



Which are the most effective and cost-effective interventions for tobacco control?

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ABSTRACT

Health Evidence Network (HEN) synthesis report on Tobacco control

Tobacco use is a leading cause of preventable premature death in the world today, claiming 1.6 million lives per year in the European region, with 2 million projected by 2020. Although tobacco deaths are on the rise globally, in some places control policies have managed to reduce smoking. Millions of people in the European region could be spared disease and early death if effective policies were put in place.

This report is HEN's response to a question from a decision-maker. It provides a synthesis of the best available evidence, including a summary of the main findings and policy options related to the issue.

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Summary

The issue

Tobacco use is a leading cause of preventable premature death in the world today, claiming 1.6 million lives per year in the European region, with 2 million projected by 2020. Although tobacco deaths are on the rise globally, in some places control policies have managed to reduce smoking. Millions of people in the European region could be spared disease and early death if effective policies were put in place.

The main approaches to tobacco control are:

- 1) price increases through higher taxes
- 2) advertising and promotional bans
- 3) smoking restrictions
- 4) consumer education campaigns
- 5) smoking cessation therapies.

Findings

Several reviews have assessed the literature on the effectiveness of these measures, which varies within and across categories according to their settings and target populations. Nevertheless, different measures likely have synergistic effects, and the consensus is that a comprehensive approach is the most effective means of reducing tobacco consumption.

Price increases on tobacco products are one of the most effective means of reducing cigarette smoking. Studies show that a price increase of 10% results in a 2.5% – 5% smoking reduction in the short run and possibly up to 10% in the long run, if prices are increased to keep pace with inflation. Young people may reduce their smoking at two to three times the rate of older people. This level of response could result in 500 000 to 2 million fewer deaths from smoking in high-income countries, and in 600 000 to 1.8 million fewer deaths in eastern Europe. Some countries have raised taxes to 70%–80% of the price of a pack of cigarettes, resulting in significant reductions in smoking, although smaller tax raises have also been successful.

The most common concerns about tobacco price increases are that government revenues may fall and jobs may be lost due to reduced tobacco consumption, that smuggling may increase dramatically, and that an increase in price disproportionately burdens lower-income smokers. These consequences are either false or overestimated. The economic and health benefits from tobacco price increases appear to outweigh any disadvantages.

Policy considerations

The principle recommendation for policy-makers is that tobacco control programmes should be comprehensive to maximize smoking reductions, and should include:

- a) permanent price increases, scaled to inflation;
- b) comprehensive bans on advertising and promotion of tobacco products;
- c) strong restrictions on smoking in work places and public spaces;
- d) education and counter-advertising campaigns;
- e) improved product warning labels;
- f) increased access to cessation therapies.

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Introduction

Tobacco is one of the leading causes of preventable premature death in the European region. About 1.6 million people in Europe die from smoking each year (1, 2). Although significant efforts have been made to reduce smoking in the developed world, smoking prevalence remains high in many European countries, particularly in eastern Europe (Table 1).

Table 1. Smoking prevalence in adults (%), 1994-1998 and 1999-2001

Country	Male adult prevalence		Female adult prevalence		Total adult prevalence	
	1994-1998	1999-2001	1994-1998	1999-2001	1994-1998	1999-2001
Albania	44	60	7	18		39
Armenia	64				29	
Austria	30		19		24	29
Azerbaijan		30			27	
Belarus	55	54	4	5	28	26
Belgium	34	36	27	26	30	31
Bulgaria	49		24		36	
Croatia	34	34	32	27	33	30
Czech Republic	43	36	31	22	36	29
Denmark	39	32	35	29	37	30
Estonia	52	44	24	20	36	29
Finland	29	27	19	20	24	23
France	35	33	21	21	28	27
Georgia	53	54	12	15	33	
Germany	43	39	30	31		35
Greece	46	47	28	29	37	38
Hungary	44	53	27	30		42

Iceland	30	25	31	23	30	24
Ireland	32		31		31	
Israel	32		25		28	
Italy	38	32	26	17	32	25
Kazakhstan	60		7			
Latvia	53	49	18	13		29
Lithuania	43	51	6	16		32
Luxembourg	39		27		32	
Malta	34		15		24	
Netherlands	36	37	29	29	33	33
Norway	36	31	36	32	36	32
Poland	44	42	24	23		
Portugal	29		6		17	
Republic of Moldova	44	46		18		
Romania	62		25			
Russian Federation	63		10		36	
Slovakia	44		15		29	
Slovenia	35	28	23	20	29	24
Spain	42		25		33	
Sweden	17	17	22	21	19	19
Switzerland	39		28		33	
Ukraine	49	51	21	19		
United Kingdom	29	29	28	25	28	27

Source: World Health Organization, Regional Office for Europe. The European Report on Tobacco Control Policy. Copenhagen, 2001 (59)

In many western European countries, smoking prevalence is approximately 30–40% among males and 20–40% among females. In eastern European countries, the respective figures are 40–60% and 10–30% (3). About half of these smokers will die from tobacco-caused diseases, many during middle age (4). Evidence shows that quitting smoking can significantly reduce related health risks within the first few years of cessation, even for older smokers (5).

The principle approaches to tobacco control policies are:

- raising prices of tobacco products via tax increases
- consumer education, including multi-media and counter-advertising campaigns, widespread dissemination of tobacco-risk evidence, and improved warning labels
- smoking restrictions, in workplaces and public spaces
- bans on advertising and promotion
- nicotine replacement therapy (NRT) and other smoking cessation therapies.

Systematic reviews of studies of these interventions show that some may be more effective and cost-effective than others depending on context, target groups, etc. There is a general consensus, however, that a combination of these strategies will yield the best overall results in slowing the tobacco epidemic (6, 7). While prevention strategies are critical for reducing smoking initiation among young people, policies designed to encourage cessation among current smokers will be the key to averting consequent deaths and diseases. (8).

Sources for this review

This synthesis is based on the findings of published systematic reviews, other reviews and studies available in Cochrane Library, PubMed, EconLit, and HealthPromis. In addition to these sources the following publications were also used: The Clinical Practice Guidelines for Treating Tobacco Control (US Public Health Service), Smoking Cessation Guidelines for Health Professionals (UK Health

Education Authority), Best Practices for Comprehensive Tobacco Control Programs (US Centers for Disease Control and Prevention), Curbing the Epidemic (The World Bank), Tobacco Control in Developing Countries (Oxford University Press) and Partnership to Reduce Tobacco Dependence (World Health Organization, Regional Office for Europe), and The Tobacco Atlas (World Health Organization).

Findings

Raising prices on tobacco products

Price increases on tobacco products are one of the most productive and cost-effective means for reducing the demand for tobacco with very little administrative burden (9). One of the fundamental principles of economics states that as the price of a good rises, demand for that good falls. The extent to which demand falls in response to a price increase is called price elasticity. This principle of price-responsiveness can be applied to demand for tobacco products, even when accounting for the highly addictive nature of tobacco use (10).

Several reviews have demonstrated that a price increase of 10% results in a decrease of 2.5% to 5% in cigarette consumption (6, 10, 11, 12, 13, 14, 15). It has been estimated that such a response to a 10% price increase could result in 600 000 to 1.8 million fewer premature deaths in eastern European and central Asian countries, at a cost of 3 to 78 US dollars per disability-adjusted life year (DALY) (16). These estimates are based on smokers' responses to a price increase in the short-run. Given the addictive nature of smoking, the response is expected to be more pronounced in the long run, when the influence of addiction is relatively more diffuse. Several studies have estimated that the demand for tobacco could be reduced twice as much in the long run as in the short-run, however, only if there is a continuous increase in real price to keep pace with inflation. It should be noted that the elasticity estimates — the reduced demand as prices increases — are mainly from high-income countries, and that those from lower/middle income countries suggest even larger responses (10).

There is a strong rationale for governments to intervene with tobacco tax increases. In countries that have taken strong action to curb tobacco use, where consumption has fallen in response to price increases, taxes account for 65% to 80% of the price of a pack of cigarettes (17). Price increases may contribute optimally to the effectiveness of comprehensive tobacco control programmes when a portion of the tobacco tax revenues are earmarked for publicly funded tobacco interventions(10).

Effects of price increase related to age, sex, and socio-economic status

Teenagers and young adults have been shown to be especially responsive to cigarette price increases, decreasing their demand two to three times more than adults, according to several estimates (6, 10, 11, 18). Possible explanations for this are that young people:

- have less income to spend on tobacco
- are responsive to both the price increase itself and the decreasing pressure from peers who have also reduced their consumption (19)
- are less heavily addicted than adults who may have been smoking for decades
- are more oriented to the present and less to the future (20).

According to American and British studies, adult women appear to be more sensitive to price increases than men (21, 22).

Socioeconomic status also appears to have an effect on smokers' responses to price increases (6, 10, 22). A study based on the British General Household Survey found that smokers in the lowest socioeconomic groups were sensitive to price increases, while smokers in the highest socioeconomic groups were less so (22). Based on these and similar findings, smokers with lower income may gain the most health benefit

from price increases, since the prevalence of smoking and smoking related diseases and deaths are much higher in this group (24).

Consumer education

The available evidence for the effectiveness of various forms of consumer education as a tobacco control suggest that this should be included as a component of a comprehensive programme against tobacco. Mass media campaigns can raise awareness and change attitudes about the risks of using tobacco and the benefits of quitting (25). There is evidence that multimedia campaigns can prevent young people from starting to smoke and increase cessation among youth and adults when combined with other interventions (12). For example, an evaluation of an anti-tobacco multi-media campaign in Norway comprised of youth-targeted messages about the negative effects of smoking found that non-smoking youth in the intervention counties were less likely to initiate than youth in control counties. Both state- and nation-wide multi-media campaigns in the United States, such as the American Legacy Foundation's Truth Campaign, appear to have raised awareness, improved attitudes about tobacco use and/or reduced prevalence and consumption among youth, though it is difficult to ascertain the degree to which the effect is attributable to the campaigns specifically, particularly when they part of comprehensive programs (26). Mass media campaigns are most likely to succeed if designed according to social marketing theory, with sufficiently large, sustained campaigns, and appropriately targeted messages based on empirical evidence for the intended population (13).

The publication of the Surgeon General's report on Smoking and Health in 1964 may have had a substantial impact on the prevalence of smoking in the US (23). "Information shocks" — for example, widespread dissemination of research findings showing the harmful effects of tobacco use on health — are particularly effective among populations in which knowledge of the health consequences of tobacco use is low, as is often the case in emerging economies (8). Hence, this may be an especially important strategy for some newly independent European countries.

It is important to make warning labels on tobacco products as effective as possible, particularly since these warnings allow the tobacco industry to argue that smokers are informed about the associated health risks. Improving warning labels appears to have been effective in some cases. As reported in a WHO publication, new highly graphic warning labels on cigarette packages in Canada have had a significant impact on smokers: 90% of surveyed smokers had noticed the warnings, 43% became more concerned about the health risks of smoking, and 44% felt more motivated to quit (3). In contrast to this, another study of teenagers in the United States showed they were aware of warning labels on cigarette packets, but considered them "uninformative and irrelevant" (27). To increase the potential for effectiveness, it has been recommended that warning labels be prominent, placed on the largest surfaces (front and back) of the packages, and be very distinct graphically from the rest of the package design (28).

The evidence regarding the effectiveness of school-based campaigns is mixed. In one systematic review, half of the studies reported a positive effect from the intervention while the other half found no effect (29). Another review showed that school-based interventions emphasizing the role of the social environment had modest but significant effects, while other programmes aimed at adolescents often had insignificant effects (13). There is evidence of limited effectiveness of community interventions — coordinated, multi-component programmes — for preventing smoking in young people (30) and of no effect on smoking habits among adults (31).

Smoking restrictions

Legal restrictions appear to be effective in reducing both demand and consumption of tobacco, though it is difficult to quantify these benefits (6). A systematic review of interventions for preventing smoking in public places concluded that carefully planned restrictions, as elements of a comprehensive strategy, were effective in reducing public smoking (32). As to restrictions at work settings, there is evidence that the prevalence of smoking is reduced by almost 4% at smoke-free workplaces (33), and may yield reductions of up to 10% (8, 34, 35).

Bans on advertising and promotion of tobacco products

Advertising bans impose essential limits on the tobacco industry's sophisticated strategies for encouraging adults and even children to use its products. Among countries that have instituted comprehensive advertising bans, there has been an associated 6.3% reduction in smoking per adult (36, 3). Equally important, the same study found that partial bans have little or no effect on smoking, as the tobacco industry in these cases simply re-channels its marketing to other mediums (36). A 1994 report by the US Surgeon General concluded that tobacco advertising directly influences youth smoking and that bans on this advertising lead to reductions in smoking prevalence among youth and at large (37).

Achieving public and political support for a complete add ban may be very challenging, particularly as the tobacco industry enlists the support and influence of other stakeholders like the media, sports industry, and cultural activity planners, many of whom rely, in some cases heavily, on tobacco advertising revenue (38). This was found to be the case in Switzerland when a 1993 initiative to ban all direct and indirect advertising of tobacco products was voted down by an unusually large majority (38).

Nicotine replacement and other therapies

Physician advice to patients to quit smoking has been demonstrated to have a significant effect on reducing smoking (39). Nicotine replacement therapies (NRT)¹ have been shown to further double the chances of successfully quitting smoking when used in conjunction with physician advice (40, 41, 42, 43). A recent meta-analysis suggested that NRT effectiveness does not decrease when they are available over-the-counter (44). Several analyses have also demonstrated these therapies to be cost-effective compared to other common medical interventions for secondary prevention, such as drug therapies for hypertension and high blood cholesterol (43, 45, 46, 47).

There is also evidence that individual counseling by a cessation specialist as well as group therapy programmes are effective in helping smokers quit (48, 49). Systematic reviews have been conducted to assess the effectiveness of hypnotherapy, aversive smoking therapy, and acupuncture, and in each case, there was no evidence that these therapies improved quit rates among smokers (50, 51, 52).

There is a dearth of cost-effectiveness analysis for most of the principle tobacco control interventions, namely non-price measures other than NRT such as consumer education, smoking restrictions, and advertising bans. Existing independent analyses are difficult to compare due to varying research methodologies. One economic analysis, however, has generated global and regional cost-effectiveness estimates for the principle approaches to tobacco control (16). The results, in terms of cost per quality-adjusted year of life saved, for different policies are summarized in the following table:

Table 2: Cost per quality-adjusted year of life saved (QALY) for different policies and countries

Policy options	High-income countries including most western and northern European countries	Eastern Europe and central Asia
Price increase on tobacco by 10 %	US\$ 161–645	US\$ 4–15
A combination of other (non-price) measures	US\$ 1347–5388	US\$ 64–257
Publicly provided nicotine replacement therapies	US\$ 746–1160	US\$ 227–247

Source: Ranson MK et al. *Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies. Nicotine and Tobacco Research 2002, 43: 311-319. (16)*

¹ NRT's are: nicotine gum, nicotine patch, nicotine nasal spray, nicotine inhaler, sublingual tablets, lozenges and bupropion, an anti-depressant that reduces the withdrawal symptoms associated with quitting.

There are several tobacco control policies, many of which aim to reduce the supply of tobacco (versus reducing demand among consumers), that, to date, have not been demonstrated to be effective. Restrictions on youth access to tobacco have not been shown to be successful and are very difficult to enforce (8, 13, 53). Penalties imposed on youth for possessing or purchasing tobacco appear to be gaining in popularity, though there is some evidence that they are ineffective and tobacco control advocates contend that they diffuse the responsibility of the tobacco industry (13, 27). Price supports and subsidies for tobacco producers have very little effect on raising the overall price of tobacco products, and international trade restrictions may lead to retaliatory responses that could have significant negative effects on economic growth and incomes (8).

Stakeholder concerns

There are several common concerns raised, particularly by policy-makers, about potential negative consequences of increasing tobacco prices. These anticipated negative effects are either false or overestimated. The economic and health benefits associated with price increases outweigh any disadvantages (8).

One concern is that a significant reduction in tobacco consumption may hurt the economy and result in many lost jobs. Analyses have shown that this claim is largely overstated – that in most cases, money that is currently spent on tobacco will be shifted to expenditures on other goods and services, thereby generating new jobs where others are lost (8). One study in the United Kingdom found that there would be a net increase of almost 100 000 jobs if income spent on tobacco were shifted to other luxury items (54).

A second concern is that government revenues from tobacco sales may fall if consumption is reduced through a price increase. While of course population health should not be jeopardized for the sake of government revenue, worries of this sort remain practical concerns nonetheless. Contrary to the anticipated effect, revenues often remain steady or even rise in the short- and medium-terms, since the response to price increases by addicted smokers (decreasing consumption) is gradual (10, 15). In fact, price increases are the sole tobacco control measure that generate revenue, and therefore may have an important stabilizing effect as consumption decreases due to other non-tax interventions. In the United Kingdom, for example, tax revenues have risen steadily along with prices, even as tobacco consumption has fallen (Fig. 1) (8,14).

Figure 1. As tobacco tax rises, revenue rises too

Real price and tobacco taxation revenue in the U.K., 1971–95



Source: Townsend, Joy. 'The Role of Taxation Policy in Tobacco Control.' In Abedian, I., and others eds. *The Economics of Tobacco Control*. Cape Town, South Africa: Applied Fiscal Research Centre, University of Cape Town. (14) Reproduced with permission

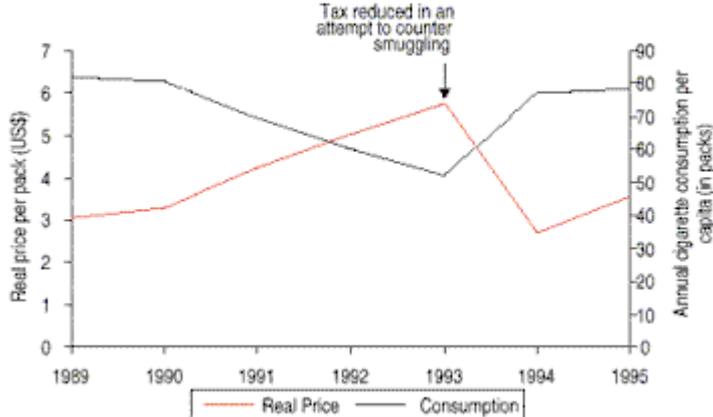
A third concern is that cross-border smuggling may increase if tobacco prices are raised, thereby reducing government revenues without the desired health effect of reducing consumption. An empirical analysis for European countries estimated that price increases led to increased revenue, even when an increase in smuggling was taken into account (55). The authors noted that coordinated tax increases across countries would help reduce smuggling associated with price increases. Other factors such as corruption, public tolerance, organized crime, and informal distribution networks may be equal or more important influences on smuggling (56). This may help explain why smuggling is more pervasive in countries such as Spain and Italy, where the tobacco excise tax is relatively low, than it is in countries with higher taxes (56). Smuggling is indeed a serious problem, but it should be addressed via law enforcement rather than foregoing the benefits of an effective public health policy (8).

A fourth objection to tobacco taxation is that it is regressive, placing a disproportionate financial burden on lower-income smokers. A growing literature suggests that increasing the tobacco tax would make it *less* regressive. Because lower-income smokers are more responsive to price than higher-income smokers and reduce their consumption relatively more, a price increase would ultimately reduce lower-income smokers' share of the tax burden and narrow the disparity in tobacco use (and consequent morbidity and mortality) between socioeconomic groups (10).

Examples of the price increase effect: Canada, United Kingdom, South Africa

Canada provides an excellent example of the effect of tobacco price increases on smoking. Cigarette prices and consumption were both fairly steady between 1950 and 1980. As prices increased steadily beginning in the early 1990s, there was a correspondingly steady decrease in consumption (10). Between 1993 and 1994, federal and some provincial tobacco taxes in Canada were cut dramatically in response to signs of increased international smuggling, and subsequently, cigarette consumption rose significantly (57). Figure 2 illustrates a strong inverse correlation between changes in cigarette price and consumption.

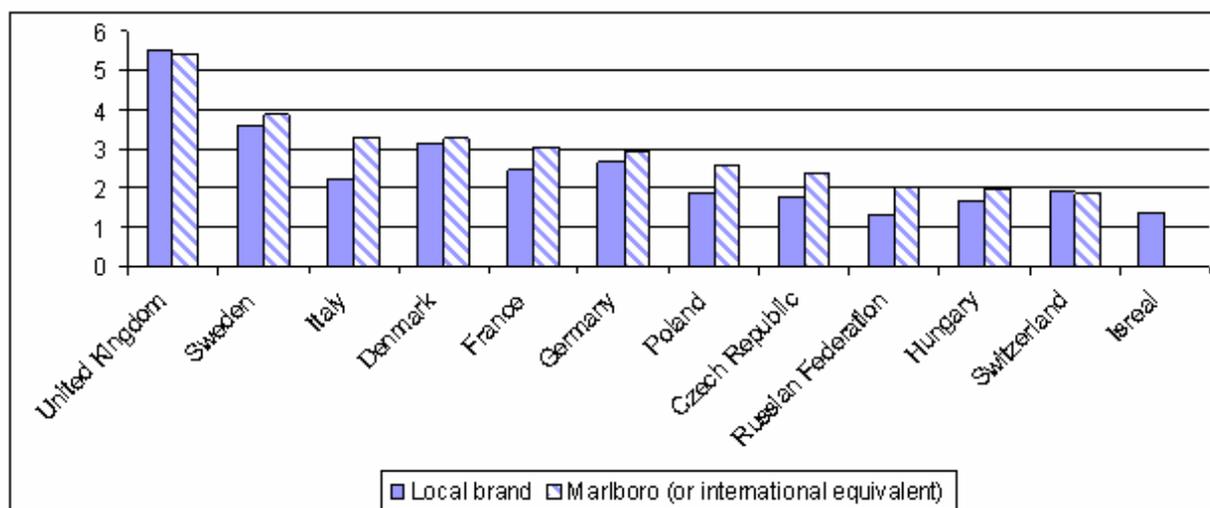
Figure 2. As cigarette price rises, consumption falls
Real price of cigarettes and annual cigarette consumption per capita, Canada, 1989-1995



Source: Jha P, Chaloupka FJ. *Curbing the epidemic: Governments and the Economics of Tobacco Control*. Washington, World Bank 1999. (8) Reproduced with permission

In the United Kingdom, cigarette prices increased from about £1.70 in 1971 to about £2.75 in 1996. As in Canada, there was a directly corresponding decline in consumption of cigarettes in the U.K., as indicated by a decline in annual expenditure from about 14 500 million pounds sterling to 9 500 million pounds over the same time period (14). In South Africa, over roughly the same time period, increasing prices corresponded directly to decreasing consumption of cigarettes (14).

In many European countries, particularly in eastern Europe, cigarette prices are relatively low (Fig. 3). As in the examples cited above, countries that have raised tobacco prices have experienced a significant reduction in smoking prevalence and cigarette consumption. Other European countries could achieve similar reductions by implementing price increases, thereby averting possibly millions of cases of tobacco-caused death and disease.



Source: Guindon GE, Tobin S, and Yach D. Trends and affordability of cigarette prices: ample room for tax increases and related health gains. *Tobacco Control*. 2002, 11:35-43 (58)

Conclusions

Most interventions for tobacco control are effective and cost-effective. The best results will be achieved by making use of all of the options available including the following:

- **Increase taxes on all tobacco products, which is the single most effective means of tobacco control.**
The tax should constitute approximately 70% – 80% of the total price.
The tax should be increased regularly to keep pace with inflation.
A portion of tobacco tax revenues should be earmarked for tobacco control programmes.
- **Utilize consumer education about tobacco-related health risks.**
Multimedia campaigns can be used to increase awareness.
Health warnings should be explicit and highly visible.
- **Institute or increase smoking restrictions in workplaces and public spaces to protect non-smokers, encourage smokers to quit, and help denormalize smoking.**
Governments should set precedent by passing laws prohibiting smoking in public buildings, and encourage restrictions of smoking at workplaces. Evidence of the harms of environmental tobacco smoke should be emphasized.
- **Institute bans on the advertising and promotion of tobacco use.**
Efforts must be comprehensive to avoid re-channeling by tobacco industry.
- **Widen the availability of NRT and other effective cessation therapies.**
These should be provided at low cost or free of charge for lower-income smokers if possible.

References

1. Peto R et al. Mortality from tobacco in developed countries: indirect estimation from national vital statistics. *Lancet*, 1992, 339:1268-1278.
2. World Health Organization Europe. *Partnership to Reduce Tobacco Dependence*. Copenhagen, World Health Organization Regional Office for Europe, 2000.
3. Mackay J, Eriksen M. *The Tobacco Atlas*. Geneva, World Health Organization, 2002.
4. Peto R et al. Mortality from smoking in developed countries 1950-2000: indirect estimates from national vital statistics. Oxford, Oxford University Press, 1994.
5. Peto R et al. Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies. *British Medical Journal*, 2000, 321:323-329.
6. U.S. Department of Health and Human Services. *Reducing Tobacco Use: a Report of the Surgeon General*. Atlanta, US Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health, 2000.
7. U.S. Centers for Disease Control and Prevention. *Best practices for comprehensive tobacco control programs – August 1999*. Atlanta, US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1999.
8. Jha P, Chaloupka FJ. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. Washington, World Bank, 1999.
9. Chaloupka FJ, Warner KE. The economics of smoking. In: Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics*, v. 1B. Amsterdam: Elsevier, 2000: 1539-1627.
10. Chaloupka FJ et al. The taxation of tobacco products. In: Jha P, Chaloupka F, eds. *Tobacco Control in Developing Countries*. Oxford, Oxford University Press, 2000.
11. Townsend J. Price and consumption of tobacco. *British Medical Journal*, 1996, 52:132-142.
12. Hopkins DP et al. Reviews of Evidence Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke. *American Journal of Preventative Medicine*, 2001, 20(2S):16-66.
13. Lantz PM et al. Investing in youth tobacco control: a review of smoking prevention and control strategies. *Tobacco Control*, 2000, 9:47-63.
14. Townsend JL. The role of taxation policy in tobacco control. In: Abedian I et al., eds. *The Economics of Tobacco Control: Toward an Optimal Policy Mix*. Cape Town, Applied Fiscal Research Centre, University of Cape Town; 1998:85-101.

15. Holly A, Gardiol L, Zurn P. Relation(s) entre la consommation tabagique et la taxation du tabac - Divers scénarios. Mandat de l'Office fédéral de la santé publique. Lausanne, Institute of Health Economics and Management, University of Lausanne, 1999.
16. Ranson MK et al. Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies. *Nicotine and Tobacco Research*, 2002, 43:311-319.
17. Jha P, deBeyer J, Heller PS. Death and Taxes: Economics of tobacco control. *Finance and Development*. Washington, International Monetary Fund, 1999.
18. Ross H, Chaloupka FJ. The Effects of Cigarette Prices on Youth Smoking. *ImpactTEEN Research Paper Series, No. 7*. February, 2001.
19. Lewit EM, Coate D, Grossman M. The effects of government regulation on teenage smoking. *Journal of Law, Economics and Organization*, 1981, 24:545-569.
20. Grossman M, Chaloupka FJ. Cigarette taxes: the straw to break the camel's back. *Public Health Report*, 1997, 112:290-297
21. U.S. Department of Health and Human Services. *Women and Smoking: a Report of the Surgeon General*. Atlanta, US Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health, 2001.
22. Townsend JL, Roderick P, Cooper J. Cigarette smoking by socio-economic group, sex, and age: effects of price, income, and health publicity. *British Medical Journal* 1994, 309:923-926.
23. U.S. Centers for Disease Control and Prevention. *History of the 1964 Surgeon General's Report on Smoking and Health*. Atlanta, US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Tobacco Information and Prevention Source, 2000.
24. Bobak M et al. Poverty and smoking. In: Jha P, Chaloupka F, eds. *Tobacco Control in Developing Countries*. Oxford, Oxford University Press, 2000.
25. Flay BR. Mass media and smoking cessation: a critical review. *American Journal of Public Health* 1987, 77:153-60.
26. Farrelley MC, Niederdeppe J, Yarsevich J. Youth tobacco prevention mass media campaigns: past, present, and future directions. *Tobacco Control* 2003;12(S1)I35-I47.
27. Crawford MA et al. Responses to tobacco control policies among youth. *Tobacco Control* 2002, 11:14-19.
28. Strahan EJ et al. *Enhancing the effectiveness of message labels on tobacco packaging*. Report to the Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada, 1999.
29. Thomas R. School-based programmes for preventing smoking. *The Cochrane Library*, 4, 2002. Oxford, Update Software.

30. Sowden A, Arblaster L. Community interventions for preventing smoking in young people. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
31. Secker-Walker RH et al. Community interventions for reducing smoking among adults. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
32. Serra C et al. Interventions for preventing tobacco smoking in public places. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
33. Fichtenberg CM, Glantz SA. Effect of smoke-free workplaces on smoking behavior: systematic review. *British Medical Journal*, 2002, 325:188-194.
34. Yurekli A, Zhang P. The impact of clean indoor-air laws and cigarette smuggling on demand for cigarettes: an empirical model. *Health Economics*, 2000, 9:159-170.
35. Evans WN, Farrelly MC, Montgomery E. Do workplace smoking bans reduce smoking? *American Economic Review*, 1999, 89:728-747.
36. Saffer H, Chaloupka F. Tobacco advertising: economic theory and international evidence. *National Bureau of Economic Research Working Paper 6958*, February, 1999.
37. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Young People*. Atlanta, US Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Center for Chronic Disease Prevention and Health Promotion, Office of Smoking and Health, 1994.
38. Cornuz J et al. Why did Swiss citizens refuse to ban tobacco advertising? *Tobacco Control*, 1996, 5:149-153.
39. Silagy C, Stead F. Physician advice for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
40. Raw M, McNeill A, West R. Smoking cessation guidelines for health professionals. A guide to effective smoking cessation interventions for the health care system. Health Education Authority. *Thorax* 1998, 53 Supplement 5, Pt 1:1-19.
41. Silagy C et al. Nicotine replacement therapy for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
42. Fiore MC et al. *Treating tobacco use and dependence*. Rockville, US Department of Health and Human Services, Public Health Service, 2000.
43. Woolacott NF et al. The clinical effectiveness and cost-effectiveness of bupropion and nicotine replacement therapy for smoking cessation: a systematic review and economic evaluation. *Health Technology Assessment*, 2002, 6:1-245.
44. Hughes JR et al. A meta-analysis of the efficacy of over-the-counter nicotine replacement. *Tobacco Control* 2003, 12:21-27.
45. Wasley MA et al. The cost-effectiveness of the nicotine transdermal patch for smoking cessation. *Preventive Medicine* 1997, 26:264-270.

46. Oster G et al. Cost-effectiveness of nicotine gum as an adjunct to physician's advice against cigarette smoking. *Journal of the American Medical Association*, 1986, 256:1315-1318.
47. Fiscella K, Franks P. Cost-effectiveness of the transdermal nicotine patch as an adjunct to physician's smoking cessation counseling. *Journal of the American Medical Association*, 1996, 275:1247-1251.
48. Lancaster T, Stead LF. Individual behavioural counselling for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
49. Stead LF, Lancaster T. Group behaviour therapy programmes for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
50. Abbot NC et al. Hypnotherapy for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
51. Hajek P, Stead LF. Aversive smoking for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
52. White AR, Rampes H, Ernst E. Acupuncture for smoking cessation. *The Cochrane Library*, 4, 2002. Oxford, Update Software.
53. Cummings KM. Strategies for controlling the use of tobacco products. *Oncogene* 2002; 21:7349-7364.
54. Buck D et al. *Tobacco and Jobs*. York, Society for the Study of Addiction and the Centre for Health Economics, University of York, 1995.
55. Merriman D, Yurekli A, Chaloupka F. How big is the worldwide cigarette-smuggling problem? In: Jha P, Chaloupka F, eds. *Tobacco Control in Developing Countries*. Oxford, Oxford University Press, 2000.
56. Joosens L et al. Issues in smuggling of tobacco products. In: Jha P, Chaloupka F, eds. *Tobacco Control in Developing Countries*. Oxford, Oxford University Press, 2000.
57. Hamilton VH et al. The effect of tobacco tax cuts on cigarette smoking in Canada. *Canadian Medical Association Journal*, 1997, 156:187-191.
58. Guindon GE, Tobin S, and Yach D. Trends and affordability of cigarette prices: ample room for tax increases and related health gains. *Tobacco Control*. 2002, 11:35-43.
59. World Health Organization, Regional Office for Europe. *The European Report on Tobacco Control Policy*. Copenhagen, 2001

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