Setting the Policy, Education, and Research Agenda to Reduce Tobacco Use

Workshop I

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Cardiovascular disease is the leading cause of death in the United States, and cigarette smoking is a major preventable cause of cardiovascular mortality. More than 434,000 deaths are attributed to cigarette smoking annually. Environmental tobacco smoke is responsible for a 30% excess risk of coronary heart disease in those exposed to it and accounts for approximately 37,000 heart disease deaths annually. Consistent with epidemiological evidence, recent studies in animal models have shown a marked dose-response relation between environmental tobacco smoke and atherosclerosis, independent of other risk factors.

In 1965 the prevalence of cigarette smoking in the United States was 43%. In 1990 it was 25.5%, with approximately 46 million smokers in the United States. Smoking prevalence remains high among many ethnic minorities, and the rate of decline among women has been relatively modest, compared with that among men. The prevalence of cigarette smoking among high school seniors has changed little in nearly a decade. It has been predicted that women in the United States will have a higher smoking prevalence than men by the year 2000 if current trends continue. If worldwide trends in tobacco use continue, annual smoking-attributable mortality will increase from an estimated 3 million in 1990 to 10 million in 2020.

Because of the magnitude of the problem and the relatively modest impact of individual and small-group prevention and intervention strategies, this working group has developed policy, program, education, and research recommendations to reduce tobacco use. The recommendations emphasize a broad-based, public health, strong advocacy approach complemented by treatment interventions at the community level and throughout the health care system. All approaches require both organizational and individual behavior change and compliance. On a societal level, smokers must adapt to an environment that no longer sanctions smoking. Nonsmokers must assert, with increased vigor, the right to a smoke-free environment. On an individual level, highly addicted smokers will continue to require treatments that incorporate behavior change strategies and pharmacotherapy for nicotine dependence. A national combined policy and treatment paradigm like that designed to control hypertension and hypercholesterolemia must be created to accomplish behavior change.

Policy Recommendations
The US Department of Health and Human Services Year 2000 Health Objectives for the nation identified the reduction of tobacco use as one of its highest priorities. Specific objectives are to reduce cigarette smoking prevalence to 15% or less among adults and to reduce the adoption of regular smoking by teenagers to 15% or less. Based on 1989 state-specific prevalence data and the national rate of change in current smoking prevalence, this goal will be achieved in only four states. Strategies to meet the Year 2000 objectives include increased tobacco taxes, stronger clean indoor air legislation, a ban on tobacco advertising, strictly enforced bans on the sale and distribution of tobacco products to youth, and regulation of tobacco products by the federal government. The evidence for effective programs increasingly favors a combination of large tax increases on tobacco products, stringent policies against smoking in public places, enforced restrictions on the sale of tobacco products to minors, and federal regulation of tobacco products as the necessary elements of tobacco control. Tobacco control programs should always be accompanied by highly accessible smoking cessation services as adjuncts for smokers who cannot quit on their own.

Tobacco Taxes and Pricing
This working group places a high priority on legislation to markedly increase state excise taxes on tobacco products. Tobacco tax increases should be of sufficient magnitude to serve as a deterrent to tobacco use and should include continuing adjustments for inflation. The working group also recommends that government dedicate a percentage of tobacco tax revenue to state and local tobacco control programs.

A fundamental economic concept is that the demand for a product goes down as its price goes up. This relation between demand and price is true for cigarettes as well as other products. The price elasticity of demand for cigarettes is in the range of −0.3 and −0.5. This means that a 10% increase in the price of cigarettes is...
expected to cause a 3% to 5% decline in cigarette consumption. There is some evidence that teenagers are significantly more responsive to price changes than adults.11

Raising cigarette taxes has the potential to rapidly and significantly reduce smoking among teenagers and adults. For example, a conservative estimate is that a $2 per pack tax increase, maintained in real terms, would result in 7.6 million fewer smokers and over time prevent 1.9 million premature deaths.12 The benefits of raising cigarette taxes are not theoretical. They have been achieved in several countries and, to a lesser extent, in some parts of the United States.

The clearest example of the benefits of higher cigarette taxes can be found in Canada. Combined federal and provincial cigarette taxes were increased from an average (in Canadian dollars) of 46¢ in 1980 to $3.27 in 1991. Cigarette consumption is now falling faster in Canada than in any other major industrialized nation; the rate of decline is more than twice that in the United States.12 Smoking among Canadian teenagers has been reduced by approximately two thirds since 1980, while US teenagers’ smoking rates have remained relatively stable.

Federal taxes on cigarettes have changed little over the last 25 years.12 However, some states have sharply increased cigarette taxes. In 1988 California voters approved Proposition 99, which raised the state cigarette tax from 10¢ to 35¢, the second-highest in the nation at the time. Twenty percent of the revenue generated by the tax hike was used to fund tobacco control programs and to pay for a statewide mass media information campaign. Between 1989 and 1991 the prevalence of cigarette smoking in California dropped by 17%, about twice the decline in the United States overall.13 Regression analysis of tobacco sales data shows that a 5% to 7% drop in consumption was attributable to the tax increase alone.14 When the mass media campaign was halted in 1992, the rate of decline in cigarette consumption slowed dramatically (Fig 1).15

Raising cigarette taxes will save millions of lives and simultaneously provide substantial revenue for priorities such as deficit reduction, health care reform, and tobacco control. Moreover, although proposals to increase most taxes meet fierce popular resistance, 70% or more of the American public support higher cigarette taxes.12

Clean Indoor Air and Reduction in Environmental Tobacco Smoke Exposure

This working group recommends a total ban on smoking in all schools, worksites, and health care settings and marked restriction of indoor smoking in most other public facilities. Preemptive legislation that effectively prohibits local governments from adopting clean indoor air legislation that is stronger than state legislation should be actively and strongly opposed.

There is potent scientific evidence that exposure to environmental tobacco smoke is responsible for considerable excess mortality. No level of environmental tobacco smoke exposure is considered safe. In 1993 the US Environmental Protection Agency designated tobacco smoke a Group A carcinogen, citing it as the cause of 3000 new cases of lung cancer annually.16 Furthermore, every year approximately 37 000 deaths from coronary heart disease result from exposure to environmental tobacco smoke.2 Coronary heart disease mortality rates decline more rapidly than cancer mortality rates when exposure to tobacco smoke is eliminated.17(p55-61) Inclusion of information about the excess risk of coronary heart disease in a companion report to the EPA report and further examination of environmental tobacco smoke as a risk factor for cardiovascular disease should be mandates of the EPA. Bans on smoking at worksites have been associated in some studies with a decrease in the overall smoking prevalence.18,19 A smoking ban at all worksites would result in a marked decline in tobacco consumption and possibly a decline in coronary heart disease rates among the working population.

Tobacco Advertising and Promotion

The working group recommends total prohibition of all tobacco product advertising and promotion. Because this is likely to be a highly contested action, an initial step should be enforcement of the tobacco industry’s voluntary code that prohibits the use of images associating tobacco product use with healthy life-styles, athleticism, or youth. Brand-name sponsorship of sporting events and concerts aimed at young audiences should be prohibited immediately.

Advertising for tobacco is more widespread than for any other consumer product, with more than $4 billion spent each year. Persuasive advertising and promotion of cigarettes has been associated with the adoption of smoking among youth and with continued smoking, particularly among women and some high-risk ethnic populations. These groups have been consistently targeted through culturally relevant and age-specific media and billboard campaigns to promote smoking.20 The 1969 Public Health Cigarette Smoking Act effectively blocked most state and local governments from regulating cigarette advertising.21 A repeal of the federal law preempting state and local regulation of advertising is considered an important step in tobacco control. Since 1964 the tobacco industry has assured Congress that it will adhere to a “voluntary advertising code” prohibiting imagery that appeals to youth or that minimizes the health risks of smoking.22 Clearly, the tobacco industry

![Graph](http://circ.ahajournals.org/)

**Fig 1.** Total cigarette consumption, which had been falling in California before passage of Proposition 99, fell even more after the tax increase. The decline slowed significantly in 1992 after suspension of the Proposition 99—funded antismoking media campaign (from Glantz15).
has consistently violated its own code. Continued depiction of tobacco products in contexts that increase their social desirability and legitimacy is a powerful counter-influence to public health messages against smoking. The tobacco industry has continued to use advertising to counter health messages, and without an eventual total ban on tobacco advertising it is unlikely that this will change (Fig 2).

Regulation of Sales and Distribution of Tobacco Products to Minors

The working group recommends a total ban on the distribution of free cigarettes and tobacco products. Cigarette vending machines should also be banned. Laws that prohibit the sales of tobacco products to minors should be strictly enforced.

Illegal sales of tobacco products to underage buyers amount to an estimated $1 billion per year. In one study, state and local legislation, accompanied by enforcement, compliance checking, and community awareness campaigns, reduced the percentage of merchants selling cigarettes to minors from 70% to 5%. Although 48 states and the District of Columbia have enacted laws that restrict the sales of tobacco products to youth, they are rarely enforced. In 1990 the US Secretary of Health and Human Services developed model legislation designed to markedly limit youth access to cigarettes, but there has been little success thus far in mobilizing states to enact this legislation. Two major components of the plan include a tobacco distribution licensing system accompanied by enforcement mechanisms and large penalties for failure to comply. The promotion and distribution of “starter products” such as chewing tobacco have become standard marketing strategies that provide opportunities for young people to get enough nicotine exposure to become addicted. It is imperative that access to these products also be limited to prevent smoking initiation later.

Federal Regulation of Tobacco Products

The working group recommends federal legislation to place tobacco product regulation under the jurisdiction of the Food and Drug Administration.

Tobacco has been called the most harmful product sold legally in the United States today. Despite the fact that smoking causes 434,000 deaths per year, no federal agency regulates the health and safety aspects of tobacco products. Tobacco is explicitly exempt from all consumer safety and substance control legislation. Thus, the distribution, manufacture, sale, and labeling of tobacco products occurs without any significant monitoring by the federal government. All other products, particularly those with known pharmacological properties, are regulated, most by the FDA. Over the past 25 years federal laws have been enacted to regulate other products that increase the risk of injuries, cancer, and fetal abnormalities. It has been estimated that the number of lives saved per year by reduced exposures to all of these substances is significantly less than the number of deaths due to cigarette smoking alone. Regulation of tobacco products would allow the application of the same standards that are now applied to all other drugs, including nicotine replacement, and may result in a marked reduction of cigarette smoking.

Educational and Program Recommendations

The proposed multimodal approach to change in tobacco use requires the development of a new integrative paradigm incorporating policy intervention strategies with state-of-the-art treatment and prevention. Widespread education for health care professionals, teachers, and the public will be required.

Promotion of Prevention and Cessation Programs

The working group recommends that all pertinent voluntary agencies, schools, health departments, and other health care systems offer prevention programs
and minimal-contact programs for smoking cessation. Such programs should be accessible and affordable and closely linked with policy-level interventions.

More than 90% of people who successfully quit smoking do so on their own. The majority of smokers prefer self-help to formal treatment programs. Low-intensity, minimal-contact programs have cessation rates of 5% to 25%; more intensive, formal programs have cessation rates of 20% to 40% but reach fewer people. Because continued smoking in the face of overwhelming evidence of serious health hazards is the result of a complex interaction of physiological, psychological, and social factors, the most successful behavioral programs are multidimensional and require the serious commitment of participants. There is little evidence that any single nonpharmacological method of smoking cessation treatment is superior to another. Although behavioral treatment programs have been the cornerstone of smoking cessation efforts, nicotine addiction as a progressive chronic relapsing disorder may overwhelm even the best of intentions to quit. This relatively new information has spawned a number of pharmacological adjuncts to behavioral treatment to minimize withdrawal symptoms. With the exception of nicotine replacement, these agents, such as clonidine and tranquilizers, have had minimal impact on abstinence rates. In the United States, the effectiveness of nicotine polacrilex gum has been disappointing, probably because its use requires significant patient skills to produce optimal bioavailability. The nicotine transdermal patch system appears to offer promise as an adjunct to both minimal-contact and more intensive and formal behavioral treatment programs. However, the combination of formal treatment and nicotine replacement is too costly for large-scale use. Widespread promotion of self-help strategies offers promise on a population level. It is possible that success rates of minimal-contact interventions could be boosted by the addition of easily accessible and affordable transdermal nicotine patch replacement.

The working group urges incorporation of state-of-the-art behavioral science principles in all cessation programs. The Stages of Change Model is an excellent example of a conceptual framework with considerable clinical utility. This model identifies smokers in a cyclic continuum: precontemplators are smokers who are not thinking about cessation; contemplators are considering quitting; and smokers in the action phase are attempting to quit. Those in the maintenance phase have remained abstinent. Unfortunately, the majority of successful quitters relapse but may reenter the cycle and ultimately quit successfully. The more progress a smoker has made along the continuum, the greater the likelihood that he or she will successfully quit smoking. Most smokers are precontemplators, yet most cessation programs are designed for the action stage. In effect, this situation lowers the success rates of current cessation programs. The working group urges voluntary agencies and health agencies to incorporate broad-based dissemination of minimal-contact programs that are tailored to the needs of persons in all stages, including precontemplation.

Because the smoking rate among young people remains relatively high, the working group also urges the widespread adoption of existing comprehensive school-based prevention programs, kindergarten through grade 12, incorporating smoking cessation for teachers and students who smoke. Although findings vary, there is evidence that school-based prevention programs that incorporate life skills training and go beyond traditional learning structures can delay and prevent smoking in youth.

Clinical Practice Guidelines for Health Professionals

The working group recommends the development and dissemination of national clinical practice guidelines for smoking cessation and for the treatment of nicotine dependence and withdrawal. Reimbursement for such clinical services should be provided by Medicaid and Medicare programs. Third-party insurers should receive strong incentives to pay for these services.

Because at least 70% of smokers see a physician once a year or more, the medical care system provides excellent opportunities for cessation intervention. Evidence from nine randomized trials indicates that physicians can have a significant impact on cessation rates, with quit rates in the range of 9% to 12%. Simple advice from physicians to stop smoking is more effective than no advice at all, and as physician-delivered interventions become more intensive, the quit rates are even higher. Clinical practice guidelines would establish the basis for physician education programs and would require physicians to incorporate interventions for all smokers into routine medical care. The working group recommends that smoking cessation services for pregnant women and new mothers be a required minimal standard of care. Quit rates have been shown to double or triple in response to health education interventions integrated into health department maternity clinics.

Health Professional Training

The working group recommends that a tobacco control and treatment curriculum for the education of health professionals be developed and widely disseminated to students and practitioners. Health professionals receive little training in tobacco control advocacy or smoking cessation treatment. In clinical environments, health professionals indicate that they believe they lack the skills to be effective smoking cessation counselors. It has been estimated that if only 10% of the 550,000 physicians in the United States persuaded 25 people to quit each year, 1,375,000 people would cease to be at risk for cardiovascular disease due to cigarette smoking. Templates for effective physician-training programs and tobacco control curricula are available. Incorporation of training in tobacco control and treatment for smoking cessation into both the basic and continuing education of health professionals would mobilize a highly credible group that has frequent contact with smokers and has demonstrated its effectiveness in reducing smoking.

Research Recommendations

The working group unanimously agreed that there are insufficient review and funding mechanisms for large-scale population-based tobacco control and smoking cessation research. Interagency funding and review processes should be established to allow coordination of studies and demonstration projects integrating individual- and policy-level issues.
Because of the magnitude and scope of the tobacco research agenda, the working group has compiled a list of selected research questions concordant with the policy, program, and education recommendations that emerged from the workshop.

1. What are the organizational and political factors that facilitate or serve as barriers to implementation of higher tobacco taxes?
2. What is the optimal tax and pricing structure to promote health?
3. What are the relative merits and problems associated with the use of tobacco tax revenues for targeted programs?
4. What are the nature and magnitude of any differential impacts of tax increases on population subgroups, particularly lower socioeconomic groups?
5. What are the best strategies for creating effective coalitions to implement tobacco control policies?
6. Do laws that prohibit possession of tobacco by minors and sales to minors affect access and use?
7. What are the most effective strategies for enforcing laws restricting distribution of tobacco products to minors?
8. What is the best way to implement and disseminate what is known about effective smoking prevention programs in schools and youth programs?
9. What strategies are most effective in implementing and enforcing bans on indoor smoking in specific sites, including schools, worksites, health care settings, and public buildings?
10. What are the sociocultural facilitators and barriers to smoking cessation and tobacco control in high-risk populations, including ethnic groups and women?
11. What is the optimal process for implementing minimal contact interventions on a population level?
12. What factors and approaches are necessary to move precontemplators to action on both an individual and policy level?
13. What strategies are most effective in mobilizing health professionals to play a more active and effective role in individual smoking cessation and in policy-level advocacy?
14. What is the best way to optimize the effectiveness of nicotine replacement therapy, to what extent can it improve the effectiveness of minimal-contact interventions, and to what extent is chronic nicotine replacement therapy safe and effective in preventing late relapse?

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