

# Chapter 1

## Introduction, Summary, and Chapter Conclusions

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## Introduction

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Previous Surgeon General's reports on tobacco use and health have largely focused on the epidemiologic, clinical, biologic, and pharmacologic aspects of adult use of tobacco products. This report on *Preventing Tobacco Use Among Young People* provides a more detailed look at adolescence, the time of life when most tobacco users begin, develop, and establish their behavior. Because regular use soon results in addiction to nicotine, this behavior may persist through adulthood, significantly increasing, through the extended years of use, the risk of long-term, severe health consequences.

Despite three decades of explicit health warnings, large numbers of young people continue to take up tobacco; currently, over three million adolescents smoke cigarettes, and over one million adolescent males currently use smokeless tobacco. Clearly, effective interventions are needed to prevent more young people from trying tobacco. To achieve significant long-term reductions in tobacco use and tobacco-related deaths in the United States, we must examine the nature and scope of adolescent tobacco use, consider the social, psychological, and marketing factors that influence young people in their decision to use tobacco products, and evaluate current efforts to prevent young people from becoming users. This report addresses the crucial problems of adolescent tobacco use.

### Development of the Report

This report of the Surgeon General was prepared by the Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Public Health Service, U.S. Department of Health and Human Services, as part of the department's responsibility, under Public Law 91-222 and Public Law 99-252, to report current information on the health effects of cigarette smoking and smokeless tobacco use to the United States Congress. This report is the first to focus on the problem of tobacco use among young people. Given the continuing onset of use in adolescence and the growing evidence of health consequences associated with early use, the report was seen as both needed and timely.

The current report has been produced through the efforts of experts in the medical, pharmacologic, epidemiologic, developmental, economic, behavioral, legal, and public health aspects of smoking and smokeless tobacco use among young people. Initial manuscripts for the report were prepared by 28 scientists who

were selected for their expertise in specific content areas. This material was consolidated into chapters, each of which underwent peer review. The entire document was reviewed by a number of experts in the field, as well as by institutes and agencies within the U.S. Public Health Service. The final draft of the report was reviewed by the Assistant Secretary for Health and by the Secretary, Department of Health and Human Services.

Several concerns guided the development of this report. The first, which is addressed in Chapter 2, is whether tobacco use is associated with health consequences during the period of adolescence (broadly defined as ages 10 through 18, although research cited in this report varies somewhat in the ages considered adolescent). The long-term health consequences—that is, those that emerge in adulthood—have been the subject of extensive review and are widely acknowledged in the scientific and public literature. The chapter thus focuses on the serious health consequences, as well as the increased risk factors for subsequent health consequences, that are evident early in life among young smokers and smokeless tobacco users. Chapter 3 examines the epidemiologic patterns of tobacco use among the young. National data on trends in adolescent use are analyzed to determine the extent of the current problem, as well as to note changes in patterns of initiation and use. The factors that influence adolescents in their decision to use tobacco are examined in Chapter 4, which considers psychosocial risk factors, and Chapter 5, which examines the influence of tobacco advertising and promotion. The final concern, the focus of Chapter 6, was to assess what has been done—from the individual level to the legislative level—to prevent tobacco use among young people.

### Major Conclusions

1. Nearly all first use of tobacco occurs before high school graduation; this finding suggests that if adolescents can be kept tobacco-free, most will never start using tobacco.
2. Most adolescent smokers are addicted to nicotine and report that they want to quit but are unable to do so; they experience relapse rates and withdrawal symptoms similar to those reported by adults.
3. Tobacco is often the first drug used by those young people who use alcohol, marijuana, and other drugs.

4. Adolescents with lower levels of school achievement, with fewer skills to resist pervasive influences to use tobacco, with friends who use tobacco, and with lower self-images are more likely than their peers to use tobacco.
5. Cigarette advertising appears to increase young people's risk of smoking by affecting their perceptions of the pervasiveness, image, and function of smoking.
6. Communitywide efforts that include tobacco tax increases, enforcement of minors' access laws, youth-oriented mass media campaigns, and school-based tobacco-use prevention programs are successful in reducing adolescent use of tobacco.

## Summary

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### Introduction

The health effects of cigarette smoking have been the subject of intensive investigation since the 1950s. Cigarette smoking is still considered the chief preventable cause of premature disease and death in the United States. As was documented extensively in previous Surgeon General's reports, cigarette smoking has been causally linked to lung cancer and other fatal malignancies, atherosclerosis and coronary heart disease, chronic obstructive pulmonary disease, and other conditions that constitute a wide array of serious health consequences (USDHHS 1989). More recent studies have concluded that passive (or involuntary) smoking can cause disease, including lung cancer, in healthy nonsmokers. In 1986, an advisory committee appointed by the Surgeon General released a special report on the health consequences of smokeless tobacco, concluding that smokeless tobacco use can cause cancer and can lead to nicotine addiction (USDHHS 1986). In the 1988 report, nicotine was designated a highly addictive substance, comparable in its physiological and psychological properties to other addictive substances of abuse (USDHHS 1988).

Considerable evidence indicates that the health problems associated with smoking are a function of the duration (years) and the intensity (amount) of use. The younger one begins to smoke, the more likely one is to be a current smoker as an adult. Earlier onset of cigarette smoking and smokeless tobacco use provides more life-years to use tobacco and thereby increases the potential duration of use and the risk of a range of more serious health consequences. Earlier onset is also associated with heavier use; those who begin to use tobacco as younger adolescents are among the heaviest users in adolescence and adulthood. Heavier users are more likely to experience tobacco-related health problems and are the least likely to quit smoking cigarettes or using smokeless tobacco. Preventing tobacco use among young people is therefore likely to affect both duration and

intensity of total use of tobacco, potentially reducing long-term health consequences significantly.

### Health Consequences of Tobacco Use Among Young People

Active smoking by young people is associated with significant health problems during childhood and adolescence and with increased risk factors for health problems in adulthood. Cigarette smoking during adolescence appears to reduce the rate of lung growth and the level of maximum lung function that can be achieved. Young smokers are likely to be less physically fit than young nonsmokers; fitness levels are inversely related to the duration and the intensity of smoking. Adolescent smokers report that they are significantly more likely than their nonsmoking peers to experience shortness of breath, coughing spells, phlegm production, wheezing, and overall diminished physical health. Cigarette smoking during childhood and adolescence poses a clear risk for respiratory symptoms and problems during adolescence; these health problems are risk factors for other chronic conditions in adulthood, including chronic obstructive pulmonary disease.

Cardiovascular disease is the leading cause of death among adults in the United States. Atherosclerosis, however, may begin in childhood and become clinically significant by young adulthood. Cigarette smoking has been shown to be a primary risk factor for coronary heart disease, arteriosclerotic peripheral vascular disease, and stroke. Smoking by children and adolescents is associated with an increased risk of early atherosclerotic lesions and increased risk factors for cardiovascular diseases. These risk factors include increased levels of low-density lipoprotein cholesterol, increased very-low-density lipoprotein cholesterol, increased triglycerides, and reduced levels of

high-density lipoprotein cholesterol. If sustained into adulthood, these patterns significantly increase the risk for early development of cardiovascular disease.

Smokeless tobacco use is associated with health consequences that range from halitosis to severe health problems such as various forms of oral cancer. Use of smokeless tobacco by young people is associated with early indicators of adult health consequences, including periodontal degeneration, soft tissue lesions, and general systemic alterations. Previous reports have documented that smokeless tobacco use is as addictive for young people as it is for adults. Another concern is that smokeless tobacco users are more likely than nonusers to become cigarette smokers.

Among addictive behaviors such as the use of alcohol and other drugs, cigarette smoking is most likely to become established during adolescence. Young people who begin to smoke at an earlier age are more likely than later starters to develop long-term nicotine addiction. Most young people who smoke regularly are already addicted to nicotine, and they experience this addiction in a manner and severity similar to what adult smokers experience. Most adolescent smokers report that they would like to quit smoking and that they have made numerous, usually unsuccessful attempts to quit. Many adolescents say that they intend to quit in the future and yet prove unable to do so. Those who try to quit smoking report withdrawal symptoms similar to those reported by adults. Adolescents are difficult to recruit for formal cessation programs, and when enrolled, are difficult to retain in the programs. Success rates in adolescent cessation programs tend to be quite low, both in absolute terms and relative to control conditions.

Tobacco use is associated with a range of problem behaviors during adolescence. Smokeless tobacco or cigarettes are generally the first drug used by young people in a sequence that can include tobacco, alcohol, marijuana, and hard drugs. This pattern does not imply that tobacco use causes other drug use, but rather that other drug use rarely occurs before the use of tobacco. Still, there are a number of biological, behavioral, and social mechanisms by which the use of one drug may facilitate the use of other drugs, and adolescent tobacco users are substantially more likely to use alcohol and illegal drugs than are nonusers. Cigarette smokers are also more likely to get into fights, carry weapons, attempt suicide, and engage in high-risk sexual behaviors. These problem behaviors can be considered a syndrome, since involvement in one behavior increases the risk for involvement in others. Delaying or preventing the use of tobacco may have implications for delaying or preventing these other behaviors as well.

## **The Epidemiology of Tobacco Use Among Young People**

Overall, about one-third of high-school-aged adolescents in the United States smoke or use smokeless tobacco. Smoking prevalence among U.S. adolescents declined sharply in the 1970s, but this decline slowed significantly in the 1980s, particularly among white males. Although female adolescents during the 1980s were more likely than male adolescents to smoke, female and male adolescents are now equally likely to smoke. Male adolescents are substantially more likely than females to use smokeless tobacco products; about 20 percent of high school males report current use, whereas only about 1 percent of females do. White adolescents are more likely to smoke and to use smokeless tobacco than are black and Hispanic adolescents.

Sociodemographic, environmental, behavioral, and personal factors can encourage the onset of tobacco use among adolescents. Young people from families with lower socioeconomic status, including those adolescents living in single-parent homes, are at increased risk of initiating smoking. Among environmental factors, peer influence seems to be particularly potent in the early stages of tobacco use; the first tries of cigarettes and smokeless tobacco occur most often with peers, and the peer group may subsequently provide expectations, reinforcement, and cues for experimentation. Parental tobacco use does not appear to be as compelling a risk factor as peer use; on the other hand, parents may exert a positive influence by disapproving of smoking, being involved in children's free time, discussing health matters with children, and encouraging children's academic achievement and school involvement.

How adolescents perceive their social environment may be a stronger influence on behavior than the actual environment. For example, adolescents consistently overestimate the number of young people and adults who smoke. Those with the highest overestimates are more likely to become smokers than are those with more accurate perceptions. Similarly, those who perceive that cigarettes are easily accessible and generally available are more likely to begin smoking than are those who perceive more difficulty in obtaining cigarettes.

Behavioral factors figure heavily during adolescence, a period of multiple transitions to physical maturation, to a coherent sense of self, and to emotional independence. Adolescents are thus particularly vulnerable to a range of hazardous behaviors and activities, including tobacco use, that may seem to assist in these transitions. Young people who report that smoking serves positive functions or is potentially useful are at increased risk for smoking. These functions are associated with

bonding with peers, being independent and mature, and having a positive social image. Since reports from adolescents who begin to smoke indicate that they have lower self-esteem and lower self-images than their non-smoking peers, smoking can become a self-enhancement mechanism. Similarly, not having the confidence to be able to resist peer offers of tobacco seems to be an important risk factor for initiation. Intentions to use tobacco and actual experimentation also strongly predict subsequent regular use.

The positive functions that many young people attribute to smoking are the same functions advanced in most cigarette advertising. Young people are a strategically important market for the tobacco industry. Since most smokers try their first cigarette before age 18, young people are the chief source of new consumers for the tobacco industry, which each year must replace the many consumers who quit smoking and the many who die from smoking-related diseases. Despite restrictions on tobacco marketing, children and adolescents continue to be exposed to cigarette advertising and promotional activities, and young people report considerable familiarity with many cigarette advertisements. In the past, this exposure was accomplished by radio and television programs sponsored by the cigarette industry. Banned since 1971 from using broadcast media, the tobacco industry increasingly relies on promotional activities, including sponsorship of sports events and public entertainment, outdoor billboards, point-of-purchase displays, and the distribution of specialty items that appeal to the young. Cigarette advertisements in the print media persist; these messages have become increasingly less informational, replacing words with images to portray the attractiveness and function of smoking. Cigarette advertising frequently uses human models or human-like cartoon characters to display images of youthful activities, independence, healthfulness, and adventure-seeking. In presenting attractive images of smokers, cigarette advertisements appear to stimulate some adolescents who have relatively low self-images to adopt smoking as a way to improve their own self-image. Cigarette advertising also appears to affect adolescents' perceptions of the pervasiveness of smoking, images of smokers, and the function of smoking. Since these perceptions are psychosocial risk factors for the initiation of smoking, cigarette advertising appears to increase young people's risk of smoking.

### **Efforts to Prevent the Onset of Tobacco Use**

Most of the U.S. public strongly favors policies that might prevent tobacco use among young people. These policies include mandated tobacco education in schools, a complete ban on smoking by anyone on school grounds,

further restrictions on tobacco advertising and promotional activities, stronger prohibitions on the sale of tobacco products to minors, and increases in earmarked taxes on tobacco products. Interventions to prevent initiation among young people—even actions that involve restrictions on adult smoking or increased taxes—have received strong support among smoking and nonsmoking adults.

Numerous research studies over the past 15 years suggest that organized interventions can help prevent the onset of smoking and smokeless tobacco use. School-based smoking-prevention programs, based on a model of identifying social influences on smoking and providing skills to resist those influences, have demonstrated consistent and significant reductions in adolescent smoking prevalence; these program effects have lasted one to three years. Programs to prevent smokeless tobacco use have used a similar model to achieve modest reductions in initiation of use. The effectiveness of these school-based programs appears to be enhanced and sustained, at least until high school graduation, by adding coordinated communitywide programs that involve parents, youth-oriented mass media and counteradvertising, community organizations, or other elements of adolescents' social environments.

A crucial element of prevention is access: adolescents should not be able to purchase tobacco products in their communities. Active enforcement of age-at-sale policies by public officials and community members appears necessary to prevent minors' access to tobacco. Communities that have adopted tighter restrictions have achieved reductions in purchases by minors. At the state and national levels, price increases have significantly reduced cigarette smoking; the young have been at least as responsive as adults to these price changes. Maintaining higher real prices of cigarettes provides a barrier to adolescent tobacco use but depends on further tax increases to offset the effects of inflation. The results of this review thus suggest that a coordinated, multicomponent campaign involving policy changes, taxation, mass media, and behavioral education can effectively reduce the onset of tobacco use among adolescents.

### **Summary**

Smoking and smokeless tobacco use are almost always initiated and established in adolescence. Besides its long-term effects on adults, tobacco use produces specific health problems for adolescents. Since nicotine addiction also occurs during adolescence, adolescent tobacco users are likely to become adult tobacco users. Smoking and smokeless tobacco use are associated with other problem behaviors and occur early in the sequence of these behaviors. The outcomes of adolescent smoking

and smokeless tobacco use continue to be of great public health importance, since one out of three U.S. adolescents uses tobacco by age 18. The social environment of adolescents, including the functions, meanings, and images of smoking that are conveyed through cigarette advertising, sets the stage for adolescents to begin using tobacco. As tobacco products are available and as peers begin to try them, these factors become personalized and

relevant, and tobacco use may begin. This process most affects adolescents who, compared with their peers, have lower self-esteem and self-images, are less involved with school and academic achievement, have fewer skills to resist the offers of peers, and come from homes with lower socioeconomic status. Tobacco-use prevention programs that target the larger social environment of adolescents are both efficacious and warranted.

## Chapter Conclusions

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Following are the specific conclusions for each chapter of this report:

### Chapter 2. The Health Consequences of Tobacco Use by Young People

1. Cigarette smoking during childhood and adolescence produces significant health problems among young people, including cough and phlegm production, an increased number and severity of respiratory illnesses, decreased physical fitness, an unfavorable lipid profile, and potential retardation in the rate of lung growth and the level of maximum lung function.
2. Among addictive behaviors, cigarette smoking is the one most likely to become established during adolescence. People who begin to smoke at an early age are more likely to develop severe levels of nicotine addiction than those who start at a later age.
3. Tobacco use is associated with alcohol and illicit drug use and is generally the first drug used by young people who enter a sequence of drug use that can include tobacco, alcohol, marijuana, and harder drugs.
4. Smokeless tobacco use by adolescents is associated with early indicators of periodontal degeneration and with lesions in the oral soft tissue. Adolescent smokeless tobacco users are more likely than nonusers to become cigarette smokers.

### Chapter 3. Epidemiology of Tobacco Use Among Young People in the United States

1. Tobacco use primarily begins in early adolescence, typically by age 16; almost all first use occurs before the time of high school graduation.
2. Smoking prevalence among adolescents declined sharply in the 1970s, but the decline slowed

significantly in the 1980s. At least 3.1 million adolescents and 25 percent of 17- and 18-year-olds are current smokers.

3. Although current smoking prevalence among female adolescents began exceeding that among males by the mid- to late-1970s, both sexes are now equally likely to smoke. Males are significantly more likely than females to use smokeless tobacco. Nationally, white adolescents are more likely to use all forms of tobacco than are blacks and Hispanics. The decline in the prevalence of cigarette smoking among black adolescents is noteworthy.
4. Many adolescent smokers are addicted to cigarettes; these young smokers report withdrawal symptoms similar to those reported by adults.
5. Tobacco use in adolescence is associated with a range of health-compromising behaviors, including being involved in fights, carrying weapons, engaging in higher-risk sexual behavior, and using alcohol and other drugs.

### Chapter 4. Psychosocial Risk Factors for Initiating Tobacco Use

1. The initiation and development of tobacco use among children and adolescents progresses in five stages: from forming attitudes and beliefs about tobacco, to trying, experimenting with, and regularly using tobacco, to being addicted. This process generally takes about three years.
2. Sociodemographic factors associated with the onset of tobacco use include being an adolescent from a family with low socioeconomic status.
3. Environmental risk factors for tobacco use include accessibility and availability of tobacco products, perceptions by adolescents that tobacco use is

normative, peers' and siblings' use and approval of tobacco use, and lack of parental support and involvement as adolescents face the challenges of growing up.

4. Behavioral risk factors for tobacco use include low levels of academic achievement and school involvement, lack of skills required to resist influences to use tobacco, and experimentation with any tobacco product.
5. Personal risk factors for tobacco use include a lower self-image and lower self-esteem than peers, the belief that tobacco use is functional, and lack of self-efficacy in the ability to refuse offers to use tobacco. For smokeless tobacco use, insufficient knowledge of the health consequences is also a factor.

### **Chapter 5. Tobacco Advertising and Promotional Activities**

1. Young people continue to be a strategically important market for the tobacco industry.
2. Young people are currently exposed to cigarette messages through print media (including outdoor billboards) and through promotional activities, such as sponsorship of sporting events and public entertainment, point-of-sale displays, and distribution of specialty items.
3. Cigarette advertising uses images rather than information to portray the attractiveness and function of smoking. Human models and cartoon characters in cigarette advertising convey independence, healthfulness, adventure-seeking, and youthful activities—themes correlated with psychosocial factors that appeal to young people.
4. Cigarette advertisements capitalize on the disparity between an ideal and actual self-image and imply that smoking may close the gap.
5. Cigarette advertising appears to affect young people's perceptions of the pervasiveness, image, and function of smoking. Since misperceptions in these areas constitute psychosocial risk factors for the initiation of smoking, cigarette advertising appears to increase young people's risk of smoking.

### **Chapter 6. Efforts to Prevent Tobacco Use Among Young People**

1. Most of the American public strongly favor policies that might prevent tobacco use among young people. These policies include tobacco education in the schools, restrictions on tobacco advertising and promotions, a complete ban on smoking by anyone on school grounds, prohibition of the sale of tobacco products to minors, and earmarked tax increases on tobacco products.
2. School-based smoking-prevention programs that identify social influences to smoke and teach skills to resist those influences have demonstrated consistent and significant reductions in adolescent smoking prevalence, and program effects have lasted one to three years. Programs to prevent smokeless tobacco use that are based on the same model have also demonstrated modest reductions in the initiation of smokeless tobacco use.
3. The effectiveness of school-based smoking-prevention programs appears to be enhanced and sustained by comprehensive school health education and by communitywide programs that involve parents, mass media, community organizations, or other elements of an adolescent's social environment.
4. Smoking-cessation programs tend to have low success rates. Recruiting and retaining adolescents in formal cessation programs are difficult.
5. Illegal sales of tobacco products are common. Active enforcement of age-at-sale policies by public officials and community members appears necessary to prevent minors' access to tobacco.
6. Econometric and other studies indicate that increases in the real price of cigarettes significantly reduce cigarette smoking; young people are at least as responsive as adults to such price changes. Maintaining higher real prices of cigarettes depends on further tax increases to offset the effects of inflation.

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