The MHHP community activities were not specifically designed as smoking prevention programs; they were directed toward adults and addressed several cardiovascular risk factors in addition to smoking. These efforts to reduce adolescent smoking may have resulted because young people were directly exposed to community program messages and appeals intended for adults, school programs had heightened intensity from being conducted in communities focused on developing healthy behaviors, or parents stimulated by the community programs gave greater attention to adolescent health behaviors. The intensity, pervasiveness, and duration of the community program may also have affected the general norms of the community on health behavior, which in turn may have influenced young people to decide against starting to smoke.

Similar results were obtained by another youth smoking prevention study conducted in the context of pervasive community cardiovascular risk reduction campaigns. The North Karelia Youth Project in Finland included a school program with three sessions in grade seven, five sessions in grade eight, and two sessions in grade nine (Vartiainen et al. 1998). Intensive community programs on cardiovascular risk reduction were conducted for adults, including community organization and mass communication campaigns for cigarette smoking cessation, during the years the school program was delivered. Significant differences in cigarette smoking prevalence between young people in the intervention and comparison areas were found at each follow-up survey through age 21. At age 28, significant differences in smoking prevalence were found among those who were nonsmokers at the baseline survey, in seventh grade. These results provide strong support for the findings of the MHHP Class of 1989 Study and emphasize the potential impact on youth smoking of combining school and community programs.

The community component of the MPP was explicitly designed to complement the school program to prevent substance use. Program activities that occurred outside the classroom were more focused on parents' behaviors than is usually found in research studies on smoking prevention. These activities included 10 homework exercises in the first program year and a wide range of family norm-setting activities; similar exercises accompanied the second year of the school curriculum. Parents helped plan and present a parent education evening in participating schools in the second year and participated in community organization activities in the third year.

The only program components to directly reach or involve the wider community were the media messages and community organization activities. The latter component was not introduced until the third program year and may not have had much effect on students' smoking behaviors. Because parents, then, were the principal focus of educational efforts outside the classroom, the MPP effects were likely achieved mainly through strong and consistent parental support of the objectives of this school-based program. The media messages may also have influenced adolescents' perceptions of peer, family, and community smoking norms.

Results of the MPP, the MHHP, and the North Karelia Youth Project thus offer the possible common interpretation that the programs' effects depended on strong school programs supported by community programs that may have affected students in two ways: through substantially increased efforts by parents and through young people's perceiving that smoking is not normative. Although parental components similar to the MPP homework assignments have been included in some school-only smoking prevention programs, the full scope of parent-oriented efforts used by the MPP in support of the school curriculum has not been tested previously. Further exploration of combined school and parent programs may be a promising avenue for future educational research studies. Similarly, these results highlight the importance of program components designed to influence adolescents' normative perceptions.

The VSMM shared with the MPP and the MHHP the general strategy of supplementing a relatively strong school-based smoking prevention program with other forms of intervention but differed in several respects. The combined school and mass media program in the VSMM was directed toward the target adolescents, and no adult participation was anticipated outside of the classroom. The project's resources thus were applied to influencing adolescents' smoking behaviors directly through changes in the students' beliefs, skills, and perceived norms.

The VSMM also differed in focusing on use of the mass media as a sole supplement to the school program. This design provided a reasonably clear indication that the magnitude and duration of a relatively strong school curriculum to prevent smoking could be significantly increased by a mass media component that concentrated exclusively on the target audience of adolescents.

Three other large-scale tests of mass media approaches to smoking prevention have been reported. One study conducted in North Carolina tested three

mass media campaigns that were not combined with school-based programs (Bauman et al. 1988). The media campaigns included radio spots on the expected consequences of smoking, a similar radio campaign that featured a smoking prevention contest, and the radio and contest components with television spots added. The messages were broadcast during three four-week periods at levels intended to reach 75 percent of the target audience four times during each period. Each campaign was conducted in two metropolitan areas; four other communities served as control areas. Adolescents aged 12–14 years were interviewed through household surveys at baseline (n = 2,102); 78 percent of them were followed up 11–17 months later. Results indicated that the campaigns had effects on the recipients' knowledge of the consequences of smoking and other mediators but not on cigarette smoking behavior (Bauman et al. 1991).

In the Television, School, and Family Smoking Prevention and Cessation Project (TVSFP), Flay and colleagues (1988, 1995) tested a mass media supplement to a school program. The study design was similar to that used in the MPP. The main study was conducted in a single metropolitan area. The mass media component was generally available to members of the community, and the school program was offered only to members of the main treatment group. The main research question thus addressed whether a school program combined with a mass media campaign had a stronger effect than the mass media campaign alone. The school curriculum included 10 classroom sessions delivered by trained health educators during the seventh grade. The media component included segments that ran for two months in evening television news shows that were linked to the classroom sessions. Students in the main intervention conditions were asked to view these segments with their parents and to complete related homework activities together. Seventh-grade students from 47 schools participated in the study; they were surveyed during the seventh, eighth, and ninth grades. Program effects were observed in the follow-up surveys for mediating variables but not for smoking behavior.

More promising results have been reported for a three-year mass media campaign on youth smoking in Norway (Hafstad et al. 1997). This campaign used the novel approach of creating messages intended to stimulate antismoking interactions among young people through use of provocative messages that presented starkly negative images of adolescent smokers. Unlike other mass media approaches, these messages were presented as movie and newspaper advertisements and posters, as well as through broadcast media channels. Messages were broadcast or placed at a relatively high level of intensity over one three-week period each year for three years. Message themes were varied each year. The impact of these campaigns was evaluated over three years by comparing baseline and follow-up survey results among a cohort of 11,033 young people aged 14 and 15 years for one intervention county and one control county. Results showed that young people from the intervention county were less likely to start smoking and more likely to stop smoking at the follow-up survey. This study demonstrates the potential impact of relatively intensive, highly targeted mass media smoking prevention campaigns that are not combined with any other type of smoking prevention intervention.

Results of these studies using mass media as a primary educational strategy suggested that better outcomes were associated with more intensive, multifaceted program efforts on social influences. The TVSFP intervention included a substantial school curriculum for the seventh grade but did not include further sessions in later grades. The mass media campaign included a maximum of 10 exposures over a two-month period. The North Carolina study did not include a direct component for interpersonal education; the media component for this study did not directly address social influences on adolescent smoking and was delivered over a total period of three months. These program efforts contrast sharply with the three-year Norwegian media campaign and the 14- to 16-session school program combined with a mass media campaign delivered over four years in the VSMM.

Because only relatively brief individual messages about cigarette smoking can be delivered to adolescents through the mass media, it is reasonable to hypothesize that behavioral effects can be achieved only when the media spots run frequently and over many months. Other evidence discussed here indicates that these types of media campaigns are most likely to be effective when combined with some form of coordinated interpersonal education, such as school-based smoking prevention programs. The VSMM results thus align with those of the MHHP and MPP in supporting the importance of school programs. The VSMM also directly targeted normative perceptions in its school and media components and demonstrated positive changes in these mediators of adolescents' smoking behaviors.

Several guidelines for designing future educational efforts to prevent smoking can be drawn from this review of three successful multifaceted programs. The central role of school programs in

smoking prevention education was affirmed by the results of all three studies. The MHHP and the MPP results both suggested the power of influencing adolescents' perceptions of cigarette smoking norms through community programs that enhance the effect of school programs; the MPP results demonstrated the effectiveness of parents' participation as a specific strategy for enhancing school prevention programs; and the VSMM demonstrated that long-term mass media campaigns targeted to adolescents' beliefs, skills, and perceived norms could enhance the effect of school programs.

On a cautionary note, the theoretical and demonstrated ability of these programs to alter the smoking behavior of young people must be viewed in the larger context of their practicality. As noted earlier, the ability to disseminate such programs has been a matter of active public health engagement. The following section examines the current status of such dissemination.

Diffusing Programs to Prevent Tobacco Use

In the mid-1990s, several surveys were undertaken to assess the extent to which national guidelines for tobacco prevention in schools (CDC 1994b) were being implemented. One of these, the School Health Policies and Programs Study (SHPPS), queried state and local education districts directly about their adherence to guidelines (Collins et al. 1995). A second survey used health department tobacco coordinators as the primary information source about tobacco prevention programs in schools (J.K. Worden and B.S. Flynn, Tobacco use prevention education in the United States, 1994, unpublished data, September 1995).

National Guidelines

According to the CDC's "Guidelines for School Health Programs to Prevent Tobacco Use and Addiction" (CDC 1994b), all schools should, for developmentally appropriate ages, provide instruction about the short-term and long-term negative physiological and social consequences of tobacco use, about social influences on tobacco use, about peer norms regarding tobacco use, and about refusal skills. Local school districts and schools are advised to "review these concepts in accordance with student needs and educational policies to determine in which grades students should receive particular instruction" (CDC 1994b, p. 9). The guidelines recommend that students in kindergarten through the 12th grade receive curricula for preventing tobacco use. Because tobacco use often begins in the 6th–8th grades (USDHHS 1994), more intensive instructional programs should be provided in these grades, and students should receive annual prevention education thereafter through the 12th grade. The guidelines also recommend that programs include support from families, support from community organizations, tobacco-related policies, and advertising campaigns for preventing smoking, because school-based efforts appear to be enhanced by complementary programs in the community. Finally, an ongoing assessment should monitor whether an adequate tobacco education program is being maintained.

School Health Policies and Programs Study

The SHPPS survey, in a follow-up to a similar survey conducted by the American School Health Association in 1989, examined state-, district-, school-, and classroom-level data (Collins et al. 1995). SHPPS examined specific instruction provided in six critical areas: intentional and unintentional injury, alcohol and other drug use, tobacco use, sexual behaviors, dietary patterns, and physical activity. The education agencies in all 50 states and the District of Columbia, a national sample of 413 school districts, a national sample of 607 middle/junior and senior high schools, and 1,040 randomly selected health education teachers were surveyed. State and district data were collected with self-administered questionnaires mailed to the person most knowledgeable about or responsible for each component of the school health program. School and classroom data were collected through on-site personal interviews with lead health education and classroom teachers. The multiple levels of data collection were necessitated by the embedded tradition of local control in determining educational requirements and content of instruction. The data from SHPPS are most clearly assessed by their relationship to the CDC guidelines.

Guideline: *All schools should develop and enforce a school policy on tobacco use. Policies should prohibit tobacco use by all students, staff, and visitors during school-related activity.*

Almost two-thirds of schools had smoke-free building policies in place in 1994, though significantly fewer (37 percent) had prohibited the use of tobacco products by all persons on school property, in school vehicles, and at school-sponsored functions away from the school site. Most schools (83 percent) prohibited tobacco use by athletes and coaches during school-sponsored events, and most (89 percent) provided written copies of the policy to students, staff, and parents. Schools were significantly more likely to have used exclusively punitive consequences (58 percent) in response to the most recent violation of their school's tobacco use policy than exclusively remedial consequences (2 percent) or a combination of punitive and remedial consequences (30 percent); few (8 percent) invoked attendance at a tobacco use prevention program as remediation for violations. Only 30 percent of schools offered tobacco cessation services in or through the school.

Guideline: *All schools should provide tobacco prevention education in kindergarten through 12th grade. The instruction should be especially intensive in middle and junior high school and reinforced in high school.*

In 1994, tobacco use prevention education was required in 37 states (72 percent) and in 83 percent of school districts. At the school level, 91 percent of middle/junior high schools and 82 percent of senior high schools included tobacco use prevention education in a required course. However, only 55 percent of middle/junior high school teachers and 47 percent of senior high school teachers of health education reported tobacco use prevention as a "major" topic in their courses. Of the middle/junior and senior high school teachers who included tobacco use prevention education as a major topic, only 21 percent spent six or more class periods on the topic.

Guideline: *Schools should provide instruction about the immediate and long-term consequences of tobacco use, about social norms regarding tobacco use and the reasons why adolescents say they smoke, and about social influences that promote tobacco use. Schools should provide behavioral skills for resisting social influences that promote tobacco use.*

Of the approximately 50 percent of teachers who taught tobacco use prevention as a major topic, 74 percent taught both short- and long-term effects of cigarette smoking. Fewer (61 percent) taught both short- and long-term effects associated with using smokeless tobacco. Although 61 percent of teachers addressed group attitudes (i.e., social norms) about tobacco use, only 42 percent taught about the actual amount of smoking and tobacco use among adolescents and adults. Less than half (48 percent) of this group of teachers provided instruction about "healthy alternatives" to tobacco use. Sixty-eight percent included instruction on social influences. Most teachers taught behavioral and social skills, though it is unclear if these skills were taught specifically within the context of tobacco use prevention education. For example, 89 percent of teachers taught decision-making skills, 87 percent taught skills for resisting social pressures, 81 percent taught communication skills, and 78 percent taught goal-setting skills.

Guideline: *Improve curriculum implementation and overall program effectiveness.*

In 1994, 82 percent of states had offered in-service training on teaching tobacco use prevention during the past two years. However, only 24 percent of school districts had offered in-service training on tobacco use prevention. Consequently, it is not surprising that only 9 percent of teachers of health education received training on tobacco use prevention education during the same time period. Although state-level training is typically designed for district staff, district-level training is the most common source of training for teachers. Increased training opportunities for teachers are needed to improve the effectiveness of tobacco use prevention education.

The 1994 SHPPS data were analyzed to examine the extent to which U.S. schools were implementing the CDC's "Guidelines for School Health Programs to Prevent Tobacco Use and Addiction" (Crossett et al. 1999). Although data do not exist in SHPPS that specifically assess adherence to each of the six recommended program areas, three criteria were selected that reflect a "comprehensive" approach to tobacco use prevention (Crossett et al. 1999): (1) a tobacco-free policy consistent with CDC guidelines, (2) at least one teacher who taught tobacco as a major topic and covered four essential content areas (short-term health effects, groups' attitudes toward tobacco, social influences, and life/refusal skills), and (3) access to tobacco cessation services for students. Only 4 percent of middle schools, junior high schools, and high schools nationwide met all three criteria. Twenty-six percent met two of the three criteria, and 41 percent met one of the three. More than one-fourth of schools (29 percent) met none of the three criteria. This analysis is

limited, because not all of the CDC guideline recommendations could be measured directly by SHPPS. Nevertheless, these findings indicated that very few schools were fully implementing the CDC recommendations in 1994.

Schools are faced with many competing demands for instruction and classroom content. Currently, most of this nation's schools are providing students with some basic tobacco use prevention education. However, the recent increases in tobacco use prevalence among youth and the overwhelming documentation of the health consequences of tobacco addiction emphasize the need for improvement in what schools are doing to reduce tobacco use and nicotine addiction among their students, faculty, and staff.

A State-Based Assessment

To estimate current program activity in smoking prevention education across the United States, tobacco control coordinators in all 50 states and the District of Columbia were asked to participate in a survey (Worden and Flynn, unpublished data; unless otherwise noted, cited data in this section are derived from this survey). The position of tobacco control coordinator was established to oversee tobacco control and education efforts in each state health department, through either the American Stop Smoking Intervention Study (ASSIST) program of the National Cancer Institute (NCI) (Shopland 1993) or the Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT) program of the CDC (USDHHS 1995). The survey was conducted between December 1994 and March 1995. The tobacco control coordinators were asked to describe any educational programs to prevent tobacco use—including school, community, and mass media activities—that were being implemented in their state during 1994 and to send written descriptions or examples of materials used in these programs. This survey differed from SHPPS in its primary reliance on health department rather than education department personnel and in the absence of a multilevel sampling approach. The state-based survey, on the other hand, focused more on the types of materials used.

Basic Curriculum

The state-based survey determined that school systems were generally left to create their own tobacco use prevention programs or to decide which of several available commercial programs would be implemented. Examples such as Here's Looking At You, 2000 or the LST Program (Bosworth and Sailes 1993; Glynn 1994) were mentioned by a few of the states. A number of states had implemented some school-based educational programs on tobacco use that were supplemental to statewide school curricula. Among the supplementary programs, the most popular was Teens As Teachers (American Nonsmokers' Rights Foundation 1994). Reported in 10 states, this program trains older high school youth to discuss with younger students the physiological and social consequences of tobacco use. The older youth also may convey the accurate norm that most young people do not use tobacco. Six states reported using the Tar Wars program, in which medical professionals discuss the consequences of tobacco use with junior high school students (Tar Wars 1995). Save a Sweet Heart, a program that emphasizes social influences on tobacco use for junior high school and high school youth (American Heart Association 1989), was reported in three states. Sporadic use was reported for several other programs, including Growing Healthy®; Teenage Health Teaching Modules, a version of D.A.R.E. that includes tobacco use prevention; the Minnesota Smoking Prevention Program; and a curriculum developed at the University of Vermont (Bosworth and Sailes 1993; Gerstain and Green 1993; Glynn 1994). In several states, either a voluntary health agency or a community or school group originated its own supplement to a school program.

Supplemental Programs

During 1994, two states—Massachusetts and California (see Chapter 7)—were particularly active in developing and implementing supplemental programs (i.e., in addition to statewide curricula) using mass media in smoking prevention. Although smoking prevention was one of several aims of the generic media campaigns funded through tobacco tax revenues in each state, the topic was clearly emphasized in a set of media spots specifically targeting youth in 1994 in each state. The Massachusetts campaign was comprehensive; seven messages addressed various topics suggested in the CDC guidelines (Massachusetts Department of Public Health 1994). The 1994 California campaign used seven television spots and six radio spots to describe the physiological consequences of smoking. Using humorous vignettes, the campaign identified toxic substances in cigarette smoke, such as arsenic, formaldehyde, ammonia, methane, and dichlorodiphenyltrichloroethane (DDT).

On a smaller scale, supplemental efforts with comprehensive coverage also occurred in West Virginia and in Denver, Colorado. In West Virginia, through a

contest sponsored by the American Cancer Society, four winning scripts for radio spots on smokeless tobacco use and on environmental tobacco smoke were selected from more than 300 entries from students in kindergarten through the 12th grade. The spots were broadcast on 22 stations and included several topics, although the only one related to the CDC guidelines concerned the physiological consequences of tobacco use. In Denver, a three-month billboard campaign promoted the theme "Smoking Doesn't Add Up," which suggested the financial consequences of tobacco use (Colorado ASSIST Alliance 1994).

Programs Including Families

Only two states reported large-scale supplemental programs that included families: New Jersey in its community grants programs and Oregon in a program entitled Parenting for a Positive Future. Three other states reported using the Unpuffables program, which requires parents' participation and includes the topics of social influences and refusal skills (Perry et al. 1990b). It should be noted, however, that this estimate of parental involvement is likely to be low, since districts and schools, which vary considerably in the degree to which they involve parents in school activities, were not queried directly.

Community Programs

In general, virtually no states reported community organization programs dedicated to supplementing educational programs to prevent tobacco use. Several programs—including the Kids Against Tobacco program, which involved 5,000 young people in northwestern Louisiana—combined tobacco education and advocacy, but the main emphasis was on inspiring young people to advocate against tobacco use.

Combined Activities

At the time of the Worden and Flynn survey, only Pennsylvania reported combining a mandated school curriculum with supplemental school, community, and mass media programs in an educational strategy to prevent tobacco use. The statewide Youth Against Tobacco program was sponsored by the state's health and education departments along with the American Cancer Society and the Pennsylvania Medical Society. These sponsors asked community organizations throughout the state to participate in the program, which ran from 1992 through 1995. More than 175,000 young people in 47 counties participated with local Boy Scouts and Girl Scouts, Boys' & Girls' Clubs, health organizations, Students Against Driving Drunk, D.A.R.E., and other groups. Community events included the 1994 Farm Show, in which 8,444 young people pledged not to smoke. The 1994 mass media program included a rap radio message aired by 223 stations in January and 280 stations in June. Declaring it "not cool" to smoke, the message described the social consequences of smoking (Pennsylvania Department of Health 1992).

Monitoring Program Objectives

Only Vermont reported having a system in place to annually assess school program activity. Act 51 stipulates that schools in Vermont annually report the number of schools implementing a curriculum. In 1994, 219 schools reported using the Here's Looking At You, 2000 program, 25 used the LST Program, and 19 used other programs (Glynn 1994). Arkansas, Indiana, Missouri, Pennsylvania, and Rhode Island were able to report the estimated number of students receiving specific programs run by voluntary agencies or local school districts. For example, Indiana reported that 15 percent of its students received the Growing Healthy program.

Interpreting the Diffusion Process

Because of the methodological differences, the results of SHPPS cannot be compared directly with those of the state-based survey conducted by Worden and Flynn. In particular, it is likely that the latter underestimated the type and amount of tobacco use prevention activity that may have been occurring on the local level. The two surveys concurred, however, in their overall assessment: considerable progress has been made, but comprehensive school health education can be improved in some areas, including tobacco use prevention. SHPPS, which focused on multiple activity levels, concluded that few schools met all the major criteria provided in the CDC guidelines (CDC 1994a; Crossett et al. 1999). As a result of its focus, the state-based survey concluded that optimal use had not yet been made of the available research on multichannel methods for maximizing the impact of school health education programs for tobacco use prevention.

Thus, the review of reported program activity in 1994 indicated that we are far from attaining an ideal, national level of educational programs to prevent tobacco use. By one set of criteria, only 4 percent of the middle, junior, and high schools in this nation were

meeting three criteria of a comprehensive tobacco use prevention program in 1994 (Crossett et al. 1999). Several reasons have been offered for this shortcoming at the time. One reason is that the year 1994 fell between two periods that may have been more active. The first period was the late 1980s and early 1990s, when the states of Minnesota and California were implementing large-scale campaigns to reduce tobacco use that were financed by tax revenues from cigarette sales. For a brief time, Michigan also developed mass media spots for preventing smoking among adolescents. Resources for these efforts apparently shrank (Begay et al. 1993), and the campaigns faded by 1994. A second period, which follows the 1994 activities reported here, arguably began with the 1994 publication of the Surgeon General's report *Preventing Tobacco Use Among Young People* (USDHHS 1994). That report seems to have stimulated development of a new set of guidelines. In addition, by this time all states had received support to coordinate their education and policy efforts to reduce tobacco use. This support came through the ASSIST program, which began such activities as early as 1991, and through the IMPACT program, which supplemented ASSIST coverage. Therefore, 1994 may represent an interregnum in the enthusiasm for tobacco prevention education. This view is supported by the events of the late 1990s. The major legal and legislative activities (see Chapter 5) were instrumental in mobilizing several states to intensify multichannel efforts at tobacco prevention (described in detail in Chapter 7).

A second reason is that there has been little evidence that the community-based approaches to prevent tobacco use that have been shown to be effective in controlled research studies have been adapted effectively to statewide use. Two states, California and Minnesota, have attempted some evaluation of community-based programs to prevent smoking on a statewide scale. In both cases, marketing research techniques similar to those described as diagnostic and formative research in the VSMM (Worden et al. 1988, 1996) were applied in developing mass media campaigns. Several creative messages for preventing smoking were developed in each state, but the number of messages dedicated to young people was limited; exposure also was limited, because paid advertising slots were allocated to target groups of adults as well as youths (Kizer et al. 1990; Minnesota Department of Health 1991).

Although awareness of each of these campaigns appeared to be high among adolescents, there was no reduction in smoking behavior (Murray et al. 1994; Pierce et al. 1994; Popham et al. 1994). Part of the difficulty may have been the absence of a sufficiently strong school-based program having similar educational objectives. It is also possible that, with funds divided to reach many targeted groups, the media could not be concentrated sufficiently on smoking prevention among youth to have a measurable effect.

A third reason is that programs implemented on a day-by-day basis over the years often lack the essential ingredients for success that were evident when they were created and evaluated by researchers. To be effective, programs should be taught as designed (Rohrbach et al. 1993). For many curricula, teachers require training—if not to encourage adoption of the program, then at least to ensure that the curriculum is correctly and completely delivered (Perry et al. 1990a; Smith et al. 1993). Many teachers are resistant to training (Brink et al. 1991), and teachers who smoke may be particularly uncomfortable with a curriculum that discourages smoking. Such resistance may not affect the quality of a brief, single-pronged program format, such as the Smoke Free Class of 2000, but may jeopardize the integrity of more long-term and comprehensive curricula. It also has been found that a school system's decision to use a curriculum is simply not enough to ensure successful implementation; teachers should be brought in at the earliest stages of adoption (Rohrbach et al. 1993). Teachers and school administrators with prior experience in tobacco use prevention education should be involved in orienting and inspiring other teachers, who will then be more likely to deliver the curriculum faithfully and effectively (Smith et al. 1993). Successful implementation also depends on the size of the school organization; smaller organizations are more likely to adopt new programs quickly, whereas larger organizations are more likely to maintain a program once it is adopted (McCormick et al. 1995).

A fourth reason is that there appears to be a shortage of linking agents, who have been found to be essential for maintaining educational programs to prevent tobacco use (Dijkstra et al. 1993) and have been recommended in several diffusion studies (Brink et al. 1991; Goodman et al. 1992; Rohrbach et al. 1993). Linking agents are persons or groups that have a strong incentive for maintaining a program and promoting its continuation by consistently and faithfully coordinating all of the necessary resources for implementation. Potential candidates for local linking agents are school health teachers, principals, volunteers, and health professionals; each could ensure that school curricula include a strong component for preventing tobacco use, much as local voluntary agencies have supported the Smoke Free Class of 2000 effort (Brink

et al. 1991). These individuals, working through a coalition, could also coordinate community program efforts involving families, community organizations, and mass media.

On a state level, the natural linking agents would be the tobacco control coordinators, who could work through coalitions or other state agencies to accomplish several long-term, comprehensive aims: (1) establish legislation mandating school-based tobacco use prevention with guidelines specifying effective curricula; (2) establish a curriculum training program, through the state education department, that would involve school administrators and teachers in the ongoing implementation of school-based curricula to prevent tobacco use; (3) establish a monitoring and support system to determine the penetration and quality of programs throughout the school system and improve instruction with ongoing teacher training; (4) work with parents' groups and volunteer organizations to support the school program; and (5) work with interested citizens to place media messages that support each of the content areas recommended by the CDC guidelines.

On a national level, linking agents could be agencies, such as the NCI or the CDC, that could support local and state efforts to reduce tobacco use with funding and continued coordination, such as by regularly convening state coordinators to share program ideas. These national linking agents might focus their diffusion efforts on using the mass media, because youth in different markets respond equally well to media-based messages for preventing tobacco use (Flynn et al. 1992). Considerable opportunity exists for enhanced diffusion of programs that have demonstrated effectiveness (Parcel et al. 1989a,b, 1995; O'Hara et al. 1991; Brink et al. 1995; Parcel 1995; McCormick and Tompkins 1998; Siegel and Biener 2000). As an example of such diffusions, the CDC's Division of Adolescent and School Health initiated the Research to Classroom project. Through this project, CDC identified programs with credible evidence of effectiveness in reducing health risk behaviors among young people. So far, CDC has identified curricula for sexuality and tobacco use prevention. The CDC staff review electronic databases, literature reviews, meta-analyses, and reports to identify evaluation studies that meet the criteria for consideration in the Research to Classroom project. Two external panels, one of evaluation experts and the other of program experts, review the curricula and their evaluations. If both panels recommend adoption of the curriculum, based on attainment of identified criteria, CDC designates the curriculum as a Program that Works. The Research to Classroom project identified *Project Towards No Tobacco Use* and *Life Skills Training* as appropriate tobacco use prevention curricula. Research to Classroom also provides information and training on these curricula for interested educators from state and local education agencies, departments of health, and national nongovernmental organizations. The CDC identifies and disseminates information on Programs that Work to help inform local and state choices. The choice to adopt a curriculum ultimately rests with local decision makers and must address community standards and needs.

Conclusions

1. Educational strategies, conducted in conjunction with community- and media-based activities, can postpone or prevent smoking onset in 20 to 40 percent of adolescents.

2. Although most U.S. schools have tobacco use prevention policies and programs in place, current practice is not optimal.

3. More consistent implementation of effective educational strategies to prevent tobacco use will require continuing efforts to build strong, multiyear prevention units into school health education curricula and expanded efforts to make use of the influence of parents, the mass media, and other community resources.

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Chapter 4
Management of Nicotine Addiction

Introduction

Preventing tobacco addiction among young people and promoting abstinence among current smokers are the final common denominators for public health strategies to reduce smoking prevalence. Although prevention efforts are increasingly regarded as the most promising long-term approach for reducing tobacco use (Lynch and Bonnie 1994; U.S. Department of Health and Human Services [USDHHS] 1994), about 1.2 million youths become regular smokers each year in the United States—adding to the millions of adult smokers who are candidates for addiction management (Leventhal et al. 1991; Centers for Disease Control and Prevention [CDC] 1998; see "Trends in Tobacco Use Among Young People" in Chapter 3). Effective treatments do exist for smoking cessation, and they are available for both the clinical and the public health context (Fiore et al. 1996). These treatments compose an important modality in the effort to eradicate tobacco use. Many of the adverse health effects of tobacco use are reversible by cessation (USDHHS 1989)—a fact important to the millions of adults who already smoke, as well as to the large numbers of young people who continue to take up smoking.

Since the 1964 release of the first Surgeon General's report on the health consequences of smoking, the prevalence of cigarette smoking among adults in the United States has decreased by 41 percent, falling from 42.2 percent in 1965 to 24.7 percent in 1997 (Giovino et al. 1994; CDC 1999a). Although these data represent significant progress in the public health campaign against tobacco use, the steady decline of 0.5 percentage points per year observed from 1965 to 1985 has lessened in recent years. In 1997, approximately 48 million adult Americans smoked; the prevalence was higher among men (27.6 percent) than among women (22.1 percent) and among American Indians and Alaska Natives (34.1 percent) than among blacks (26.7 percent), whites (25.3 percent), Hispanics (20.4 percent), or Asian Americans and Pacific Islanders (16.9 percent) (Table 4.1). Smoking prevalence was also lower among college graduates (11.6 percent) than among high school dropouts (35.4 percent) and higher among those below the poverty level (33.3 percent) than above it (24.6 percent) (CDC 1999a). Since smoking prevalence did not decline at a more rapid rate than that observed in the past few years, the *Healthy People 2000* goal of an adult smoking prevalence of 15 percent or less by the year 2000 (USDHHS 1991) was not met. Unless smoking prevalence declines at a more rapid rate than that observed in the past, we will not achieve the *Healthy People 2010* goal of an adult smoking prevalence of 12 percent or less by the year 2010 (USDHHS 2000).

Considered over the time frame of the last 30 years, however, smoking cessation has increased dramatically. Self-reported data from 1997 suggest that almost 50 percent (44 million) of people who have ever smoked have successfully quit smoking (Thomas and Larsen 1993). In 1991, the earliest year for which socioeconomic data are available, the prevalence of smoking cessation was greater among male, white, older, more educated, and wealthier persons (Table 4.2) (Giovino et al. 1994). An encouraging finding from the 1993 National Health Interview Survey was that most (70 percent) current adult smokers were interested in quitting. Such interest was higher among women, African Americans, and younger persons (Thomas and Larsen 1993).

Cessation represents a desired end result to what is usually a lengthy, demanding, and often frustrating undertaking. Data on cessation should be interpreted in light of the fact that for every successful attempt to quit using tobacco, many more attempts fail. Although millions of Americans say they want to quit smoking, studies suggest that only about 6 percent of persons who try to quit smoking at any given time are successful for more than one month (CDC 1993a). Research into tobacco cessation seeks tools that will translate the desire to quit into prolonged abstinence from tobacco. Such treatments hold a greater potential for immediate public health returns than do prevention methods, and cessation treatments may also be cost-effective (see "Cost-Effectiveness" later in this chapter).

In the course of this chapter, the terms "smoking cessation" and "management of tobacco addiction" are used interchangeably. Though the former is the more familiar, the latter better conveys a more rigorous and systematized approach to a complex addiction behavior. Value judgments on the impact of a particular modality should be interpreted within a qualitative system for judging costs and benefits. A small impact may be viewed favorably if achieved with minimal intervention. More intense intervention may have a larger impact, but may not be justified by the resources it requires.

Table 4.1. Percentage of adults aged ≥18 years who were current cigarette smokers,* by sex, race/ethnicity, education, age, and poverty status—United States, National Health Interview Survey, 1997

Characteristic	Men (n = 15,361) %	(95% CI†)	Women (n = 20,455) %	(95% CI)	Total (n = 35,816) %	(95% CI)
Race/Ethnicity‡						
White, non-Hispanic	27.4	(± 1.0)	23.3	(± 0.8)	25.3	(± 0.7)
Black, non-Hispanic	32.1	(± 2.4)	22.4	(± 1.7)	26.7	(± 1.4)
Hispanic	26.2	(± 2.1)	14.3	(± 1.4)	20.4	(± 1.4)
American Indian/Alaska Native§	37.9	(± 13.7)	31.3	(± 8.8)	34.1	(± 7.7)
Asian American/Pacific Islander	21.6	(± 4.4)	12.4	(± 3.5)	16.9	(± 2.7)
Education (years)Δ						
≤8	29.9	(± 3.0)	15.1	(± 2.2)	22.5	(± 1.9)
9–11	41.3	(± 3.1)	30.5	(± 2.4)	35.4	(± 2.0)
12	31.8	(± 1.7)	25.7	(± 1.3)	28.4	(± 1.0)
13–15	27.4	(± 1.7)	23.1	(± 1.4)	25.1	(± 1.1)
≥16	13.0	(± 1.2)	10.1	(± 1.0)	11.6	(± 0.8)
Age (years)						
18–24	31.7	(± 2.8)	25.7	(± 2.4)	28.7	(± 1.9)
25–44	31.2	(± 1.3)	26.1	(± 1.1)	28.6	(± 0.8)
45–64	27.6	(± 1.5)	21.5	(± 1.3)	24.4	(± 1.0)
≥65	12.8	(± 1.4)	11.5	(± 1.1)	12.0	(± 0.9)
Poverty status¶						
At or above	27.3	(± 1.0)	21.8	(± 0.8)	24.6	(± 0.7)
Below	38.7	(± 2.8)	29.8	(± 1.9)	33.3	(± 1.7)
Unknown	23.4	(± 2.0)	18.2	(± 1.5)	20.5	(± 1.2)
Total	27.6	(± 0.9)	22.1	(± 0.7)	24.7	(± 0.6)

*Persons who reported having smoked at least 100 cigarettes during their lifetime and who reported currently smoking every day or some days. Excludes 300 respondents with unknown smoking status.
†95% confidence interval.
‡Excludes 74 respondents of unknown, multiple, and other racial/ethnic categories.
§Wide variances on estimates reflect the small sample sizes.
ΔPersons aged ≥25 years. Excludes 305 respondents with unknown years of education.
¶Published 1996 poverty thresholds from the Bureau of the Census are used in these calculations.
Source: Centers for Disease Control and Prevention 1999a.

Table 4.2. Percentage of adults* who abstained from smoking cigarettes in the previous year, by sex, race/ethnicity, age, education, and poverty status—United States, National Health Interview Survey, 1991†

Characteristic	Abstinence for ≥1 day		Maintenance among abstainers		Maintenance‡ among all persons who were daily smokers 1 year earlier*	
	%	(95% CI§)	%	(95% CI)	%	(95% CI)
Sex						
Male	42.6	(40.8–44.4)	13.8	(12.0–15.6)	5.8	(5.0–6.6)
Female	41.5	(40.0–43.0)	13.7	(12.0–15.4)	5.6	(4.9–6.3)
Race/Ethnicity						
White^Δ	40.3	(39.0–41.6)	14.0	(12.6–15.4)	5.6	(5.0–6.2)
Black^Δ	48.7	(45.2–52.2)	7.9	(5.1–10.7)	3.8	(2.4–5.2)
Hispanic	52.1	(46.4–57.8)	16.3	(10.3–22.2)	8.5	(5.2–11.8)
American Indian/ Alaska Native	53.3	(39.7–67.0)		NA¶		NA¶
Asian American/ Pacific Islander	45.0	(33.7–56.3)		NA¶		NA¶
Age (years)						
18–24	56.7	(52.9–60.5)	14.0	(9.9–18.1)	7.9	(5.6–10.3)
25–44	43.4	(41.8–45.0)	12.7	(11.0–14.4)	5.4	(4.7–6.1)
45–64	36.1	(33.9–38.3)	14.1	(11.4–16.8)	5.0	(4.0–6.0)
≥65	35.7	(32.2–39.2)	19.4	(14.6–24.2)	6.8	(5.1–8.5)
Education (years)						
<12	36.5	(34.1–38.9)	12.9	(10.2–15.6)	4.7	(3.7–5.7)
12	42.5	(40.8–44.2)	12.8	(10.9–14.7)	5.3	(4.5–6.1)
13–15	46.9	(44.2–49.6)	14.3	(11.4–17.2)	6.6	(5.2–8.0)
≥16	45.9	(42.5–49.3)	18.8	(14.9–22.7)	8.5	(7.0–10.0)
Poverty status**						
At or above	42.7	(41.4–44.0)	14.8	(13.4–16.3)	6.2	(5.6–6.8)
Below	42.9	(39.5–46.3)	7.5	(4.7–10.3)	3.2	(2.0–4.4)
Unknown	35.2	(31.2–39.2)	12.6	(8.3–16.9)	4.4	(2.9–6.0)
Total	42.1	(40.9–43.3)	13.8	(12.5–15.1)	5.7	(5.2–6.3)

*Persons aged ≥18 years who reported having smoked at least 100 cigarettes in their lifetime and smoked cigarettes daily 1 year earlier and who provided information of their current smoking status.
†Sample size = 9,703; race/ethnicity variable excludes 34 respondents of other, unknown, or multiple race; education variable excludes 24 respondents of unknown education level.
‡Abstinence from smoking cigarettes for at least 1 month at the time of the survey. Excludes 92 respondents who were abstinent from cigarettes for <1 month or for whom duration of abstinence was unknown.
§Confidence interval.
ΔExcludes persons of Hispanic origin.
¶Sample sizes too small to derive reliable estimate.
**Poverty statistics are based on definitions developed by the Social Security Administration, which includes a set of income thresholds that vary by family size and composition.
Source: National Center for Health Statistics, public use data tape, 1991.

Methods for Managing Nicotine Addiction

Historically, the great majority of smokers (more than 90 percent) who successfully quit smoking did so "on their own"—that is, without the assistance of formal cessation programs (USDHHS 1989; Fiore et al. 1990). With the advent of new treatments, including pharmaceuticals, more smokers (20 percent) are using some form of assistance when trying to quit (Zhu et al. 2000). The success rate among this large group of unassisted quitters is half that observed for those who use some form of assistance. Although more than 1 million smokers quit each year, 75–80 percent relapse within six months (Carmody 1992). Those who quit may relapse at any time (even after a period of years), and a substantial portion of quitters go through cycles of quitting and relapse (Cohen et al. 1989a). Given this complex context in which the natural history of smoking occurs (an important leitmotif in the management of tobacco addiction), it is difficult to assign a single number to the proportion who quit on their own. Nonetheless, in the current environment of declining prevalence, the end result of this cyclic process, and of all the interventional efforts brought to bear on it, is that each year about 3–5 percent of smokers quit for a year, for longer, or for good.

The success of smoking cessation methods should be evaluated in terms of both process and outcome measures. *Process measures* are designed to assess those variables that are affected by treatments and that influence outcomes. Ideally, process measures should target the specific change mechanisms that treatments are intended to influence. For instance, if a treatment is intended to provide smokers with coping skills, process measures might assess a patient's ability to anticipate and generate appropriate responses to stresses. If a treatment is intended to promote cessation by reducing withdrawal symptoms, then a withdrawal symptom scale might be used as a process measure. Clinically significant *outcome measures* include attempts at quitting and abstinence success. Withdrawal symptom severity and concomitants of cessation attempts, such as weight gain, may be viewed as outcomes as well.

Some of the efficacy evaluations reported here incorporate the results of published meta-analyses. Meta-analysis is a statistical technique that assesses the impact of a variable (or, in this context, a treatment) across a set of related investigations (Dickersin and Berlin 1992). Meta-analyses may present a more objective assessment of accumulated research findings than do traditional narrative reviews (e.g., Cooper and Rosenthal 1980) and can be useful for identifying study or treatment characteristics that are associated with differences in study outcomes (Dickersin and Berlin 1992). Meta-analyses of smoking cessation treatments have used different techniques for estimating the size of treatment effects. The precise methods used to calculate and pool these estimates vary (for detailed descriptions, see Fleiss 1981 and Cooper and Hedges 1994). In both meta-analyses and individual studies, the most frequently encountered measures are the odds ratio (an estimate of the relative risk for the outcome in control versus treatment groups) and some form of effect size (difference in effect between treatment and control groups).

Self-Help Manuals

Because of the size of the population who try quitting on their own, the broad dissemination of materials that can help them in their efforts—without requiring them to participate in a formal cessation program—may be a potent strategy at the national level for decreasing the prevalence of smoking (Glynn et al. 1990a; Curry 1993). A wide array of self-help strategies has been developed for smoking cessation (Curry 1993). This section discusses the efficacy of written manuals, the most extensively investigated self-help materials (Curry 1993). The discussion is limited to studies of such manuals distributed to relatively small populations of smokers. Self-help materials delivered to large populations are discussed later in the chapter in association with nonprint messages and programs (self-help or supervised) included in mass media and community-based efforts.

Efficacy

In a review of the research literature on self-help manuals, the median long-term prevalence of cessation associated with manual-based interventions was about 5 percent (Curry 1993). This proportion is lower than those of face-to-face cessation programs (Schwartz 1987; Lichtenstein and Glasgow 1992; Lando 1993). Furthermore, recent evidence suggests that self-help manuals, when used by themselves, may produce negligible

increases in long-term cessation (Gritz et al. 1992; Petersen et al. 1992; Gomel et al. 1993; Fiore et al. 2000).

Because self-help manuals can be distributed, at low cost, to very large numbers of smokers, even relatively small cessation success could translate into large numbers of successful quitters. Since 30–40 percent of smokers each year make a serious effort to quit, self-help aids could have a vast influence on public health (Hatziandreu et al. 1990; CDC 1993b, 1999b). The available evidence suggests that self-help manuals work better for smokers who are less dependent on nicotine, more motivated, and more confident of quitting (Curry 1993), but the relationship between motivation and success is complex. Less addicted smokers may be less likely to seek formal treatment (Fiore et al. 1990; Zhu et al. 2000) and are therefore an apt audience for self-help manuals. More addicted smokers are more likely to seek formal self-help programs (Wagner et al. 1990) but may be less successful in quitting (Schoenbach et al. 1992). Thus, in view of both their uncertain effectiveness and their potential to be cost-effective, it is important to determine whether self-help manuals have a consistent, albeit small, benefit.

Although many self-help manuals have been developed, there is little evidence that they differ in their effectiveness (Cummings et al. 1988; Glynn et al. 1990a; Curry 1993). Accordingly, an Expert Advisory Panel convened by the National Cancer Institute (NCI) has recommended that public health professionals try to increase the availability of existing manuals rather than refine them or develop new ones (Glynn et al. 1990a). The committee also concluded that if new materials are deemed necessary, they should, at a minimum, contain the following components: (1) information about the social and health effects of smoking; (2) specific strategies and exercises for quitting; and (3) specific strategies and exercises to avoid relapse and, in the event of relapse, to try quitting again (Glynn et al. 1990a).

Manuals tailored to special populations of smokers, such as pregnant women, older adults, African Americans, and Hispanics, have been developed and tested (Windsor et al. 1985; Glynn et al. 1990b; Davis et al. 1992; USDHHS 1998). Although manuals targeted to specific populations have not had consistently greater success than generic manuals at helping members of relevant populations quit (Curry 1993; Rimer et al. 1994), such manuals have the potential to reach smokers missed by traditional materials (Curry 1993).

It appears that combining multiple types of self-help materials (manuals, videotapes, etc.) does not improve long-term cessation rates. A meta-analysis of 21 studies using multiple types of self-help without person-to-person contact found no significant difference between multiple types of self-help and no self-help at all (Fiore et al. 2000).

Reading level has been increasingly recognized as an important attribute of self-help manuals. Since the early 1970s, trends in smoking prevalence have been different for those with differing levels of educational attainment (Pierce et al. 1989). Smoking prevalence has dropped sharply among persons with a college education (10.1 percentage points between 1974 and 1985) but has declined only marginally among high school dropouts (2.1 percentage points during the same period). Concerns about literacy have led to the recommendation that self-help materials for smoking cessation be written at no more than a seventh-grade reading level (Glynn et al. 1990a), although this level may be too high in some situations.

Adjuncts to self-help manuals, such as telephone counseling (Orleans et al. 1991; Curry et al. 1992; Lando et al. 1992), hot lines (Ossip-Klein et al. 1991), and personalized feedback (Curry et al. 1991; Prochaska et al. 1993), have also been evaluated. These adjunctive interventions have met with varying success (Curry 1993). For example, self-help treatments that include nicotine gum as well as smoking cessation manuals have not had greater long-term efficacy than the manuals alone (Harackiewicz et al. 1988; Killen et al. 1990b). Computer-generated personalized feedback (Curry et al. 1991) and telephone outreach, however, have improved cessation success (Orleans et al. 1991; Lando et al. 1992; Prochaska et al. 1993; Strecher et al. 1994). At present, research suggests that such adjuvants materially improve the effectiveness of self-help manuals.

Adjunctive interventions that require financial and personnel resources, however, may undercut the potential population impact of self-help interventions. The addition of other components to self-help manuals may also mark the point at which the self-help modality merges with more formal assistance, which, as mentioned earlier, have not appealed to as large a population of smokers motivated to quit. But at least one such treatment, proactive telephone counseling (as opposed to reactive approaches, such as help lines smokers must call), appears to be effective when used as an adjuvant (Fisher et al. 1993).

Relevant Process Measures

Most studies of self-help manuals lack process measures, and the specific measures used across studies vary considerably (Curry 1993). Two distinct process measures, manual reading and manual use, have been assessed in some studies of self-help manuals for smoking cessation. Reading measures simply ask

smokers whether they read most or all of the manual. Use measures assess the extent to which smokers performed the specific exercises recommended in the manual. In theory, persons who actually read a manual or practice manual-recommended exercises should be more successful than those who merely possess a manual. Curry (1993) concluded that although reading has sometimes been related to program success, use has been more consistently related to improved outcomes. Further work is needed to determine with some certainty whether the information conveyed by the manuals, rather than nonspecific motivational effects, is responsible for their efficacy.

Summary

Although self-help manuals have had only modest and inconsistent success at helping smokers quit, manuals can be easily distributed to the vast population of smokers who try to quit on their own each year. Adjuvant behavioral interventions, particularly proactive telephone counseling, may increase the effect of self-help materials. Process measures are not routinely incorporated into self-help investigations, but the available process data suggest that persons who not only have a self-help manual but also perform the exercises recommended in the manual are more likely to quit smoking.

Minimal Clinical Interventions

Minimal clinical interventions are those that can be delivered briefly to smokers by health care professionals during the course of a regular health care encounter. These strategies may be as simple as advising smokers to quit, or they may be as complex as using computers to tailor the intervention to the individual smokers. Minimal clinical interventions could have a great influence at a national level on smoking cessation, but they have been underused. Findings from a 1985 (Ockene et al. 1987), a 1991 (CDC 1993b), and a 1992 national survey (Tomar et al. 1996) suggest that nearly 70 percent of American smokers (nearly 36 million) make at least one outpatient health care visit each year; however, only 40–52 percent of the smokers in the surveys reported that during the preceding year they had been advised by a health care professional to quit smoking. In a separate study, 48.8 percent of 2,710 current smokers had been advised by their physician to stop smoking or to smoke less (Frank et al. 1991). More than 50 percent of adult smokers in the United States saw a dentist in 1992, but fewer than 25 percent of those who saw a dentist in the preceding year reported that the dentist had advised them to quit smoking (Tomar et al. 1996). Among adult users of smokeless tobacco, 18 percent reported that they had ever been advised by a dentist and 15 percent had ever been advised by a physician to quit (Tomar et al. 1996).

Many clinicians may believe that they are not equipped to help smokers quit (Wells et al. 1984; Glynn 1988) or that a physician can help a smoker quit (Ockene et al. 1988a). Training programs for clinicians have been developed to address this problem (Ockene et al. 1988b; Cummings et al. 1989a,b; Duncan et al. 1991; Manley et al. 1991; Strecher et al. 1991); however, data suggest that simply training clinicians may not be effective (Dietrich et al. 1992; Carney et al. 1995; Klein et al. 1995). However, implementing reminder systems in the clinic has been shown to triple clinician intervention with smokers (Fiore et al. 1996, 2000). Some evidence suggests that the delivery of these minimal clinical interventions is becoming more common (Gilpin et al. 1992).

Surveys suggest that smokers who are white, female, older, better educated, or ill, or who smoke more cigarettes per day are more likely than others to receive clinical advice to quit (Ockene et al. 1987; Frank et al. 1991; Gilpin et al. 1992; CDC 1993b). At present, clinicians apparently do not ensure that all of their patients who smoke receive cessation advice and assistance, in part because of structural and policy issues (such as reimbursement) related to medical care delivery. Nonetheless, such efforts might be more common if clinicians were trained to view smoking as a chronic disease, marked by periods of remission and relapse, rather than as an acute disorder (Fiore and Baker 1995).

Researchers have shown that institutional changes can increase the systematic delivery of minimal clinical interventions for smoking cessation. For example, brief physician training, availability of nicotine gum, and patient chart stickers documenting smoking status can increase the amount of time physicians spend in cessation counseling and increase successful cessation by a factor of 2 to 6 (Cohen et al. 1989b; Ockene et al. 1991). One proposed change is to expand patient vital signs to include an assessment of tobacco use (Fiore 1991). This simple institutional change has been shown to increase markedly the proportion of patients who report that their health care providers asked and counseled them about smoking cessation (Fiore et al. 1995; Robinson et al. 1995).

Finally, institutional changes are critical for prompting more clinicians to play a role in smoking cessation. Currently, clinicians are only sporadically