR changed) NEAR (behavior OR behaviors OR behaviour OR behaviours)).TI,AB.
#58	54 OR 55 OR 56 OR 57
#59	53 AND 58

1104 records were downloaded.

King's Fund (Datastar interface). Searched 10/7/6

ID	SEARCH TERMS
#1	smoking#.DE.
#2	smoking-policy.DE.
#3	cigarettes#.DE.
#4	tobacco#.DE.
#5	smoking-control.DE.
#6	tobacco-consumption.DE.
#7	smokers.DE.
#8	nicotine.DE.
#9	betel.DE.

ID	SEARCH TERMS
#10	tobacco-chewing.DE.
#11	tobacco-products.DE.
#12	cigars.DE.
#13	skoal-bandits.DE.
#14	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).TI,AB.
#15	(TOBACCO OR NICOTINE).TI,AB.
#16	(cigar OR cigars OR cigarette OR cigarettes).TI,AB.
#17	(BIDI\$ OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
#18	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
#19	Communication-Media.DE.
#20	Mass-Media.DE.
#21	Destination-Directed-Communication.DE. OR Mail.W..DE. OR Email.W..DE.
#22	Broadcasting.W..DE. OR Commercial-Broadcasting#.DE. OR Local-Broadcasting#.DE. OR Radio.W..DE. OR Local-Radio.DE. OR Television#.W..DE.
#23	Telephones#.W..DE. OR Telephone-Services.DE. OR Telephone-Helplines.DE.
#24	Advertising.W..DE. OR Commercials.W..DE. OR Newspaper-and-Magazine-Advertising.DE. OR Radio-Advertising.DE. OR Television-Advertising.DE.
#25	Information-Transfer.DE. OR Dissemination-Of-Information.DE.
#26	Persuasion.W..DE.
#27	Non-Verbal-Communication.DE.
#28	Films.W..DE. OR Cinema.W..DE. OR Theatre.W..DE.
#29	Multi-Media.DE.
#30	Magnetic-Tape-Recordings.DE. OR Videos.W..DE.
#31	Press#.W..DE.
#32	Health-Education.DE.
#33	Counselling.W..DE.
#34	Internet.W..DE.
#35	Health-Promotion.DE.
#36	Support-Groups.DE. OR Self-Help-Groups.DE.
#37	Telecommunications.W..DE.
#38	(mass ADJ media).TI,AB.
#39	((advert\$ OR campaign\$ OR program\$) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR newspaper\$ OR journal\$ OR magazine\$)).TI,AB.
#40	((advert\$ OR campaign\$ OR program\$) NEAR (dvd OR dvds OR video\$ OR motion ADJ picture\$ OR film OR films OR broadcast\$ OR televised)).TI,AB.
#41	(community ADJ intervention\$).TI,AB.
#42	((phone OR telephone OR mobile OR cellular) NEAR (counsel\$ OR hotline\$ OR hot ADJ line\$ OR quitline\$ OR quit ADJ line\$ OR helpline\$ OR help ADJ line\$)).TI,AB.
#43	(internet NEAR (advert\$ OR campaign\$ OR information OR program\$)).TI,AB.
#44	(sms OR text ADJ messag\$ OR texting).TI,AB.
#45	(pod ADJ cast\$ OR podcast\$).TI,AB.
#46	(smoking ADJ day OR smoking ADJ days).TI,AB.
#47	(competition\$ OR compete OR incentive\$).TI,AB.
#48	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer ADJ advocacy).TI,AB.
#49	(tobacco ADJ control ADJ alliance\$).TI,AB.
#50	(tobacco ADJ control ADJ program\$).TI,AB.
#51	commit.TI,AB.
#52	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#53	(smoke ADJ free ADJ cities).TI,AB.
#54	((advert\$ OR campaign\$ OR program\$ OR intervention\$) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#55	19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 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 OR

ID	SEARCH TERMS
	45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54
#56	18 AND 55
#57	limit set 56 YEAR > 1989
#58	smoking-cessation.DE.
#59	(quit\$ OR cease\$ OR stop\$ OR cessation OR motivat\$ OR confidence).TI,AB.
#60	(uptake OR prevent\$ OR chang\$ NEAR behavior\$ OR chang\$ NEAR behaviour\$).TI,AB.
#61	58 OR 59 OR 63
#62	59 AND 64

94 records were downloaded.

DH-DATA (Datastar interface). Searched 10/7/6

ID	SEARCH TERMS
#1	smoking#.DE.
#2	smoking-policy.DE.
#3	cigarettes#.DE.
#4	tobacco#.DE.
#5	smoking-control.DE.
#6	tobacco-consumption.DE.
#7	smokers.DE.
#8	nicotine.DE.
#9	betel.DE.
#10	tobacco-chewing.DE.
#11	tobacco-products.DE.
#12	cigars.DE.
#13	skoal-bandits.DE.
#14	(SMOKING OR SMOKER OR SMOKERS OR SMOKEFREE OR SMOKE ADJ FREE OR antismoking OR anti ADJ smoking).TI,AB.
#15	(TOBACCO OR NICOTINE).TI,AB.
#16	(cigar OR cigars OR cigarette OR cigarettes).TI,AB.
#17	(BIDIS OR KRETEK OR PAAN OR GUTKHA OR SNUFF OR SNUS OR BETEL OR HAND ADJ ROLLED).TI,AB.
#18	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
#19	Communication-Media.DE.
#20	Mass-Media.DE.
#21	Destination-Directed-Communication.DE. OR Mail.W..DE. OR Email.W..DE.
#22	Broadcasting.W..DE. OR Commercial-Broadcasting#.DE. OR Local-Broadcasting#.DE. OR Radio.W..DE. OR Local-Radio.DE. OR Television#.W..DE.
#23	Telephones#.W..DE. OR Telephone-Services.DE. OR Telephone-Helplines.DE.
#24	Advertising.W..DE. OR Commercials.W..DE. OR Newspaper-and-Magazine-Advertising.DE. OR Radio-Advertising.DE. OR Television-Advertising.DE.
#25	Information-Transfer.DE. OR Dissemination-Of-Information.DE.
#26	Persuasion.W..DE.
#27	Non-Verbal-Communication.DE.
#28	Films.W..DE. OR Cinema.W..DE. OR Theatre.W..DE.
#29	Multi-Media.DE.
#30	Magnetic-Tape-Recordings.DE. OR Videos.W..DE.
#31	Press#.W..DE.
#32	Health-Education.DE.
#33	Counselling.W..DE.
#34	Internet.W..DE.
#35	Health-Promotion.DE.
#36	Support-Groups.DE. OR Self-Help-Groups.DE.
#37	Telecommunications.W..DE.
#38	(mass ADJ media).TI,AB.
#39	((advert\$ OR campaign\$ OR program\$) NEAR (tv OR television OR cable OR cinema OR cinemas OR theatre OR theatres OR theater OR theaters OR movies OR media OR

ID	SEARCH TERMS
	newspaper\$ OR journal\$ OR magazine\$)).TI,AB.
#40	((advert\$ OR campaign\$ OR program\$) NEAR (dvd OR dvds OR video\$ OR motion ADJ picture\$ OR film OR films OR broadcast\$ OR televised)).TI,AB.
#41	(community ADJ intervention\$).TI,AB.
#42	((phone OR telephone OR mobile OR cellular) NEAR (counsel\$ OR hotline\$ OR hot ADJ line\$ OR quitline\$ OR quit ADJ line\$ OR helpline\$ OR help ADJ line\$)).TI,AB.
#43	(internet NEAR (advert\$ OR campaign\$ OR information OR program\$)).TI,AB.
#44	(sms OR text ADJ messag\$ OR texting).TI,AB.
#45	(pod ADJ cast\$ OR podcast\$).TI,AB.
#46	(smoking ADJ day OR smoking ADJ days).TI,AB.
#47	(competition\$ OR compete OR incentive\$).TI,AB.
#48	(selfhelp OR self ADJ help OR counter ADJ marketing OR counter-marketing OR consumer ADJ advocacy).TI,AB.
#49	(tobacco ADJ control ADJ alliance\$).TI,AB.
#50	(tobacco ADJ control ADJ program\$).TI,AB.
#51	commit.TI,AB.
#52	(quit NEAR win).TI,AB. OR (smokeout OR smoke-out OR smoke ADJ out).TI,AB.
#53	(smoke ADJ free ADJ cities).TI,AB.
#54	((advert\$ OR campaign\$ OR program\$ OR intervention\$) NEAR (nationwide OR statewide OR countrywide OR citywide OR national OR nation ADJ wide OR state ADJ wide OR country ADJ wide OR city ADJ wide)).TI,AB.
#55	19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 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 OR 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54
#56	18 AND 55
#57	limit set 56 YEAR > 1989
#58	smoking-cessation.DE.
#59	(quit\$ OR cease\$ OR stop\$ OR cessation OR motivat\$ OR confidence).TI,AB.
#60	(uptake OR prevent\$ OR chang\$ NEAR behavior\$ OR chang\$ NEAR behaviour\$).TI,AB.
#61	58 OR 59 OR 60
#62	57 AND 61

399 records were downloaded.

ASSIA (CSA interface). Searched 5/7/6

Searches were restricted to: 1990 – 2006

(((((DE=("smoking" or "heavy smoking" or "moderate smoking" or "occasional smoking" or "passive smoking" or "tobacco smoke")) or (DE=("tobacco" or "cigarettes" or "cigars" or "snuff")) or (DE=("nicotine" or "tobacco" or "cigarettes" or "cigars" or "snuff")))) or (TI=(smoking or anti-smoking or antismoking) or AB=(smoking or anti-smoking or antismoking)) or (TI=(tobacco or nicotine or cigar*) or AB=(tobacco or nicotine or cigar*)) or (TI=(bidi or bidis or kretek) or TI=(paan or gutkha or snuff) or TI=(snus or betel or (hand roll*)) or (AB=(bidi or bidis or kretek) or AB=(paan or gutkha or snuff) or AB=(snus or betel or (hand roll*)))))

and (((((DE=("mass media" or "advertisements" or "broadcasting" or "films" or "newspapers" or "periodicals" or "press" or "radio" or "television")) or (DE="mobile phones") or (DE="persuasive communication") or (DE="reminders") or (DE="tape recordings") or (DE="selfhelp tape recordings")) or (TI=(community intervention*) or AB=(community intervention*)) or (TI=((advert* or campaign* or program*) within 3 (tv or television or cable or cinema or cinemas or theatre or theatres or theater or theaters or movie* or media or newspaper* or journal* or magazine*)) or (AB=((advert* or campaign* or program*) within 3 (tv or television or cable or cinema or cinemas or theatre or theatres or theater or theaters or movie* or media or newspaper* or journal* or magazine*)) or (TI=((advert* or campaign* or program*) within 3 (dvd or dvds or video* or motion picture* or film or films or broadcast* or televised))) or (AB=((advert* or campaign* or program*) within 3 (dvd or dvds or video* or motion picture* or film or films or broadcast* or televised))) or (TI=((phone or telephone or mobile or cellular) within 3 (counsel* or

hotline* or **hot line*** or **quitline*** or **quit line*** or **help line*** or **helpline***))) or (AB=((**phone** or **telephone** or **mobile** or **cellular**) within 3 (**counsel*** or **hotline*** or **hot line*** or **quitline*** or **quit line*** or **help line*** or **helpline***))) or (TI=(**internet** within 3 (**advert*** or **campaign*** or **information** or **program***))) or (AB=(**internet** within 3 (**advert*** or **campaign*** or **information** or **program***))) or (TI=(**sms** or (**text message***) or **texting**) or AB=(**sms** or (**text message***) or **texting**)) or (TI=(**podcast*** or (**pod cast***)) or AB=(**podcast*** or (**pod cast***))) or (TI=(**competition*** or **compete** or **incentive***) or AB=(**competition*** or **compete** or **incentive***)) or (TI=((**smoking day**) or (**smoking days**)) or AB=((**smoking day**) or (**smoking days**))) or (TI=((**self help**) or **selfhelp** or (**counter marketing**) or **TI**=(**counter-marketing** or (**consumer advocacy**))) or (AB=((**self help**) or **selfhelp** or (**counter marketing**) or AB=(**counter-marketing** or (**consumer advocacy**))) or (TI=((**tobacco control alliance***) or (**tobacco control program***)) or AB=((**tobacco control alliance***) or (**tobacco control program***))) or (TI=**commit*** or AB=**commit***) or (TI=(**quit** within 3 **win**)) or (AB=(**quit** within 3 **win**)) or (TI=(**smokeout** or (**smoke out**) or **smoke-out**) or AB=(**smokeout** or (**smoke out**) or **smoke-out**)) or (TI=((**smoke free cities**) or (**smoke-free cities**)) or AB=((**smoke free cities**) or (**smoke-free cities**))) or (TI=((**advert*** or **campaign*** or **program*** or **intervention***) within 3 (**nationwide** or **statewide** or **countrywide** or **citywide** or **national** or **nation wide** or **state wide** or **country wide** or **city wide**))) or (AB=((**advert*** or **campaign*** or **program*** or **intervention***) within 3 (**nationwide** or **statewide** or **countrywide** or **citywide** or **national** or **nation wide** or **state wide** or **country wide** or **city wide**))) or (DE=("health education" or "health promotion")) or (DE="counselling" or (DE=("internet" or "telecommunications"))))

and ((TI=(**quit*** or **cease*** or **stop***) or TI=(**cessation** or **motivat*** or **confidence**)) or (AB=(**quit*** or **cease*** or **stop***) or AB=(**cessation** or **motivat*** or **confidence**)) or (TI=(**uptake** or **prevent***) or AB=(**uptake** or **prevent***)) or (TI=((**chang*** within 3 **behaviour**) or (**chang*** within 3 **behavior**))) or (AB=((**chang*** within 3 **behaviour**) or (**chang*** within 3 **behavior**))))

336 records were downloaded.

Sociological abstracts (CSA interface). Searched 6/7/6

Searches were restricted to: 1990 – 2006

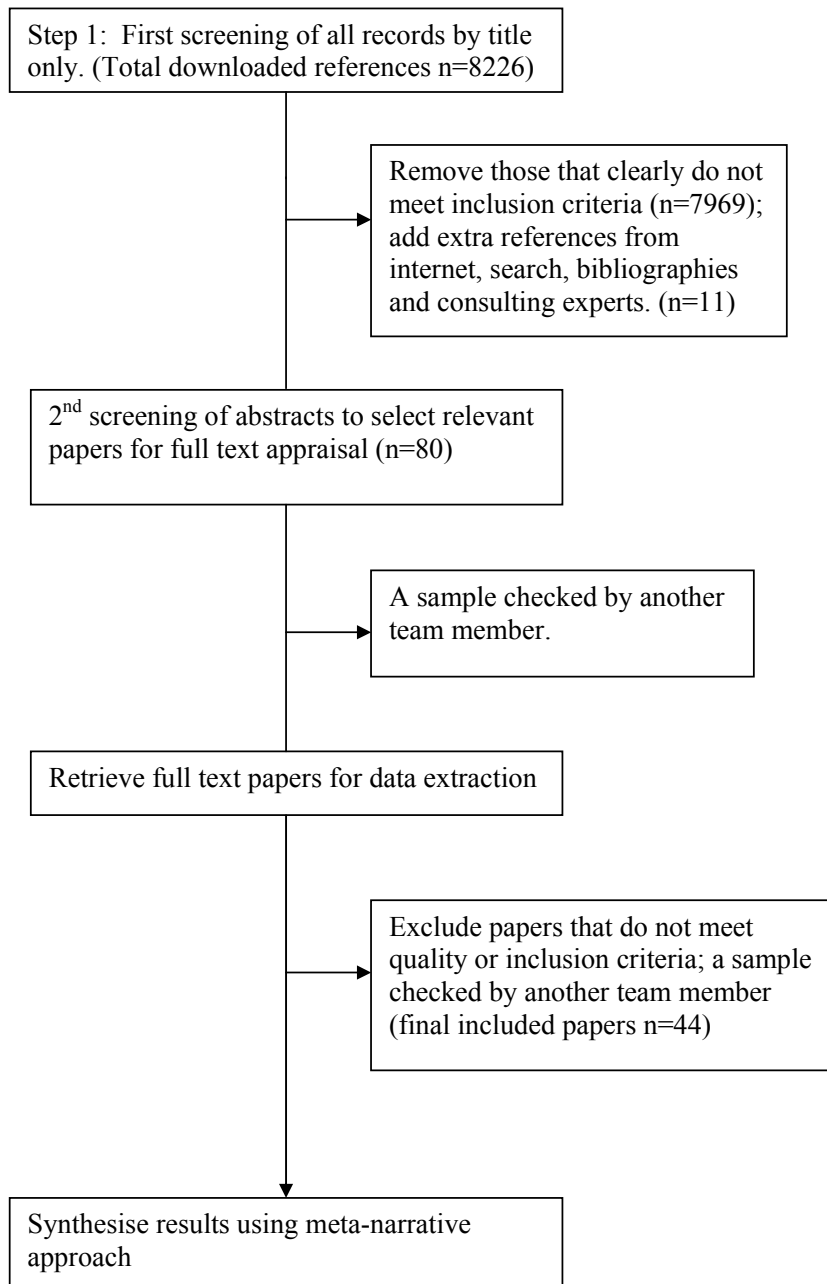
((DE="smoking" or (TI=(**smoking** or **antismoking** or **anti-smoking**)) or (AB=(**smoking** or **antismoking** or **anti-smoking**)) or (TI=(**tobacco** or **nicotine** or **cigar*** or **bidi** or **bidis** of **kretek** or **paan** or **gutkha** or **snuff** or **snus** or **betel** or **hand roll***)) or (AB=(**tobacco** or **nicotine** or **cigar*** or **bidi** or **bidis** of **kretek** or **paan** or **gutkha** or **snuff** or **snus** or **betel** or **hand roll***))))

and (((DE=("mass media" or "news media" or "advertising" or "information dissemination" or "mass media effects" or "mass media images" or "messages" or "newspapers" or "telecommunications")) or (DE="news coverage") or (DE="internet") or (DE=("radio" or "telephone communications" or "television")) or (DE=("counselling" or "health education" or "self help groups" or "films" or "magazines" or "videotape recordings")))) or (TI=(**community intervention***) or AB=(**community intervention***)) or (TI=((**advert*** or **campaign*** or **program***) within 3 (**tv** or **television** or **cable** or **cinema** or **cinemas** or **theatre** or **theatres** or **theater** or **theaters** or **movie*** or **media** or **newspaper*** or **journal*** or **magazine***))) or (AB=((**advert*** or **campaign*** or **program***) within 3 (**tv** or **television** or **cable** or **cinema** or **cinemas** or **theatre** or **theatres** or **theater** or **theaters** or **movie*** or **media** or **newspaper*** or **journal*** or **magazine***))) or (TI=((**advert*** or **campaign*** or **program***) within 3 (**dvd** or **dvds** or **video*** or **motion picture*** or **film** or **films** or **broadcast*** or **televised**))) or (AB=((**advert*** or **campaign*** or **program***) within 3 (**dvd** or **dvds** or **video*** or **motion picture*** or **film** or **films** or **broadcast*** or **televised**))) or (TI=((**phone** or **telephone** or **mobile** or **cellular**) within 3 (**counsel*** or **hotline*** or **hot line*** or **quitline*** or **quit line*** or **help line*** or **helpline***))) or (AB=((**phone** or **telephone** or **mobile** or **cellular**) within 3 (**counsel*** or **hotline*** or **hot line*** or **quitline*** or **quit line*** or **help line*** or **helpline***))) or (TI=(**internet** within 3 (**advert*** or **campaign*** or **information** or **program***))) or (AB=(**internet** within 3 (**advert*** or **campaign*** or **information** or **program***))) or (TI=(**sms** or **text message*** or **texting**) or AB=(**sms** or **text message*** or **texting**)) or (TI=(**podcast*** or **pod cast***) or AB=(**podcast*** or **pod cast***)) or (TI=(**competition*** or **compete** or **incentive***) or AB=(**competition*** or **compete** or **incentive***)) or (TI=((**smoking day**) or (**smoking days**)) or AB=((**smoking day**) or (**smoking days**))) or (TI=((**self help**) or **selfhelp** or (**counter marketing**) or **counter-marketing** or (**consumer advocacy**))) or

(AB=((self help) or selfhelp or (counter marketing) or counter-marketing or (consumer advocacy))) or (TI=((tobacco control alliance*) or (tobacco control program*))) or (AB=((tobacco control alliance*) or (tobacco control program*))) or (TI=(commit* or (quit within 3 win))) or (AB=(commit* or (quit within 3 win))) or (TI=(smokeout or (smoke out) or smoke-out) or AB=(smokeout or (smoke out) or smoke-out)) or (TI=((smoke free cities) or (smoke-free cities)) or AB=((smoke free cities) or (smoke-free cities))) or (TI=((advert* or campaign* or program* or intervention*) within 3 (nationwide or statewide or countrywide or citywide or national or nation wide or state wide or country wide or city wide))) or (AB=((advert* or campaign* or program* or intervention*) within 3 (nationwide or statewide or countrywide or citywide or national or nation wide or state wide or country wide or city wide))))

and ((TI=(quit* or cease* or stop* or cessation or motivat* or confidence) or AB=(quit* or cease* or stop* or cessation or motivat* or confidence)) or (TI=(uptake or prevent*) or AB=(uptake or prevent*)) or (TI=((chang* within 3 behaviour) or (chang* within 3 behavior))) or (AB=((chang* within 3 behaviour) or (chang* within 3 behavior))))

68 records were downloaded.

Appendix 3: QUORUM statement for selection of papers

Appendix 4: References for included studies and reviews

- Biener, L., McCallum-Keeler, G., and Nyman, A. L. (2000). Adults' response to Massachusetts anti-tobacco television advertisements: impact of viewer and advertisement characteristics. *Tobacco Control*.9:401-407.
- Boyd, N. R., Sutton, C., Orleans, C. T. et al. (1998). Quit Today! A targeted communications campaign to increase use of the cancer information service by African American smokers. *Preventive Medicine*.27:S50-S60.
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- Etter, J. F. and Laszlo, E. (2005). Evaluation of a poster campaign against passive smoking for World No-Tobacco Day. *Patient Education & Counseling*.57:190-198.
- Feil, E. G., Noell, J., Lichtenstein, E. et al. (2003). Evaluation of an internet-based smoking cessation program: lessons learned from a pilot study. *Nicotine & Tobacco Research*.5:189-194.
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- Friend, K. and Levy, D. T. (2002). Reductions in smoking prevalence and cigarette consumption associated with mass-media campaigns. *Health Education Research*.17:85-98.
- Frisby, G., Bessell, T. L., Borland, R. et al. (2002). Smoking cessation and the internet: a qualitative method examining online consumer behavior. *Journal of Medical internet Research*.4:E8.
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- Hafstad, A., Aaro, L. E., and Langmark, F. (1996). Evaluation of an anti-smoking mass media campaign targeting adolescents: The role of affective responses and interpersonal communication. *Health Education Research*.11:29-38.
- Hantula, D. A., Stillman, F. A., and Waranch, H. R. (1992). Can a mass-media campaign modify tobacco smoking in a large organization? Evaluation of the Great American Smokeout in an urban hospital. *Journal of Organizational Behavior Management*.13:33-47.
- Hey, K. and Perera, R. (2005a). Quit and Win contests for smoking cessation. *Cochrane Database of Systematic Reviews* Issue 2. Art. No.: CD004986.pub2. DOI: 10.1002/14651858.CD004986.pub2.
- Hey, K. and Perera, R. (2005b). Competitions and incentives for smoking cessation. *Cochrane Database of Systematic Reviews*. Issue 2. Art. No.: CD004307.pub2. DOI: 10.1002/14651858.CD004307.pub2.
- Hopkins, D. P., Briss, Peter A., Richard, Connie J. et al. (2001). Reviews of Evidence Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke . *American Journal of Preventive Medicine*.20:16-66.
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- Lenert, L., Munoz, R. F., Perez, J. E. et al. (2004). Automated e-mail messaging as a tool for improving quit rates in an internet smoking cessation intervention. *Journal of the American Medical Informatics Association*.11:235-240.
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- Owen, L. and Youdan, B. (2006). 22 years on: the impact and relevance of the UK No Smoking Day. *Tobacco Control*.15:19-25.
- Pierce, J. P., Macaskill, P., and Hill, D. (1990). Long-term effectiveness of mass media led antismoking campaigns in Australia. *American Journal of Public Health*.80:565-569.
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- Rodgers, A., Corbett, T., Bramley, D. et al. (2005). Do u smoke after txt? Results of a randomised trial of smoking cessation using mobile phone text messaging. *Tobacco Control*.14:255-261.
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- Sussman, S., Dent, C. W., Wang, E. et al. (1994). Participants and nonparticipants of a mass media self-help smoking cessation program. *Addictive Behaviors*.19:643-654.

Swartz, L. H., Noell, J. W., Schroeder, S. W. et al. (2006). A randomised control study of a fully automated internet based smoking cessation programme. *Tobacco Control*.15:7-12.

Thieleke, J., McMahon, J., Meyer, G. et al. (2005). An evaluation of the Freedom From Smoking Online cessation program among Wisconsin residents. *Wmj*.104:41-44.

Valois, R. F., Adams, K. G., and Kammermann, S. K. (1996). One-year evaluation results from CableQuit: a community cable television smoking cessation pilot program. *Journal of Behavioral Medicine*.19:479-499.

White, V., Tan, N., Wakefield, M. et al. (2003). Do adult focused anti-smoking campaigns have an impact on adolescents? The case of the Australian National Tobacco Campaign. *Tobacco Control*.12 Suppl 2:ii23-ii29.

Woodruff, S. I., Edwards, C. C., Conway, T. L. et al. (2001). Pilot test of an internet virtual world chat room for rural teen smokers. *Journal of Adolescent Health*.29:239-243.

Appendix 5: Excluded studies and reviews and reasons for exclusion

Reference

Anon. (2005). Internet-based smoking cessation schemes focused on individual patients work the best. *Pharmaceutical Journal*.274:536.

Anon. (2005). Testing online smoking cessation programs. *Ca-A Cancer Journal for Clinicians*.55:6.

Anon. (2006). Do advertisements for smoking cessation products help smokers quit? *National Bureau of Economic Research Bulletin on Aging & Health*.3.

Avery, R., Kenkel, D., Lillard, D. R., and Mathios, A. (2006). Private Profits And Public Health: Does Advertising Smoking Cessation Products Encourage Smokers To Quit? 11938 Cambridge, MA., National Bureau Of Economic Research. NBER Working Paper Series . 6 A.D.

Babrow, A. S., Black, D. R., and Tiffany, S. T. (1990). Beliefs, attitudes, intentions, and a smoking-cessation program: A planned behavior analysis of communication campaign development. *Health Communication*.2:145-163.

Bains, N., Pickett, W., and Hoey, J. (1998). The use and impact of incentives in population-based smoking cessation programs: a review. *American Journal of Health Promotion*.12:307-320.

Bala, M., Strzeszynski, L., and Hey, K. (2004). Mass media interventions for smoking cessation in adults. The Cochrane Database of Systematic Reviews: Protocols 2004 Issue 2 John Wiley & Sons, Ltd Chichester, UK DOI: 10.1002/14651858.CD004704.

Beaudoin, C. E. (2002). Exploring antismoking ads: appeals, themes, and consequences. *Journal of Health Communication*.7:123-137.

Bessell, T. L., McDonald, S., Silagy, C. A. et al. (2002). Do Internet interventions for consumers cause more harm than good? A systematic review. *Health Expectations*.5:28-37.

Bowen, D. J., Orlandi, M. A., Lichtenstein, E. et al. (2003). Intervention effects on youth tobacco use in the community intervention trial (COMMIT). *Journal of Epidemiology & Community Health*.57:159-160.

Buller,D.B., Woodall,W.G., Hall,J.R., Borland,R., Ax,B., Brown,M., and Hines,J.M. (2001). A Web-Based Smoking Cessation and Prevention Program for Children Aged 12 to 15. In *Public communication campaigns (third edition)*, Rice, Ronald E., & Atkin, Charles K. [Eds], Thousand Oaks, CA: Sage pp. 357-372.

Centers for Disease Control and Prevention. (1997). Impact

Reason for exclusion

Is just a short news item rather than study with data to extract

Is just an editorial - no primary data

Is just an editorial report on a study

Is an econometric analysis

Not a cessation intervention. Is just intent to participate so no relevant outcome measures

Relevant review but covered by more recent Cochrane review

Cochrane protocol only

Is content analysis of advertising with no outcome measures.

No relevant data

Is just a letter - the full study appears in another paper

Is an overview of a smoking cessation website but is not evaluated and does not offer any data on effectiveness.

Is an overview / editorial of

Reference

of promotion of the Great American Smokeout and availability of over-the-counter nicotine medications, 1996. *MMWR - Morbidity & Mortality Weekly Report*.46:867-871. Centers for Disease Control and Prevention. (1999). Decline in cigarette consumption following implementation of a comprehensive tobacco prevention and education program--Oregon, 1996-1998. *MMWR - Morbidity & Mortality Weekly Report*.48:140-143.

Chapman, S., Smith, W., Mowbray, G. et al. (1993). Quit and win smoking cessation contests: how should effectiveness be evaluated? *Preventive Medicine*.22:423-432.

Chew, F. and Palmer, S. (2005). Television health promotion in four countries. *Nutrition*.21:634-638.

Cooke, M., Mattick, R. P., and Walsh, R. A. (2001). Implementation of the "Fresh Start" smoking cessation programme to 23 antenatal clinics: A randomized controlled trial investigating two methods of dissemination. *Drug and Alcohol Review*.20:19-28.

Corbett, K., Thompson, B., White, N. et al. (1990). Process evaluation in the Community Intervention Trial for Smoking Cessation (COMMIT). *International Quarterly of Community Health Education*.11:291-309.

Dallery, J. and Glenn, I. M. (2005). Effects of an Internet-based voucher reinforcement program for smoking abstinence: a feasibility study. *Journal of Applied Behavior Analysis*.38:349-357.

Etter, J. F. (2006). Internet-based smoking cessation programs. *International Journal of Medical Informatics*.75:110-116

Evans, W. D., Crankshaw, E., Nimsch, C. et al. (2006). Media and secondhand smoke exposure: results from a national survey. *American Journal of Health Behavior*.30:62-71.

Feil, E. G. (2004). Response to CATCH-IT Report by Cameron Norman: Evaluation of an Internet-based smoking cessation program: Lessons learned from a pilot study.

Reason for exclusion

a study about to take place rather than primary research paper.

Is a campaign targeting prevention - also is overview/editorial rather than a primary research paper.

Included in Cochrane review on quit and win contests

Is about changing multiple health behaviours and is about smoking reduction rather than cessation.

Focus / outcome measures are related to success of disseminating a programme rather than evaluating it in terms of quit rates.

This is a methods paper talking about what is involved in the process evaluation rather than providing data. Gives a useful overview of the process but nothing to extract.

Is a study focused on efficacy of CO monitoring for cigarette consumption / detection of abstinence etc. Also, only 4 participants so poor quality study.

Not a systematic review

Outcomes are mainly knowledge, attitudes and behaviour in terms of SHS - more linked to prevention of this and effectiveness of media. No relevant data to extract.

Is a response to comments on the above report rather than a report of another

Reference

Journal of Medical Internet Research.6.

Freels, S. A., Warnecke, R. B., Parsons, J. A. et al. (1999). Characteristics associated with exposure to and participation in a televised smoking cessation intervention program for women with high school or less education. *Preventive Medicine*.28:579-588.

Goldman, L. K. and Glantz, S. A. (1998). Evaluation of antismoking advertising campaigns. *Jama*.279:772-777.

Hopkins, D. P., Husten, Corinne G., Fielding, Jonathan E. et al. (2001). Evidence reviews and recommendations on interventions to reduce tobacco use and exposure to environmental tobacco smoke: A summary of selected guidelines. [References]. *American Journal of Preventive Medicine*.20:-87.

Korhonen, H. J., Puska, P., Lipand, A. et al. (1993). Combining mass media and contest in smoking cessation. An experience from a series of national activities in Finland. *Hygie*.12:14-18.

Lancaster, T. and Stead, L. F. (2005). Self-help interventions for smoking cessation. *Cochrane Database of Systematic Reviews*.

McAlister, A. L., Ramirez, A. G., Amezcua, C. et al. (1992). Smoking cessation in Texas-Mexico border communities: a quasi-experimental panel study. *American Journal of Health Promotion*.6:274-279.

Meis, T. M., Gaie, M. J., Pingree, S. et al. (2002). Development of a tailored, Internet-based smoking cessation intervention for adolescents. *Journal of Computer-Mediated Communication*.7.

Royce, J. M., Corbett, K., Sorensen, G. et al. (1997). Gender, social pressure, and smoking cessations: the Community Intervention Trial for Smoking Cessation (COMMIT) at baseline. *Social Science & Medicine*.44:359-370.

Sowden, A. J. and Arblaster, L. (1998). Mass media interventions for preventing smoking in young people. *Cochrane Database of Systematic Reviews*.

Stead, L. F., Lancaster, T., and Perera, R. (2003). Telephone counselling for smoking cessation. *Cochrane Database of Systematic Reviews*.

Takahashi, Y., Satomura, K., Miyagishima, K. et al. (1999). A new smoking cessation programme using the Internet. *Tobacco Control*.8:109-110.

Wakefield, M., Flay, B., Nichter, M. et al. (2003). Effects of anti-smoking advertising on youth smoking: a review.

Reason for exclusion

intervention

Only looks at intention to quit - assesses movement through stages of change but is all self report and very dubious basis for a study given the criticisms of this model.

Literature review which is not systematic

Is an overview but does not provide data on mass media interventions

Relevant study but already included in a systematic review

Is high quality review of self help but does not have a mass media component

Relevant study but reported in review by Secker-Walker

Is a discussion of how the internet site was developed but has not been evaluated and there is no data on effectiveness.

Outcome is social pressure; no outcomes on smoking cessation; only baseline data

High quality review but focus is on prevention rather than cessation or relapse prevention

High quality review - but does not include mass media

Is a letter to the editor

Is a literature review but not systematic review.

Reference

Journal of Health Communication.8:229-247.

Walters, S. T., Wright, J. A., and Shegog, R. (2006). A review of computer and Internet-based interventions for smoking behavior. *Addictive Behaviors*.31:264-277.

Warnecke, R. B., Flay, B. R., Kviz, F. J. et al. (1991). Characteristics of participants in a televised smoking cessation intervention. *Preventive Medicine*.20:389-403.

Wewers, M. E., Ahijevych, K., and Page, J. A. (1991). Evaluation of a mass media community smoking cessation campaign. *Addictive Behaviors*.16:289-294.

Reason for exclusion

Only one study relevant to this review, and the study is already included

Relevant but reports on a study published before 1990

Relevant study - but too poor quality for data extraction