

## National mass media campaigns for reducing population smoking rates

Matrix Insight, in collaboration with Imperial College London, Kings College London and Bazian Ltd, were commissioned by [Health England](#) to undertake a research study to develop and apply a method for prioritising investments in preventative interventions for England. Seventeen preventative health interventions were included in the study. Each intervention was evaluated in terms of the following criteria: reach; inequality score; cost-effectiveness; and affordability. This report presents the results of the analysis for one of the interventions: national mass media campaigns for reducing population smoking rates. The full report of the study is available from the [H.E.L.P.](#) website.

### Summary

Description of the intervention
Adult anti-smoking one-year campaign comprising: (a) mass media advertising including television, outdoor posters, and press; (b) a free telephone helpline; and (c) a specially devised booklet providing practical advice on giving up smoking and staying a non-smoker (Ratcliffe et al, 1997).

Criteria	Measure	Value	Certainty
<b>1. Reach</b>			
Percentage of population affected by the condition and that could potentially benefit from the intervention.	Adult smokers as a percentage of the population aged 15 and above in England (Office for National Statistics, 2009)	22.30%	★★★
<b>2. Inequality score</b>			
Ratio of the percentage of disadvantaged population to the percentage of the general population that could potentially benefit from the intervention.	Ratio of percentage of adult smokers in routine and manual occupations to percentage of smokers in the general population (Office for National Statistics, 2009)	1.55	★★
<b>3. Cost-effectiveness</b>			
Cost of the intervention per <a href="#">QALY</a> gained (in £2007/08)	See <a href="#">cost-effectiveness</a>	£288	★★
Net cost of the intervention per <a href="#">QALY</a> gained (in £2007/08)	See <a href="#">cost-effectiveness</a>	-£3,032	★★
Timing of benefits	<a href="#">QALY</a> gain and cost savings are estimated to occur in the long-run (5 years or more after the intervention).		
<b>4. Affordability</b>			
Total cost of implementing the intervention at the national level	Multiple of eligible individuals and unit cost of the intervention	Less than £100 million	★★

### Key to certainty grading scales

- ★ Low quality evidence
- ★★ Medium quality evidence
- ★★★ High quality evidence

### Box 1. Cost per QALY gained

A quality adjusted life year (QALY) is a simple way of combining quality of life with length of life. One QALY is equivalent to one year in full health. The cost per QALY gained is therefore the cost of achieving one extra year of full health. Its calculation is based on the following formula:

$$\text{cost per QALY gained} = \frac{\text{incremental cost of intervention}}{\text{QALYs gained}}$$

The net cost per QALY gained is the cost per QALY considering the incremental cost of the intervention as well as the cost saved through health treatment avoided. Its calculation is based on the following formula:

$$\text{net cost per QALY gained} = \frac{\text{incremental cost of intervention} - \text{cost savings}}{\text{QALYs gained}}$$

### Cost effectiveness

**Cost.** National mass media campaigns for reducing population smoking rates cost on average £1.63 per smoker (£2007/08).

**Effect.** National mass media campaigns for reducing population smoking rates increase the quit rate by 0.44 per cent. This effect was obtained from a [review](#) undertaken to identify evidence on the effectiveness and cost-effectiveness of smoking cessation interventions.

**Benefits.** The benefits of the intervention derive from stopping individuals smoking. Two types of benefits are considered: QALYs and health care cost savings.<sup>1</sup> Based on the QALYs gained and the health care cost savings of quitting smoking, a 0.44 per cent increase in the quit rate is associated with the following benefits:

- An additional 0.006 QALYs per person
- Cost savings of £18.9 per person (£2007/08)

Please refer to [decision model](#) for details on how the QALY gain and cost savings were calculated.

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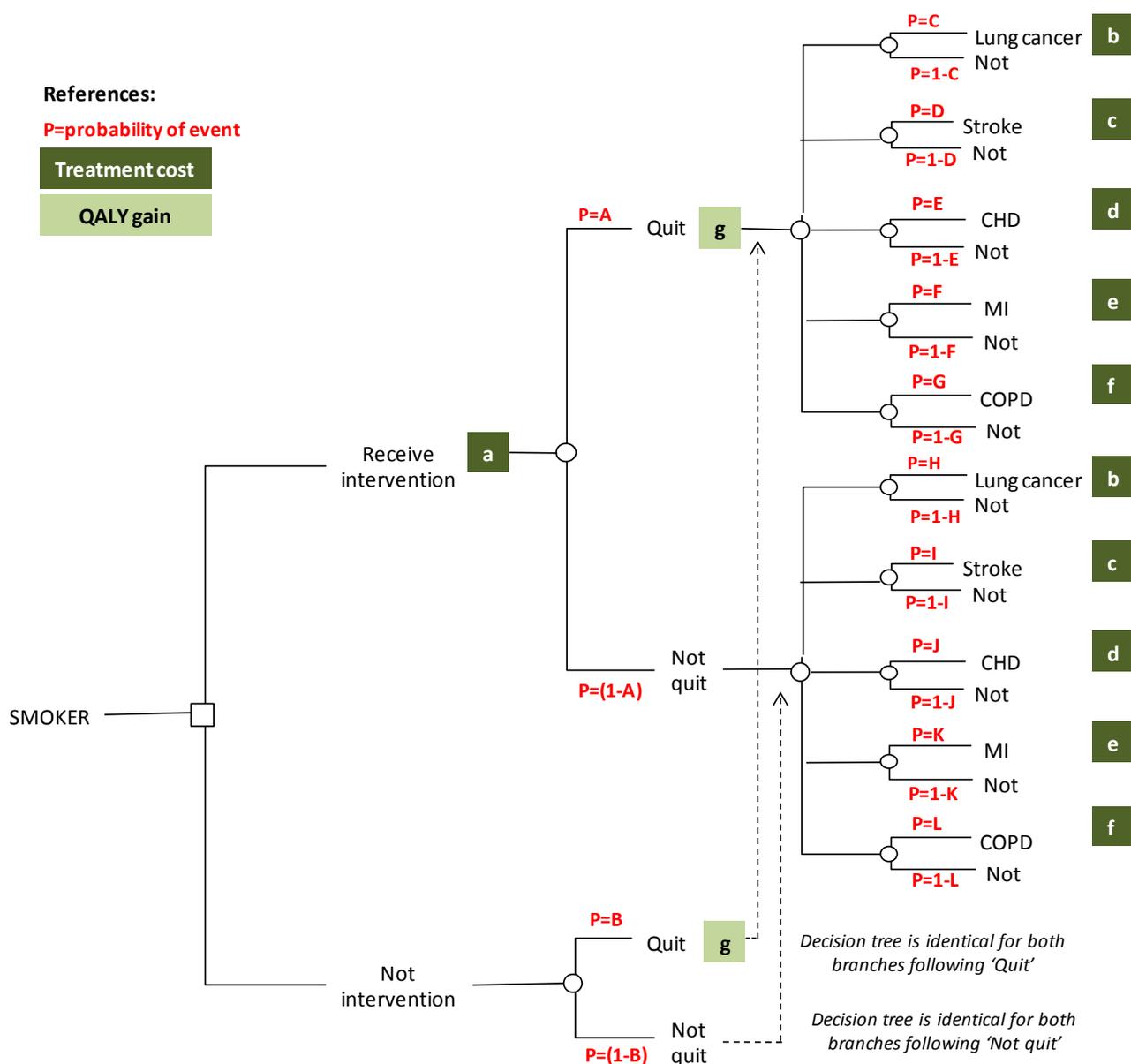
<sup>1</sup> Cost associated with increased life expectancy resulting from the intervention –such as pensions and health care costs– are not included in the analysis.

## Decision model

An economic model was built to estimate the cost-effectiveness of the intervention. The model estimates the QALY gain and cost savings associated with the intervention. Figure 1 illustrates the structure of the model, which is based on the following assumptions:

- The effect of the intervention is given by a change in the chances of an individual's quitting smoking.
- Individuals receiving the intervention are assumed to be 45 years old on average.
- Smoking is assumed to be associated with five diseases: lung cancer, stroke, coronary heart diseases (CHD), myocardial infarction (MI) and chronic obstructive pulmonary disease (COPD). These diseases have impacts in terms of quality of life and health care costs.
- The probabilities of experiencing these diseases vary for smokers and former smokers. Former smokers have reduced probabilities of experiencing the diseases. Thus, quitting smoking reduces the probability of experiencing these diseases and produces corresponding improvements in quality of life and health care cost savings.

Figure 1. Smoking cessation model



Unless stated otherwise, the analysis was undertaken in accordance with H.M. Treasury's Green Book (HM Treasury, 2003). Specifically:

- Any costs and effects incurred more than one year after the intervention were discounted at 3.5%.
- Where necessary monetary values were converted in 2007/8 prices using Gross Domestic Product (GDP) deflators (HM Treasury, 2008).
- Where necessary monetary values were converted into pounds sterling using: [www.x-rates.com](http://www.x-rates.com)

The model draws the following estimates from the literature:

- The unit cost of the intervention (Table 1).
- The effect of the intervention on people's smoking behaviour (Table 1).
- The probabilities that those who smoke experience diseases (Table 2).
- The probabilities that those who don't smoke experience diseases (Table 2).
- The impact of experiencing diseases on quality of life, measured in QALYs (Table 3).
- The impact of experiencing diseases on health care treatment costs (Table 3).

**Table 1. Intervention costs and effects (monetary values in £2007/08)**

Ref	Description	Value	Calculation and source
<b>a</b>	Cost of intervention	£1.63	Total cost of the campaign divided by total number of smokers in catchment area –i.e. Scotland (Ratcliffe et al, 1997). Costs considered include the following: developmental and maintenance costs; mass media advertising; telephone helpline; information booklet; and research costs (Ratcliffe et al, 1997).
<b>A</b>	P(if intervention, 12-month quit)	0.0044	This is the direct incremental effect of the campaign calculated by Ratcliffe et al (1997) based on the percentage of all smokers in Scotland who made contact with the helpline (4.5%) and their estimated quit rate at 12 months (9.88%) . Non smokers had spent at least 6 months during the follow-up period as non-smokers. However, most of the non-smokers had been non-smokers for at least 80% of the follow-up period (Ratcliffe et al, 1997). See evidence <a href="#">review</a> for further details.
<b>B</b>	P(if no intervention, 12-month quit)	0.0000	Given that the effect of the intervention measures incremental quit rate, the probability of quitting for those not receiving the intervention is assumed zero.

**Table 2. Transition probabilities**

Ref	Description	Value	Calculation and source
<p>The probability of contracting the disease for (former) smokers was assumed to be equivalent to the average prevalence of the disease among (former) smokers. These were calculated for three different age groups: 55 to 64, 65 to 74, and 75 and older. The following formula was used in the calculation:</p> $D = \frac{x}{t} \cdot D_x \cdot RR_x + \frac{y}{t} \cdot D_x \cdot RR_y + \frac{z}{t} \cdot D_x \cdot RR_z$ <p>where: D = prevalence of disease; RR = relative risk of contracting the disease; x = non-smokers; y = former smokers; z = smokers.; and t = total population.</p>			
<b>C</b>	P(if smoker, lung cancer) by age group	0.0045 0.0297 0.0329	<p>These were obtained by applying the following parameters to the above formula:</p> <ul style="list-style-type: none"> <li>Prevalence of the disease in the total population by age group (D=0.0015; D=0.008; D=0.008).</li> <li>Relative risk of lung cancer among men (RR smokers=1; RR former smokers=0.44; RR non-smokers=0.03) and women (RR smokers=1; RR former smokers=0.21; RR non-smokers=0.05).</li> <li>Proportion of smokers in the general population by age group (z/t=0.195; z/t= 0.116; z/t=0.08).</li> <li>Proportion of former smokers in the general population by age group (y/t=0.367; y/t=0.419; y/t=0.469).</li> </ul> <p>All data refers to the UK (Flack et al, 2007).</p>
<b>H</b>	P(if former smoker, lung cancer) by age group	0.0014 0.0087 0.0095	
<b>D</b>	P(if smoker, stroke) by age group	0.0272 0.0961 0.1684	<p>These were obtained by applying the following parameters to the above formula:</p> <ul style="list-style-type: none"> <li>Prevalence of the disease in the total population aged 65 to 74 years old (D=0.022; D=0.076; D=0.133).</li> <li>Relative risk of stroke (RR smokers=1.37; RR former smokers=1.11; RR non-smokers=1).</li> <li>Proportion of smokers in the general population by age group (z/t=0.195; z/t= 0.116; z/t=0.08).</li> <li>Proportion of former smokers in the general population by age group (y/t=0.367; y/t=0.419; y/t=0.469).</li> </ul> <p>All data refers to the UK (Flack et al, 2007).</p>
<b>I</b>	P(if former smoker, stroke) by age group	0.0220 0.0778 0.1365	
<b>E</b>	P(if smoker, CHD) by age group	0.2149 0.4564 0.5771	<p>These were obtained by applying the following parameters to the above formula:</p> <ul style="list-style-type: none"> <li>Prevalence of the disease in the total population aged 65 to 74 years old (D=0.111; D=0.215; D=0.264).</li> <li>Relative risk of CHD (RR smokers=3.12; RR former smokers=1.55; RR non-smokers=1).</li> </ul>

Ref	Description	Value	Calculation and source
<b>J</b>	P(if former smoker, CHD) by age group	0.1068 0.2267 0.2867	<ul style="list-style-type: none"> <li>Proportion of smokers in the general population by age group (<math>z/t=0.195</math>; <math>z/t= 0.116</math>; <math>z/t=0.08</math>).</li> <li>Proportion of former smokers in the general population by age group (<math>y/t=0.367</math>; <math>y/t=0.419</math>; <math>y/t=0.469</math>).</li> </ul> <p>All data refers to the UK (Flack et al, 2007).</p>
<b>F</b>	P(if smoker, myocardial infarction) by age group	0.0854 0.1644 0.1694	<p>These were obtained by applying the following parameters to the above formula:</p> <ul style="list-style-type: none"> <li>Prevalence of the disease in the total population aged 65 to 74 years old (<math>D=0.067</math>; <math>D=0.121</math>; <math>D=0.121</math>).</li> <li>Relative risk of MI among men (RR smokers=1.6; RR former smokers=1.11; RR non-smokers=1) and women (RR smokers=2.76; RR former smokers=1.05; RR non-smokers=1).</li> </ul>
<b>K</b>	P(if former smoker, myocardial infarction) by age group	0.0592 0.1141 0.1175	<ul style="list-style-type: none"> <li>Proportion of smokers in the general population by age group (<math>z/t=0.195</math>; <math>z/t= 0.116</math>; <math>z/t=0.08</math>).</li> <li>Proportion of former smokers in the general population by age group (<math>y/t=0.367</math>; <math>y/t=0.419</math>; <math>y/t=0.469</math>).</li> </ul> <p>All data refers to the UK (Flack et al, 2007).</p>
<b>G</b>	P(if smoker, COPD) by age group	0.0114 0.0578 0.1152	<p>These were obtained by applying the following parameters to the above formula:</p> <ul style="list-style-type: none"> <li>Prevalence of the disease in the total population aged 65 to 74 years old (<math>D=0.01</math>; <math>D=0.05</math>; <math>D=0.10</math>).</li> <li>Relative risk of COPD among men (RR smokers=1; RR former smokers=0.84; RR non-smokers=0.68) and women (RR smokers=1; RR former smokers=0.96; RR non-smokers=0.92).</li> </ul>
<b>L</b>	P(if former smoker, COPD) by age group	0.0103 0.0519 0.1034	<ul style="list-style-type: none"> <li>Proportion of smokers in the general population by age group (<math>z/t=0.195</math>; <math>z/t= 0.116</math>; <math>z/t=0.08</math>).</li> <li>Proportion of former smokers in the general population by age group (<math>y/t=0.367</math>; <math>y/t=0.419</math>; <math>y/t=0.469</math>).</li> </ul> <p>All data refers to the UK (Flack et al, 2007).</p>

**Table 3. Associated outcomes (monetary values in £2007/08)**

Ref	Outcome	Value	Calculation and source
<p>All lifetime treatment cost calculations were based on the present value of the annual treatment cost through the expected duration of the disease. The duration of the disease was assumed to be given by the difference between the average onset and mortality ages for the disease. Three possible onset ages were considered: 60, 70 and 80 years old. Total treatment costs were discounted to the age of individuals receiving the intervention, which was assumed 45 years old, at a 3.5% annual rate.</p>			
<b>b</b>	Lung cancer treatment cost by onset age of disease	£4,923 £3,490 £2,474	The annual treatment of lung cancer cost was estimated by Flack et al (2007) at £5,742 (in £2007/08). The mortality age was assumed to be equal to that for colon cancer and to increase with the onset age of the disease. As reported by Matrix (2006), the mortality ages assumed are: 64, 74 and 86 years old.
<b>c</b>	Stroke treatment cost by onset age of disease	£4,905 £2,101 £2,187	The annual treatment cost was estimated by Matrix (2006) at £2,194 (in £2007/08) based on data from the Department of Health. The average mortality was assumed to increase with the onset age of the disease. As reported by Matrix (2006), the mortality ages assumed are: 64, 72 and 84 years old.
<b>d</b>	CHD treatment cost by onset age of disease	£7,182 £4,547 £2,809	The annual treatment cost was estimated by Matrix (2006) at £1,511 (in £2007/08) based on data from the British Heart Foundation. The average mortality was assumed to increase with the onset age of the disease. As reported by Matrix (2006), the mortality ages assumed are: 72, 78 and 87 years old.
<b>e</b>	Myocardial infarction treatment cost by onset age of disease	£10,790 £6,831 £4,221	The annual treatment cost was estimated by Flack et al (2007) at £2,270 (in £2007/08) based on data from the Department of Health and the Health and Social Care Information Centre. The mortality age was assumed to be equal to that for CHD and to increase with the onset age of the disease. As reported by Matrix (2006), the mortality ages assumed are: 72, 78 and 87 years old.
<b>f</b>	COPD treatment cost by onset age of disease	£4,594 £2,908 £1,797	The annual treatment cost was estimated by Flack et al (2007) at £967 (in £2007/08) based on data from the National Clinical Guideline on Management of COPD. The mortality age was assumed to be equal to that for CHD and to increase with the onset age of the disease. As reported by Matrix (2006), the mortality ages assumed are: 72, 78 and 87 years old.
<b>g</b>	QALYs: 12 month quit	1.29	This is the number of QALYs gained associated with lifetime quitting based on the number of quitters at 12 months. It was estimated by Fiscella and Franks (1996) using the results from the Healthy People 2000 Years of Healthy Life research project (US). It implicitly assumes a 35% relapse rate.

## Effectiveness evidence

A literature review was undertaken by [Bazian](#) to identify evidence on the effectiveness and cost-effectiveness of national mass media campaigns for reducing population smoking rates. Further details are available on the [evidence](#) methods page of the *H.E.L.P.* website.

The review of the evidence on the effectiveness of national mass media campaigns for reducing population smoking rates identified four effectiveness studies. Table 4 provides the following details of the studies identified:

- Population
- Intervention
- Results

The review of the evidence on the cost-effectiveness of national mass media campaigns for reducing population smoking rates identified five economic studies. Table 5 provides the following details of the studies identified:

- Population, intervention and model
- Perspective, discounting, inflation, cost year
- Utility/benefit
- Unit costs
- Efficiency

Table 6 provides a quality assessment of the effectiveness and cost-effectiveness studies. Further details are available on the [quality appraisal](#) methods page.

The following criteria were applied to select effectiveness evidence for undertaking the economic analysis:

- Location. Studies from the UK were preferred over studies from other locations.
- Population. Studies applied to the general population were preferred over studies applied to restricted population groups (e.g. pregnant women; individuals from specific communities/nationalities).
- Counterfactual. Studies for which the counterfactual intervention was 'usual care' or 'do nothing' in a UK setting were preferred over studies for which the counterfactual was different from 'usual care' or 'do nothing'.
- Method. Studies using more rigorous design methods (e.g. randomised control trials or quasi experimental designs with regression models controlling for confounders) were preferred over studies using less rigorous design methods (e.g. before-after studies or simple correlation analysis).

**Table 4. Effectiveness of national mass media campaigns for reducing population smoking rates**

Study reference	Population	Intervention	Results
<p>Ratcliffe, 1997; Scotland</p> <ul style="list-style-type: none"> <li>▪ cost-effectiveness study of Scotland's public anti-smoking campaign (see below for cost-effectiveness results)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nationwide intervention; evaluation based on 970 adults who were a 1 in 10 random sample of adult callers to Smokeline subsequently interviewed at three weeks, six months, and one year follow up</li> </ul>	<p>Scotland's public anti-smoking campaign which included TV adverts, posters and billboards advertising Smokeline, a telephone service available from 12 noon to 12 midnight which had 3 major objectives:</p> <ul style="list-style-type: none"> <li>▪ To provide an advice and information service</li> <li>▪ To provide general support, encouragement and counselling where relevant</li> <li>▪ To send 'you can stop smoking' (a step by step guide to quitting) to callers who requested it</li> </ul> <p>No control group</p>	<p>At 12 months: 9.88% of smokers reported themselves as non-smokers and as having given up for at least 6 months in the previous year</p> <p>Researchers compared findings here with those from a general survey of smokers (separate study). Cessation rate used to model the effects on mortality</p>
<p>Stevens, 2002; UK</p> <ul style="list-style-type: none"> <li>▪ cost-effectiveness study based on a before-after study</li> </ul>	<ul style="list-style-type: none"> <li>▪ Turkish community in Camden and Islington Health Authority; half of original interviewees completed a follow-up interview</li> </ul>	<ul style="list-style-type: none"> <li>▪ Programme undertaken by Camden and Islington Health Promotion Agency; aimed to highlight the dangers of smoking, reduce the amount smoked and the number of current smokers</li> <li>▪ Included a play, a poster and media campaign and purpose-designed leaflets</li> <li>▪ Follow up was a survey of Turkish community about smoking habits, attitudes to smoking and knowledge about health effects both before and after the intervention</li> </ul>	<p>At follow up there was a net reduction in smokers of 6.4% (95% CI 0 to 13.6%); conservative estimate (assuming non-responders did not quit): 2.9% (95% CI 0 to 6.3%)</p> <p>At follow-up, 51% of respondents recognised at least one of the Turkish language interventions</p>

Study reference	Population	Intervention	Results
<p>Flynn et al, 1994; USA</p> <ul style="list-style-type: none"> <li>▪ non-randomised, controlled study</li> <li>▪ effectiveness study on which Secker-Walker, 1997<sup>32</sup> base their cost-effectiveness study</li> </ul>	<ul style="list-style-type: none"> <li>▪ 5458 students in years 10 to 12 (aged 15 to 18 years) in two cities in Montana, one in New York, and one in Vermont; intervention and control communities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Four year mass media campaign. Original project took place between 1984 and 1991 where 4 communities received:               <ul style="list-style-type: none"> <li>– Mass media campaign involving 36 TV and 17 radio spots</li> <li>– A school programme involving 4 lessons each year that was typical of the smoking prevention curricula available in the 1990s</li> </ul> </li> <li>▪ Control: School programme only - not the mass media campaign. A 'do nothing' alternative was not considered</li> </ul>	<p>38% of those participating at baseline participated at 2 year follow up</p> <p>Odds ratio for smoking in intervention vs. control group: 0.62 (95% CI 0.49 to 0.78)</p>
<p>Johansson, 2005; Sweden</p> <ul style="list-style-type: none"> <li>▪ cost-effectiveness analysis based on uncontrolled before-after study in smoking mothers (published source of effectiveness data is not referenced clearly, so methods extracted from Johansson)</li> </ul>	<p>Target group: 18,000 women with children, aged 0 to 6 years; personal addressed direct mail used to recruit women</p>	<ul style="list-style-type: none"> <li>▪ five personally addressed letters, two occasions of smoking cessation telephone hotline support and one get-together</li> <li>▪ nicotine replacement products were allowed</li> <li>▪ smokers had to be smokefree for seven months to be eligible for a prize in the contest</li> <li>▪ quitters defined as sustained tobacco free participants at 12 months, based on a mailed questionnaire to all participants</li> </ul>	<p>238 women participated in the contest: 14% sustained tobacco free at 12-months follow-up</p>

**Table 5. Cost-effectiveness of national mass media campaigns for reducing population smoking rates**

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
<p>Fishman, 2005; USA</p> <ul style="list-style-type: none"> <li>cost-benefit analysis based on hypothetical intervention – unclear where effectiveness measures are from</li> </ul>	<p>Cost benefit analysis based on all 18 year olds in the USA in the year 2000, and their children. Model based on a hypothetical intervention involving a mass media campaign for 4 years in a hypothetical cohort before they turned 18. At the end of this period a \$1 per pack tax on cigarettes was imposed. Additional modelling was done until the cohort was 85 years. Effectiveness results from literature, not specifically from an RCT.</p>	<ul style="list-style-type: none"> <li>Societal perspective</li> <li>3, 4, 5, 6, and 7% discounting</li> <li>Unclear whether inflationary adjustment</li> <li>Cost year: USD2000</li> </ul>	<p>Life years saved: at 3% discount rate: 630,925</p>	<p>Three different per capita costs for mass media campaign used:</p> <ul style="list-style-type: none"> <li>Lowest: \$0.31</li> <li>Medium: \$0.97</li> <li>Highest: \$2.35</li> </ul> <p>\$1 per pack tax levied at end of 4 year campaign</p>	<p>Cost per life year saved (only 3% discount rate presented):</p> <p>Lowest per capita cost: \$528 (£405)</p> <p>Medium per capita cost: \$1913 (£1467)</p> <p>Highest per capita cost: \$4097 (£3143)</p>
<p>Ratcliffe, 1997; Scotland</p> <ul style="list-style-type: none"> <li>cost-effectiveness study of Scotland's public anti-smoking campaign (see above for effectiveness results)</li> </ul>	<p>First year of Health Education Board for Scotland (HEBS)'s general public anti-smoking campaign aimed at all adults in Scotland. HEBS campaign was launched in October 1992 and had the following components:</p>	<ul style="list-style-type: none"> <li>Unclear perspective (costs of campaign: development and maintenance costs, mass media advertising, telephone helpline, information booklet, research costs)</li> <li>Discounted at 6%</li> </ul>	<p>NS</p>	<ul style="list-style-type: none"> <li>Total costs (which cover 6 month lead in and then the first year of the campaign) of HEBS varied from £1,316,302 to £1,376,621 (£1993)</li> <li>£1,895,732 to</li> </ul>	<ul style="list-style-type: none"> <li>Cost per individual cessation: £167 to £327 (£1993) [£272 to £471 (£2006)</li> <li>NB: see p. 14 of 12D - error in table - costs are in GBP1993 and GBP2006, not 1993 dollar as stated in table</li> </ul>

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
	<p>A mass media advertising campaign which included TV, outdoor posters and the press</p> <p>'Smokeline' - a free telephone helpline open from 12 noon to 12 midnight providing advice and support to callers (launched via two TV advertisements screened in October and November 1992)</p> <p>Provision of a 'You can stop smoking' booklet providing advice on stopping smoking and on staying a non-smoker</p> <p>Study did not involve a comparison of alternatives</p> <p>A random sample of 1 in 10 (970) adult callers to the helpline - 848 were current smokers. After one year, data on smoking status and period of time as a non-smoker were available for 587 individuals (of whom</p>	<ul style="list-style-type: none"> <li>▪ No adjustment for inflation</li> <li>▪ Cost year: GBP1993</li> </ul>		<p>£1,982,603 (£2006)</p> <ul style="list-style-type: none"> <li>▪ Costs excluded the costs of the youth campaign as part of HEBS</li> </ul>	<ul style="list-style-type: none"> <li>▪ Discounted cost per life year: £304 to £581 (£1993) [£438 to £837 (£2006)]</li> </ul>

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
	9.88% were currently non-smokers and had spent at least 6 months during the year as a non-smoker)				
Stevens, 2002; UK <ul style="list-style-type: none"> <li>▪ cost-effectiveness study based on a before-after study</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community intervention aimed at highlighting dangers of smoking and reducing amount smoked. Intervention was aimed at the Turkish community living in Camden, aged over 15 years, and ran between May and August 1996. Intervention consisted of:               <ul style="list-style-type: none"> <li>- 10 minute play</li> <li>- a poster campaign</li> <li>- a series of purpose-designed leaflets</li> <li>- campaign was communicated in Turkish</li> </ul> </li> <li>▪ No comparator was explicitly stated (it seemed to be "without the</li> </ul>	<ul style="list-style-type: none"> <li>▪ Health perspective</li> <li>▪ No discounting</li> <li>▪ No adjustment for inflation</li> <li>▪ Cost year: GBP1996</li> </ul>	NS	Total cost of intervention: £56,987	Cost per one-year quitter: <ul style="list-style-type: none"> <li>▪ GBP 1996: £825 (95% CI £300 to £3500)</li> <li>▪ GBP 2006: £1,091 (95% CI £397 to £4,626)</li> </ul> Cost per life year gained: <ul style="list-style-type: none"> <li>▪ GBP 1996: £105 (95% CI £33 to £391)</li> <li>▪ GBP 2006: £139 (95% CI £44 to £517)</li> </ul>

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
	<p>community smoking cessation intervention")</p> <ul style="list-style-type: none"> <li>Decision analytic model used to assess impact of intervention on a theoretical population of 3,000 people</li> </ul>				
<p>Secker-Walker, 1997; USA</p> <ul style="list-style-type: none"> <li>cost-effectiveness study based on matched control design by Flynn et al (see above)</li> </ul>	<ul style="list-style-type: none"> <li>Four year mass media campaign aimed at students in years 10 to 12 (aged 15 to 18 years). Original project took place between 1984 and 1991 where 3 communities (2 schools) received: <ul style="list-style-type: none"> <li>Mass media campaign involving 36 TV and 17 radio spots</li> <li>A school programme involving 4 lessons each year that was typical of the smoking prevention curricula available</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Health perspective</li> <li>Discounted at 0%, 3% and 5%</li> <li>Yes, adjusted for inflation</li> <li>Cost year: USD1996</li> </ul>	<p>Beginning at age 75, assumed a constant annual mortality rate:</p> <ul style="list-style-type: none"> <li>life expectancy at age 20 for smokers: additional 58.97 years for women and 50.17 years for men</li> <li>life expectancy at age 20 for non-smokers: additional 64.03 years for women and 56.50 years for men</li> </ul>	<p>Estimated cost of developing and broadcasting a similar mass media campaign in all 209 American media markets would be approximately \$84.5 million (\$8 per student potentially exposed to the campaign)</p>	<p>Cost per student smoker averted: \$162</p> <p>0% discount rate:</p> <ul style="list-style-type: none"> <li>Broadcast only: \$32, 95% CI 21 to 54 / LYG [GBP 2006 £27, £18 to £46]</li> <li>Development and broadcast: \$133, 88 to 229 / LYG [GBP 2006 £113, 75 to 194]</li> </ul> <p>3% discount rate:</p> <ul style="list-style-type: none"> <li>Broadcast only: \$167, 95% CI 107 to 301 [GBP 2006 £142, 91 to 46]</li> <li>Development and broadcast: \$696,</li> </ul>

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
	<p>in the 1990s</p> <ul style="list-style-type: none"> <li>Control: School programme only - not the mass media campaign. A 'do nothing' alternative was not considered</li> </ul>				<p>95% CI 445 to 1,269 [GBP 2006 £590, 337 to 1,075]</p> <p>5% discount rate:</p> <ul style="list-style-type: none"> <li>Broadcast only: \$417, 95% CI 266 to 747 [GBP 2006 £353, 225 to 633]</li> <li>Development and broadcast: \$1,732, 1,118 to 3,333 [GBP 2006 £1,468, 967 to 2,824]</li> </ul>
<p>Johansson, 2005; Sweden</p> <ul style="list-style-type: none"> <li>cost-effectiveness analysis</li> </ul>	<p>Markov model to assess effects of cessation on cancer, COPD, CVD based on results of before-after study: 'Quit and Win' contest in the healthcare districts of Stockholm County Council in Sweden. Participants were recruited by personally addressed direct mail, local newspapers and through key informants. Support was provided to participants (five</p>	<ul style="list-style-type: none"> <li>Social perspective</li> <li>Discounted at 3%</li> <li>CPI used to adjust costs if necessary</li> <li>Cost year: SEK2000 (and GBP2006)</li> </ul>	<p>These results not reported by review but calculated based on 238 participants and 34 quitters:</p> <ul style="list-style-type: none"> <li>QALY gain per person receiving intervention: <math>16.5/238 = 0.069/\text{participant}</math></li> <li>QALY gain per quitter: <math>16.5/34 = 0.485/\text{quitter}</math></li> </ul> <p>16 QALYs gained overall:</p>	<p>Cost per participant: 1,100 SEK (GBP 2006 £94)</p> <p>Total societal intervention costs of the Quit and Win contest were 267,000 SEK (GBP 2006 £22,783); costs included personnel, overhead costs, printing and design of campaign material, distribution of direct mail, participants support measures, prize ceremony and participant time.</p>	<p>20 life years were saved overall (at 3% discount):</p> <p>Breakdown:</p> <ul style="list-style-type: none"> <li>Age 15-19: 0.4</li> <li>Age 20-24: 2.0</li> <li>Age 25-29: 1.8</li> <li>Age 30-34: 6.2</li> <li>Age 34-39: 7.3</li> <li>Age 40-44: 1.9</li> <li>Age 45-49: 0.5</li> </ul> <p>Cost per quitter: SEK 7,850 (GBP £670)</p> <p>Cost per life year saved:</p>

Study reference	Population, intervention and model	Perspective, discounting, inflation, cost year	Utility/benefit	Unit costs	Efficiency
	<p>personally addressed letters, two occasions of smoking cessation hotline support and group meeting); NRT was allowed. To be eligible for a prize, participant had to be smoke-free for 7 months.</p>		<p>Breakdown:</p> <ul style="list-style-type: none"> <li>▪ Age 15-19: 0.3</li> <li>▪ Age 20-24: 1.7</li> <li>▪ Age 25-29: 1.3</li> <li>▪ Age 30-34: 5.5</li> <li>▪ Age 34-39: 5.7</li> <li>▪ Age 40-44: 1.6</li> <li>▪ Age 45-49: 0.6</li> </ul> <p>Total saving SEK 830,000 (comparing cost of intervention 267,000 to costs saved 1,101,074):</p> <p>Breakdown of costs saved:</p> <ul style="list-style-type: none"> <li>▪ Age 15-19: SEK 20,178</li> <li>▪ Age 20-24: SEK 114,705</li> <li>▪ Age 25-29: SEK 76,283</li> <li>▪ Age 30-34: SEK 352,363</li> <li>▪ Age 35-39: SEK 421,412</li> <li>▪ Age 40-44: SEK 92,610</li> <li>▪ Age 45-49: SEK 23,523</li> </ul>		<p>SEK 13,200 (GBP £1,126)</p>

**Table 6. Quality assessment for economic studies**

Study reference	QA for economic studies						Score	Grading (++ 4-6; + 3; -0-2)
	All costs of intervention included?	Market values used for costs?	Perspective reported?	Sensitivity analysis?	Reports base year adopted?	Effectiveness data from RCT or MA?		
Fishman, 2005	Yes	Yes	Yes	Yes	Yes	No	5	++
Ratcliffe, 1997	Yes	Don't know	No	Yes	Yes	No	3	+
Stevens, 2002	Yes	Yes	No	No	Yes	No	3	+
Secker-Walker et al, 1997	Yes	Yes (CPI)	Yes	Yes	Yes	No	5	++
Johansson, 2005	Yes	Yes	Yes	Yes	Yes	No	5	++

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