Smoking, Tobacco, and Cancer Program

19851989 Status Report

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service
National Institutes of Health

Dedicated to Dr. C. Everett Koop

"His understanding *of science andpublic health and his integrity and oneness of purpose in leading PHS initiatives to achieve a smoke-free society by the year 2000 are an indelible hallmarkfor the 1980's and unquestionably will be a benchmark in the histo y of public health in this county."*

Joseph W. Cullen, Ph.D.

Smoking, Tobacco, and Cancer Program

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Foreword

From the earliest days of this Nation, Americans have been involved in both the growing and consumption of tobacco. However, at the turn of this century cigarettes were such a rare social phenomena that in 1900 only 50 cigarettes were consumed per adult. We were, in short, a nation of smokeless tobacco users, consuming an average of 4 pounds of chewing tobacco and snuff per year for every adult 18 years and older. Yet, in the brief span of one generation we replaced the spittoon with the ashtray. That change in a single personal behavior has altered the health of the Nation in a way that few could have predicted.

As we approach the 21st century-if individuals use tobacco at all-they are more likely to be cigarette smokers than users of all other tobacco products combined. More than 55 million persons currently smoke cigarettes in the United States and they consumed some 533 *billion* cigarettes last year. This translates to an average 3,000 cigarettes per adult, smokers and nonsmokers alike, or 10,000 cigarettes per smoker. A staggering sum when one considers that cigarettes, when consumed as intended by the manufacturer, caused nearly 400,000 premature deaths last year in this country.

This year marks the 40th anniversary of the publication of the first major studies linking cigarette smoking with increased lung cancer mortality. The findings of Wynder and Graham[1] and Levine et al.[2] appeared in the same issue of *JAMA* in early 1950. Two other studies[3,4] were published later that same year in the journal *Cancer Research;* all four observed higher lung cancer rates in male smokers compared with nonsmoking controls. These early epidemiologic findings received considerable media and public attention and prompted a flurry of other investigations that both confirmed and extended the earlier results.

By the time the Advisory Committee to the Surgeon General issued their now historic report in 1964[5] more than 6,000 studies existed in the worldwide scientific literature on smoking and health,' including some three dozen prospective and retrospective studies on the relationship between smoking and lung cancer alone. Dozens more documented the correlation between smoking and cancer of other sites or other chronic diseases.

Over the past 30 years, thousands of additional studies have been conducted both in this country and abroad with increasingly more predictable results.' Although these investigations have added to our overall knowledge about the health consequences of smoking, from a practical, public health perspective the majority of the studies were repetitive and unnecessary.

Surely enough information existed on the negative health effects of smoking by the early 1960's that smoking prevention and cessation initiatives and not basic biomedical research should have received priority consideration. Unfortunately, this was not the case. Instead, the majority of Federal resources for smoking during the 1960's through the early 1980's continued to concentrate on the health effects of smoking rather than research on how best to intervene in smoking behavior among existing smokers or prevent initiation among adolescents.

The NCI Strategy for Smoking and Tobacco Use Control

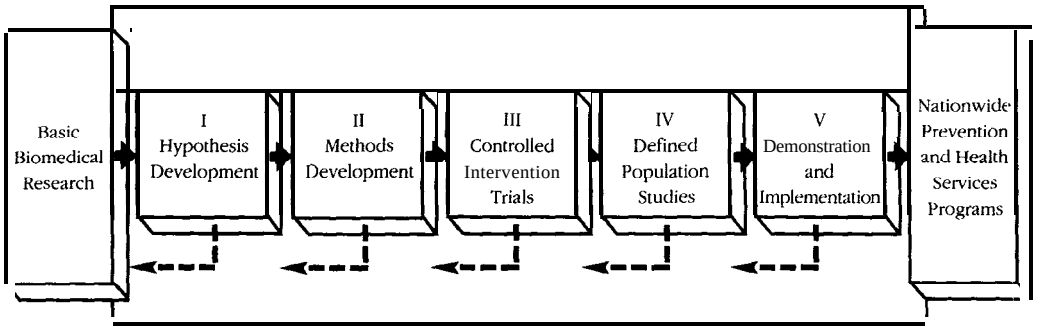
Shortly after I came to the National Cancer Institute (NCI) in 1981 to lead what is now the Division of Cancer Prevention and Control (DCPC), Dr. Joseph Cullen came as deputy director and took charge of the Smoking, Tobacco, and Cancer Program. The following year Dr. C. Everett Koop issued his first report as Surgeon General in 1982. This report

was unique in the series on the health consequences of smoking for it was the first to be entirely devoted to a single disease. *The Health Consequences of* Smoking: Cancer-A *Report of the Surgeon General*[8] established cigarette smoking as the single largest cause of excess cancer mortality for the U.S. population and estimated that 30 percent of all cancer deaths annually were directly related to smoking.

Obviously the role of tobacco in national cancer mortality statistics was so large that an all-out remedial response by this Institute was going to be required if we had any hope of reducing overall cancer deaths and rates. As a result, NCI decided to seriously reconsider the focus and direction of its smoking research program.

Within the division we had already initiated a planning process to develop a national strategy for cancer prevention and control and the control of smoking was now the cornerstone to this effort. The blueprint for this strategy was a model for defining priorities for cancer control research within DCPC.[9]

Cancer Control Phases



The model classifies research efforts according to an orderly sequence of five stepwise phases from hypothesis development (phase I) through large-scale demonstration projects (phase V). Between each phase operational criteria are applied to determine if research outcomes warrant proceeding to the next phase. Compared with other areas of cancer control in 1982, sufficient phase I and II studies already existed in smoking to allow the Institute to move immediately into phase III and IV intervention trials.

The priorities for NCI's renewed Smoking, Tobacco and Cancer Program grew from a systematic planning process that utilized state-of-the-art reviews and consensus development involving hundreds of scientists and public health experts. The result was a two-pronged strategy. The first strategy involved the study of intervention methods that were school based, self-help (minimal intervention), physician-dentist delivered interventions, mass media approaches, and community-based interventions. Our second strategy targeted specific populations that were at greatest risk for developing cancer or were amenable to prevention strategies, including youth, minority/ethnic groups, women, heavy smokers, and smokeless tobacco users.

The current STCP status report summarizes the efforts of this Institute to control smoking and tobacco use and covers the period FY 1985 through FY 1989. This program is now the largest smoking and tobacco use control effort in the world. Prevention and cessation trials begun in the mid-1980's have directly involved some 10 million people while millions more have been indirectly affected. By the end of FY 1990 total program costs will approach $250 million.

National Cancer Institute Funding for Smoking, Tobacco, and Cancer

(in 000's)

1982	10,943
1983	9,476
1984	16,721
1985	21,131
1986	27,099
1987	37,288
1988	39,604
1989	40,151
1990 (estimate)	41,092
Total 1982-1990	$243,505

Source: National Cancer Institute.

To a larger extent, however, the control of cigarette smoking cannot be achieved by the Federal sector alone. To achieve the goal of a smoke-free society by the year 2000 will require the cooperation, dedication, and energy of all of us at all levels of society.

In this regard, NCI has launched a major initiative in the fight against tobacco-related cancers with the American Stop Smoking Intervention Study for Cancer Prevention-or ASSIST.*' ASSIST is a large-scale cooperative effort involving not only NCI but the national and local offices of the American Cancer Society, state and local health departments, and individual community organizations and agencies throughout the country. Total Federal and non-Federal fiscal resources will exceed $100 million and at least 50 million individuals will be affected by the project. Up to 20 ASSIST sites will receive Federal funding starting next year and will continue through mid-1998. ASSIST builds on the NCI-developed cessation and prevention technology summarized in this volume and has the potential of substantially altering the smoking behavior of millions of Americans and thus reducing both the number and rate of those cancers most associated with tobacco use, particularly cigarette smoking.

Last, I want to express here my sincere appreciation and gratitude to the countless individuals, both inside and outside of government, who have contributed to NCI's smoking control efforts during the past 5 years. Without their involvement and commitment to these important public health initiatives, the progress made in the fight against the number one cause of preventable cancers would not have been possible.

Peter G. Greenwald, M.D., Dr. P.H.
Director
Division of Cancer Prevention and Control,
NCI

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Preface

Cancer incidence and mortality rates in the United States continue to increase. Although a complex of factors underlies this disturbing trend, two facts are clear: If lung cancer were excluded from these cancer statistics, overall cancer rates would actually be decreasing; and lung cancer is almost entirely caused by smoking cigarettes.

In 1982, as part of a major National Cancer Institute (NCI) initiative, an aggressive plan to control tobacco use in the United States was developed. The plan called for a comprehensive research program, initially involving phase III and IV intervention trials testing the efficacy of a variety of intervention strategies in selected populations. Tobacco control trials involving more than 10 million individuals in 33 states and more than 200 North American communities were implemented. Nearly $250 million has now been allocated to this effort, making the NCI Smoking, Tobacco, and Cancer Program (STCP) the largest program of its kind in the world.

This report summarizes the rationale, thrust, and results to date of the STCP effort. It codifies the importance of health promotion research and testifies to the fact that such research can be done systematically and effectively. The report also reveals that health promotion research needs to be perfected and expanded considerably if mortality rates from tobacco use-related cancers are to be reduced.

The STCP never deviated from its original objectives or the proposed strategies to achieve them. Now, based on the outcome of the trials completed to date and using the phases of cancer control research logic, new steps need to be taken. These steps are operationalized in two community trials, COMMIT (already under way) and ASSIST (just beginning). Both efforts are described and discussed in this report.

As an advocate and willing participant in the National Cancer Program (NCP), I take much of the responsibility as coordinator for the STCP for the large amount of funds allocated to this effort. I assume such responsibility with the full understanding that the monies spent meant that other important NCP activities had to be displaced, because overall resources are finite. I believe that the Institute's sacrifice to carry out a public health research program of this immensity was warranted and will in the next decade prove its usefulness when the application of the findings from these studies contribute to the intended outcome, a reduction in smoking and tobacco use prevalence and ultimately a reduction in cancer mortality.

Many individuals are to be recognized for their independent and interdependent contributions to the planning and implementation of the STCP. They include the investigators who carried out the research and advised NCI staff on the priorities to be undertaken; the STCP staff, which grew from 2 in 1982 to its present contingent of 15; other NCI staff who have been actively involved in program activities; the advisory committees, ad hoc and chartered, with particular gratitude to the members of the Board of Scientific Counselors (BSC); the Division of Cancer Prevention and Control (DCPC), which operated over the span of the events described; other governmental agencies, particularly the Office on Smoking and Health; and NCI leadership, particularly Dr. Vincent DeVita (NCI director, 1980-1988), Dr. Samuel Broder (NCI director, 1988-present), Dr. Peter Greenwald (director and chief architect for all of the DCPC control activities), and Dr. C. Everett Koop (Surgeon General of the U.S. Public Health Service (PHS) 1981-1989) to whom this report is dedicated. His understanding of science and public health and his integrity and oneness of purpose in leading PHS initiatives to achieve a smoke-free society by the year 2000 are an indelible hallmark for the 1980's and unquestionably will be a benchmark in the history of public health in this country.

I would also argue that what has been learned as a result of the STCP is not the unfolding of complex and arcane principles of human behavior that hitherto defied understanding or the discovery of unusual technologies to modify ingrained lifestyles. Rather, what was learned was simple, predictable, and rational. For example, physicians can be effective agents to help smokers stop, if and when they take enough interest to identify patients who smoke, advise them not to, and help them through one of several simple, existing support channels. Many other examples are equally as compelling. They involve the determination of simple steps to prevent adolescents from initiating smoking or tobacco use of any kind; use of minimal interventions to reach the largest number of individuals; use media to influence tobacco use; and how to carry out effective, large-scale tobacco control programs in community studies. In all of these efforts, all Americans who use or may use tobacco are targets. But special attention is paid to youth, women, ethnic minorities, and heavy smokers because these subpopulations are now at the greatest risk or will be in time.

When this program began in 1982, many believed it was premature and that gathering more basic information was a higher priority: information related to the demography of smokers, why they smoked, why they stopped, etc. These points were and still are debatable. But many felt that unless we began to address tobacco use aggressively on a population-wide basis and adhered to the logic of the cancer prevention and control phases, the most important preventable risk factor known to cause cancer, smoking cigarettes, would continue to produce unacceptable morbidity statistics that plague our Nation unnecessarily.

Nearly 800,000 deaths were postponed or averted between 1964 and 1985 because millions of Americans decided to quit or not to start smoking. We believe, therefore, that the actions of the PHS played a major role in this glorious statistic. We also believe, as stated in the most recent Surgeon General's report (1989), that there would be more than 90 million American smokers today instead of some 56 million, if the antismoking campaign begun in 1964 had not occurred. But we also believe that much more can and should be done and that NCI should play and has played a leading and forceful role in serving this Nation by developing an armamentarium of effective intervention strategies. These strategies now must be deployed across the Nation and until they are, the research-to-application cycle will be incomplete.

Joseph W. Cullen, Ph.D.
Coordinator
Smoking, Tobacco, and Cancer Program
1982-1989

Acknowledgments

The 1985-1989 Status Report of the National Cancer Institute's Smoking, Tobacco and Cancer Program (STCP) was prepared by the staff of the Smoking, Tobacco and Cancer Branch (STCB), Cancer Control Sciences Program, Division of Cancer Prevention and Control, Dr. Terry Pechacek, acting branch chief. Technical and editorial support was provided by Prospect Associates of Rockville, Maryland. Managing editors were Donald R. Shopland, National Cancer Institute (NCI), and Marilyn M. Massey, Prospect Associates.

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Finally we would like to acknowledge below the many staff members, past and present, who have contributed to the success of the program during the period covered by this report.

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Preparation and Organization of the Report

Information contained in the report reflects program accomplishments and initiatives funded by the Institute through fiscal year 1989.

Draft manuscripts were prepared by individual STCB and contractor professional staff. These manuscripts were reviewed internally, edited, and then consolidated into major content areas. Where trial outcome results are reported, these data are based primarily on NCI consensus statements already published or in press. The NCI consensus documents represent public health statements concerning trial findings and recommendations and have been subjected to independent peer review by scientists and experts both in and out of government. Other trial results represent findings extracted from individually published reports and studies or were summarized from existing state-of-the-art reviews, including recent reports of the Surgeon General.

Findings and results summarized in this volume represent the opinion of NCI and do not necessarily reflect the opinions of individual investigators or their institutions.

The 1985-1989 status report is dedicated to the leadership of Dr. C. Everett Koop, Surgeon General, U.S. Public Health Service, 15X31-1989. It contains a foreword by Dr. Peter Greenwald, director, Division of Cancer Prevention and Control, a preface by Dr. Joseph Cullen, former STCP coordinator and division deputy director, and is organized to review the following major content areas:

- Overview of the health consequences of smoking with emphasis on smoking and cancer.
- Trends in smoking behavior and lung cancer incidence and mortality.
- Summary, findings, and results from STCP intervention trials and studies.
- National dissemination of STCP intervention technology.
- Other smoking research and communications efforts within NCI.
- References and supplemental information on STCP research and products.

Review of the Scientific Evidence and Program Accomplishments

Review of the Scientific Evidence and Program Accomplishments

The Link Between Tobacco Use and Health

At the heart of all strategies to reduce the burden of mortality, morbidity, and disability associated with tobacco use is maintaining an understanding of the substantial and expanding body of scientific knowledge about the health consequences of smoking. Thousands of studies detail the numerous and severe health consequences of tobacco use, and a succession of Surgeons General have reviewed and summarized the health effects associated with smoking and other forms of tobacco use. Highlights of these data are reviewed below.

Tobacco Use as a Cause of Cancer

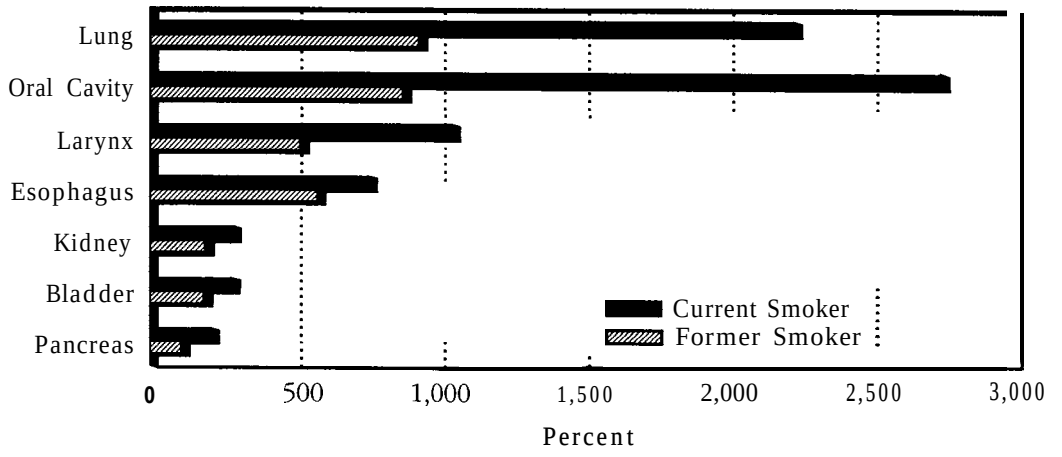
Knowledge of the relationship between tobacco use and health stems from clinical observations about cancer, the first disease to be linked to tobacco use. Tobacco use has been suspected of increasing the risk for developing cancer for more than 200 years. According to one historian, Dr. John Hill is credited with the first published report linking tobacco use and cancer as early as 1761 in his work *Cautions Against the Immoderate Use of Snuff.*[1]

The first major development in the modern history of the effects of smoking on health occurred in 1950 with the publication of four retrospective studies on smoking habits among lung cancer patients and among controls.[1, 2, 3, 4, 5, 6] Although many researchers accepted the findings of these early retrospective studies as conclusive proof that smoking was etiologically associated with lung cancer, other investigators turned to prospective investigations in which large numbers of healthy individuals were enrolled in studies and followed over time. Facts about their lifestyles (including smoking), occupational history, place of residence, and other characteristics were recorded. Results from these studies clearly documented that smoking not only substantially increased the risk of developing lung cancer but increased the risk of developing cancer of other sites as well as noncancerous diseases?'[7, 8] By the time the Surgeon General's Advisory Committee on Smoking and Health was established in 1962, eight major prospective studies were already under way or planned. Studies have now been conducted in the United States, Great Britain, Canada, Japan and Sweden, and collectively represent over 20 million person-years of observation.

The largest of these, the American Cancer Society (ACS) 25 State Study, was initiated in 1959 and involved more than 1 million persons followed prospectively for 12 years. In 1982, the ACS initiated a new study in which more than 1.2 million men and women in all 50 states are being followed every 2 years. The ACS 50 State Study provides important new information concerning the risks of smoking and tobacco use for the individual and the total public health dimension of the disease burden due to tobacco use for the U.S. population. The following information is taken from these two studies. The ACS 50 State Study provides more information for women than for men.[9,10]

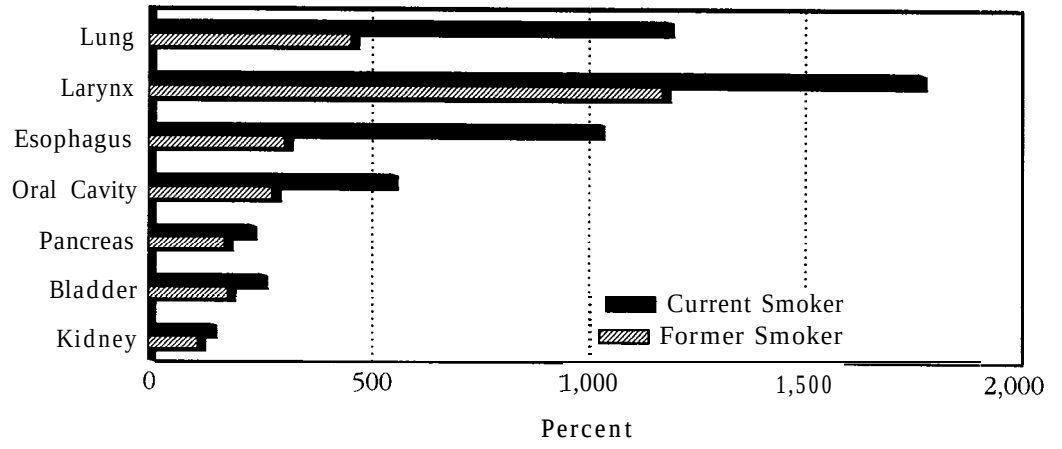
Findings from the new ACS prospective study indicate that for cancers of the respiratory tract-particularly the lung-male smokers experience more than a 2,000-percent greater chance of dying from lung cancer than male nonsmokers; among women who smoke the lung cancer risk is approximately 1,200 percent greater. For each site smokers experience substantially higher mortality risks compared with comparable nonsmokers. Mortality risks for former smokers are lower than continuing smokers but higher than those who have never smoked.

Percent Increased Risk of Cancer for Men Who Smoke



Source: ACS 50-State Study.

Percent Increased Risk of Cancer for Women Who Smoke



Source: ACS 50-State Study.

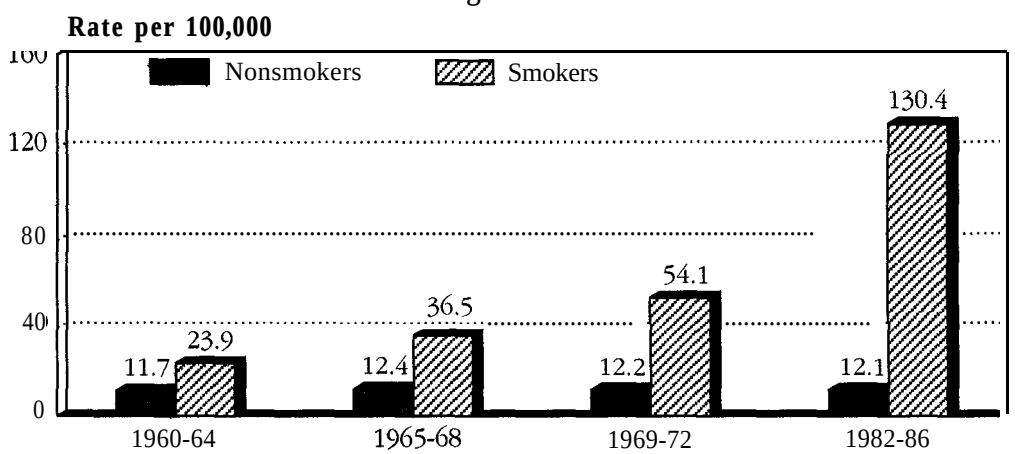
The chances of a premature cancer death among smokers have increased over the past 25 years. This finding reflects that total lifetime smoking exposure among more contemporary cohorts is greater than that observed among older cohorts that formed the basis of published studies in the 1950's and 1960's. To illustrate this finding, mortality ratios of smokers versus nonsmokers for selected sites of cancer from the ACS 25 State Study (initiated in 1959) are presented with those from the current ACS 50 State Study begun in 1982. For lung cancer and a number of other cancer sites associated with smoking behavior, smoker mortality ratios have increased. Among men the lung cancer ratio doubled from approximately 11 to 22 while for women the ratio increased nearly fourfold from about 3 to 12. Lung cancer mortality ratios for women mirror the ratios seen in men two decades earlier. Interestingly, the nonsmoker lung cancer mortality rate has remained virtually unchanged in women during this 26-year period.

Cancer Mortality Ratios for Current Smokers 35 Years and Older at Time of Enrollment by Sex

	Males		Females	
Cancer Site	**25-State Study**	**SO-State Study**	**25-State Study**	**SO-State Study**
Lung	11.35	22.36	2.69	11.94
Oral	6.33	27.48	1.96	5.59
Esophagus	3.62	7.60	1.94	10.25
Larynx	10.00	10.48	3.81	17.78
Bladder	2.90	2.86	2.87	2.58
Pancreas	2.34	2.14	1.39	2.33
Kidney	1.84	2.95	1.43	1.41

Source: American Cancer Society, 25-State Study and 50-State Study.

Lung Cancer Death Rates Among Smoking and Nonsmoking Women Over Time



Source: Garfinkel and Stellman. ***Cancer Res*** **1988.** Adjusted to U.S. Population for 1970

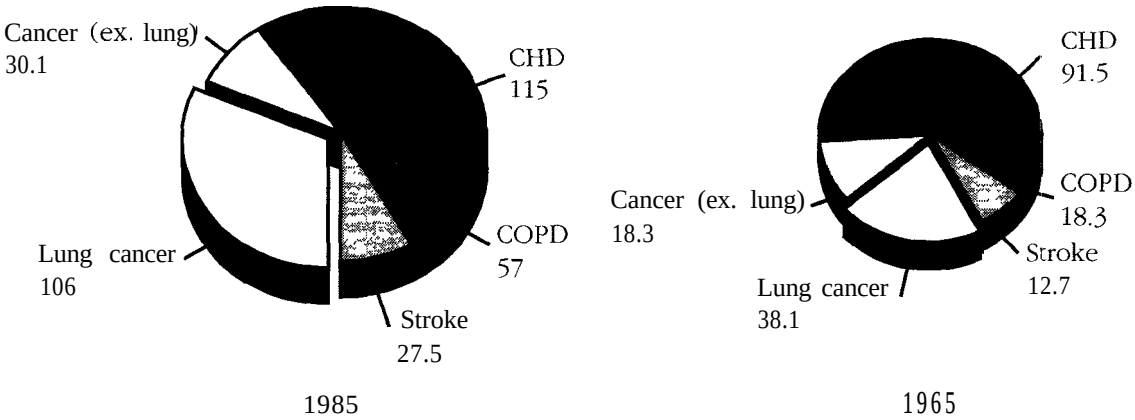
Applying national smoking and cancer mortality rates to the new ACS data provides an estimate of the total number of excess cancer deaths attributed to smoking for the U.S. population. For the major smoking-related sites, smoking is responsible for nearly 140,000 cancer deaths annually. Because these estimates do not include other sites that are now thought to be associated with cigarette smoking (i.e., stomach, cervix) or those related to environmental tobacco smoke (ETS) exposures in nonsmokers (about 5,000 annually), the total cancer burden due to smoking is probably in excess of 150,000 deaths annually. Overall nearly one-third of all cancer deaths are considered directly related to tobacco use in the United States each year. By far, smoking cigarettes is the single largest cause of excess cancer cases and deaths known to our society.

Smoking as a Cause of Other Diseases

Smoking and tobacco use are not only related to substantial numbers of cancer deaths, but regular use of these products is also associated with deaths from many other diseases and conditions. Although the risk of death for many of these causes is usually lower than those for lung cancer, they represent a significant number of premature deaths because of their total influence on national mortality patterns. Smoking-related coronary

heart disease (CHD) risk, for example, is much smaller than the risk for lung cancer; but because CHD is responsible for more cases and deaths nationally than any other cause, the number of smoking-related CHD deaths is large (approximately 115,000 deaths in 1985 alone).

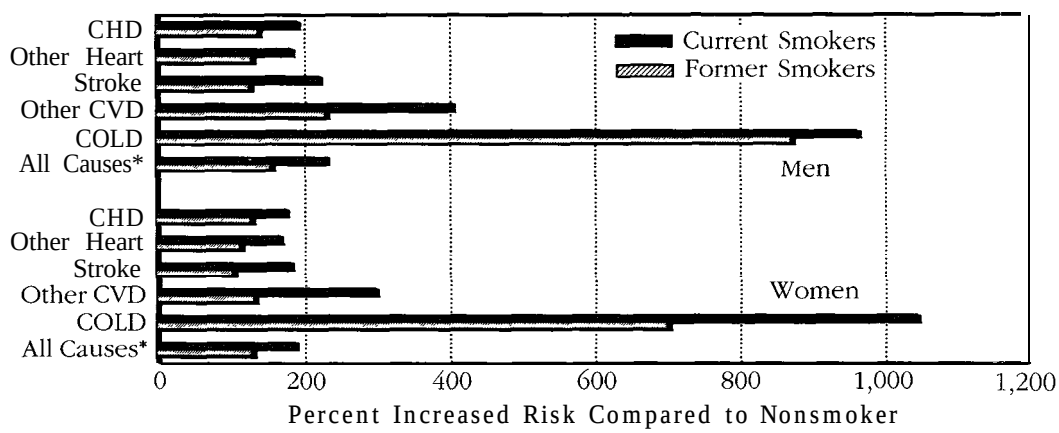
Deaths (in thousands) Attributed to Smoking From Select Causes, Males and Females, 1965 and 1985 (Major Smoking-Related Diseases Only)



Source: ACS 25- and 50-State Studies.

The effects of smoking on the leading causes of death related to tobacco use are illustrated below for two time periods 20 years apart. Smoking is responsible for nearly 400,000 deaths annually, representing nearly 1 in every 6 deaths nationally. Increasingly, proportionately more deaths are due to cancer than the other major causes of death.

Percent Increased Risk of Other Diseases for Men and Women Who Smoke



Source: ACS 50-State Study. *Includes cancer and all other diseases combined

There is no longer any question that tobacco use, particularly in the form of cigarette smoking, is the Nation's number one cause of premature mortality; the tragedy is that this enormous disease burden is entirely self-inflicted and, therefore, avoidable if appropriate prevention and control measures are defined and applied.

Trends in Cigarette and Tobacco Use Rates

Progress against tobacco use is necessarily measured in several dimensions. In particular, accurate data on trends in tobacco use are needed to estimate the magnitude of the tobacco use problem and its distribution among major socioeconomic groups in the United States, to foretell the future course of tobacco-related disease, and to target public health interventions to those at highest risk of tobacco use and tobacco-related mortality.

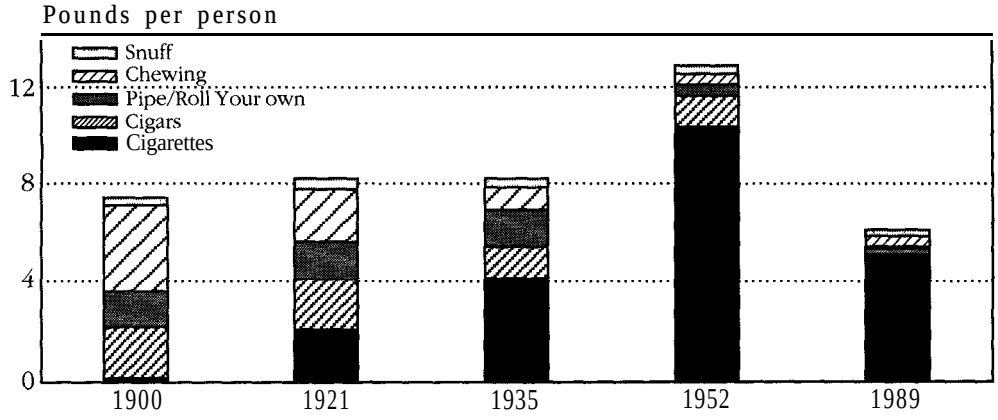
Early Historical Perspective

Historically, tobacco use has been part of American culture for more than 400 years, predating the arrival of Columbus and the early settlers. The use of cigarettes, however, is of a relatively recent origin, having gained widespread acceptance only during this century.

Of the 7.43 pounds of tobacco consumed per capita in 1900, manufactured cigarettes accounted for only 0.16 pounds per person or less than 1 percent of total tobacco used. The majority of tobacco consumed at the turn of the century was in the form of smokeless tobacco. Widespread adoption of cigarette smoking began in 1913 with the introduction of the first blended cigarettes. These cigarettes represented an entirely new generation of smoking products that were easily inhaled compared with their earlier counterparts, thus directly exposing the lung and other organs to the dozens of toxic and carcinogenic

Per Capita Consumption of Tobacco Products

Unstemmed Processing Weight



Source: U.S. Department of Agriculture.

constituents found in tobacco smoke. By 1921 more pounds of tobacco per capita (expressed as unstemmed processing weight) was being consumed in cigarettes than any other tobacco product category, and as early as 1935 it accounted for more than half of all tobacco consumed.

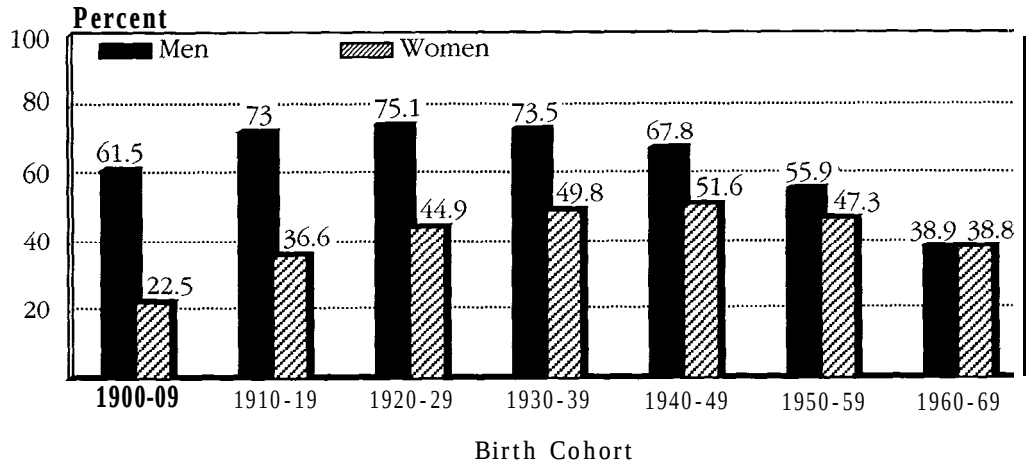
Peak consumption (in per capita pounds) occurred in 1952 when 12.9 pounds of tobacco was consumed per person; of this amount, 10.4 pounds were consumed in cigarettes. It was during this time that the first public warnings about the dangers of smoking appeared in the regular press, and in response the tobacco industry introduced and widely promoted filter cigarettes in the hope that consumers would view these as "safe." Today cigarettes still account for the vast bulk of all tobacco consumed (5.11 of the 5.85 pounds consumed per capita); however, total pounds of tobacco per capita is now at the lowest level in more than 100 years and total pounds of cigarette tobacco per capita is lower than at any time since World War II.

Use of cigarettes accelerated during and immediately following World War I as the result of aggressive advertising and promotion tactics of the tobacco industry, especially its targeting of the military. When U.S. soldiers returned from the European campaigns, many had become addicted to these newer products while in the service. By the early 1920's a majority of men were estimated to be regular cigarette smokers, having switched from other forms of tobacco use. Smoking by women in the early part of this century was not socially acceptable, and it is widely held that only a very small percentage of women smoked until after World War I-and few of these women would be classified as "regular" smokers in the common use of that term.

When successive age groups of men and women are examined, it is readily apparent that large numbers of men became regular smokers two to three decades earlier than women. Further, smoking behavior among older men and women differed substantially. Until the appearance of more recent age groups (i.e., beginning about 1940) most women did not begin smoking until their late twenties or early thirties, whereas the vast majority of men initiated regular smoking while in their teens. As will be discussed later, the differences in smoking intensity observed between men and women in the various age cohorts have had a profound impact on the pattern of lung cancer in the United States.

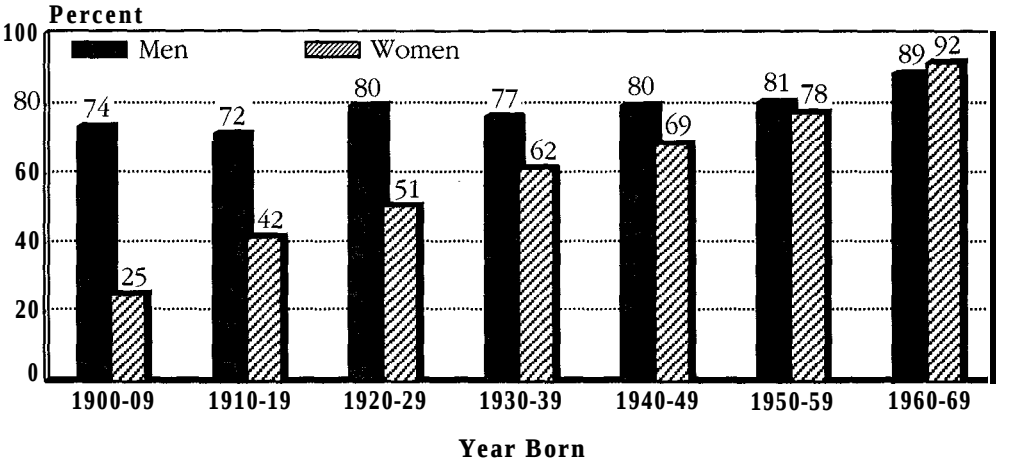
The first large-scale national survey to determine smoking prevalence was conducted in 1955 by the National Cancer Institute (NCI) in response to early findings linking

Maximum Smoking Rates of Men and Women by Year of Birth



Source: 1987 National Health Interview Survey.

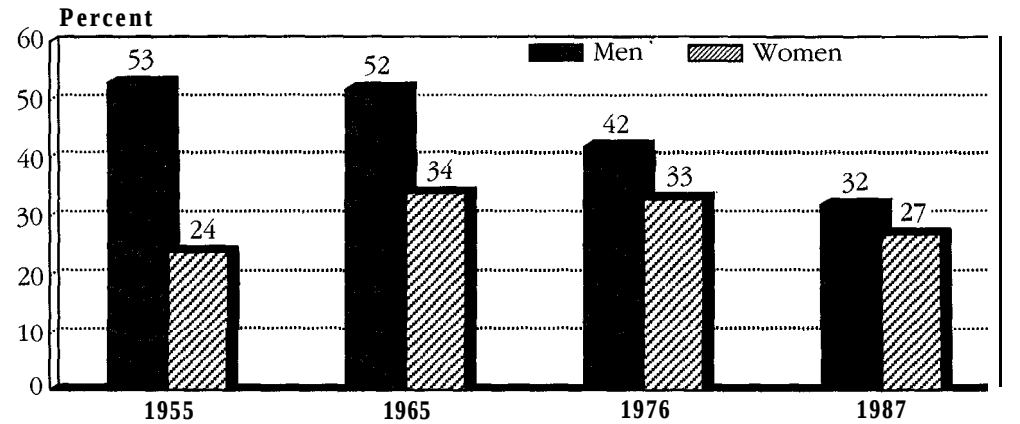
Percent of Smokers Who Began Smoking Before Age 20 by Year of Birth



Source: 1987 National Health Interview Survey.

cigarette smoking to risk for lung cancer.[11] Between that time and 1987, the nature of smoking prevalence for men and women has changed dramatically. Following decades of increased cigarette use, smoking prevalence and overall cigarette consumption peaked during the 1960's as a result of the first report of the Surgeon General in 1964, publicity surrounding mandated warning labels, and other measures undertaken to inform the public about the hazards of cigarette smoking.

Percent of Adult Cigarette Smokers in the U.S., 1955 to 1987



Source: 1955 Current Population Survey and 1965-87 National Health Interview Survey.

Men responded more quickly than women to these first warnings. Between 1965 and 1976 smoking rates declined by 20 percent among men from 52 to 42 percent, while in women it remained about the same at around 33 percent. Since 1976 smoking has declined in both men and women with each successive survey, a trend that has continued into 1987—the last year for which detailed national data are available.

Current Tobacco Use Prevalence

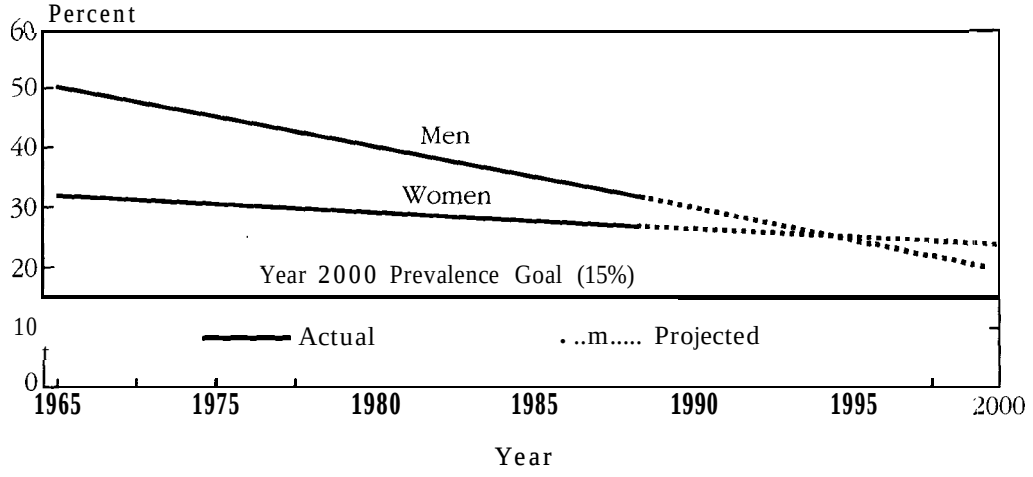
In 1987 NCI sponsored a supplement to the National Health Interview Survey (NHIS) to assess health practices known to affect cancer morbidity, mortality, and survival. Included in this supplement were questions regarding current and former use of various tobacco products and the public's perception of smoking and tobacco use practices on health.

Although it is not the intention of this report to provide a detailed analysis of the **1987** NHIS cancer supplement, several key findings are highlighted below. More detailed information on each of these as well as other data from the 1987 NHIS can be found in appendix A.

Differences by Gender

Smoking among all adults (both men and women 20 years of age and older) was 29 percent in 1987, the lowest reported figure since the Government began collecting information in 1955. Smoking rates remain higher among men compared with women, however, the gap between the sexes is narrowing.[11] If present trends continue, women are expected to surpass men in smoking prevalence by the mid-1990's.

Projections to Year 2000: Smoking Prevalence for Men and Women



Source: Pierce et al. *JAMA* 1989.

Overall, 1987 rates for men are probably lower than at any time except before World War I. Compared with women, men also report smoking more cigarettes per day, and among both men and women the percent of smokers classified as heavy smokers has increased in recent years. This may reflect either a change in the numbers of cigarettes consumed daily per smoker or that proportionately more light-to-moderate than heavy smokers have been successful in giving up smoking.

Racial/Ethnic Smoking Prevalence

Detailed information on smoking behavior among various racial and ethnic groups indicates that black males have the highest reported current cigarette use rates (39 percent) and Hispanic females the lowest (18 percent). Both white and black females report identical smoking rates of 28 percent, a pattern that has been consistently observed for nearly

Cigarette Smoking Among Racial Ethnic Groups (Percent) by Race and Sex, Persons 18 Years of Age or Older

Race/Sex	Smoking Status: Never Smoker	Former Smoker	Current Smoker
Whites (non-Hispanic)			
Males and Females	46.2	24.8	29.0
Males	38.2	31.2	30.6
Females	53.5	19.0	27.5
Blacks (non-Hispanic)			
Males and Females	52.3	14.8	32.9
Males	42.3	18.9	38.9
Females	60.3	11.5	28.2
Hispanics			
Males and Females	60.3	16.1	23.6
Males	49.3	20.7	30.0
Females	70.0	12.1	18.0

Source: National Health Interview Survey, 1987.

two decades. Among all major race and ethnic groups, highest use rates are generally seen in the middle age groups, after which smoking declines. Whites of both sexes consume more cigarettes per day compared to other groups and are observed to have higher rates of heavy smoking (greater than 25 cigarettes daily).

Pattern of Cigarette Use Among Various Groups in the U.S. Population

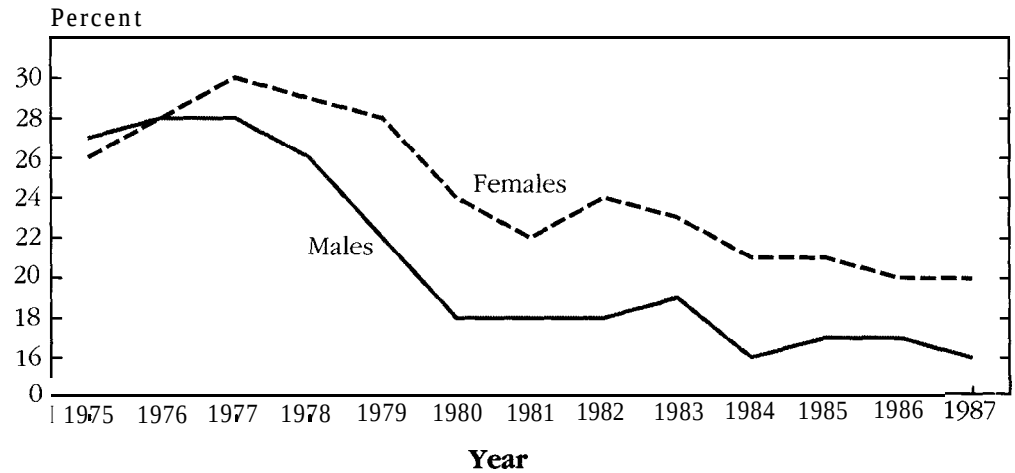
Race/Sex	Number of Cigarettes Smoked per Day: 1-14	15-24	25+	Any Amount
All Races	9.1	11.8	7.6	28.8
Males	8.6	12.2	10.2	31.2
Females	9.6	11.5	5.2	26.5
Whites (non-Hispanic)	7.3	12.6	8.9	29.0
Males	6.3	12.4	11.8	30.6
Females	8.3	12.8	6.2	27.5
Blacks (non-Hispanic)	19.8	10.0	2.5	32.9
Males	21.2	13.7	3.4	38.9
Females	18.7	7.1	1.8	28.2
Hispanics	13.3	7.3	2.8	23.6
Males	16.4	8.9	4.3	30.0
Females	10.6	5.8	1.5	18.0

Source: National Health Interview Survey, 1987.

Teenage Cigarette Smoking

Periodic and systematic surveys to assess smoking among teens have not been conducted. The last national survey of smoking behavior among teens occurred in 1979. Data from other surveys that include significant numbers of teens or high school students, however, provide considerable insight into current adolescent cigarette use. For example, the National Institute on Drug Abuse (NIDA) High School Seniors Survey clearly shows that smoking by seniors has remained nearly constant since 1980 after several years of decline. The 1985 NIDA Household Survey on Drug Abuse supports this finding, with 16 percent of teenagers, 12 to 17 years of age, reporting having used cigarettes in the past month. This figure is lower than reported in 1977 but represents virtually no change from that reported 3 years earlier.

Prevalence of Daily Cigarette Smoking by High School Seniors



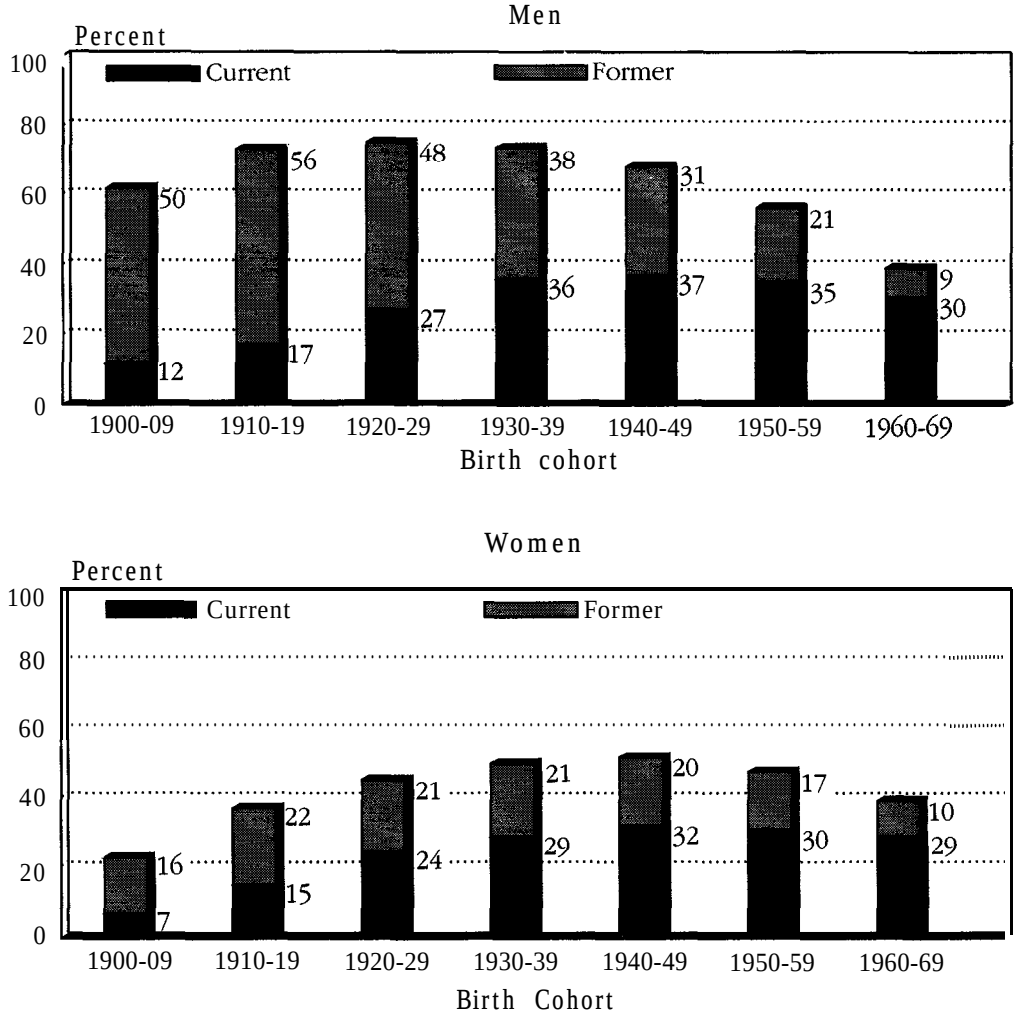
Source: NIDA High School Seniors Survey.

Quitting Behavior

Quitting patterns among various age groups of men and women have produced a population of former smokers that currently totals nearly half of the adults who have ever smoked. Reductions in smoking that have occurred over the past quarter century are already having a measurable impact on lung cancer incidence and mortality rates, especially among men.

In the 1987 NHIS current smokers were asked whether they had ever tried to quit and if they had attempted to quit during the previous 12 months. Two-thirds of smokers reported making at least one serious quit attempt, and approximately one out of three had tried to quit during the past year. Little difference exists between men and women in reported quit attempts. Among both men and women proportionately more light than moderate or heavy smokers reported making a recent attempt. These and other data on quitting can be found in appendix A.

Percent of Current and Former Smokers Among Various Age Cohorts



Source: 1987 National Health Interview Survey.

Other Forms of Tobacco Use

Several questions concerning other forms of tobacco use were included on the 1987 NHIS. Use of these products is primarily a male phenomenon; fewer than 1 percent of all women use these forms of tobacco. Slightly more than 6 percent of males regularly used some form of smokeless tobacco (i.e., snuff and/or chewing tobacco) in 1987; more than 3 percent used pipes and more than 5 percent smoked cigars.

Use of smokeless tobacco products by young adolescent males appears to be a growing problem at a time when their use of cigarettes has been declining. Teenage boys 16 to 19 years of age reported a 300-percent increase in the use of snuff and a 250-percent increase in the use of chewing tobacco from 1970 to 1985. A similar pattern of increased use occurred among younger age adult males (20 through 29 years of age) during this same period; 1987 NHIS data indicate continued high levels of smokeless tobacco use among younger age males.

Prevalence of Smokeless Tobacco Use (Snuff and/or Chewing Tobacco) Among U.S. Males by Age

Age	Smokeless Tobacco Use		
	Never User	Former User	Current User
18+	84.1	9.8	6.1
18-24	79.8	11.3	8.9
25-34	84.9	9.1	6.0
35-44	87.6	7.7	4.7
45-64	85.9	9.1	4.9
65+	79.6	13.6	6.9

Source: National Health Interview Survey, 1987.

State and Regional Differences in Cigarette and Smokeless Tobacco Use

The 1985 Current Population Survey by the U.S. Census Bureau was the first survey to permit cigarette and smokeless tobacco use estimates for all 50 states and the District of Columbia.[12,13] Among men only states in the southeast (East South Central Division) consistently dominated the high rankings for both cigarette and smokeless tobacco use.

Percent Current Cigarette Smokers 16 Years of Age and Older* by Region, Division, and Sex

Area	Male Percent	Female Percent	Total. Percent
Total United States	31.3	25.0	28.0
Northeast Region	29.7	25.2	27.3
New England Division	29.4	25.9	28.1
Mid-Atlantic Division	29.9	24.6	27.1
North Central Region	30.8	26.3	28.5
East North Central Division	31.5	27.5	29.5
West North Central Region	29.1	23.6	26.2
South Region	34.5	25.1	29.5
South Atlantic Division	34.4	25.3	29.5
East South Central Division	35.8	25.2	30.1
West South Central Division	33.9	24.7	29.0
West Region	28.0	22.7	25.2
Mountain Division	28.6	23.5	26.0
Pacific Division	27.7	22.4	25.0

*Total adult sample (≥16 years of age) N = 114,342.

Source: Marcus et al. *JNCI* 1989.

These states can be characterized as having low cigarette excise taxes, an absence or lack of state or local laws restricting smoking in public places, and state economies that depend more heavily on tobacco than other states. The West had the lowest smoking prevalence for both men and women. (See appendix A for prevalence on individual states.)

Percent Current Users of Snuff and Chewing Tobacco by Region and Division, Males 16 Years and Older

Area	Snuff	Chewing Tobacco	Any Smokeless
Total United States	1.9	3.9	5.5
Northeast Region	1.0	1.4	2.3
New England Division	0.4	0.8	1.2
Mid-Atlantic Division	1.2	1.6	2.7
North Central Region	2.1	3.4	5.3
East North Central Division	1.8	2.9	4.4
West North Central Division	2.9	4.7	7.5
South Region			8.3
South Atlantic Division	1.7	6.0	6.7
East South Central Division	2.7	9.4	11.6
West South Central Division	4.0	5.5	9.1
West Region	1.4	3.3	4.5
Mountain Division	2.3	5.4	7.5
Pacific Divison	1.0	2.6	3.4

Source: Marcus et al. *NCI Monogr 1989.*

public Knowledge About Smoking and Cancer

The 1989 report of the Surgeon General provided information from a variety of surveys regarding the public's knowledge or perception of the relationship between smoking and cancer. Overall, the public overwhelmingly agrees that smoking causes lung cancer. The proportion of all adults who agree that smoking causes cancer of the lung has increased steadily since 1954 when questions concerning this relationship first appeared on national surveys. Even most current smokers agree that smoking causes lung cancer; in the 1987 NHIS cancer supplement 83 percent of current smokers thought cigarette smoking caused lung cancer. Recent data from the 1987 NHIS, however, indicate that only 19 percent agree that smoking causes most lung cancer deaths, reflecting knowledge of a risk but not its magnitude.

The public's perception of the relationship between smoking and cancer of other organ sites is also very high. Data reported from a number of national surveys dating from 1977 have observed high percentages of adults agreeing that smoking is associated with a number of other cancer sites. Although use of different terms to describe various cancer sites makes comparisons difficult, the data do indicate a high degree of acceptance of the relationship between smoking and these cancers.

Slightly greater than one-third (36 percent) of the public thinks cigarette smoking either definitely or probably increases a person's chance of developing bladder cancer.

Trends in Public Knowledge About Smoking and Lung Cancer

Survey	Year	Cigarette Smoking Causes Lung Cancer (Percentage Who Agree by Smoking Status) Current Smokers	Former Smokers	Never Smokers	Au Nonsmokers	All Adults
Gallup	1954					41
Gallup	1957					50
Gallup	1958					44
AUTS[a]	1964	53	75	75	75	66
AUTS[a]	1966	57	79	70	72	66
Gallup	1969					71
Gallup	1971					71
Gallup	1977					81
Gallup	1978	72			87	81
Gallup	1981	69			91	83
NHIS[a]	1985	92	96	96	96	95
AUTS	1986	85	94	95	95	92
Gallup	1987	75	90		94	87
NHIS	1987	83	92	92		89

[a]Percentages including those who believe that smoking "definitely" or "probably" increases the risk

AUTS = Adult Use of Tobacco Survey
NHIS = National Health Interview Survey

Source: U.S. Department of Health and Human Services. A *Report of the Surgeon General,* 1989.

Trends in Public Knowledge About Smoking and Cancer of the Mouth/Throat/Larynx/Esophagus

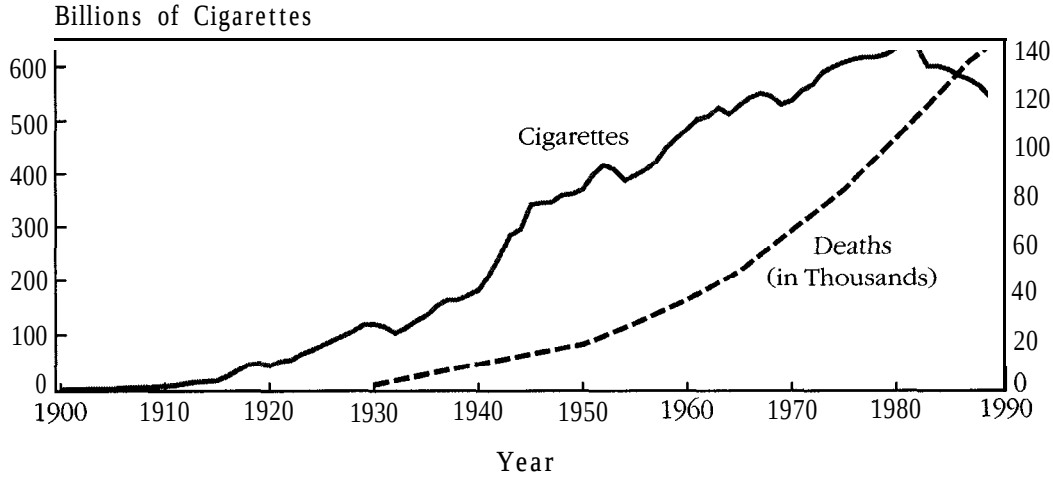
Survey	Year	Cigarette Smoking Causes Mouth/Throat/Larynx/Esophagus Cancer (Percentage Who Agree by Smoking Status) Current Smokers	Former Smokers	Never Smokers	All Nonsmokers	All Adults
Gallup	1977				79	
Gallup	1978	73			82	79
Gallup	1981	69		87	81	
NHIS	1985	83	90	90	90	88
NHIS	1985	75	83	82	82	80
AUTS	1986	82	91	91	91	88
NHIS	1987	73	85	83		80

Source: U.S. Department of Health and Human Services. *A Report of the Surgeon General,* 1989.

Trends in Lung Cancer Incidence and Mortality

Lung cancer did not become a medical problem in the United States until 25 to 30 years after widespread adoption of cigarettes by American society. As was discussed earlier, cigarette smoking among men began to increase after the turn of the century and accelerated before and during World War I. By the beginning of the 1920's a majority of men had not only become regular cigarette smokers but a significant proportion of them had been smoking for many years. Lung cancer was considered such a rare medical occurrence during the early part of the 20th century that it was not listed as a cause of death in the International Classification of Disease (ICD) system until 1930.

Cigarette Consumption and Lung Cancer Deaths in the U.S., **1900-1989**



Source: U.S. Department of Agriculture; National Center for Health Statistics.

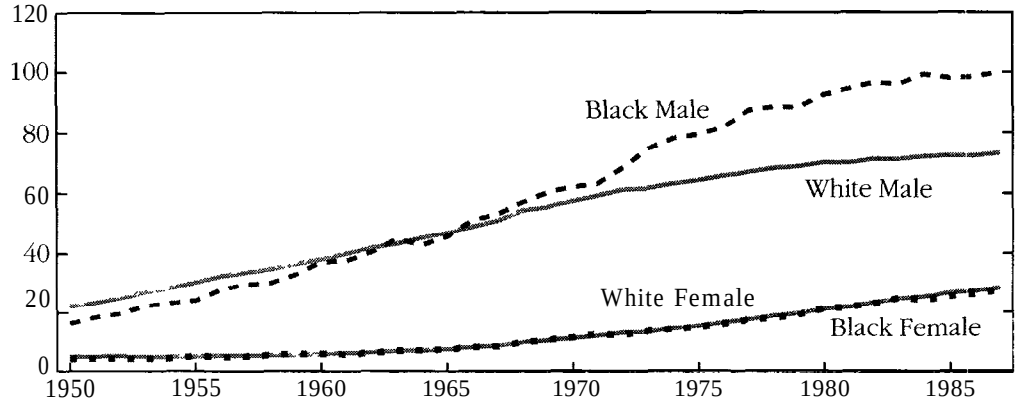
Lung Cancer Mortality Pattern, 1950 to 1987

Between 1930 and 1950 lung cancer increased significantly in the United States, and by 1950 it accounted for fully 14 percent of all cancer deaths among men. Among women lung cancer was only beginning to emerge as a problem, reflecting the difference in late onset of smoking behavior in women compared with men. In 1950 there were approximately 14,000 lung cancer deaths in men and 3,000 in women. By 1987 these figures had increased to 87,200 and 42,700, respectively; of these, 115,000 occurred among whites and 14,000 in blacks. More than 2 million lung cancer deaths occurred in the United States between 1950 and 1986; an estimated 90 percent were directly caused by cigarette smoking.

Mortality rates have increased among both men and women for the period 1950 to 1987 although men experienced much higher rates compared with women. During the 1960's lung cancer mortality in black men had surpassed that of whites, and by 1987 blacks were experiencing mortality rates 36 percent higher than whites (99.9 versus 73.2 deaths per 100,000). Among white and black women no significant difference in their lung cancer mortality rates has been observed over the past four decades.

Although men experience substantially higher lung cancer mortality rates than women, this finding masks a significant change occurring in the lung cancer trend between the sexes. The age-adjusted lung cancer rate for white men appears to be plateauing, whereas in white women it is increasing.

Age-Adjusted Lung Cancer Mortality Rates by Race and Sex, U.S., 1950-1987



Age-Adjusted to 1970 U.S. Population

Source: National Center for Health Statistics.
Note: Data prior to 1973 are rates for "nonwhites,"

The lung cancer death rate over the 14-year period 1973 to 1986 increased 17 percent among men but 94 percent in women; on an annual basis men increased 1.3 percent compared with 5.7 percent among women.

Change in Age-Specific Lung Cancer Mortality Between 1973 and 1986

Sex/Age	Average Rate* 1973-1974	1985-1986	Percent Change
Males	63.3	74.0	+17.0
o-54	12.4	11.0	-11.3
15-34	0.5	0.3	-26.3
35-44	15.0	10.5	-29.8
45-54	72.0	66.8	-7.2
55-64	198.8	215.2	+8.3
65-74	350.5	417.9	+19.2
75+	360.8	527.0	+46.1
Females	13.8	26.7	+93.9
o-54	4.5	5.8	+30.6
15-34	0.3	0.2	-19.5
35-44	6.5	6.1	-5.7
45-54	24.4	34.6	+41.9
55-64	48.5	89.6	+84.7
65-74	57.1	145.2	+154.1
75+	59.8	131.6	+120.2

*Rates are per 100,000 population and are age-adjusted to the 1970 U.S. standard population.
Source: NCI, Cancer Statistics Review, 1973-86, May 1989.

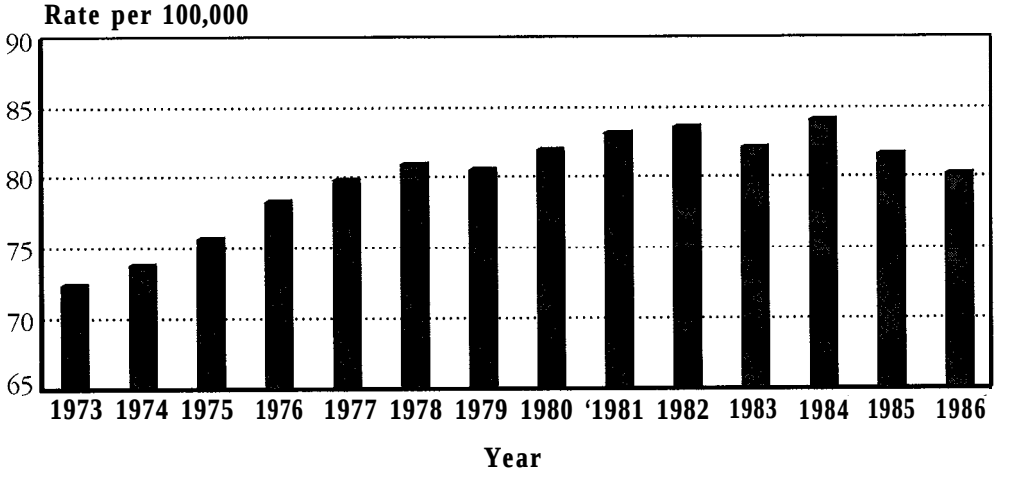
When age-specific lung cancer death rates are examined, younger age males (younger than 55) demonstrate a decline in lung cancer mortality by 1986 (11.3-percent decrease) compared with the average during 1973 to 1974, whereas among women younger than 55 the lung cancer death rate increased by more than 30 percent. These

changes are consistent with observed changes in smoking behavior among males and females during the past 25-year period.

SEER Lung Cancer Incidence Rates

Information obtained from NCI's Surveillance, Epidemiology, and End Results (SEER) program from 1973 through 1986 provides additional evidence that changes in smoking behavior are beginning to have a positive impact on lung cancer occurrence. Although the age-adjusted cancer mortality rate among all major demographic groups is still increasing, data from SEER show a significant decline in the white male lung cancer incidence rate. In 1986 the white male rate was 80.3 per 100,000 or approximately the same rate reported in 1979. A decline in the white male lung cancer incidence rate has now been recorded for 3 out of the past 4 years. Similar declines in other groups have not been consistently observed, however, a decline in the incidence rate among black men appears likely.

Lung Cancer Incidence for White Males in the U.S., 1973-1986



Source: SEER, 19751986.

A sustained decline in lung cancer incidence should predate a decline in the national lung cancer mortality pattern. Thus, it appears probable that a decline in the white male lung cancer mortality rate will occur in the near future; this should be followed by a decline in the black male rate if the present trend continues.

Impact of Smoking Behavior Change on Lung Cancer Rates

When smoking and lung cancer rates are compared over time between whites and blacks and between males and females, it becomes clear that changes observed in smoking behavior parallel the observed trends in their respective lung cancer experiences approximately two decades later. For example:

1. Smoking historically has been much higher among men than women, and male lung cancer experience has also been significantly greater.
2. Smoking behavior in men declined sharply in the 1960's and continued to decline through the 1980's; smoking among women, however, did not begin to decline

until well into the 1970's, and the rate of decline has been slower than that observed among men. By 1987 smoking prevalence in men was almost 40 percent lower than in 1965 but only 18 percent lower in women. Consequently by the 1980's lung cancer mortality rates in men had leveled off and incidence rates were actually declining. No such pattern in women is yet evident.

3. Smoking by black men has traditionally been higher than among other groups, including white males-a pattern that appears to predate the 1960's (black men also tend to smoke cigarettes with higher tar and nicotine levels). As a result black male lung cancer mortality and incidence rates exceed those of all other demographic groups in the United States.

4. Differences in smoking behavior between black and white women over the past quarter century are not evident, and no difference is observed in their lung cancer mortality experience over this period.

Thus, observed differences in total smoking behavior over time is quite coherent with the lung cancer morbidity and mortality pattern observed in the U.S. population during this century.

Because cigarette smoking plays such a dominant role in lung cancer etiology (90 percent of all lung cancers are directly related to cigarette smoking), any reduction in prevalence can have a strong positive effect on lung cancer incidence and mortality? Although some reduction in lung cancer risk in the population may occur by altering the level of exposure to tar and other constituents or by reducing the number of cigarettes consumed, significant reductions will only be achieved by substantial reductions in the rate of smoking initiation among adolescents and by accelerations in the rate of cessation.

NCI Year 2000 Goal

To achieve its goal of significantly reducing cancer mortality rates by the year 2000, NCI must achieve a sizable reduction in cigarette smoking over the next decade. Several initiatives toward this effort were initiated by the Smoking, Tobacco, and Cancer Program (STCP) in 1982; more recently several large-scale initiatives, including COMMIT (Community Intervention Trial for Smoking Cessation) and ASSIST (American Stop Smoking Intervention Study), are now being implemented (see "Applications of Research Findings" sections for an overview of these and other national impact projects). Such efforts are especially designed to accelerate the reduction in national smoking rates and thereby reduce both the rate and number of lung and other cancers associated with tobacco use.

How much of a reduction is attainable in the national lung cancer death rate by the turn of the century is dependent on both the magnitude of the reduction in smoking prevalence and how quickly this reduction can occur, especially among those smokers most at risk. Although few data exist that would allow an accurate prediction of the magnitude of smoking reduction needed to produce an effect, it is clear that reducing smoking to its lowest possible level will result in a reduction in the lung cancer incidence and mortality rate.

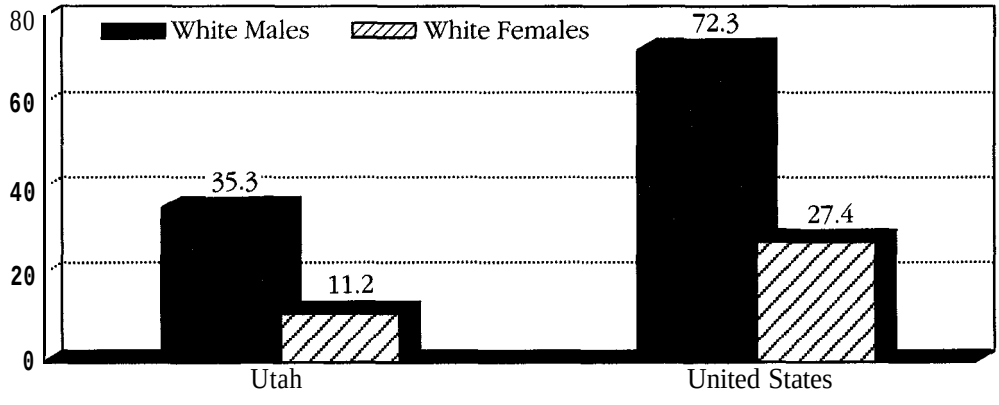
Historical understanding of the lag time between large-scale adoption of smoking and increased lung cancer rates observed earlier in this century would indicate that the same two- to three-decade period will be required before we see a reduction in the overall national lung cancer death rate.

A good example of what is achievable in the long term can be seen by examining the smoking and lung cancer experience in the State of Utah.

Utah has a large Mormon population (about 70 percent of the state) whose religious tenets proscribe the use of tobacco in any form. This factor contributes substantially to

Utah's historically lower use of cigarettes compared with the U.S. general population which in turn contributes substantially to their lower lung cancer mortality rate. For example, per capita cigarette consumption in Utah has been nearly half that of the United States since 1950. Consequently, the lung cancer mortality rate in Utah is the lowest in the Nation. Among Utah males the lung cancer rate is almost half the rate of males in the general U.S. population, and among females the rate is nearly 2.5 times lower. Not surprising, smoking prevalence rates for Utah males and females reflect differences of about the same order of magnitude as their U.S. counterparts. (See table 7 in appendix A.) Although smoking prevalence information is not available for the State of Utah over the 40-year period, per capita consumption figures indicate prevalence is or has always been relatively low in Utah compared with the United States during this time.

Lung Cancer Mortality Differences in Utah vs. Total U.S. Population, 1986



Source: Surveillance Program, NCI; Public use tape, U.S. Mortality 1986, NCHS, CDC.

The Year 2000 and Beyond

Any immediate change in smoking prevalence will not result in an immediate change in lung cancer mortality because of total smoking exposure that has already occurred in those age groups most at risk. Also smoking cessation and initiation rates are distributed unevenly throughout the population, and the degree of excess lung cancer risk experienced by former smokers is strongly dependent on their total lifetime exposure to cigarettes, the number of years of smoking, and health status at the time of cessation. However, 25 years of epidemiological research shows that simultaneously reducing the prevalence of adult smoking and the rate of smoking initiation among younger cohorts will reduce future lung cancer rates

Already, as a result of changes in smoking behavior that have occurred during the previous three decades, a sizable impact on national lung cancer mortality experience is now becoming evident. If the trends in smoking behavior and lung cancer mortality that were observed in previous decades had continued, the present rate of lung cancer in the United States would be substantially higher.

The 1989 Surgeon General's report estimated that due to the reductions that have occurred in smoking prevalence since 1965, nearly 800,000 deaths had been postponed by 1985 and that the number of deaths averted or postponed was increasing rapidly in recent

years. This finding reflects the cumulative public health benefit of quitting on total mortality that has occurred in the United States since the early 1960's.

The 1989 Surgeon General's report also estimated that between 1986 and the year 2000 an additional 2.1 million smoking-related deaths will be avoided or postponed, including 112,000 in 1985 alone. If only a quarter are cancer deaths (probably an underestimation given the proportion of total smoking deaths that are now attributed to cancer), this translates to more than one-half million individuals that will be spared an early cancer mortality between now and the end of the century because they gave up smoking.

Overview of NCI Initiatives to Control Tobacco Use

Of all the Public Health Service (PHS) agencies, the National Cancer Institute (NCI) has the longest history in the battle against smoking. As a result of the first developments linking smoking with lung cancer in the early 1950's, NCI quickly included smoking as part of its research agenda. Since then NCI has established a comprehensive cancer prevention strategy that includes the prevention and control of tobacco use as a top priority in the reduction of cancer incidence and mortality.

Evolution of the Smoking, Tobacco, and Cancer Program

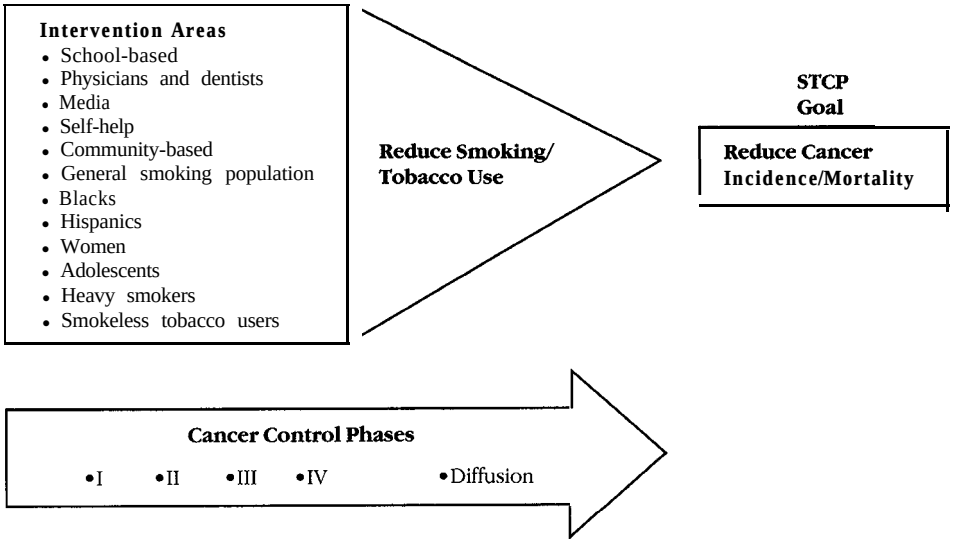
In 1955 the Institute undertook the first large-scale examination of smoking and tobacco use in the United States by sponsoring a special supplement to the Current Population Survey (CPS) administered by the U.S. Census Bureau.[14] In 1956 NCI was part of Surgeon General Leroy Burney's PHS Study Group on Smoking and Health, which issued the first official PHS statement on smoking and lung cancer.[15] When the Surgeon General's Advisory Committee on Smoking and Health was formed in October 1962, NCI provided staff and expertise in development of the landmark report on the health consequences of smoking.[16]

During the 1960's the Institute continued its basic biomedical research program on smoking and tobacco use, expanding its efforts to include studies not only in epidemiology but also the chemistry, toxicology, and pharmacology of tobacco smoke and animal. experimentation studies. In the early 1970's NCI initiated a large-scale effort to identify hazardous elements in tobacco and tobacco smoke and ways to reduce or eliminate these agents as a means of reducing the smoking population's exposure to them and thereby reduce their disease risk.[17] As a result of these efforts, a new generation of cigarettes appeared on the market with markedly lower yields of tar, nicotine, carbon monoxide, and other smoke constituents [18] that appear to lower the smoker's risk of lung and possibly other cancers.[19,20,21] The NCI smoking and health effort changed again in the late 1970's to place more emphasis on why people smoke and related behavioral issues.

In 1982, following the publication of the first Surgeon General's report that focused entirely on cancer caused by the use of tobacco and coincident with NCI's new thrust in cancer prevention and control, the Institute undertook a major planning effort to reduce tobacco use prevalence in the United States. Although the medical and scientific communities had reached closure on the link between smoking and lung cancer, there was no consensus on how best to persuade people to give up the habit or not to begin smoking at all. Because of the uncertainties surrounding the effectiveness of specific smoking control approaches, NCI initiated a major effort that placed emphasis on human interventions. This initiative marked the beginning of the Smoking, Tobacco, and Cancer Prograrn as it is known today.

The STCP is the focal point for NCI's disease prevention and health promotion research activities related to tobacco use and cancer. The goal of this program is to decrease the incidence and mortality of cancers caused by or related to smoking and the use of

Smoking, Tobacco, and Cancer Program



other tobacco products. It incorporates a range of activities that cover the full spectrum of disease prevention and control. These activities may be summarized within four broad categories:

- **Basic Research.** The NCI continues to carry out limited and selective etiologic research relating tobacco use to cancer and sociobehavioral aspects of tobacco use.
- **Intervention Research.** The primary thrust of STCP activity involves the development of intervention activities to reduce the incidence and/or prevalence of smoking and tobacco use. It includes research to determine the best intervention strategies to reduce smoking and tobacco use and research on diffusion methods to implement these strategies efficiently, particularly on a wide-scale population basis in order to achieve a broad public health impact. Also included is research that focuses on identifying and intervening with target populations in which the greatest tobacco-related cancer prevention and control gains can be expected. Included are those populations with (1) higher incidence and/or prevalence of smoking and tobacco use, (2) higher prevalence of combined exposure to tobacco and other known carcinogens, and (3) higher dosage of exposure to tobacco-related cancers (currently or potentially).
- **Research Applications and Information Dissemination.** The development, synthesis, and communication of information concerning the cancer risk of tobacco use and means of reducing that risk are important components of the STCP strategy. Program efforts include: (1) synthesizing available information on smoking prevention and cessation; (2) developing messages and materials specifically designed to encourage smoking prevention and cessation among individuals at risk for cancer; and (3) communicating through public, professional, and patient

channels specific smoking control messages and materials as well as the progress being made to reduce cigarette smoking.

- Surveillance. A key aspect of STCP activities is the capability to monitor and assess patterns and trends of tobacco use and progress in preventing and controlling such use. Emphasis is placed on: (1) identifying target populations for intervention, (2) obtaining information from national/regional surveys on smoking to determine patterns and trends in tobacco use, (3) monitoring intervention research studies for their readiness in cancer control phases IV and V, and (4) measuring achievements of goals and objectives.

The Intervention Research Component

The main strategy for attaining the STCP goal is to develop and apply effective interventions to reduce the prevalence of tobacco use. The program's specific objectives are to reduce the proportion of adults and youth who smoke to 15 percent or less by the year 2000.

Cancer Control Objectives: Smoking

Action: Cancer prevention.

Target: Smoking prevention and cessation.

Rationale: The causal relationship between smoking and cancer has been scientifically established.

Year 2000 Objectives: Reduce the percentage of adults who smoke from **34** percent (in **1983)** to 15 percent or less.

Reduce the percentage of youths who smoke by age 20 from **36** percent (1983) to 15 percent or less.

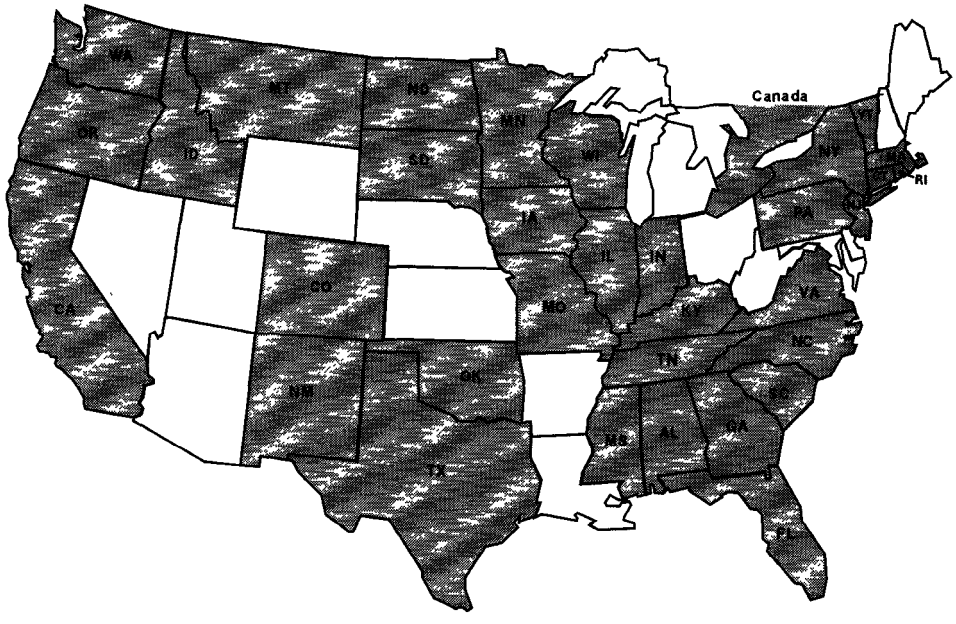
The priorities for the STCP intervention research effort grew from a systematic planning process that involved state-of-the-art reviews and consensus development involving hundreds of scientists and public health experts. The result was a two-pronged strategy. The first strategy involved the study of intervention methods that were school-based, self-help techniques, physician/dentist-delivered interventions, mass media approaches, and community-based interventions. The second strategy targeted specific populations that were at greater risk for developing cancer and/or were amenable to prevention strategies: youth, minority ethnic groups, women, smokeless tobacco users, and heavy smokers.

This effort has now become the largest of its kind in the world. Prevention and cessation trials were begun in the early to mideighties that have affected more than 10 million people in **33** states and eastern Canada and in more than 200 North American communities. The cost of this program for the years 1982 to **1990** will be $250 million.

As with all of NCI's prevention and control efforts, the logic of the cancer control phases was used to determine the nature of study readiness. This logic comprises five sequential phases that emphasize a progression of activity from basic investigations to broad applications in target populations. Between each phase there is a "decision point" with operational criteria to determine if research outcomes warrant proceeding to the next phase. Brief descriptions of the phases follow.

- Phase I: Hypothesis Development. In phase I studies, available scientific evidence from basic laboratory, clinical, epidemiologic, or behavioral research is assessed to determine the opportunity for formulating a testable hypothesis.
- Phase II: Methods Development. Phase II studies are designed to characterize the variables to be controlled or monitored in subsequent intervention studies and to ensure that accurate and valid procedures are available before the study is implemented.
- Phase III: Controlled Intervention Trials. Phase III trials test the hypotheses developed in phase I using the methods validated in phase II. These trials test hypotheses in groups that enable the efficacy of the intervention to be determined.
- Phase IV: Defined Population Studies. Phase IV studies are designed to quantify the impact of an effective intervention in a large sample representative of a large target population.
- Phase V: Demonstration and Implementation Studies. Phase V demonstrations apply the proven interventions from phase IV in large communities and,, measure their public health impact.

State Distribution of STCP Intervention Research Sites



From 1984 to 1989 STCP's smoking control intervention research emphasized phases III and IV. The results of these efforts are already yielding sufficient data from which to enter phase V demonstration and implementation studies by 1990. Using the results of these trials, NCI and ACS recently joined forces to launch the world's largest demonstration project for tobacco control and health promotion ever conducted. Called ASSIST-for

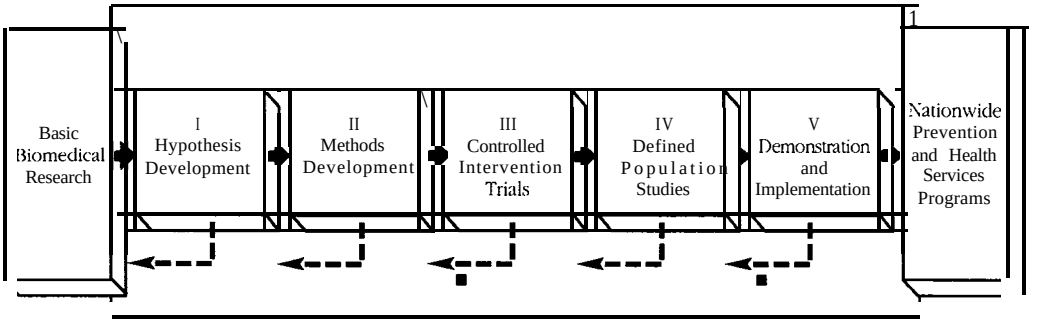
National Cancer Institute Funding for Smoking, Tobacco, and Cancer

(in 000's)

1982	**10,943**
1983	**9,476**
1984	**16,721**
1985	21,131
1986	27,099
1987	37,288
1988	39,604
1989	40,151
1990 (estimate)	**41,092**
Total 1982-1990	$243,505

Source: National Cancer Institute.

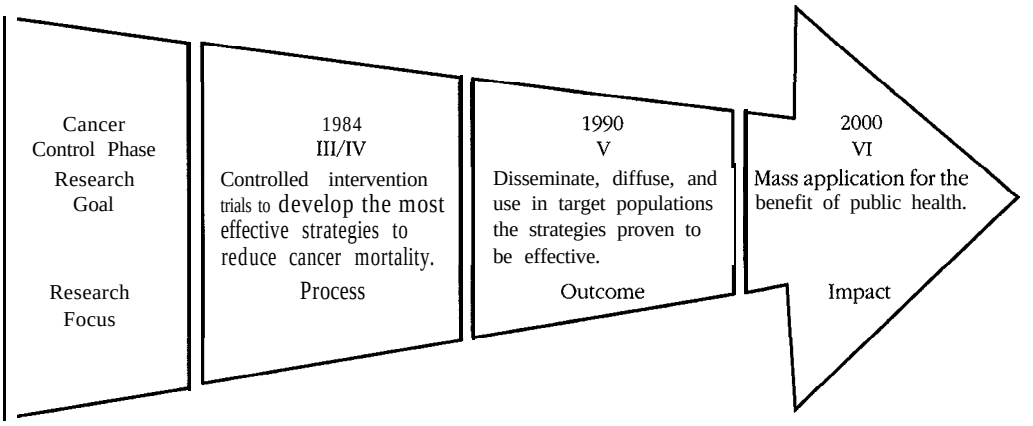
Cancer Control Phases Applied to Smoking, Tobacco, and Cancer Program



	Research on Appkations	Applied Research	Appkations of Research
1982-1986	10%	80%	10%
1987-1990	10%	50%	40%
1991-2000	10%	30%	60%

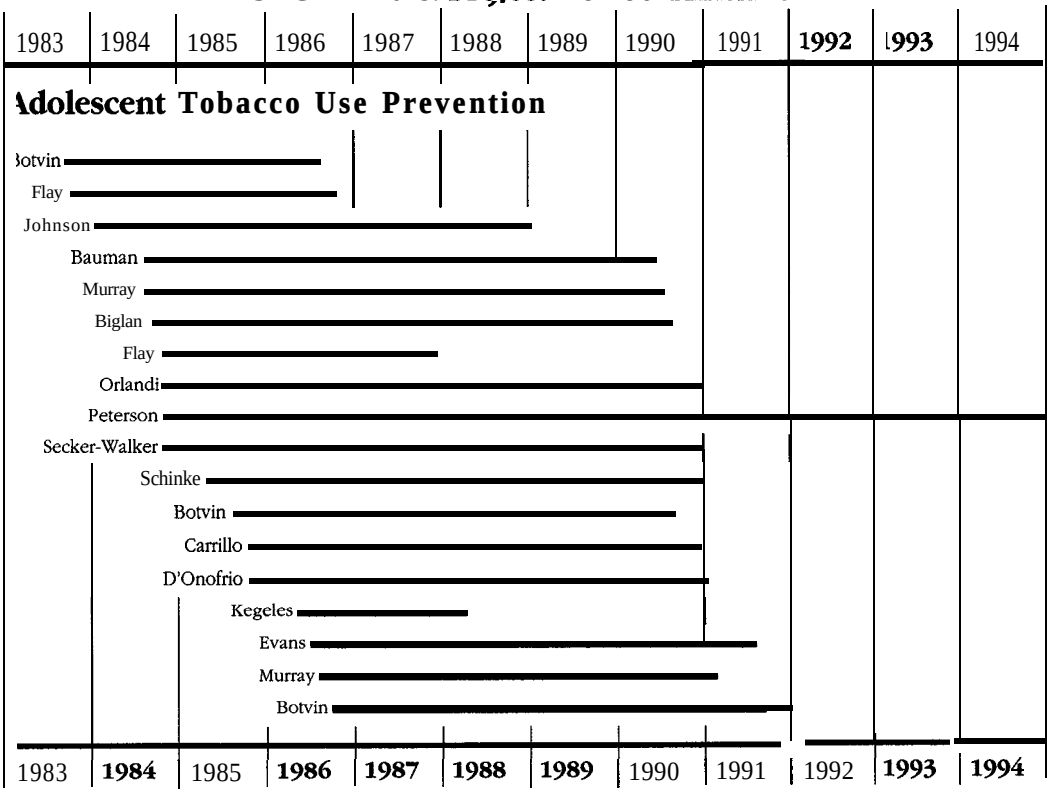
the American Stop Smoking Intervention Study for Cancer Prevention-this project is the latest initiative in a series of efforts by NCI and ACS to accelerate reductions in the prevalence of cigarette smoking and tobacco use by both adults and youth by the turn of the century. Its results should produce a major contribution to the reduction of smoking and other tobacco use prevalence in this last decade of this century and, therefore, a reduction in the attendant tobacco-related cancers. A more complete description of ASSIST can be found later in this volume.

Research Progress Toward Year 2000 Goal, 1984

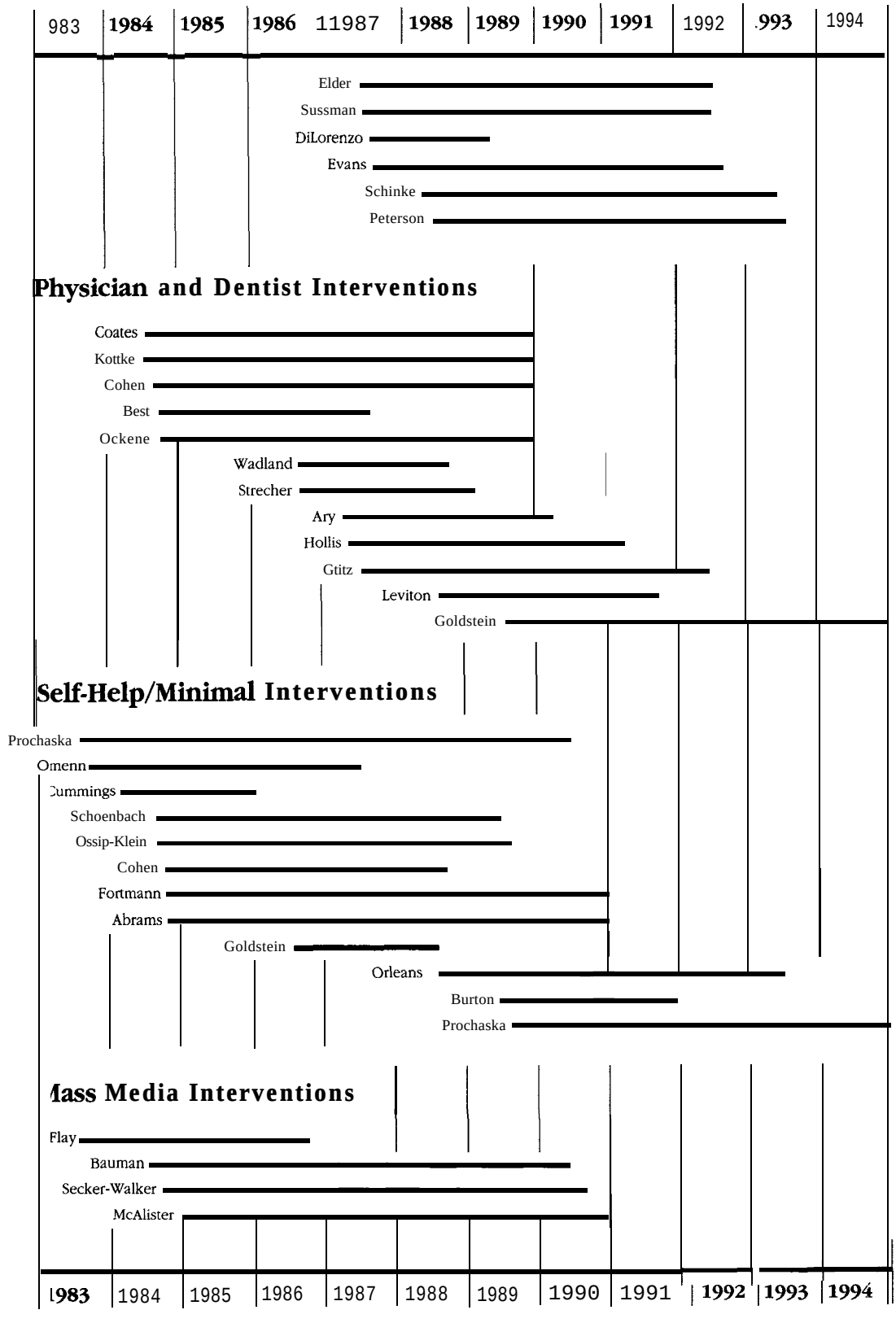


Descriptions of the STCP intervention efforts are presented in the remaining sections of this report. These descriptions emphasize the results to date of the major intervention research projects that were started by the STCP between 1984 and 1985. They represent primarily phase III and IV intervention trials; however, a few of them involve phase II study components that preceded the development and testing of the specific intervention methods. Abstracts of the intervention trials appear in appendix B. Appendixes C and D reflect the products and publications that have resulted from the trials.

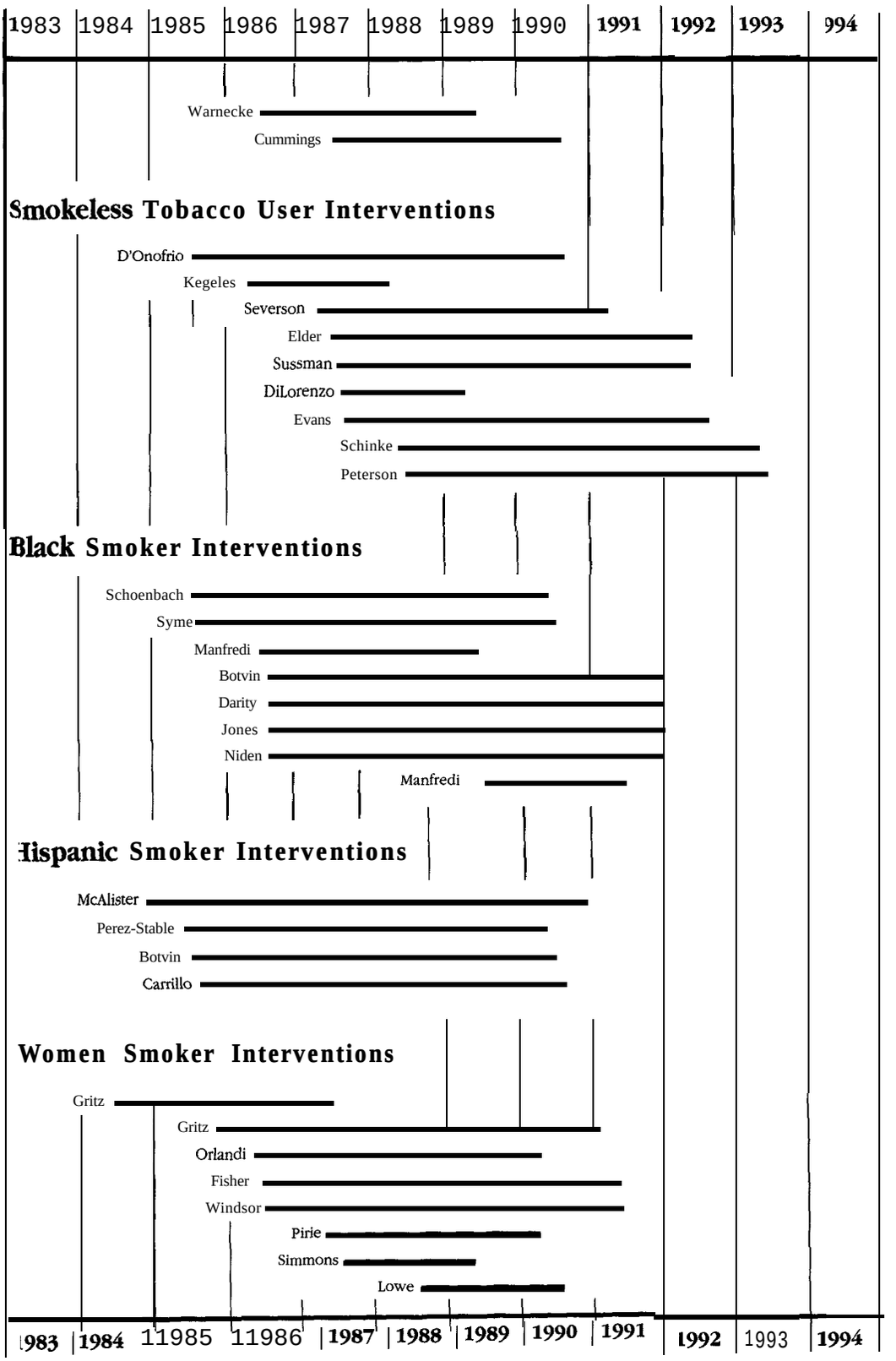
STCP Trials: Project Period Timeline



STCP Trials: Project Period Timeline (continued)



STCP Trials: Project Period Timeline (continued)



Adolescent Tobacco Use Prevention

More than 3,000 adolescents begin smoking in the United States every day, and nearly 750 of them will die prematurely from a smoking-related disease. Without a reduction in this smoking initiation rate, it will be difficult to reduce U.S. smoking prevalence rates. Therefore, a significant portion of the research activity supported by the STCP is aimed at adolescents. Since *1984* the STCP has supported 24 intervention trials in adolescents involving, directly or indirectly, approximately 1 million youth. Seven of these trials focus on smokeless tobacco use (discussed on pages 44-46). One trial uses media techniques to

Profile of Adolescent School-Based Tobacco Use Prevention

Objective:	To develop curricula to prevent the onset of habitual tobacco use among adolescents.
Number of Trials:	24
Cancer Control Phase(s):	III/IV
Methods Tested:	· Skills training · Schoolwide support activities • Peer involvement • Parental family involvement • Teacher training • Booster sessions • Combined media and school-based approaches • Statewide campaigns • Multicomponent school health education • Prevention curricula in nonschool settings
Channels Involved:	• Schools • Youth groups • Athletic clubs • Health and dental health facilities • Worksites • Community at large (media) • Community/volunteer agencies • Ethnic minority organizations
Trial Sites:	Vermont, New York, Montana, Washington, New Jersey, Minnesota, California, Connecticut, Wisconsin, Massachusetts, Oregon, Missouri, Texas, Idaho, North Dakota, South Dakota, Colorado, Oklahoma, Canada
Estimated Number of Subjects Affected:	978,000
Primary Study Periods:	1984-1994
Status of Consensus Development Process:	• Held consensus meeting (December 1987). • Developed recommendations on essential elements of smoking prevention curricula. • Published *Essential Elements of School-Based Smoking Prevention Programs* and School *Programs to Prevent Smoking: The National Cancer Institute Guide to Strategies That Succeed.*

reach youth; the remaining 15 focus either partially or entirely on prevention of adolescent smoking through school-based programs. These 15 trials may be categorized into three broad types:

- Trials developing new curricula or techniques for smoking prevention (8 trials).
- Trials adapting existing curricula for smoking prevention to more current approaches or special populations (5 trials).
- Trials conducting long-term followup of youth who were exposed to smoking prevention programs in schools as long as 10 years ago (2 trials).

Trial Results

To date only four of these trials have been completed. The results summarized below, therefore, are based on the final results of the completed trials and preliminary information from ongoing ones.

Major Trial Results: Adolescent School-Based Tobacco Use Prevention

- The onset of tobacco use among youth is delayed in 20 to 50 percent of seventh or eighth grade students after program exposure.
- Successful program delivery is influenced by several factors, including program focus, content, and length; age at intervention; peer involvement; teacher training; and program implementation.

Modest but consistent program effects demonstrate that the onset of smoking among seventh or eighth grade adolescents can be delayed for several years in 20 to 50 percent of the students compared with controls. Although experimental-control differences as high as 80 percent have been reported 1 year after program exposure, composite data based on preliminary information from these trials suggest that these effects decay over time, thus emphasizing the need for followup booster sessions and high school reexposure. Nevertheless, even if the effects diminish after several years, delaying onset and reduction in exposure is an important outcome. Booster sessions, as suggested by composite, preliminary data, can help reduce physiological exposure to tobacco smoke during early adolescence, improve the potential for quitting in late adolescence or adulthood, and result in lower incidence of morbidity and mortality.

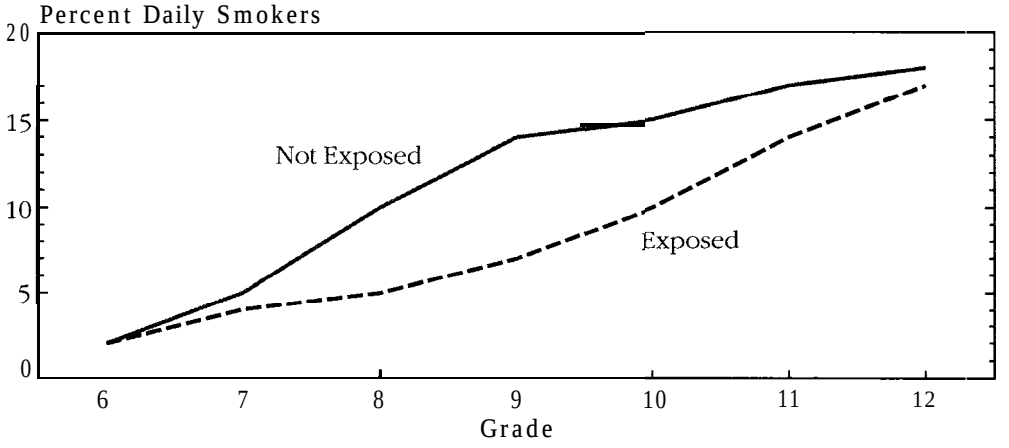
In addition to the behavioral outcomes, several factors may influence the successful delivery of school-based prevention programs:

- Program Focus. School-based smoking prevention programs that have a smoking-only focus and those that are part of a multicomponent health education program are equally effective. More important is the preference of the school administration for one approach or the other and the subsequent likelihood of program adoption.
- Program **Content.** The key curriculum elements for maximum effect are (1) information about social consequences and short-term physiological effects of tobacco use; (2) information about social influences on tobacco use, especially peer,

parent, and media influences; and (3) training in refusal skills, including modeling and practice of resistance skills.

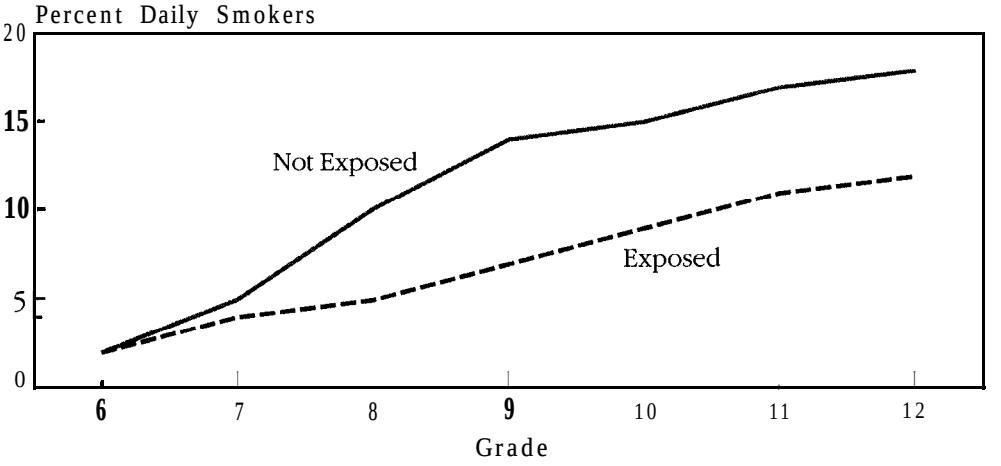
- **Program Length.** Two five-session blocks of smoking prevention program delivery in separate school years between grades 6 and 9 is the minimal exposure for which differential effects could be found and decay of effects postponed. Programs beginning earlier than grade 6 and continuing past grade 9, although few, produced results suggesting that such prevention programs should be delivered as early as kindergarten and continue through grade 12 if possible. It was strongly recommended that booster sessions be included for any prevention program that does not continue beyond grade 9.
- Age at Intervention. The transition year in which adolescents move from elementary to middle school or from middle school to junior high school is the time when they are most likely to begin use of tobacco and, thus, the most appropriate time to introduce a smoking prevention program, unless it was possible to offer one before the transition year.
- Peer Involvement. Peer involvement in the delivery of school-based programs can enhance program efficacy. The most effective involvement uses a peer leader and a trained teacher.
- Teacher Training. Thorough teacher training is essential. Especially important is the inclusion of experiential activities (e.g., role playing, refusal skills training, interaction with peer assistants) and training in maintaining adherence to the curriculum.
- Program Implementation. The most successful programs, both in terms of smoking reduction and acceptance by the school, were those that carefully considered. community norms and needs, the interests of the entire educational community (including teachers, principals, students, parents, administrators, and board members), current school smoking policies, costs of the program, needs of the existing curriculum, and in particular the ease with which teachers could implement the program.

Delay of Onset Curve-Estimated Effect of One-Time, 7th Grade Program Exposure



Source: Smoking, Tobacco, and Cancer Program, NCI.

Delay of Onset Curve—Estimated Effect of 7th Grade Exposure Plus 10th Grade Booster



Source: Smoking, Tobacco, and Cancer Program, NCI.

Adolescent School-Based Tobacco Use Prevention Programs: Key Curriculum Elements

- Information on:
  - -Social consequences
  - -Short-term physiological effects
  - -Social influences
- Training in refusal skills

Application of Research Results

These recommendations for school-based smoking prevention programs are being made available to every school district in the United States in a document entitled School *Programs to Prevent Smoking: The National Cancer Institute Guide to Strategies That Succeed* They represent the consensus of an expert advisory panel that was convened by NCI in December 1987.

To facilitate effective implementation and institutionalization of smoking prevention programs in school systems, NCI is also supporting two studies in diffusion research.

Research Needs

The panel that defined the essential elements of school-based prevention programs also identified several areas in which additional research is necessary.

- School-based smoking prevention programs have had the least success with high-risk youth (e.g., dropouts, students with smoking parent(s), low SES). Greater efforts must be undertaken to identify successful means of reaching these youth.
- Similarly, special efforts should be undertaken among adolescent smokers who are black, Hispanic, rural, low SES, and low achievers. These groups are not only at

higher risk to start smoking, they also have had few specific programs targeted to them.

- Some studies (such as those being supported by the National Heart, Lung, and Blood Institute), including some of the ongoing NCI studies, should follow their cohorts through and beyond high school to determine the natural history of these prevention programs on regular smoking.
- Efforts aimed at prevention programs for youth below grade 6 and above grade 9 should be encouraged. For older groups, additional consideration should be given to incorporating cessation programs into the senior high school curriculum because nearly 20 percent of adolescents are already smokers and it is already too late for prevention.
- Consideration should be given to maintaining fidelity to the details of a given prevention program whenever feasible and compatible with local norms. Research on how to adopt prevention programs in nonresearch school settings as well as research to determine what aspects of these programs must be delivered to optimize outcomes should be encouraged.
- Although current data suggest that parental involvement is not an essential component in program success, parents are an untapped resource, and methods to involve them in adolescent smoking prevention need to be explored.
- Given the demonstrated success of several of prevention interventions in adolescents, diffusion research to broadly disseminate such programs remains a high priority.
- Research to employ channels other than schools to prevent smoking among youth needs to be carried out. Examples include economic and legislative methods as well as use of other community resources.

Physician and Dentist Interventions

The approximately 500,000 physicians and 135,000 dentists in the United States are in a unique position to influence patients to quit smoking. An estimated 70 percent of all adults in the country see a physician at least once a year and about 60 percent see a dentist. Thus, involving health professionals in the delivery of cessation counseling can have a significant effect on reducing smoking prevalence.

Since 1984 the STCP has supported 12 major intervention trials involving physicians and dentists in the cessation of tobacco use. The objective of these trials is to develop brief, structured training and intervention protocols for physicians, dentists, and their staffs to use in assisting patients to stop smoking. These trials directly or indirectly affect more than 100,000 patients and 6,000 physicians and dentists; they will end by 1994.

Although many trials have already been conducted exploring the effectiveness of physicians in the delivery of smoking cessation counseling, the unique aspects of the STCP trials are that (1) they involve large numbers of patients and physicians and simulate as closely as possible conditions characteristic of a nonresearch environment; (2) they aim to determine whether physicians can effectively deliver smoking cessation counseling and how they might best do so; and (3) they allow a sufficient followup period to test the durability of the interventions. Additionally, the evaluation procedures being used in these trials are particularly stringent and conservative in order to best judge their applicability to medical practice. The unit of randomization is the physician's practice, not

Profile of Physician and Dentist Interventions

Objective:	To develop brief, structured training and intervention protocols for physicians and dentists to reduce patient smoking prevalence.
Number of Trials:	12
Cancer Control Phases:	III/IV
Methods Tested:	• Nicotine gum use • Training • Support and reminder systems • Relapse prevention • Self-help • Protocol compliance • Social support
Channels Involved:	• Private practices • Public clinics • Health maintenance organizations • Residency training programs
Trial Sites:	Massachusetts, Minnesota, North Carolina, Ontario, Canada, California, Indiana, Rhode Island, Vermont, Oregon
Estimated Number of Subjects Affected:	109,000 patients 6,100 physicians and dentists
Primary Study Period:	1984-1994
Status of Consensus Development Process:	• Held consensus meetings (December 1986, March 1987). • Developed recommendations on essential elements. • Published *How to Help Your Patients Stop Smoking, How to Help Your Patients Stop Smoking:* Trainer's *Guide,* and *Quit for Good: A Practitioner's Stop Smoking Guide.* • Developed physician training program. • Developing similar materials and training program for dentists.

the patient. The experimental group of physicians is trained in treating smoking cessation; the control group of physicians is not. *All* smokers seen in a practice are followed (and included in the denominator when cessation rates are calculated), even though some of them never are treated for smoking cessation. These trials test the input of physician training on the smoking cessation rate of the *entire* practice, not just those patients who received treatment. In short, these were studies of the effectiveness, not the efficacy, of treating nicotine dependence.

The settings or channels for these trials are diverse (e.g., private practices, public clinics, health maintenance organizations (HMO'S), and residency training programs). The training protocols developed are also diverse. The techniques employed make full use of findings from previous trials involving nicotine gum, role playing, use of videotapes, relapse prevention techniques, development of office-based reminder systems, training

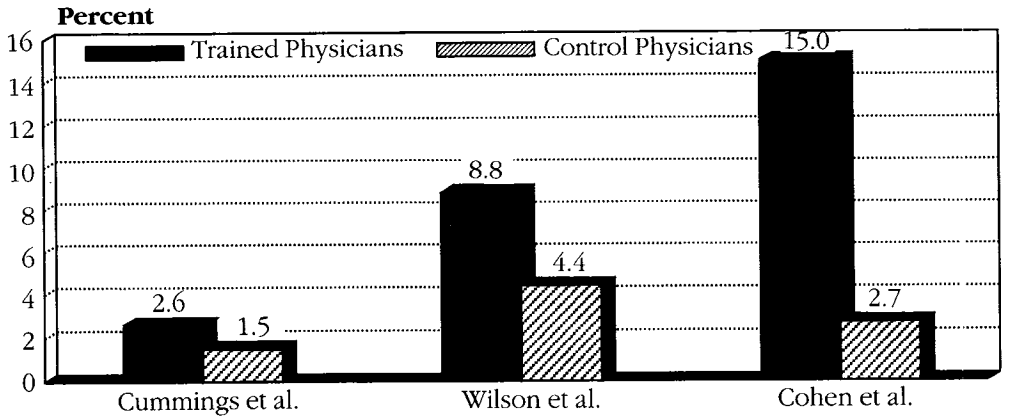
for office staff, self-help strategies and booklets, and efforts to increase the compliance of physicians and dentists in using the cessation protocols. The amount of time required to train physicians and office staff in use of the protocols ranges from 2 hours to 2 days.

Although the STCP-supported trials are designed to simulate as closely as possible a nonresearch environment, they also are carefully controlled, randomized studies with sophisticated experimental designs that will enable investigators to make predictions about the effectiveness of these techniques in actual physician and dental practices.

Trial Results

Consistent, patient smoking cessation rates ranged from 2 to more than 15 percent, or up to six times the success rates of control patients.[22,23,24] These rates are for all patients, not just self-selected, motivated, or counseled patients. The most consistent, positive effects resulted in offices and practices where physicians and office staff routinely performed four tasks: ASKED about patient smoking status at each visit; ADVISED against smoking; ASSISTED patients in stopping smoking by setting quit dates, providing self-help material, and prescribing nicotine gum as appropriate; and ARRANGED followup visits to discuss maintenance and relapse.

Patient Cessation Rates
Trained vs. Control Physicians

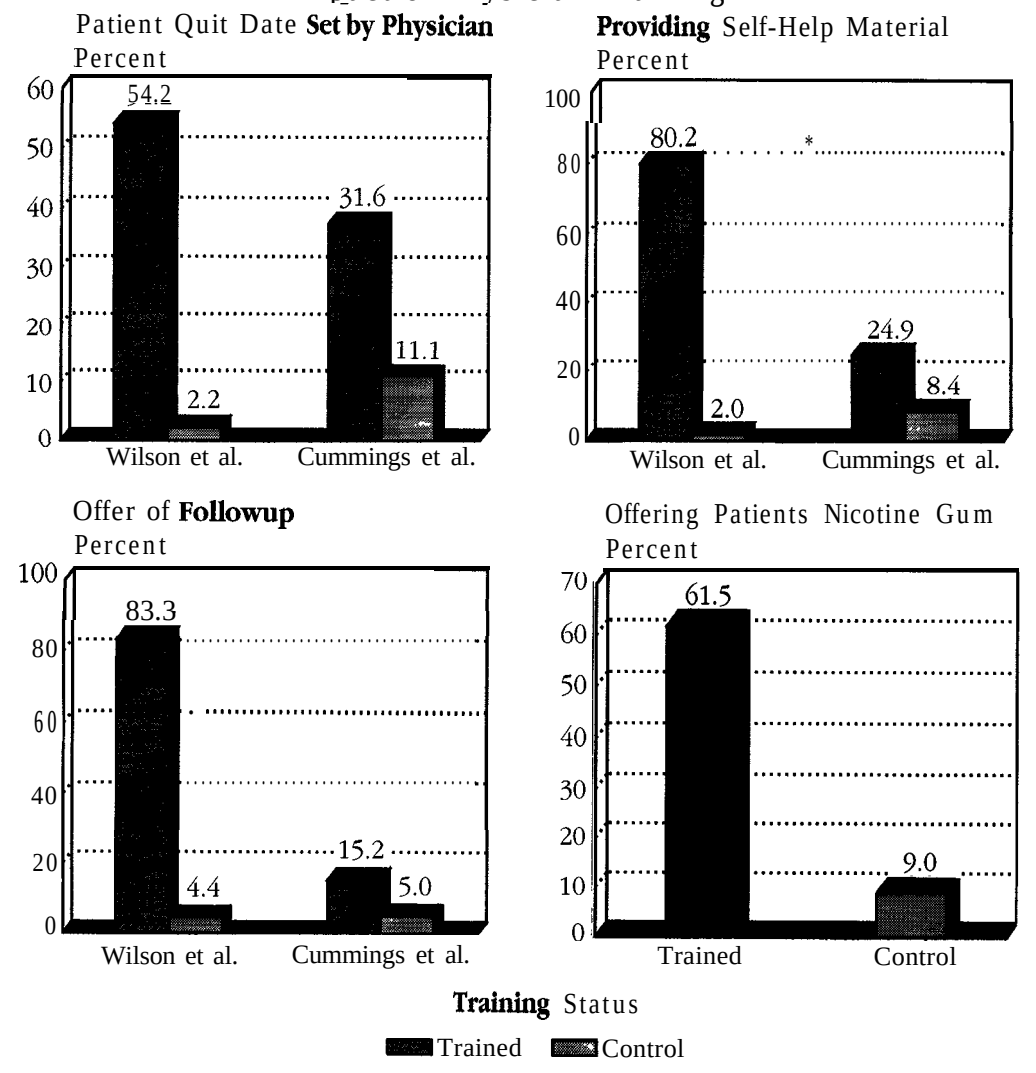


Source: NCI Physician Trials.

Brief Physician and Dentist Protocol for Patient Smoking Cessation

1. **ASK** about smoking at every opportunity.
2. **ADVISE** all smokers to stop.
3. **ASSIST** patients with stopping by setting a quit date, providing self-help materials, and prescribing nicotine gum as appropriate.
4. **ARRANGE** followup visits to foster maintenance and prevent relapse.

Training physicians to give advice about smoking produced positive changes in physician activities related to patient smoking cessation. These changes included more time devoted to smoking cessation advice, increased use of chart reminders, increased prescription of nicotine gum, increased use of patient referrals to outside smoking programs, increased followup appointments devoted partially or wholly to smoking, more frequent distribution of self-help material, and more frequent establishment of patient quit smoking dates.



Source: NCI Physician Trials; Wilson et al. *JAMA* 1988.

In addition to the benefit of training, physicians were more effective and efficient at cessation if they involved a support team of selected office staff members, including receptionists and nurses, and systematized the process. Most important, the selection of a member of the staff to implement and monitor simple office procedures is necessary. Additionally, developing a smoke-free office, identifying smokers, reminding the physician of patients' smoking status (simple chart stickers), and reviewing information on cessation and withdrawal with the physician all have a positive effect. Finally, the staff must ensure that followup letters and return visits are arranged.

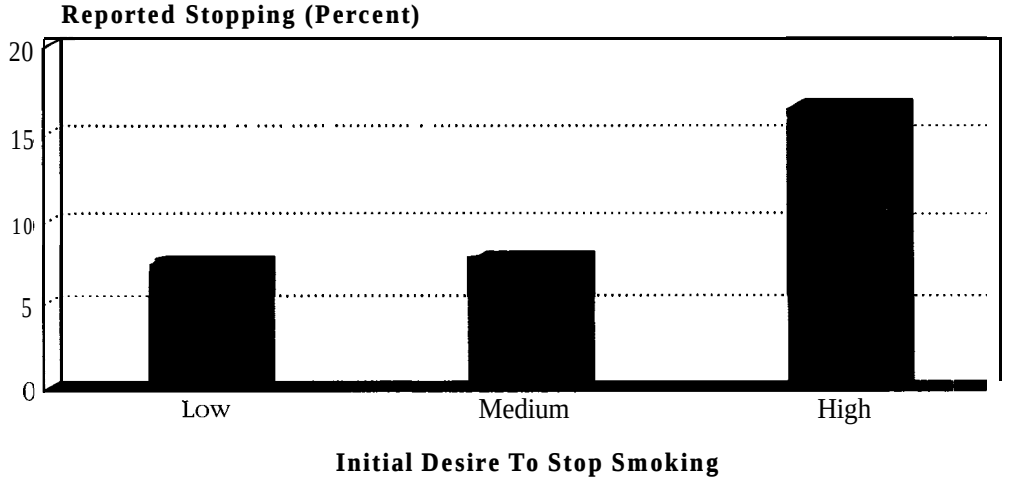
Brief Office Protocol for Patient Smoking Cessation

1. Select an office smoking cessation coordinator.
2. Create a smoke-free office.
3. Identify all smoking patients.
4. Develop patient smoking cessation plans.
5. Provide followup support.

Patient success rates were greatly increased under three conditions:

- When comprehensive office systems to remind support staff and physicians to provide advice about smoking were in place.
- When only patients who were motivated to stop smoking were the focus of the intervention.[25] Screening patients to determine their level of motivation and focusing on them is a better use of staff and physician time than counseling ***all*** patients with the same level of intensity.
- When program intensity was increased. Followup visits that are devoted partially or wholly to smoking cessation can modestly increase patient quit rates (for example, as demonstrated in the one trial in Canada where physicians were able to be reimbursed for such followup visits and patients did not incur the cost of the followup visit); nicotine gum prescription is also effective provided the gum is used correctly.

Smoking Cessation by Initial Motivation To Stop



Source: Kottke et al. *JAMA* 1988.

Other noteworthy findings from the physician intervention programs include:

- Advice about smoking cessation was more cost effective than many other valuable preventive medical interventions, including hypertension and hypercholesterolemia interventions. The cost was estimated at $748 per year of life saved.
- Involvement and encouragement from their professional organizations increase physician participation in organized efforts to routinely deliver smoking cessation advice.
- Integration and long-term maintenance of simple, officewide smoking cessation procedures are more effective than an intense but brief program.
- Adopting the program to the reality of medical practice, thereby allowing for a long-term intervention, is more effective.

Application of Research Results

Physicians

The above recommendations are now codified in the NCI manual ***How To Help Your Patients Stop Smoking.*** The manual outlines the practical steps physicians and other health professionals can take to implement smoking cessation services as a routine part of office practice.

Another document, the *Quit for* ***Good*** kit for physicians is a more abbreviated application of the STCP trials results. It contains a brief booklet of information for physicians, chart stickers, and copies of self-help and waiting room materials.

In planning to disseminate this information to physicians throughout the Nation, initial priority has been given to training practicing physicians. When an effective program to train practicing physicians has been established, attention will be given to resident training and medical school curricula.

Three levels of training are now planned for practicing physicians. The first is a simple "grand rounds" presentation, lasting 45 to 60 minutes. The second is a longer workshop, lasting about 3 hours. This format is much preferred to the shorter session, given the variety of skills that physicians need to learn to treat smokers effectively, but reality and feasibility will dictate the preferred approaches.

The third level of training is paramount to the STCP training strategy: the training of trainers. Physicians are recruited and trained to conduct the 1- and 3-hour sessions. These physicians are recruited from organizations that have a commitment to the prevention of cancer and also have the ability to reach large numbers of practicing physicians. Recruitment and training efforts involve collaboration with medical professional groups, health voluntaries, and large health maintenance organizations.

A prototype train-the-trainers session was held in conjunction with the Community Intervention Trial for Smoking Cessation (COMMIT) project in April 1989. Physicians from the 11 COMMIT intervention sites received 1 full day of training. They then returned to their communities to conduct their own training of physicians, supported by local organizations that were mobilized by COMMIT staff. A trainer's guide, slides, and videotape were developed to support the training sessions.

A second train-the-trainers session was conducted in August 1989 for ACS divisions. Professional education staff and volunteers from each division will be trained and/or receive instruction in the promotion and support of smoking cessation training. Additional sessions in collaboration with the following organizations have been conducted or

planned: American Medical Women's Association, California Medical Society, District of Columbia Medical Society, and the Society of Teachers of Family Medicine.

Dentists

Data from those STCP trials that included dentists suggest that dentists also can have a significant impact on smoking rates among their patients. Based on these data, a national program has been outlined to promote participation by dental professionals in smoking control. A key component of this program is the acceptance by the profession that smoking cessation is a legitimate aspect of dental practice. The STCP is working closely with national dental organizations to accomplish this task. In this program dental professionals will be trained in smoking cessation techniques using a modified version of the physician training materials. The following manuals and training programs will be available by early 1990: a clinic guide, *Tobacco Related Oral Health Effects,* a dental office reference, *How to Help Your Patients Stop Using Tobacco: A NCI Manual for the Oral Health Team;* and *How to Help Your Patients Stop Using Tobacco: Trainer's Guide.*

Self-Help/Minimal Interventions

The development of self-help or minimal intervention approaches (i.e., exposure only to public health messages or minimal contact with health providers) to smoking cessation is viewed as a cornerstone of the STCP. Nearly all types of cessation interventions—those carried out entirely by the individual or delivered by physicians and other health professionals through the media, group programs, worksite programs—depend at least in part on the use of self-guided materials or strategies. Indeed, most people who quit smoking do so using their own personal resources.

The self-help/minimal intervention component of the STCP has two objectives: (1) to develop *prima y* self-help materials and strategies for individuals who wish to quit smoking on their own and (2) to provide *supplementa* y materials for use in programs that require interaction with trained individuals but that also depend to some extent on self-help interventions. The STCP was guided by the knowledge that as many as 90 percent of all smokers who quit do so on their own (i.e., without the continued assistance of health professionals, trained leaders, or organizations). Development of the program was further guided by Schwartz's [26] definition of the three modes of self-help in smoking cessation: (1) devising one's own way of quitting; (2) receiving brief instructions or advice on how to stop and then doing it; and (3) using an aid or a self-help guide to quitting (e.g., stop-smoking book, instructional manual or record, over-the-counter preparations or aids).

Between 1984 and 1989, 13 self-help/minimal intervention trials involving, directly or indirectly, approximately 3.5 million individuals were begun. These trials function in settings such as hospitals, voluntary associations, worksites, and HMO's, as well as in set:-tings that require no face-to-face interaction. Several other STCP-supported trials that are not technically classified as self-help/minimal intervention trials (because their primary aim is not the development of self-help interventions) are developing supplementary self-help/minimal intervention materials and approaches as part of their goals. Some of these materials and approaches are aimed at special populations (e.g., blacks, Hispanics, pregnant and nonpregnant women) and others at the general population of smokers.

Profile of Self-Help/Minimal Interventions

Objectives:	1) To develop primary self-help materials and strategies for individuals who wish to quit on their own. 2) To provide supplementary materials for use in programs that require continuing interactions between the smoker and program staff.
Number of Trials:	13
Cancer Control Phases:	III/IV
Methods Tested:	• Individual approaches • Group support approaches • Organization and nonsmoking policy approaches • Behavioral self-management principles • Psychosocial support approaches • Relapse prevention materials • Nicotine gum use • Telephone hotline/minimal counseling • Correspondence approaches • Motivational materials • Self-change models and materials • Existing cessation manuals/materials • Media-based approaches
Channels Involved:	• Health facilities • Health departments • Worksites • Community/voluntary agencies • Media
Trial Sites:	Pennsylvania, New York, California, Rhode Island, Illinois, Washington
Primary Study Period:	1984-1994
Estimated Number of Subjects Affected:	3,475,000
Status of Consensus Development Process:	• Held consensus meeting (June 1988). • Developed recommendations on essential elements. • Publication of *Essential Elements of Self-Help/Minimal Intervention Strategies for Smoking Cessation* and *Self-Guided Programs for Smoking* Cessation: *Strategies That Succeed* planned in early 1990.

Trial Results

An expert advisory panel convened by NCI in June 1988 to identify the essential elements of self-help/minimal intervention smoking cessation programs developed the following recommendations based on existing data and trial experiences.

Major Trial Results: Self-Help/Minimal Interventions

- Trial results showed little need to devote resources to changing or improving existing materials and programs. Rather efforts should be concentrated on using existing cessation approaches and materials more effectively, particularly in motivating far greater numbers of smokers to make serious attempts to stop.
- The most effective self-help/minimal intervention strategies do the following:

  -Motivate more smokers to stop.

  -Include a variety of program delivery modes.

  -Target programs to smoking cessation stages and specific populations.

  -Include content on basic smoking information and cessation/maintenance exercises.

  -Make programs widely available.

  -Use adjunctive activities and procedures.

- **Motivating Smokers To Quit.** More widespread reduction of smoking prevalence was obtained by motivating smokers to make quit attempts and using existing programs than by increasing individual self-help/minimal intervention programs' success rates.
- Program **Delivery Modes.** The more successful programs were those that tried to be comprehensive, including not only the traditional target of smokers who seek help but also a range of efforts directed toward all smokers in a variety of settings, to increase motivation, opportunity, and the likelihood of stopping smoking in the population at large.
- **Targeting Programs to Smoking Cessation Stages.** Intervention success can be increased by matching specific self-help/minimal intervention programs to the special needs of smokers in each stage of the cessation process (i.e., precontemplation, contemplation, action, and maintenance or relapse).
- **Targeting Programs to Specific Populations.** Self-help/minimal intervention programs specifically targeted at populations that have had less access to cessation advice and services-thnic minorities and economically disadvantaged-produce increased quit rates.
- Program **Content.** The more successful self-help/minimal intervention programs included, at a minimum, the following elements: (a) information about the health and social consequences of smoking; (b) specific strategies and exercises for

quitting; and (c) specific strategies and exercises for maintenance of nonsmoking or relapse avoidance.

- Program Design. Subtle variations in self-help/minimal intervention programs did not greatly affect quit rates. Rather, existing programs were most effectively used by promoting their distribution and use rather than "fine tuning" their content.
- Program Adjuncts. Although most self-help/minimal intervention programs are designed to stand on their own, some adjunctive activities or procedures increase their success (e.g., personalized counselor telephone calls, personalized computer-generated progress reports, or use of nicotine gum).

Application of Research Results

The above recommendations are being codified for dissemination to a broad target audience, including individuals, institutions, and community organizations. This document, being developed under the auspices of the NCI Office of Cancer Communications and entitled ***Self-Guided Programs for Smoking Cessation: Strategies That Succeed,*** will include the consensus recommendations and a wide-ranging list of materials appropriate for use in a self-help or minimal intervention cessation program.

Research Needs

The most important area for further research relates to motivating smokers to move from a precontemplation or contemplation stage to an action stage in the quitting process, that is, to motivate smokers who express no interest in quitting to consider the possibility and, finally, to make a serious quit attempt; or to move large numbers of smokers who say that they would like to quit to a serious quit attempt. These issues are crucial in the field of smoking control. Although it is possible that effective strategies already exist to carry them out (e.g., "persistent and inescapable" negative cues in the environment, ready availability of cessation materials and programs), there may be other programmatic elements that can accelerate the motivation and cessation process so that, with limited resources, we can apply as broadly as possible what is already known,

Several related marketing issues also exist, including resource availability and strategies on how to reach a desired audience. For example, what materials and programs can be disseminated after pretesting but before full-scale evaluation; what are the advantages and disadvantages of producing high-quality materials that are attractive but expensive; can voluntary, state, and Federal health agencies successfully distribute their programs or are professional marketers necessary; how are access groups engaged (e.g., professional medical societies, worksites, nonhealth-related voluntary organizations)? Because these issues involve "selling" health promotion and healthy behaviors rather than a concrete product, many of these issues are new to the health field and require exploration.

The use of adjunctive strategies in self-help/minimal intervention programs is relatively unexplored. Some of the approaches (e.g., use of nicotine gum, counselor telephone calls) are discussed above, but many others have been suggested and their effectiveness remains to be tested. Examples for consideration include use of other pharmacological agents, expanded use of the telephone to include social support and relapse prevention, "simple" computer programs, policies restricting smoking in public settings, and adjuncts to existing materials for special populations.

The issue of gaining access to smokers in specific populations or in particular stages of cessation requires further exploration, Although preliminary studies suggest that it is appropriate to target material and strategies to specific populations or stages, more research

is necessary to determine the most appropriate strategies for the successful delivery of programs to these smokers.

An aspect of self-help/minimal intervention programs that seldom has been studied concerns the cost-effectiveness of these approaches. There is an assumption that these approaches are less costly, but this has seldom been documented.

Mass Media Interventions

The use of mass media in tobacco control programs has the potential to reach many thousands of individuals at one time, deliver prevention and cessation messages to individuals in all walks of life, including those with limited literacy, offer a convenient and relatively inexpensive means for obtaining assistance with quitting, deliver antitobacco messages to young people who do not attend school, and contribute to the development of a social climate that discourages tobacco use. For these reasons the STCP supported intervention trials to develop and evaluate the long-term effectiveness of programs incorporating electronic and print media to encourage cessation and prevent tobacco use initiation.

Profile of Mass Media Interventions

Objective:	To develop and evaluate the long- term effectiveness of programs incorporating electronic and print media to encourage cessation and prevent tobacco use initiation.
Number of Trials:	6
Cancer Control Phases:	III/IV
Methods Tested:	• Radio and TV public service announcements for smoking prevention • Self-help TV programs
Channels Involved:	• Media • Health departments • Community/voluntary agencies • Schools • Health facilities • Worksites
Trial Sites:	California, Texas, New York, Vermont, Montana, Illinois, Pennsylvania, New Jersey, Delaware, Alabama, Virginia, Georgia, North Carolina
Primary Study Period:	1984-1990
Estimated Number of Subjects Affected:	27,351,000
Status of Consensus Development Process:	• Held consensus meeting (October 1989). • Guidelines document under development.

Trial **Results**

Three of these trials are still in progress and final results are not yet available. However, the following basic principles have emerged from the regular collaborative meetings held with the investigators and NCI staff.

- Television and radio are cost-effective ways to reach large numbers of individuals with antitobacco messages.
- Formative research is essential for the development of effective messages that will be positively received by the target audience.
- The appropriate placement of media messages is critical for reaching the target audience. Radio should be given strong consideration in reaching youth rather than relying on television alone. Both the medium chosen and message effectiveness vary with age, gender, and general level of risk for becoming a smoker.
- Behavior change is most likely when media campaigns are broad and sustained rather than short and intense and are linked to other antismoking activities in the community, although the linkage need not always be made explicit to the target audience.
- Purchase of media time is preferable to dependence on donated time, particularly if specific audience segments are to be targeted.
- Although nonsmoking media messages can at times be combined with other issues (e.g., drug use, diet modification, exercise), nonsmoking messages appear to be most effective when exposed alone.
- Media gatekeepers are more likely to provide more desirable and frequent public service announcement time when time is also purchased for antitobacco use messages.

Application of Research Results

A media advocacy consensus workshop was conducted in January 1988, cosponsored by NCI and the Advocacy Institute of Washington, D.C. This workshop brought together media experts, especially from the news media, in smoking control. The principal product of the workshop is a document entitled *Media Strategies for Smoking Control: Guidelines From a Consensus Workshop.* This monograph was published in 1989 and will be distributed principally to health promotion directors and media personnel for community organizations/businesses.

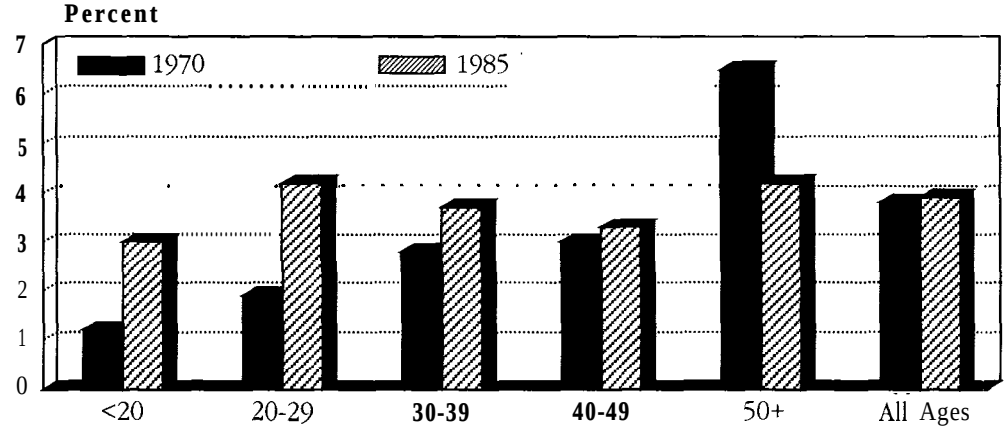
A second consensus meeting, this one of media researchers and practitioners, was held in late 1989 to make recommendations based on the NCI trials and related research. The document from this meeting, to be published in 1990, will complement the guidelines from the earlier media advocacy workshop.

In response to the decline in allotments for public service announcements as competition for their air time increases, the STCP will publish *Guidelines for Use of Paid Media* in early 1990 to help tobacco control advocates decide whether they should purchase media, and if so, how and on what basis. A series of consensus meetings involving experts in media and tobacco use control provide the basis for these guidelines.

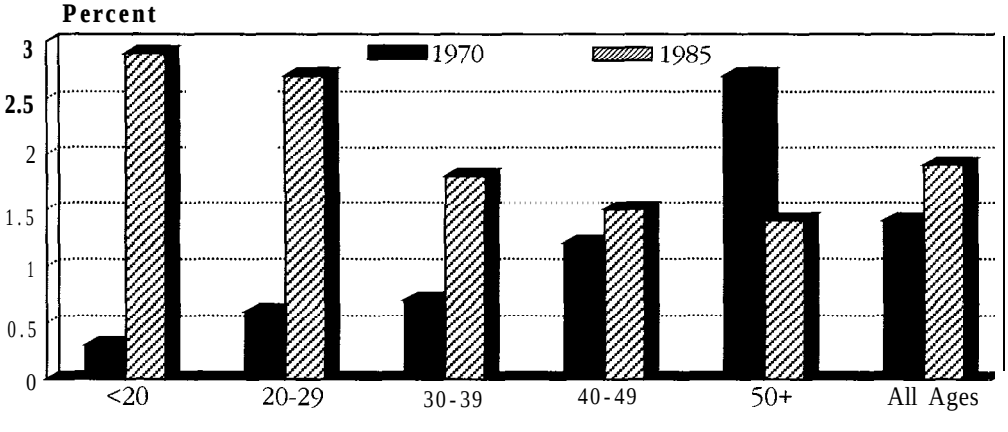
smokeless Tobacco User Interventions

Before the mid-1970's use of chewing tobacco and snuff (smokeless tobacco) in the United States was primarily the practice of older persons, residents of rural areas, and certain occupational groups where smoking is not allowed. Prevalence was lowest among the youngest age groups. At present, however, use of chewing tobacco and snuff has become most common among younger age groups. Both national and local/regional surveys indicate that adolescent and preteen boys are adopting this practice in large numbers. Estimates from the 1987 NHIS of adults indicate that males ages 18 to 24 are more likely to use snuff or chewing tobacco (8.9 percent) than any other age group. Of the approximately 5.5 million adults who use some form of smokeless tobacco, more than 1 million are males between the ages of 18 and 24.

Prevalence of the Use of Chewing Tobacco Among Males, 1970 and 1985

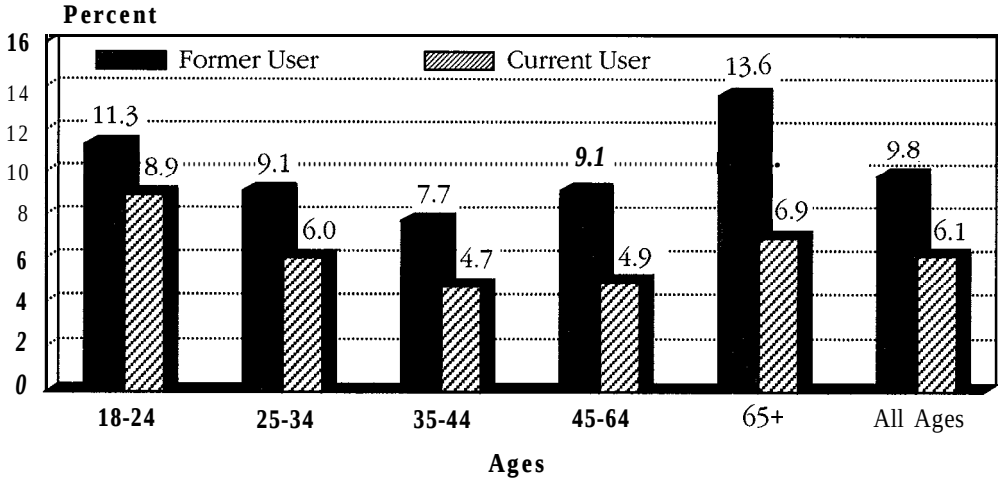


Prevalence of the Use of **Snuff** Among Males, by Age, 1970 and 1985



Source: 1970 National Health Interview Survey and 1985 Current Population Survey.

Smokeless Tobacco Use Among **Males** in the U.S., 1987



Source: National Health Interview Survey, 1987.
Includes both chewing and snuff use.

Reports of increased use of smokeless tobacco by youth have coincided with new evidence regarding health hazards. These risks were reviewed in the **1986** report of the Surgeon General, The ***Health Consequences of Using Smokeless Tobacco,*** with the following conclusions:

- The scientific evidence is strong that the use of snuff can cause cancer in humans. The evidence for causality is strongest for cancer of the oral cavity, wherein cancer may occur several times more frequently in snuff dippers compared with nontobacco users. The excess risk of cancer of the cheek and gum may reach nearly fifty-fold among long-term snuff users.
- Smokeless tobacco use can lead to the development of oral leukoplakias (white patches or plaques of the oral mucosa), particularly at the site of tobacco placement. Based on evidence from several studies, some leukoplakias can undergo transformation to dysplasia and further to cancer.
- Gingival recession is a commonly reported outcome of smokeless tobacco use.
- Because nicotine levels in the body resulting from smokeless tobacco use are similar in magnitude to nicotine levels from cigarette smoking, it is concluded that smokeless tobacco use also can be addictive.
- Some evidence suggests that nicotine may play a contributory or supportive role in the pathogenesis of coronary artery and peripheral vascular disease, hypertension, peptic ulcers, and fetal mortality and morbidity.

In response to this emerging health risk behavior, NCI funded nine research grants to develop interventions to prevent the initiation of smokeless tobacco use and/or promote and assist cessation. Most of these projects focus on school-based prevention and cessation interventions. Three are developing prevention curricula for youth in nonschool settings-4-H clubs, Little League Baseball clubs, and Native American community centers. One project is developing a cessation intervention for adults and older teenagers that will be delivered through a dental HMO.

Profile of Smokeless Tobacco User Interventions

Objective:	1) To identify the patterns and major factors that influence the use of smokeless tobacco. 2) To develop interventions that will prevent the initiation of smokeless tobacco use and/or promote and assist cessation.
Number of Trials:	9
Cancer Control Phases:	II/III/IV
Methods Tested:	• Integrated behavioral/educational approaches • School health curricula • Curricula for community and athletic youth organizations • Community and family support • Booster sessions • Recruitment and teacher training protocols • Behavioral techniques
Channels Involved:	• Schools • Education departments • Community/voluntary agencies • Youth groups • Athletic organizations • Ethnic minority organizations • Dental health facilities • Worksites
Trial Sites:	Missouri, California, Connecticut, Texas, Idaho, Montana, North Carolina, Oklahoma, Oregon, Washington, Colorado, North Dakota, South Dakota
Primary Study Period:	1987-1993
Estimated Number of Subjects Affected:	38,000
Status of Consensus Development Process:	Pending Completion of Trials

Nearly all of these programs are in their first or second year of funding. Thus, outcome data are not yet available. However, several preliminary observations and principles have emerged:

- Prevention curricula should address all forms of tobacco use; smokeless tobacco and cigarette smoking programs should be integrated so that youth will understand there is no safe form of tobacco use.
- Interventions should be sensitive to the prevailing norms and attitudes toward smokeless tobacco. There is more regional variation in smokeless tobacco use than in cigarette smoking. (See tables 5 and 6.)
- Due to the potential for nicotine addiction from smokeless tobacco use, many young users, as well as adults, may be in need of cessation information and assistance, about which little knowledge and few programs are available.

Black Smoker Interventions

The prevalence of cigarette smoking and tobacco-related cancers (especially those of the lung, esophagus, and larynx) is higher among blacks than among other US. subpopulations or among whites.

Although smoking prevalence rates among black adults have begun to decline, overall rates remain higher than for whites; this is particularly true for black males. Limited efforts to reduce smoking rates of black Americans have been undertaken a number of times in the past 20 years, but few have approached this problem in a culturally relevant manner. Therefore, between 1985 and 1986 NCI began supporting smoking intervention trials aimed at black Americans with the objective to develop, implement, and evaluate programs aimed at reducing smoking prevalance.

Existing research suggests both that the health needs of many blacks may be more efficiently met through targeted interventions and that many blacks also have a strong desire to quit smoking. Yet because there has been little systematic research conducted concerning black smoking behavior or smoking control, little has been done to address these needs.

Profile of Black Smoker Interventions

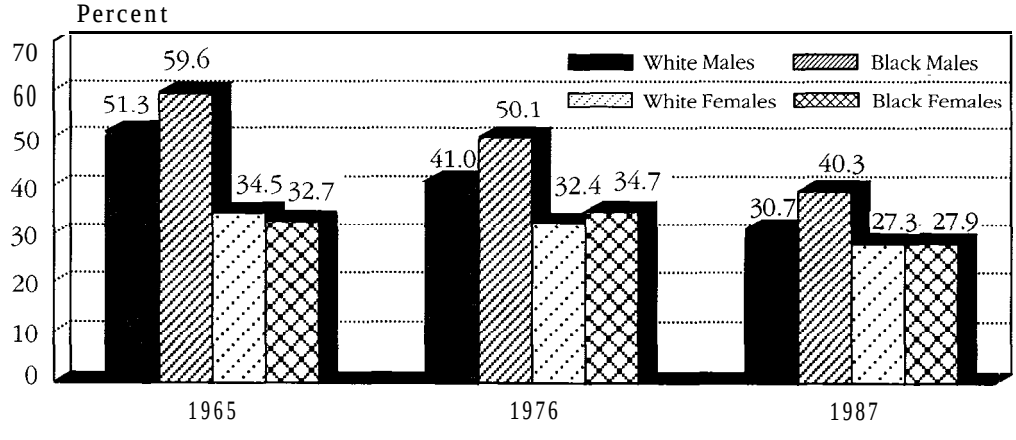
Objectives:	1) To develop a better understanding of the smoking knowledge, attitudes, and behavior of black smokers and ex-smokers. 2) To develop cost-effective smoking prevention and cessation programs specifically oriented to the needs of black smokers or those at risk to begin smoking.
Number of Trials:	8
Cancer Control Phases:	II/III/IV
Methods Tested:	• Self-help cessation programs • Community-based approaches • Skills training prevention approaches • Motivational approaches • Recruitment procedures • Social support groups • Physician intervention • Nicotine gum use • Media programs
Channels Involved:	• Health facilities • Media • Worksites • Community/voluntary agencies . Schools
Trial Sites:	California, Illinois, New Jersey, North Carolina, South Carolina, Michigan, Massachusetts
Primary Study Period:	1986-1991
Estimated Number of Subjects Affected:	153,000
Status of Consensus Development Process:	Pending Completion of Trials

To date, eight trials aimed at the prevention and cessation of smoking among blacks have been supported by the STCP. These trials are being conducted in geographically diverse regions and in a variety of settings, including schools, community health clinics, businesses, community action programs and, in several instances, in entire communities. The first objective of these trials is to develop a better understanding of the smoking habits, smoking knowledge, quitting motivation, quit attempts, and quitting experiences of black smokers and ex-smokers (phase II studies). The second objective is to develop cost-effective smoking prevention and cessation programs specifically oriented toward the needs and concerns of black smokers or blacks at risk to begin smoking (phase III intervention research).

Because these trials began recently, there are few intervention results to report. In addition, these trials by necessity had to begin with an analysis of black smoking behavior, about which very little was known. The following are interim results:

- Smoking Behavior. It has been further confirmed that although smoking prevalence among blacks is greater than among whites, black smokers smoke fewer cigarettes per day than whites and report high nicotine dependency. On the other hand, blacks show relatively high quitting motivation and awareness of health risks from smoking.
- Self-Help Intervention. Effective self-help programs aimed at black smokers can be developed and disseminated, if culturally appropriate material is used and if disseminated by an organization or group respected by the black community.
- Intervention Channels. Black smokers make more quit attempts and adolescents delay onset of smoking if appropriate outreach programs are employed. The types of outreach found to be most appropriate involve communications using channels such as churches, black-oriented media, fraternal organizations, health clinics serving the black community, neighborhood and civic associations, community-based organizations such as Head Start, and local business, community, and political leaders. Initial results strongly suggest that it is the interaction of these approaches, rather than the success of any one of them, that leads to program success.

Changes in Smoking Prevalence in the U.S. by Race and Sex, **1965-1987**



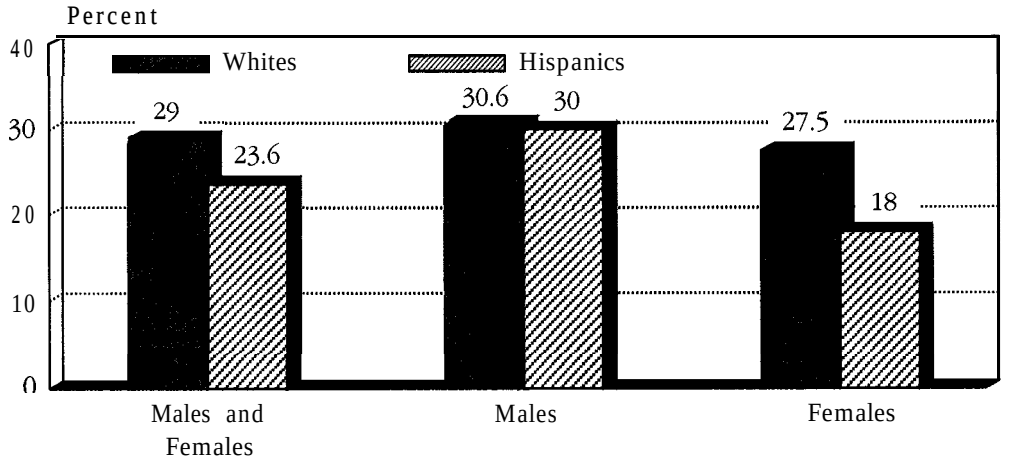
Source: National Health Interview Survey.

Hispanic Smoker Interventions

For many years there has been an assumption that because smoking prevalence and lung cancer rates were lower among Hispanic Americans that this issue was not one that required special attention. Recent data indicate, however, that this is no longer the case. If a sharp increase in tobacco-related cancers among Hispanics is to be avoided, the issue of tobacco use must be addressed swiftly and strongly.

Hispanic males now smoke at rates comparable to white males, and smoking among Hispanic females, although not as prevalent as among white females, also has risen. Smoking among Hispanic adolescents, both male and female, closely parallels that of the general adolescent population, and therefore one can predict that tobacco-related cancer rates among Hispanics in the next century will be little different from those of Anglos.

Prevalence of Current Cigarette Smoking Among Whites and Hispanics (Percent) by Sex



Source: National Health Interview Survey, 1987.

In response to this profile, the STCP began supporting large intervention trials aimed at the prevention and cessation of tobacco use among Hispanic Americans. Recognizing the special cultural and language needs of this group, these trials involve several Hispanic subgroups, use Spanish-language material appropriate to the different Hispanic groups represented in the trials, and use a variety of channels (including Spanish-language media, community outreach, and Hispanic organizations) to reach this population.

Because these trials began more recently than other STCP-supported trials and required preliminary research (phase II studies) to ascertain details about Hispanic smoking behaviors, intervention results are incomplete. The following findings provide only preliminary results pertinent to intervention in these populations:

- Smoking Behavior. As expected, Hispanic smokers smoke less than the general population, with many being only occasional smokers.
- Accessibility to Services. Hispanics are often not aware of where or how to obtain services to help them quit smoking and do not have services available to them in Spanish.
- Knowledge and **Attitudes.** Hispanics report culturally specific reasons for not smoking, including avoiding being a bad example to children, concern that smoking damages relationships with others, and that smoking is esthetically undesirable.

- Level of Acculturation. More highly acculturated Hispanics smoke more cigarettes per day than those who are less acculturated.
- Intervention Channels. A community-wide approach to the reduction of Hispanic smoking is not only feasible but may be more appropriate than single-channel approaches. A variety of culturally relevant activities are necessary for out:-reach to Hispanic smokers and adolescents at risk for smoking (e.g., use of role models, Spanish-language media, after- and outside-school activities, and use of the "central reference points" often found in Hispanic communities such as community agencies, stores, churches, or other institutions).
- Single Versus Multiprogram Focus. Reductions in Hispanic smoking may better be approached from a health promotion point of view rather than focusing on reduction of tobacco use alone. This suggests that a health promotion campaign, with reduction of tobacco use as a primary but not single theme, may appeal to the Hispanic community more than a tobacco-only approach.
- Prevention Intervention. With the addition of some culturally relevant material and involvement of the family, existing curricula for smoking prevention may be appropriate for use among Hispanic adolescents.

Profile of Hispanic Smoker Interventions

Objectives:	1) To develop a better understanding of the smoking knowledge, attitudes, and behavior of Hispanic smokers and ex-smokers. 2) To develop cost-effective smoking prevention and cessation programs specifically oriented to the needs of Hispanic smokers or those at risk to begin smoking.
Number of Trials:	4
Cancer Control Phases:	II/III/IV
Methods Tested:	• Skills training for smoking prevention • Community-based programs • Media approaches • School health curricula
Channels Involved:	• Schools • Health facilities • Media • Community/voluntary agencies • Worksites • Health departments
Trial Sites:	California, Connecticut, Massachusetts, Texas, New York
Primary Study Period:	1985-1990
Estimated Number of Subjects Affected:	314,000
Status of Consensus Development Process:	Pending Completion of Trials

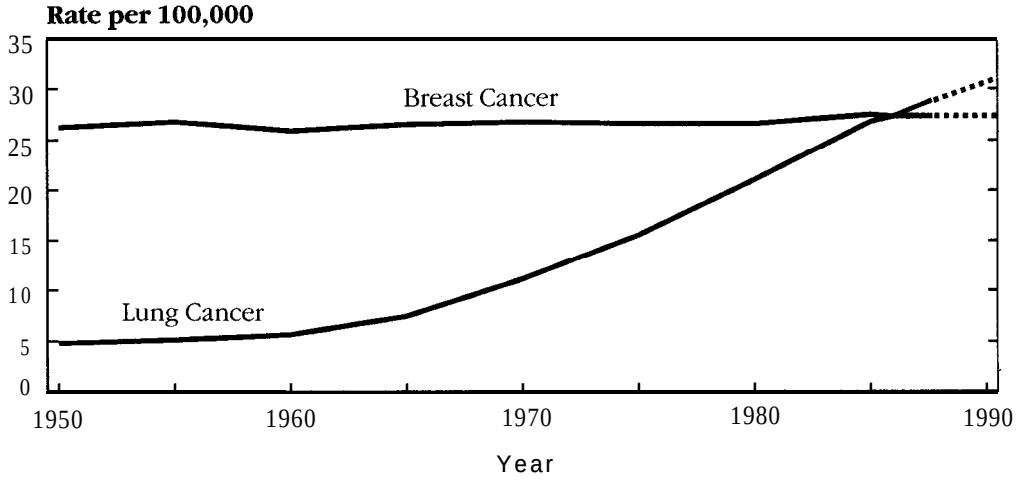
Women Smoker Interventions

In 1987 27 percent of the U.S. female population were smokers. This represents a 21-percent decrease since 1965 when female smoking rates reached their highest level at 34 percent. This decline, although encouraging, stands in sharp contrast to the 40-percent reduction in male smoking rates seen over the same period. Thus, although female smoking rates never attained the same magnitude as those of males, the slower rate of decline in women compared with men is of concern. The toll of the dramatic increase in women's smoking since World War II is reflected in the death rates for female lung cancer, which now surpasses breast cancer as the leading cause of cancer deaths in women.

Survey and experimental data suggest that women may have greater difficulty in quitting cigarettes than men. Various social, psychological, and behavioral explanations of this problem have been suggested such as fear of postcessation weight gain, dependence on social support as an aid to quitting, and smoking as a response to the multiple role stress experienced by today's woman.

Since 1985 the STCP has funded eight projects focusing solely on cessation among women, although roughly half of the population reached by the program's remaining intervention trials are females. The difference in the projects supported as a result of the women and smoking initiative is their focus on either a particular population of female smokers or the targeting of specific needs and concerns related to cessation that are unique to women, or in some cases, both of these.

Death Rates for Lung Cancer Compared With Breast Cancer, **1950-1986**



Source: National Center for Health Statistics, 1989. Age-Adjusted to 1970 Population

The themes of the women smoker intervention trials can be summarized as follows:

- Examining why women quitting in formal cessation classes appear to have poorer outcomes.
- Achieving cessation during pregnancy and maintaining abstinence through l-year postdelivery.
- Developing programs for female quitters with expressed concern about weight gain.
- Testing the role of peer support and competence training in treating smoking behavior among women.
- Promoting smoking prevention and cessation among nurses. Women make up **98** percent of the profession and smoke at a rate that exceeds that of other health professionals.
- Achieving smoking cessation and maintenance for low-income, predominantly black pregnant smokers.

Profile of Women Smoker Interventions

Objective:	To develop interventions that target the specific needs and concerns related to smoking cessation that are unique to women.
Number of Trials:	8
Cancer Control Phases:	II/III
Methods Tested:	· Self-help cessation manuals · Skills training programs · Peer group and other social support approaches • Nursing school-based intervention • Relapse prevention techniques • Stress management techniques • Behavioral and pharmacologic weight gain prevention strategies • Clinic reinforcement services
Channels Involved:	• Schools • Health facilities/professionals • Community/voluntary agencies • Worksites
Trial Sites:	Alabama, Missouri, California, Illinois, New York, Minnesota
Primary Study Period:	**1985-1991**
Estimated Number of Subjects Affected:	**7,600**
Status of Consensus Development Process:	Pending Completion of Trials

These women smoker interventions required the completion of phase II studies prior to the development and testing of interventions; they are in varying stages of completion. Interim findings from recruitment efforts, materials development, and early followups will be available in the future.

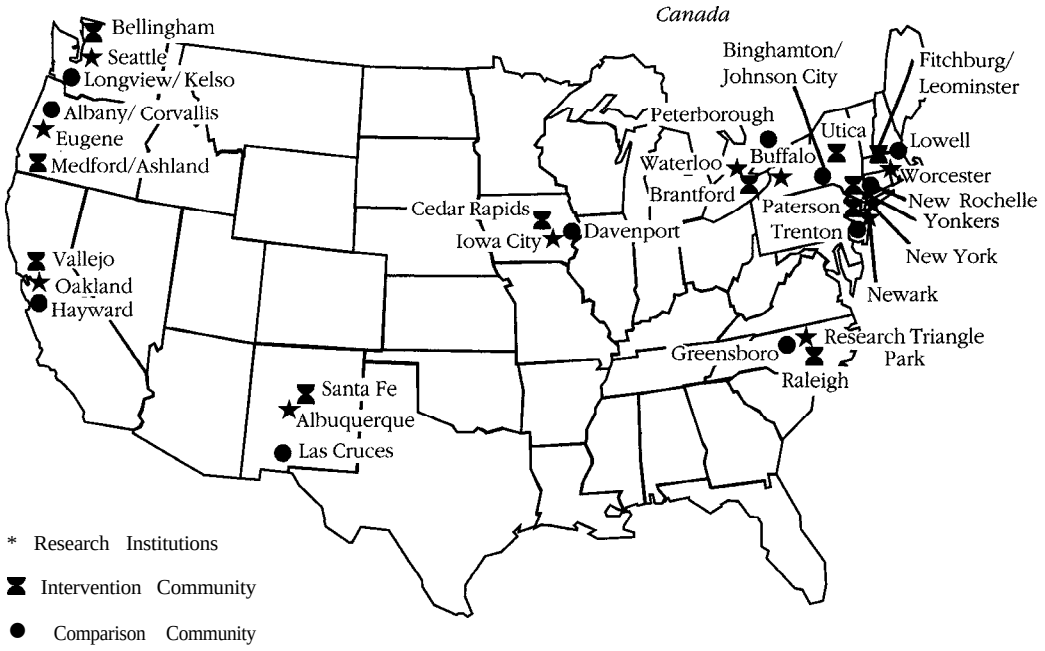
The Community Intervention Trial for Smoking Cessation

The Community Intervention Trial for Smoking Cessation (COMMIT) is the largest smoking intervention trial in the world, involving directly or indirectly more than **6** million people in the testing of a community-based intervention protocol that can be disseminated nationwide to meet NCI's year 2000 objective to reduce smoking prevalence. Heavy smokers (25 or more cigarettes a day) are emphasized due to their greater cancer risk and their difficulty in quitting. These heavy smokers represent only one-quarter of all smokers, but they account for nearly half of all the lung and smoking-related cancers among smokers.

Objectives and Description

The trial design includes 11 pairs of communities in North America that were matched in size, demographics, and location. Pairs of communities are located in western Washington, western Oregon, northern California, New Mexico, Iowa, North Carolina, upstate New York, metropolitan New York, New Jersey, and Massachusetts in the United States and in western Ontario in Canada. Following the baseline survey, one community from each pair was selected randomly in May **1988** as the intervention site.

Location of COMMIT Research Institutions and Community Pairs



The baseline survey was conducted between January and May 1988 to determine overall prevalence of cigarette smoking in each of the 22 communities and to recruit and describe cohorts of heavy and light-to-moderate smokers. The primary trial endpoint is the smoking cessation rate in each community as observed annually in randomly selected cohorts of heavy smokers and cohorts of light-to-moderate smokers (n = 500 in each cohort in all 22 sites). The intervention effort will be blind to cohort identity and will be directed at all smokers in intervention sites. An additional cohort of smokers and nonsmokers will assess community smoking attitudes and behaviors at the beginning, middle, and end of the intervention period. Changes in community smoking prevalence and adolescent smoking rates will be monitored by cross-sectional surveys at the beginning and end of the trial. The evaluation plan also includes a variety of program evaluation and monitoring activities in all 22 communities to track the level of cessation program activity, health professionals' advice to stop smoking, worksite smoking cessation programs, smoke-free policy changes, and local participation in local and national smoking control efforts. These multiple sources of data will be used both to monitor program implementation and to provide interim feedback to community leaders and participating organizations.

The primary hypothesis being tested is that the implementation of a defined intervention protocol, delivered through multiple community groups and organizations and using limited external resources, will result in a quit rate in heavy smokers that is at least 10 percentage points greater (e.g., 25 percent versus 15 percent) than that observed in the comparison communities. The COMMIT interventions will build on, coordinate, and facilitate community smoking control activities. The overall intervention goals of the trial are to:

- Increase the priority of smoking as a public health issue.
- Improve the community's ability to modify smoking behavior.
- Increase the influence of existing policy and economic factors that discourage smoking.
- Increase social norms and values that support nonsmoking.

Results from the STCP trials have defined numerous strategies for inclusion in COMMIT. Trial investigators evaluated the STCP trial results, scientific literature, and other data sources to define the protocol of 40 required interventions. The most promising strategies include interventions offered through physicians and dentists, mass media, worksites, community organizations, and telephone hotlines. These interventions are organized into several areas: health care providers, worksites and organizations, smoking cessation resources and services, public education, and schools. Goals and objectives were defined for these intervention areas, and quantifiable process objectives were set for each of the 40 protocol-defined intervention activities. This detailed protocol was developed to maintain standardization across sites while accommodating differing structures and capabilities in the communities.

As a community trial, COMMIT requires the implementation of a complex intervention protocol in partnership with diverse community organizations and groups. To effectively form this community partnership, the protocol required the formation of a community board and task forces in all intervention sites. Following randomization in May 1988, the process of community mobilization was started so that the community boards could assume the responsibility for planning and managing the protocol implementation in early 1989. In the 11 sites, the 4-year intervention effort will involve more than 1,000 doctors, 700 dentists, 1,400 worksites, 1,000 community organizations, 250 media outlets, 400 schools, and 60 cessation service providers.

Example COMMIT. Intervention Activities: Trial Interventions

Intervention Task Force	Public Education	Community Activities	Policy / Economic Activities
Health Care	Motivate smokers to seek cessation assistance from providers.	Physician/dentist/pharmacist training. Expand cessation programs.	Seminars/consultation to promote no-smoking policies.
Worksites	Promote worksite smoking behavior changes (presentations, posters, newsletters).	Support worksite cessation programs (self-help manuals, A/V materials, incentives).	Develop smoke-free worksite policies.
Organizations	Presentations at meetings and in organizational media.	Promote community cessation resources, large organization self-help programs.	Promote smoke-free meetings, organization competitions ("magnet events">.
Cessation Resources/ Services	Oral/written information on health consequences, quit resources, maintenance, passive smoking.	Counseling, self-help materials, referral to cessation programs through telephone hotline.	Refer to community resources to change policies. Information on regional/national smoke-free policies.
	Newsletter for smokers/families with information on quit resources through network.	Promote self-help, cessation resources, social support through network ("buddy system").	Publicize local smoking policy changes.
Public Education (Media)	"Kickoff" event to publicize other activities; media training for local advocates; local amplification of national events.	Self-help information, referrals to cessation resources, including hotline.	Publicize policy changes in local institutions, passive smoking issue.
schools	School curricula; student/parent materials; teacher training.	Promote parental cessation through youth, combined parent-cessation/adolescent-prevention programs.	Promote smoke-free school policies, sports, other public events. Reduce tobacco sales to teenagers.

Results of the Baseline Survey

In the COMMIT baseline survey, more than 355,000 randomly selected telephone numbers were used to identify the cohorts of 500 heavy smokers and 500 light-to-moderate smokers in each of the 22 communities. Cigarette smoking prevalence was determined by interviewing a household member 18 years of age or older who provided smoking status information on all members of the household. Based on information provided in these 125,355 household screening interviews, more detailed interviews were conducted on 35,197 smokers ages 25 to **64** and 5,157 recent quitters ages 18 to 64. The combined demographics of the 22 sites match closely with national averages. Overall rates of smoking in the targeted populations (ages 25 to 64) within the COMMIT sites also are consistent with national estimates from the 1987 NHIS. Using these prevalence rates and local census data, it is possible to derive the estimated number of adults in the 22 sites by smoking status. The baseline survey also provides data regarding intervention feasibility and baseline levels of cessation program participation.

Race, Ethnicity, and Sex of Smokers (Percent)

		COMMIT Sites	Nationally
Race			
White		84.4	79.9
Black		9.7	12.7
Hispanic		7.2	5.6
Sex	**Age**		
Male	25-34	18.1	18.6
	35-44	15.8	15.4
	45-64	16.2	17.9
Female	25-34	18.1	17.7
	35-44	15.0	13.1
	45-64	16.9	17.3

Sources: National Health Interview Survey, 1987.
COMMIT Baseline Survey, 1988.

Baseline Smoking Prevalence and Quit Rates in the COMMIT Study

Community Pair[1]	Prevalence of Smoking	Quit Rates[2]
1A	26.2	27.5
1B	26.7	28.0
2A	30.9	25.6
2B	33.2	22.9
3A	27.0	28.2
3B	24.2	30.1
4A	30.6	26.1
4B	27.9	27.6
5A	30.9	21.9
5B	28.1	20.5
6A	20.4	31.7
6B	22.6	34.9
7A	26.8	28.5
7B	27.2	28.0
8A	27.2	26.5
8B	28.4	26.8
9A	27.1	26.6
9B	23.2	29.6
10A	19.7	29.8
10B	21.9	30.9
11A	26.2	28.7
11B	21.3	32.8

[1]Denotes intervention and comparison communities.
[2]Percentage of smokers quitting over the past 5 years.

Source: COMMIT Baseline Survey, 1988.

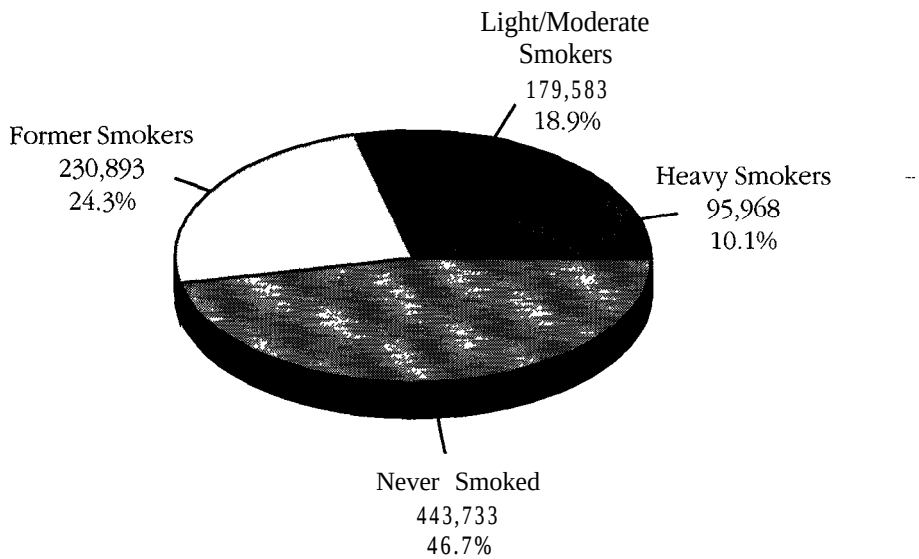
COMMIT Intervention Feasibility

- Health care received in the community
  - -86 percent of heavy smokers
  - -84 percent of light-to-moderate smokers
- Workplace located in the community
  - -71 percent of employed heavy smokers
  - -71 percent of employed light-to-moderate smokers
- Methods used by ex-smokers to quit
  - -10 percent used professional help
  - 4.4 percent used a health agency
  - -2.2 percent used a work program
  - -13.8 percent used TV advice
  - -7.1 percent used a community event

Source: COMMIT Baseline Survey, 1988.

Baseline smoking quit rates in the 22 COMMIT sites were estimated based on the retrospective quitting information from surveyed ex-smokers. Statistical analysis to evaluate the primary trial hypothesis will emphasize mean community pair differences in quit rates observed among both the heavy and light-to-moderate smoker cohorts during annual followup surveys. Using communities as the unit of analysis, the sample of 11 pairs of communities were included so that the study will have greater than 90-percent power to detect a lo-percent mean paired difference (e.g., 25 percent versus 15 percent) in cohort quit rate at a one-sided $p < 0.05$ level of significance. Similar analyses will be conducted on mean paired differences in changes in smoking prevalence and adolescent smoking rates.

Estimated Number of Adults in COMMIT Communities by Smoking Status



Source: COMMIT Baseline Survey, 1988.

Implications for Broader Application

Major national efforts to deal with the smoking problem in the United States will be continuing on multiple fronts. The social acceptability and public attitudes toward smoking and tobacco use behaviors are changing rapidly. Schools are adopting more effective prevention curricula; worksites are changing policies and encouraging cessation; the health care system is taking a more active role in smoking cessation; and the general public is urging public policy changes related to smoking and tobacco use. As these

Available COMMIT Materials

Title	Content
Protocol Summary	Comprehensive summary of the COMMIT study protocol, including the rationale, trial design, community analysis, and mobilization methods, intervention strategies, evaluation overview, and sample size considerations.
Organizing for Community Health Promotion: A Handbook	Handbook to assist both field staff and community leaders in their efforts to mobilize community resources and citizen energy for community-wide health promotion. Includes four sections: community-wide change-theory and practice issues; community analysis and citizen activation; community-wide intervention strategies; and program maintenance and diffusion of innovations. Provides multiple appendix materials and case studies.
COMMIT Video	7-minute video in the form of a "commercial" for COMMIT, professionally narrated with accompanying visuals. Used to introduce community members to the COMMIT study and encourage them to join in the effort.
Manual for Training Health Care "Influentials"	Handbook to guide COMMIT staff during meetings with local health care providers. Contains an introduction to COMMIT and sections on the health care channel goals, mobilization of health care providers, working as a change agent in health facilities, and health providers as community change agents.
Physician Level I Level II Training Materials	NCI protocol packaged in a document entitled *How to Help Your Patients Stop Smoking,* which guides a trainer through a 3-hour workshop on smoking cessation techniques. Also contains an appendix with suggestions for physicians to use to prepare a 45-minute presentation on smoking cessation.
Using the Medical Office to Prevent and Treat Nicotine Dependence	Creative and inexpensive suggestions for medical and dental offices to use to promote tobacco-free living in waiting rooms and other office space.
Incentive Programs Workbook	A workbook to be used by worksites and community organizations in organizing and implementing incentive programs to motivate individuals to quit smoking.
Working With Unions to Reduce Cigarette Smoking	"How-to" work with unions guide. Part I addresses the issues related to the involvement of unions in workplace smoking policies and programs; Part II provides concrete suggestions for working with unions and involving unions in smoking issues.

changing social trends motivate community leaders to take actions, appropriate resources, materials, and expertise will be needed to maximize these local efforts. **COMMIT** will serve as a major laboratory for the study of community-wide smoking cessation and for the evaluation of specific strategies to meet these needs. Therefore, the results of this trial should be an important element in NCI's multiple efforts to accelerate national trends toward a smoke-free society. On completion of the trial numerous materials and resources will be available for widespread dissemination and use.

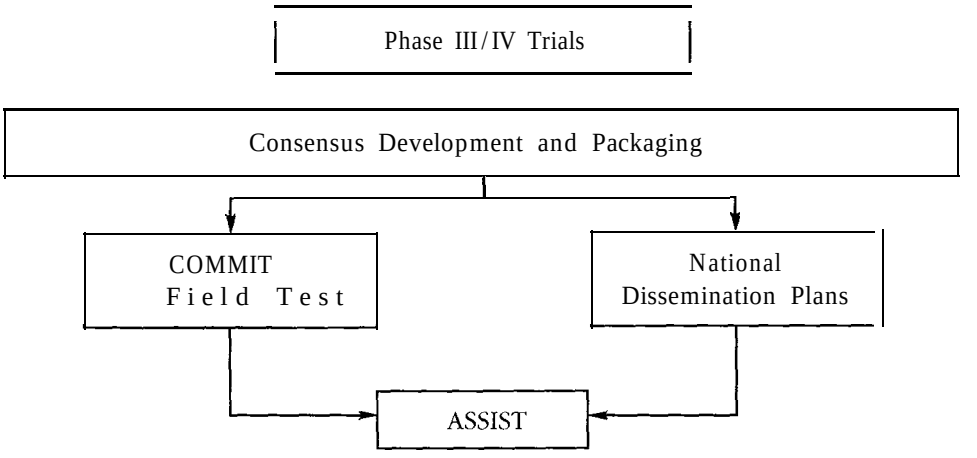
Available COMMIT Materials (continued)

*What Can You **Do*** Brochure	Six-panel, easy-to-read 8 1/2" x 11" brochure that offers helpful hints on helping smokers quit, combating the tobacco industry, and promoting a smoke-free environment.
COMMIT Guide to Running a Workshop on Workplace Smoking Policy	Guide designed for COMMIT field directors and other staff to provide basic information needed to plan and implement a workshop on workplace smoking policies for local businesses.
Guidelines for Establishing Worksite Smoking Policy Network	General directions for establishing a network among worksites so they may share information on the design, implementation, and evaluation of worksite smoking policies.
COMMIT Guide to Nonsmoking Policies for Small Businesses	Guide to help small businesses (10-200 employees) design and implement workplace nonsmoking policies.
Handbook for Developing the COMMIT Cessation Resources Guide	Handbook to aid COMMIT sites with the production of a community-specific Cessation Resource Guide. Includes an introduction, provider chart, "other" cessation aids chart, list of local resources for advice, and sample prototype.
Smokers Network Getting Started	Brief summary of ideas for recruiting smokers into a "Smokers Network" that will provide useful information and support to smokers interested in quitting.
Planning and Producing a Small Newsletter	Guidelines for producing a successful newsletter, including tips on planning, selecting content and format, and estimating costs. Includes appendixes on newsletter mockups, examples of format elements, and a sample timeline.
How to Use the EC50 Carbon Monoxide Monitor	Description of process for preparing EC50 monitor for use, testing subjects, disassembling monitor, and performing calibration checks. Also contains guidelines and a sample log sheet.
COMMIT: Public Education Resource Kit	Guide for creating COMMIT graphics such as logos, letterhead, business cards, envelopes, and press releases for use in magnet and promotional events. Includes specifications for typesetting, sample graphics, media factsheets on smoking-related topics, and a list of sources for media pieces.

Consensus Development and National Dissemination

One of the major barriers in the effort to control smoking behavior in the U.S. population over the past 25 years has been the lack of a systematic plan to make practical use of available smoking control technology. During this period, a substantial body of intervention research has emerged from the published literature. As reflected in the preceding discussions, in several research areas enough data are presently available to allow the STCP to proceed to phase V demonstrations and implementation. This process first involves assessing and synthesizing the results of current research to define the essential elements of proven intervention strategies to reduce smoking and other forms of tobacco use. To this end, consensus meetings involving the principal investigators of the STCP trials and other experts in the intervention area of interest are held; the findings of these meetings are translated into guidelines and appropriately packaged for widespread dissemination to targeted audiences.

Model for STCP's Research to Applications of Research Sequence



In addition to application efforts emanating directly from the intervention trials, the STCP has developed for national dissemination other consensus products that cut across the various intervention areas. Major efforts are highlighted below.

Comprehensive Smoking Prevention and Control Standards

The *NCI Standards for Comprehensive Smoking Prevention and Control* has been developed which represents a consensus of smoking control experts about the essential activities that comprise a comprehensive smoking prevention and control program. These standards are based on the findings and strategies developed through the STCP research trials, other smoking research, and the expertise of countless public health professionals and activists. Together, they represent the current state of the art of smoking prevention and control intervention. The standards will be widely distributed to encourage smoking prevention and control efforts across the country.

State Tobacco Prevention and Control Plans

In collaboration with the Association of State and Territorial Health Officials (ASTHO), STCP developed the *Guide to Public Health Practice: State Health Agency Tobacco Prevention* and *Control Plans.* The guide was written by tobacco control specialists in state and Federal government who have had experience in planning and carrying out programs to reduce the use of tobacco. It is designed to help state health agencies mobilize existing public and private resources to further reduce tobacco use and its resultant death and disability. It describes a process that has been used successfully for other public health problems and that require the involvement of citizens as well as business, education, government, and health organizations. The guide has been distributed to the governor, state health officer, and state tobacco coordinator in each state. Plans are under way to produce additional copies of the guide for wider distribution.

Smoking and Tobacco Use Control Monographs

One of the primary mechanisms being developed to aid in the national dissemination of STCP trials results will be a series of monographs on smoking and tobacco use control. The STCP has awarded a 5-year contract that calls for the development and publication of up to three monographs per year. Each monograph will consist of several elements:

- A detailed analysis of smoking and tobacco use trends by target group or population that is the focus of the monograph.
- Analysis of national cancer incidence and mortality patterns within the target group or population discussed.
- Review and synthesis of relevant published literature pertaining to intervention and prevention approaches by target population or intervention channel.
- STCP trial results, including analysis of pooled results where practical.
- Identification of gaps in scientific understanding of effective smoking and tobacco control technology.
- Recommendations of public health action steps that can be taken by various agencies and organizations, including new directions in research, control activities, or social and public health policy changes.

The first monograph in the series will focus broadly on overall NCI-sponsored intervention initiatives and how the widespread application of these will contribute to NCI year 2000 goals for reducing cancer mortality. Subsequent monographs will examine in detail individual trial areas or other pertinent topics.

Network Development

To facilitate broader dissemination of information on effective tobacco use intervention technology, STCP has initiated the organization of several target group networks: one of women's organizations and leaders and one of state tobacco contacts in each state. Once established, networks such as these will serve as primary conduits of information and resources concerning tobacco use control strategies to key target audiences.

The American Stop Smoking Intervention Study for Cancer Prevention

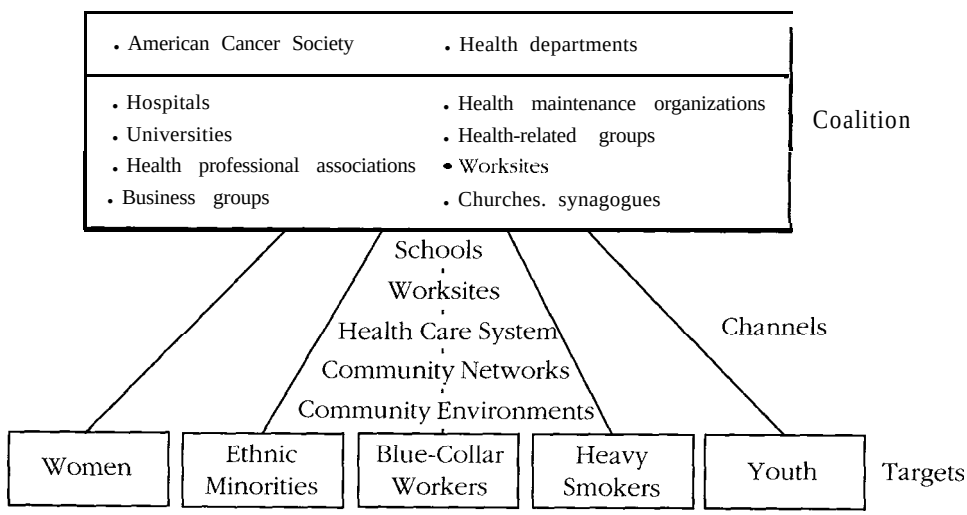
With the adoption of the American Stop Smoking Intervention Study for Cancer Prevention (ASSIST), NCI has further committed the resources necessary to ensure the dissemination of smoking control technology to effect large-scale change. In 1987 NCI program officials recognized that as large and as comprehensive as the STCP trials were, they would have little impact on smoking behavior and even less on cancer mortality rates unless their resulting technology was applied on a national scale. Thus, in April 1987 NCI convened a 3-day meeting of more than 250 of the world's most knowledgeable smoking experts to plan the next step in the continuum to reduce smoking prevalence and cancers related to smoking. It was the group's consensus that many of the STCP strategies being tested were proved effective and were ready to be implemented in phase V cancer control research efforts.

Based on this consensus, the STCP staff initiated a series of meetings and discussions with experts both inside and outside the program to develop and plan the approach necessary to affect sufficient numbers of U.S. citizens to achieve the tobacco control objectives of the NCI year 2000 goal. The expert consultants strongly recommended that community-based tobacco control coalitions be established in entire states or in large metropolitan areas and that 50 million Americans be affected. This recommendation served as the basis for the development of the concept for ASSIST, a large-scale demonstration project that will widely apply tested strategies.

Project Organization

ASSIST will involve entire states and large metropolitan areas. Any state, regardless of population, is eligible as an ASSIST site, as are selected major metropolitan areas that meet certain statistical considerations. An ASSIST site is required to form community-based tobacco control coalitions that will be responsible for developing comprehensive tobacco prevention and control plans and implementing these plans in a coordinated fashion throughout the demonstration site. State and local health departments, because of their overall responsibility for the public's health, will serve as the fiscal agent for the coalitions.

American Stop Smoking Intervention Study (ASSIST) for Cancer Prevention: Sample Model



As project development began, NCI and ACS discussed their respective roles. Because of its long history in smoking and health at the national and local levels and its extensive network of local volunteers, ACS is a complementary partner whose participation is critical to the success of this project.

In keeping with established ACS policy, ACS will receive no project funds. However, because of ACS's historic commitment to tobacco control and strong local presence, it will maintain a high level of community involvement and undertake a significant share of the local intervention burden.

The ACS agreed to contribute to the effort with a commitment of several million dollars in the form of in-kind resources to the project nationally as well as to' those sites approved for NCI project funding.

The organization of ASSIST is based on the coalition model. The strength of the ASSIST coalition model is the ability of member agencies to expand smoking control activities in existing systems of contact with targeted smokers, to institutionalize smoking interventions, and to initiate and support comprehensive smoking control policies such as increasing restrictions on smoking in public places to protect nonsmokers and limiting access to tobacco by minors via sales and promotions.

Membership in coalitions will include organizations, agencies, groups, or institutions that:

- Provide health or social services to target groups.
- Have memberships that include target group members,
- Bring a high level of visibility and credibility to the project.

In addition, coalition members will have an institutional agenda that is consistent with smoking control, a network of organization members throughout the demonstration site, an established means of communication, and a structure (or the flexibility to create one) that will support smoking control activities.

Project Implementation

ASSIST will be implemented in two phases. Phase I, the planning period, will start in mid-1991 and last 24 months. Phase II, the implementation period, will begin in 1993 and continue for 5 years.

During phase I, each funded coalition will perform a comprehensive site analysis by thoroughly surveying its region to determine the current status of tobacco control and to assess needs. Each coalition will develop a comprehensive tobacco prevention and control plan that not only reflects the unique needs of the ASSIST site but also meets NCI project standards.

Phase II will involve carrying out the detailed action steps developed during the planning process in keeping with NCI project standards, The NCI standards will set minimum levels of emphasis in different program areas, including the health care system; workplaces; schools; civic, social, and religious organizations; the media; and the social policy arena. Phase II activities will include training health care professionals to deliver cessation services and counseling, provision of targeted cessation interventions in various community locations (particularly worksites), implementation of tobacco use prevention curricula in schools, and activation of print and electronic media to more aggressively cover the smoking and health issue.

A major emphasis of the project will be the targeting of interventions to population groups of particular concern. Ethnic and racial minorities, because their rates of smoking are stable or increasing and/or their access to and use of smoking prevention and cessation services are limited, will be priority target groups.

Evaluation

Demonstration sites will be evaluated using the CPS conducted by the U.S. Census Bureau. Three surveys are currently planned: a baseline, a midproject, and a post-implementation phase survey. The endpoint of the project is the smoking and tobacco use prevalence in demonstration sites compared with those rates in the United States exclusive of ASSIST sites. In addition to the CPS, a number of process and other evaluation studies will be conducted throughout the project. All evaluations will be done centrally by NCI project staff.

Other NCI Smoking Research and Control Activities

Phase II Methods Development Studies

Although the vast majority of STCP projects are phase III and IV efforts as discussed in the preceding sections, there are a number of areas where phase II studies are warranted to characterize variables that must be controlled or monitored in subsequent intervention studies and/or to ensure that accurate and valid procedures are available before comparative studies are begun. The STCP has supported several projects related to such issues as smoking control policies, physician intervention in special patient populations, smokeless tobacco use in targeted groups, and measurement techniques and tools for smoking behavior. Abstracts of these projects are contained in appendix B.

Worksite Intervention

Smoking control efforts are the most prevalent worksite health promotion activity. Worksites are an important channel for smoking control because they represent a setting in which large numbers of smokers may be reached and in which smoking control activities may be promoted, cessation programs offered, and cessation attempts encouraged and supported. They also are attractive targets for they involve nonsmokers in smoking control efforts, particularly through the promotion of nonsmoking policies. Several worksite intervention projects are supported by the STCP. As described more specifically in the project abstracts of appendix B, these efforts test interventions for both individual self-change as well as organizational change such as incentives, competitions, and policy.

Other Intervention Research Projects

As the results of research efforts suggest needs and opportunities for new or modified smoking control interventions, the STCP has undertaken projects to explore some of the most promising leads identified. For example, there is some evidence that adolescent smoking cessation programs are efficacious, however, the results are far from conclusive. While the role of physicians as smoking control interventionists has been clearly established, smoking control programs that involve other health professionals such as pharmacists and nurses to whom patients can turn with their health problems present promising alternatives for reaching large numbers of smokers. Other studies aimed at decreasing the incidence of lung cancer in high-risk populations focus on testing the efficacy of using certain chemopreventive agents such as retinol and beta-carotene. Abstracts of such projects are found in appendix B.

Tobacco Products Liability Reporter, Inc.

In 1986 the Small Business Innovative Research Program (SBIR) of the National Cancer Institute funded the Tobacco Products Liability Reporter, Inc. to develop a method to help legal professionals involved with product liability cases evaluate the adverse health effects attributed to tobacco use. The methodology developed consisted of

(I) documenting the chronological history of scientific knowledge of the causal relationship between tobacco use and disease incidence, (2) having scientific experts review and evaluate the current epidemiological evidence, and (3) developing a quantitative procedure to estimate the likelihood that tobacco users who develop diseases that are causally associated with tobacco use would not have developed those diseases had they not used tobacco. The calculations involved the use of Assigned Share Theory developed and published by the National Academy of Sciences. The Assigned Share Theory has not previously been applied to the many smoking-related diseases. In phase I only two of the many well-documented diseases are explored-lung cancer and coronary heart disease. In phase II the methodology developed will be tested, refined, and applied. ***Calculations of Relative Risk and Assigned Share: Cigarette Smoking and Lung Cancer*** and ***Cigarette Smoking*** and ***Coronary Heart Disease: A Chronological Review of the Scientific Evidence of Their Association*** were developed during Phase I. Phase II funding of this SBIR project is under consideration.

Review and Evaluation of Smoking Cessation Methods

In recognition of the many agents and channels through which to influence the reduction of tobacco use in this country, the STCP addressed the need for information on what intervention strategies will work and how best to implement such strategies by commissioning a comprehensive review and evaluation of smoking cessation methods in the United States and Canada for the years 1978 to 1984. This review updated a similar review that was formerly carried out under the auspices of the Centers for Disease Control for the years 1969 to 1977. The monograph evaluates nonprofit, commercial, community, and research programs, as well as self-care approaches and practitioner methods. Special sections on worksite control programs and long-term maintenance are provided. Also addressed are important methodological issues affecting the reliability of results and variation across studies as well as evaluative and interpretive commentary regarding the cessation methods identified. This monograph brings together the highly diverse smoking cessation literature into a single volume. As such it serves as an extremely valuable and almost encyclopedic resource. The extended reference listing is itself a major contribution to those either working in smoking cessation or desiring to learn more about the field. Also quite useful is the appended listing of doctoral dissertations.

Tobacco Carcinogenesis and Epidemiologic Studies

NCI's Division of Cancer Etiology (DCE) conducts tobacco-related research in two areas: tobacco carcinogenesis and the role of tobacco in cancer epidemiology. Current activities in tobacco carcinogenesis include studies of the mutagenic and carcinogenic effects of various tobacco products and their constituents, the chemical analysis of tobacco, and the identification and analysis of the effects of nontobacco compounds found in tobacco products (such as flavor additives). Several of these studies focus on chewing tobacco and snuff.

In response to increasing evidence that Environmental Tobacco Smoke (ETS) is hazardous to the health of nonsmokers, DCE supports a variety of epidemiologic research focusing on this important area. Research is being conducted on reliable techniques for detecting ETS exposure levels, methods for measuring the components of ETS and their concentration in natural environments such as homes, the association of ETS and lung cancer and cervical cancer in nonsmokers, and the effects of ETS on the uptake and retention of domestic radon daughters.

Epidemiologic studies of the combined effects of tobacco and alcohol consumption, the biological and behavioral effects of smoking cigarettes with different nicotine yields, and the risk of smoking cigarettes containing low yields of tar and nicotine are also under way.

State Health Department Initiatives

Four states have received support for health department cancer prevention and control programs containing major smoking prevention and control components.

In California, the Los Angeles County Health Services Department, one of the largest local health departments in the Nation, is translating cancer control technology into primary and secondary prevention programming for its staff and service population. In addition to breast and cervix cancer screening, a major project is a smoking cessation training program for departmental staff targeting both employees and patients.

The Colorado State Department of Health is working with community groups and agencies to develop and obtain funding for cancer control efforts focusing on smoking prevention and cessation programs as well as breast and cervical cancer screening activities.

The Michigan State Department of Health is planning, implementing, and evaluating population-based cancer prevention and control programs targeted at smoking cessation and prevention, early cervical cancer detection, and early breast cancer detection.

The Minnesota State Department of Health is analyzing state-supported community antismoking coalitions to develop model cancer control programs that will increase the department's technical capacity to make cancer control funding decisions. The initial area of analysis will focus on statewide nonsmoking efforts.

Smoking Cessation Among Blue-Collar Workers

Blue-collar workers in trades exposed to asbestos generally smoke more cigarettes than other members of the work force. This project evaluated the effect of a physician-led health team's concerted effort to motivate a change in smoking behavior among workers exposed to asbestos. An intensive personally focused intervention was conducted on 2,627 men that repeatedly emphasized the established and observable effects of smoking on each individual and its relationship to present and future health problems.

The study targeted two groups, boilermakers and pipefitters, who had worked at many worksites for relatively short periods-seldom more than 1 year-and had therefore been left out of previous worksite-based smoking intervention trials.

The evaluation found that the intervention had helped to motivate changes in smoking behavior among these individuals. An explanatory letter and questionnaire sent to each worker 6 to 25 months after the screening study revealed that out of 504 respondents 29.8 percent had quit smoking and 35.9 percent had reduced their smoking from 28 to 13.3 cigarettes per day. Of the remaining 32.7 percent who reported that they continued to smoke as before, 90 percent stated that they were still trying to quit. Virtually all of the respondents had previously been chronic heavy smokers.

These results suggest that this "blitz strategy," aimed at motivation but not providing a method for quitting, can have a significant impact on smoking behavior.

Resource on Tobacco Advertising and Promotion

This project established a data bank on cigarette advertising and other forms of tobacco promotion for analytic use and to provide information of interest to the media, voluntary agencies, and policymakers.

The data bank consists of a database on the nature and extent of cigarette promotions; marketing information on demographic characteristics of the readerships of individual publications (available through subscription to various services); current smoking prevalence data by age, race, sex, and socioeconomic status; and computerized bibliographic and text indexing services for magazines and newspapers.

The data bank was used to analyze recent time trends in the extent of magazine advertising, changes in magazines that did not carry cigarette advertising between early 1985 and late 1986, and the characteristics of magazines that carry smokeless tobacco advertising. The resource was also used to compare magazines that carry cigarette advertising with those that do not and to examine the relation between the extent of cigarette advertising in magazines and readership characteristics.

Study of the Health and Economic Impact of Tobacco Consumption in Developing Countries

The health and economic impact of tobacco consumption was assessed in three developing countries (Egypt, Brazil, and Thailand) in an effort to increase awareness within these nations of the long-term costs of tobacco production and consumption. The study identified, compiled, and analyzed information on the prevalence and epidemiology of tobacco use behavior; the health economics of tobacco use; and the economics of tobacco production within each of the three nations.

Study of Involuntary Smoke Exposure Aboard Aircraft

In-flight exposure to nicotine, urinary cotinine levels, and symptom self-reports were assessed in a study of five passengers and four flight attendants on four routine commercial flights of approximately 4 hours' duration each. Urine samples were collected for 72 hours following each flight.

As reported in the *Journal of the American Medical Association* (January 1989), exposures to nicotine measured during the flights using personal exposure monitors were found to be variable, with some nonsmoking areas attaining levels comparable to those in smoking sections. The results showed that attendants assigned to work in nonsmoking areas were not protected from smoke exposure. In addition, the type of aircraft ventilation used was important to resultant in-flight nicotine exposure levels.

The ETS levels that occurred produced measurable levels of cotinine, a major metabolite of nicotine, in the urine of passengers and attendants. Passengers who experienced the greatest smoke exposure had the highest levels of urinary cotinine. Changes in eye and nose symptoms between the beginning and end of the flights were significantly related both to nicotine exposure during the flight and to the subsequent urinary excretion of cotinine. In addition, subjects' perceptions of annoyance and smokiness in the airplane cabin were also related to in-flight nicotine exposure and urinary excretion measures.

Conference on Tobacco Use Among Blacks and Hispanics

The Conference on Tobacco Use Among Blacks and Hispanics was held March 28-29, 1988, at which participants reviewed the state of knowledge concerning tobacco use prevalence, adverse health consequences, and current and potential intervention strategies in black and Hispanic populations; identified crucial policy and research issues concerning tobacco use control and intervention in these populations; and recommended actions to address the policy and research issues identified. Conference recommendations identified applications opportunities, research needs, and priority target groups; publication of the proceedings is planned for a special issue of the *Journal of the National Medical Association* in the spring of 1990.

Office of Cancer Communications Activities

Although research has always been the primary mission of NCI, in the mid-1970's NCI began developing broad public and professional information programs on smoking

through its Office of Cancer Communications (OCC). A number of the products from these programs have been identified in the preceding discussions on applications of research results related to the intervention trial areas. Additional efforts are described herein.

General Self-Help Information

Cancer *Prevention Brief: Tobacco* presents an overview of the science relating tobacco use to cancer and other health problems. It also summarizes recent trends in the use of tobacco and outlines key strategies for prevention. It includes a selected bibliography.

An updated version of Clearing *the Air,* a self-help smoking cessation booklet, was produced in 1987. This booklet is among the most popular produced by OCC and through the OCC supermarket distribution program. Since the booklet was first produced in 1977, approximately 7 million copies have been distributed. The revised version is a compilation of methods and techniques for giving up cigarettes, including information on fighting withdrawal symptoms and handling relapse.

An OCC publication developed especially for Hispanics, Guia *Para Dejar de Fumar,* became available in late 1988. This four-color self-help smoking cessation booklet was prepared for Spanish-speaking Americans through an STCP grant. It is being promoted through public service announcements on Spanish-speaking radio and television stations and through Hispanic and health organizations.

Health Professional Intervention Materials

The OCC has historically tried to increase the involvement of health professionals in counseling patients about cessation of tobacco use through such products as a speaker's kit for use by physicians and local organizations to present a community-based smoking education program, a cessation kit for use by physicians to help their patients stop smoking, and a similar kit adapted for use by dentists and dental professionals.

Based on the evaluation results of these earlier physician and dentist kits, *Quit for Good* was developed in *1982.* It featured a health professional guide, waiting room materials, and 50 sets of two patient booklets, *Quit It,* a redesigned version of Clearing *the Air,* and a new piece, *For Good,* which focused on maintenance of nonsmoking rather than initial cessation. The "Quit for Good" kit was promoted beginning in 1984 by direct mail to 120,000 dentists, cardiologists, chest physicians, community health physicians, and black physicians and through print advertisements, editorial mention in professional journals, and exhibits at major medical meetings. About 60,000 kits have been distributed to date.

In collaboration with ACS, the physician component of the *Quit for Good* kit was revised and is called *Quit for Good: A Practitioner's Stop-Smoking Guide.* The guide became available in April 1989 and is being promoted separately by both NCI and ACS, with each organization packaging it with supporting materials, including self-help booklets. The revised guide, which was pretested during development, is based on the protocol that has resulted from the STCP physician and dentist intervention trials. This new protocol includes involvement of the entire office support staff in identifying smokers and encouraging and supporting their quit attempts. The new kits include waiting room materials and chart reminders to focus the physician, office staff, and patients on smoking cessation.

The *Pharmacist's Helping Smokers Quit* kit, similar to the physician and dentist kits, was developed in 1986 in collaboration with the American Pharmaceutical Association (APhA). The distinctive feature of this program is its focus on drug interactions in smoking. The kit contains a pharmacist's guide, counter cards, posters, and sets of take-home materials for 25 patients. In addition, OCC and APhA worked with a private vendor to

produce a special patient education label for containers that warn of possible adverse smoking-drug interactions. The program, launched in June 1986 at a national news conference, was promoted in succeeding months by direct mail to 25,000 members of the association, a special mailing to chain drugstore owners, and print advertisements and editorial mention in pharmaceutical journals. A second wave of direct mail promotions was conducted during summer 1987 targeting the Nation's 67,000 retail and hospital pharmacies. The kit was promoted in 1988 to APhA's student chapters. Response to the direct mail promotions has been about 15 percent, with about 15,000 kits distributed. Total distribution of the kits reached 40,000 by 1989. The OCC has conducted two focus groups of pharmacists, and APhA conducted a survey of kit users to evaluate kit materials and to learn more about pharmacist opportunities for smoking cessation counseling. Based on this evaluation, OCC plans to work with APhA to revise kit materials in late 1989 before a new wave of promotion to pharmacists,

Smoking **Policy** and **Worksite** Information

Smoking Policy: Questions *&* ***Answers (Q&A) was*** developed by NCI and the Smoking Policy Institute. It is a series of 10 interviews with experts in areas related to smoking and the workplace. Topics covered in one-page discussions are the health effects of environmental tobacco smoke, implementation of smoking policies, strategies for selecting smoking cessation programs, costs and benefits of smoking restrictions in the workplace, smoking policies and the unions, smoking policies in health care institutions, smoking and the female work force, smoking and the blue-collar work force, and smoking in the workplace, with factsheets on both ventilation and legal issues. The Q&A sheets are to be made available to health departments, employers, and others who need information on smoking policy.

Smokeless Tobacco Materials

Chew or Snuff Is Real Bad Stuff is a brochure designed for adolescent boys. The brochure, developed to be graphically appealing to the target audience, highlights the adverse health and social effects of using smokeless tobacco.

A Guide to Make Young ***People Aware of the Dangers of Using Smokeless Tobacco*** was developed by NCI and the American Academy of Otolaryngology-Head and Neck Surgery, Inc. It is an aide for teachers in providing adolescent boys (ages 10 to 18) with information in a nonjudgmental manner about the social influences and health consequences of using smokeless tobacco. Both the guide and the brochure include a foldout color poster. The NCI and the academy have promoted the materials to school-related organizations and through media attention during the AAO-sponsored *Through* ***With Chew*** held in February 1989. The day marks the anniversary of the death of Sean Marsee, a youth who died of oral cancer related to his use of smokeless tobacco.

Resources for Smokeless Tobacco Education provides descriptions of and ordering information for a variety of print and audiovisual materials related to smokeless tobacco that have been developed by both public and private organizations.

The Cancer Information Service

In 1976, NCI established the Cancer Information Service (CIS), a toll-free telephone public inquiry system providing information about cancer. CIS offices are located near major cancer research centers across the United States. In addition to providing telephone assistance, CIS offers free printed materials on subjects ranging from types of cancer and treatments to smoking cessation. Many of the materials developed by OCC are distributed through the CIS network. The CIS receives approximately 80,000 calls from smokers

annually. In summer 1986, OCC collaborated with NCI's Division of Cancer Prevention and Control (DCPC) to develop a slide training program for CIS staff to help them better counsel patients who smoke on how to stop. This represented the first formal training effort for CIS staff on the topic of smoking since the service was launched.

The OCC has collaborated with the Office on Smoking and Health to develop four television public service campaigns that refer viewers to OCC materials or the CIS toll-free number. The most recent campaign, launched in January 1989, encourages smokers to keep on trying to quit, even if they have failed before, and to call the CIS for tips and support.

Through the CIS, DCPC is supporting two cancer communications research projects focused on smoking. In Seattle, researchers are studying the effectiveness of a smoking, cessation hotline service for blue-collar workers. In New York State and Pennsylvania, investigators are testing the effectiveness of television public service advertisements and self-help materials tailored to specific audiences.

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Appendix A: Supplemental Data Tables

This appendix contains several additional tables of data on the prevalence and patterns of smoking and other forms of tobacco use. The data are derived from the two most recent and comprehensive sources of this data: the I987 National Health Interview Survey (NHIS) and the U.S. Census Bureau's 1985 Current Population Survey (CPS).

TABLE I.-Cigarette Smoking Among the U.S. Population (Percent) by Sex and Age, All Races

Sex/Age	Smoking Status: Never Smoked	Former Smoker	Current Smoker: Cigarettes Per Day 1-14	15-24	25+	Total Prevalence*
Males and Females						
18+	48.4	22.8	9.1	11.8	7.6	28.8
Males:						
18+	39.9	28.9	8.6	12.2	10.2	31.2
18-19	74.2	4.3	9.3	10.1	2.2	21.6
20-24	61.1	7.8	12.5	13.8	4.8	31.1
25-34	47.8	17.4	10.9	13.6	10.0	34.8
35-44	35.3	28.1	8.0	13.4	14.9	36.6
45-64	26.4	40.1	7.0	12.6	13.8	33.5
65+	29.4	53.4	5.6	7.0	4.4	17.2
Females:						
18+	56.0	17.4	9.6	11.5	5.2	26.5
18-19	73.4	5.7	11.2	8.5	1.1	20.9
20-24	61.5	10.5	13.3	11.1	3.5	28.1
25-34	52.6	15.6	11.5	13.7	6.5	31.8
35-44	51.1	19.4	9.5	13.0	6.7	29.6
45-64	50.7	20.7	8.8	12.9	6.6	28.6
65+	66.5	19.8	5.8	5.7	2.1	13.7

*Includes unknown amount.

Source: 1987 National Health Interview Survey.

TABLE 2.—Cigarette Smoking Among Racial/Ethnic Groups (Percent) by Race, Sex, and Age

Race/Sex/Age	Smoking Status: Never Smoked	Former Smoker	Current Smoker
Whites (non-Hispanic)			
Males and Females:	46.2	24.8	29.0
Males:	38.2	31.2	30.6
18-24	62.7	7.3	29.9
25-34	47.5	18.2	34.3
35-44	34.0	29.7	36.3
45-64	2j.6	42.1	32.3
65+	28.7	55.6	15.7
Females:	53.5	19.0	27.5
18-24	59.9	10.9	29.2
25-34	49.4	17.5	33.2
35-44	48.8	21.1	30.1
45-64	48.1	22.0	30.0
65+	65.6	20.3	14.1
Blacks (non-Hispanic)			
Males and Females:	52.3	14.8	32.9
Males:	42.3	18.9	38.9
18-24	73.0	3.4	23.6
25-34	42.4	12.4	45.2
35-44	36.4	19.1	44.5
45-64	26.9	29.5	43.6
65+	31.1	37.8	31.1
Females:	60.3	11.5	28.2
18-24	76.3	3.5	20.2
25-34	56.4	7.9	35.7
35-44	51.8	12.5	35.8
45-64	53.0	18.4	28.6
65+	72.2	15.9	11.8
Hispanics			
Males and Females:	60.3	16.1	23.6
Males:	49.3	20.7	30.0
18-24	68.4	7.0	24.6
25-34	54.8	16.7	28.6
35-44	39.6	24.5	35.9
45-64	31.3	33.0	35.8
65+	39.7	39.0	21.3
Females:	70.0	12.1	18.0
18-24	75.1	6.6	18 3
25-34	66.0	12.6	21.4
35-44	66.5	14.8	18.7
45-64	71.3	12.9	15.8
65+	72.8	17.2	10.0

Source: 1987 National Health Interview Survey.

TABLE 3.—Quit Attempts by Current Smokers: The Percent of Smokers Who Have Tried to Quit by Sex and Amount of Cigarettes Smoked Per Day

Sex/Amount Smoked	Ever Tried	More Than Once	Within Past Year
Males:			
1-14/day	64.6	43.4	36.6
15-24/day	67.4	43.7	34.4
25+/day	66.2	39.8	24.6
Any amount/day'	65.7	41.9	31.4
Females:			
1-14/day	67.7	45.8	40.1
15-24/day	66.7	43.7	31.7
25+/day	65.0	39.4	27.9
Any amount/day'	66.6	43.5	33.8

'Including unknown.

Source: 1987 National Health Interview Survey.

TABLE 4.-Prevalence of Smokeless Tobacco Use (Snuff and/or Chew) Among the U.S. Population by Sex and Age

	Smokeless Tobacco Use		
Sex/Age	Never Used	Former User	Current User
Males:			
18+	84.1	9.8	6.1
18-24	79.8	11.3	8.9
25-34	84.9	9.1	6.0
35-44	87.6	7.7	4.7
45-64	85.9	9.1	4.9
65+	79.6	13.6	6.9
Females:			
18+	98.8	0.5	0.6

Source: 1987 National Health Interview Survey.

TABLE 5.—Prevalence of Pipe and Cigar Smoking Among the U.S. Population by Age and Sex

Sex/Age	Pipe Smoking Status			Cigar Smoking Status		
	Never Smoked	Former Smoker	Current Smoker	Never Smoked	Former Smoker	Current Smoker
Males:						
18+	81.4	15.2	3.4	81.4	13.3	5.3
18-44	90.3	7.4	2.3	88.6	6.7	4.8
45+	67.9	27.2	4.9	70.5	23.3	6.2
Females:						
18+	99.7	0.3	0.0	99.6	0.3	0.1

Source: 1987 National Health Interview Survey.

TABLE 6.-Responses to Selected Attitude/Knowledge Questions by Smoking Status and by Sex

Percent of Population Who Strongly Agree With Statement

	Smoking Status			Sex		
	Never Smoked	Former Smoker	Current Smoker	Males and Females	Males	Females
Cigarette smoking is related to lung cancer.	85.2	83.6	68.7	79.6	78.8	80.2
Most deaths from lung cancer are caused by cigarette smoking.	23.5	21.7	11.3	19.3	18.9	19.8
The smoke from someone else's cigarette is harmful to you.	34.3	25.8	10.6	2j.5	23.0	27.7

Source: 1987 National Health Interview Survey.

Percent Current Users of Snuff and Chewing Tobacco by Region, Division, and State: ≥16-Year-Old Males (continued)

West North Central	2.9	1.0	4.7	1.3	7.5	1.6
Minnesota	3.5	2.5	2.8	2.2	6.1	3.2
Iowa	1.8	1.9	4.6	2.9	6.4	3.4
Missouri	3.1	2.1	3.6	2.2	6.7	3.0
North Dakota	6.1	3.1	5.1	2.9	10.7	4.0
South Dakota	1.9	1.7	6.1	3.0	7.9	3.4
Nebraska	1.4	1.6	6.8	3.4	8.0	3.6
Kansas	3.3	2.5	8.6	3.9	11.7	4.4
South	2.7	0.5	6.0	0.7	8.3	0.8
South Atlantic	1.8	0.5	5.2	0.9	6.7	1.0
Delaware	0.6	1.2	2.4	2.3	3.0	2.6
Maryland	0.4	0.8	2.1	1.8	2.4	1.9
District of Columbia	0.0	0.0	0.4	1.0	0.4	1.0
Virginia	2.3	1.9	6.2	3.1	7.8	3.5
West Virginia	11.5	4.4	13.5	4.8	23.1	5.9
North Carolina	1.8	1.0	8.6	2.1	9.8	2.2
South Carolina	0.7	1.1	5.3	3.0	6.1	3.2
Georgia	1.4	1.6	7.3	3.4	8.7	3.7
Florida	1.1	0.7	1.9	0.9	2.9	1.1
East South Central	2.7	1.1	9.4	1.9	11.6	2.1
Kentucky	3.2	2.4	11.2	4.4	13.6	4.7
Tennessee	1.7	1.8	9.3	4.1	10.3	4.2
Alabama	1.7	2.0	6.6	3.9	8.3	4.3
Mississippi	5.7	3.3	11.4	4.5	16.5	5.3
West South Central	4.0	1.0	5.5	1.1	9.1	1.4
Arkansas	6.0	3.4	9.5	4.2	14.7	5.1
Louisiana	2.5	2.2	5.8	3.2	8.0	3.8
Oklahoma	4.8	2.9	6.7	3.4	11.0	4.2
Texas	4.0	1.4	4.6	1.5	8.2	2.0
West	1.4	0.4	3.3	016	4.5	0.8
Mountain	2.3	1.1	5.4	1.6	7.5	1.9
Montana	5.5	3.1	8.3	3.7	13.7	4.7
Idaho	2.3	2.1	6.7	3.5	8.7	3.9
Wyoming	3.4	2.8	13.0	5.2	15.8	5.7
Colorado	1.2	1.6	6.4	3.6	7.5	3.9
New Mexico	5.3	3.0	5.2	3.0	10.2	4.1
Arizona	2.0	2.1	3.8	2.8	5.4	3.4
Utah	0.9	1.3	3.0	2.4	3.7	2.7
Nevada	1.5	2.0	2.8	2.7	4.3	3.3
Pacific	1.0	0.4	2.6	0.7	3.4	0.8
Washington	1.8	1.9	6.1	3.5	7.1	3.7
Oregon	2.7	2.5	5.4	3.4	7.6	4.0
California	0.7	0.5	1.7	0.7	2.3	0.8
Alaska	2.5	2.2	6.3	3.4	8.8	4.0
Hawaii	0.2	0.7	0.4	0.9	0.7	1.2

Source: Marcus et al. *NCI Monogr 1989.*

Appendix B: Project Abstracts

This appendix contains abstracts of the various intervention research projects supported by the Smoking, Tobacco, and Cancer Program during the period 1985 to 1990. They are grouped as follows:

- Phase II Studies
- Phase III/IV Intervention Trials
- Community Intervention Trial for Smoking Cessation

Within each grouping, the abstracts are organized alphabetically by the name of each project's principal investigator.

Project Abstracts: Phase II Studies

Cigarette Taxation, Addiction, and Smoking Control

Principal Investigator: Frank Joseph Chaloupka IV, Ph.D.
Performing Organization: National Bureau of Economic Research

The specific aim of this project is to examine empirically the effects of using cigarette excise taxes to discourage cigarette smoking. Also of interest is the impact of clean indoor air laws on cigarette smoking behavior. An empirical framework was developed from a theoretical model of rational addictive behavior that resulted in cigarette demand equations and smoking decision equations that are quite different from those used in the past.

The predictions of the model concerning the direction magnitude of past, current, and future cigarette prices and past and future cigarette consumption, as well as the magnitude of the long-run price elasticity of demand, will be tested empirically using cycle I of the National Health and Nutrition Examination Survey and its followup. The combination of these surveys yields a longitudinal data set with a unique quantity of information on lifetime cigarette smoking patterns.

Some specific questions that will be addressed are: Is cigarette smoking an addictive behavior? Do smokers behave myopically or rationally? How responsive are cigarette smokers to changes in the price of cigarettes? What do these estimates suggest about the magnitude of the response of cigarette smoking to changes in the Federal excise tax rate on cigarettes? Are the effects limited to infrequent smokers or, as the model suggests, do heavy smokers respond more to price changes in the long run than light smokers? Are the price-induced changes in smoking limited to reductions in the number of cigarettes consumed or do they lead to smoking cessation as well? How are smoking initiation and cessation affected by changes in the price of cigarettes? Are there differential price effects across sexes and/or races?

Using epidemiological studies from the 1970's and 1980's, the results obtained from the estimated demand equations will be used to predict the health consequences of the reductions in smoking provoked by increases in the Federal excise tax rate on cigarettes, particularly the reductions in the smoking-related cancers induced by changes in taxes.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-48360
Project Period: 8/1/88-1/31/90

Smoking Cessation and Relapse Prevention: A Community Intervention Project

Principal Investigator: Susan Goldstein Curry, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

The overall purpose of this developmental project was to lay the foundation for a controlled investigation of the effectiveness of mass communication of a recently developed Relapse Prevention Program for smoking cessation. The long-range goals were to: (1) develop an effective method of applying relapse prevention procedures on a community-wide basis, and (2) demonstrate the effectiveness of these procedures in a comparison study involving experimental and control communities in the State of Washington. The specific goals of the developmental project were to: (1) select and

develop liaison with target communities, (2) develop existing relapse prevention materials for community-wide dissemination, and (3) develop outcome assessment strategies.

This project surveyed existing databases and research literature for information relevant to the selection of target communities, developed relapse prevention program materials for mass dissemination, and prepared a phase IV defined population study grant proposal for implementation of the study at the conclusion of the developmental project. Specific tasks included: (1) reviewing census and other population data for potential target communities, (2) preparing profiles of potential target communities and rank ordering their desirability (e.g., in terms of potential travel distance and comparability of community organizations), (3) reviewing existing mass media smoking cessation and other health care promotion programs, (4) assessing the cost of different program delivery formats, and (5) assessing the cost and feasibility of different outcome assessment strategies (e.g., per capita cigarette sales, thiocyanate testing).

Project Officer: Carlos Caban, Ph.D.
Identification Number: P50-CA-34847 (Subproject D1)
Project Period: 7/83-6/85

Multiple Measures of Reducing Passive Smoke Exposure in the Workplace

Principal Investigator: Karen M. Emmons, M.A.
Performing Organization: Brown University Medical School

This study is designed to validate methodologies for detecting low levels of smoke constituents found in nonsmokers and to evaluate the impact of a total worksite smoking ban on passive smoke exposure. Before, and 6 months following implementation of a smoking ban in the experimental worksite, the following measurements of passive smoke exposure will be taken: (1) saliva cotinine; (2) active sampling of nicotine and respirable particulate matter (RSP); (3) passive sampling of nicotine, cadmium, and RSP; (4) indoor sampling of ambient air quality; and (5) self-monitoring of exposure. In addition, spirometric measurements of lung function will be taken before and following the ban to further assess its health impact.

The goal of this project is to determine which of these assessment methods provides the most sensitive and specific measurement of passive smoke exposure and to determine the reduction in exposure produced by a worksite smoking ban. This study has implications for smoking policy development in the workplace and for the development of worksite health promotion programs.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-48437
Project Period: 9/30/88-9/29/90

Pediatricians' Role in Smoking Prevention and Cessation

Principal Investigator: Barbara L. Frankowski, M.D.
Performing Organization: University of Vermont

Pediatricians have frequent interactions with the parents of infants and young children who would not otherwise have contact with the medical profession. The major goal of this project is the initial development of effective methods for providing smoking prevention and smoking cessation advice in pediatricians' offices.

The specific aims are to: (1) identify the current attitudes and activities of pediatricians as these relate to providing smoking prevention and smoking cessation advice to both parents and children; (2) identify the current attitudes, perceived needs, and smoking behavior of parents visiting their child's pediatricians as these relate to their pediatrician providing them with smoking prevention or smoking cessation advice; and (3) develop protocols for pediatricians to use in their offices to help prevent the onset of smoking and to reduce the prevalence of smoking among both parents and children.

These specific aims will be achieved by: (1) surveying all pediatricians (n=90) in Vermont by mail and telephone, using a questionnaire we have pretested among pediatricians in Maine; (2) interviewing 20 pediatricians in depth concerning their smoking prevention and smoking cessation activities in practices randomly selected from those of the pediatricians responding to the survey; and (3) interviewing 600 parents visiting their child's pediatrician in 12 practices randomly selected from those of the respondent pediatricians.

The results of the survey of pediatricians, the indepth interviews with pediatricians, and the interviews with parents will be used to devise the educational objectives and content of a smoking cessation intervention for pediatricians to use in their offices targeting the parents of the children they treat.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-48364
Project Period: 9/1/88-9/30/90

Identification of Biochemical Markers in Smokers' Breath

Principal Investigator: Sydney M. Gordon, Ph.D
Performing Organization: IIT Research Institute

Cessation of smoking substantially decreases the risk of lung cancer among smokers, but the benefit of programs aimed at reducing smoking are sometimes difficult to assess. As self-reported smoking behavior is often unreliable, independent biochemical verification is necessary to validate survey data and monitor compliance.

The ultimate objective of this research program was to develop a noninvasive detector to validate compliance with smoking intervention strategies using volatile organic constituents in expired air. The basic hypothesis was that the exhaled breath of smokers contains volatile organic compounds (VOC) that can be used to determine smoker status. An earlier study found that benzene concentration in the exhaled breath of smokers was substantially higher than that of nonsmokers. The data were generated as part of the TEAM (Total Exposure Assessment Methodology) study that measured human exposure to VOC's in the breath of a group of subjects in New Jersey. Although data were obtained

on 100-200 volatile constituents in the breath of each participant, the TEAM study focused on only 20 preselected compounds (including benzene) and ignored the remaining measured volatiles. A subset of the complete database (69 samples) was evaluated to test the hypothesis.

The raw GC/MS data were first conditioned using a set of special computer algorithms. Thereafter, all the variables (GC/MS peaks) were screened both individually and in combination for statistical significance using one-way analysis of variance and stepwise discriminant function analysis.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: R03-CA-43959
Project Period: 8/1/86-7/31/88

Cigarette Smoking Cessation and Relapse

Principal Investigator: Jeffrey E. Harris, M.D., Ph.D.
Performing Organization: Massachusetts Institute of Technology

This research sought to determine the most significant predictors of cigarette smoking cessation and relapse in large, nationally representative, computerized data samples. The main goal of the project was to identify successful "self-help" cessation strategies for the general population.

The analysis focused on the determinants of making quit attempts, the probability of long-term abstinence, and the duration of unsuccessful quit attempts. Special attention was given to the behavior of continuing smokers after a failed attempt, particularly the likelihood of a renewed attempt to quit smoking. Both cross-sectional and longitudinal panels, retrospective and prospective, were studied by means of advanced statistical techniques specifically designed by biological and social scientists for such data bases.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: R03-CA-41117
Project Period: 8/1/85-7/31/86

Conditioned Craving for Cigarettes and Related Phenomena

Principal Investigator: Nancy C. Hemmes, Ph.D.
Performing Organization: Queens College, City University of New York

This project investigated the basic behavioral factors underlying persistent smoking behavior. The project tested predictions of the Pavlovian conditioning model, particularly in regard to known deterrents to abstinence from smoking. The goal of the proposed research was to demonstrate conditioned control of cigarette craving (through both objective and subjective indices) and related behavioral and physiological phenomena.

In experiment 1, dependent measures sensitive to cigarette deprivation in experienced smokers were sought. These measures included stated intensity of cigarette craving, rate of smoking, performance on a cognitive task, and heart rate. In experiment 2, experienced smokers were exposed to a Pavlovian conditioning procedure in which

one cue was paired with smoking while another cue was paired with abstinence from smoking. Probe sessions and a random control group were used to confirm the associative status of observed behavioral and physiological effects.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-46698
Project Period: 8/15/87-7/31/89

A Study of Black Physicians and Smoking Intervention Strategies

Principal Investigator: Gary King, Ph.D.
Performing Organization: Westat, Inc.

The objective of this project was to conduct a baseline study of the characteristics, use, and views of black physicians, in direct patient care, toward smoking intervention strategies for their patients.

The study entailed a nationwide random sampling of black physicians in training and in medical practice. A mail questionnaire was sent to selected physicians to obtain data about five primary areas related to smoking intervention stategies. These areas included: the professional characteristics of the respondents, the demographic and socioeconomic characteristics of their patients, the incidence of smoking among their patients, the present use and effectiveness of smoking intervention strategies, their opinions about various smoking intervention strategies, and their suggestions and recommendations for the use of intervention strategies designed to stop cigarette smoking among their black patients. Two focus groups comprised of black doctors and patients and a smoking intervention specialist discussed various phases of the study.

Because the majority of black physicians have clienteles that are predominately black, this study provided reliable and previously unavailable data about the present use and potential of provider-directed smoking cessation strategies for minority groups.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-42696
Project Period: 9/20/85-2/18/88

Development of Methods for Study of the Effects of Worksite Smoking Policies

Principal Investigator: Susan Kinne, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

Worksite smoking policies may encourage smoking cessation, but there is currently little evidence of their impact. This project will provide two kinds of information to aid in the evaluation of the impact of worksite smoking policies on employee smoking cessation.

First, a telephone survey of a population of manufacturing worksites in Seattle, Washington, will provide data on smoking policy prevalence and restrictiveness. This will create a directory of worksites for future study and worksite interventions.

Second, analysis of detailed information on organizational variables from a stratified sample of these worksites will suggest factors that may confound any apparent relation between policy restrictiveness and smoking cessation. These variables may then be controlled or matched in future studies evaluating the effect of worksite smoking policies.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-34847 (Project I 4)
Project Period: 7/88-6/90

Parametric Survival Analysis for Smoking Cessation Data

Principal Investigator: Kenneth J. Koehler, Ph.D.
Performing Organization: Iowa State University

Optimal statistical data analysis techniques have not been developed for smoking cessation studies with smoking out (abstinence versus smoking) as the response variable. This project developed and evaluated statistical methods for modeling and analyzing correlated survival data, methods needed for studies where there is interaction among respondents that causes the survival times of some respondents to be affected by the other respondents' results. This occurs in comparative smoking cessation studies where subjects are treated in groups of about 8 to **12** people. Individuals in the same group interact, some are spouses or acquaintances, and the length of time that an individual remains abstinent (the survival time) can be affected by the performance of other members of the same group. Furthermore, some subjects may remain permanently abstinent, so a limited. failure population (LFP) model was constructed to provide a means of estimating the proportion of subjects that will never fail (return to smoking). This could be viewed as a cure rate for other types of human health studies.

The procedures developed are quite general and have been shown to make appropriate adjustments for correlations among responses, The approach is semiparametric, using the two-parameter Weibull distribution for the survival time of the subjects that eventually fail, which also contained a third parameter representing the proportion of subjects that will not fail (the cure rate). Instead of directly modeling the correlations, the approach used resampling techniques, such as the bootstrap or jackknife procedures, to adjust standard errors of the estimates of the parameters in the LFP model and related confidence intervals for the correlations. These techniques were evaluated with an extensive simulation study, and it was found that they generally provide very reliable estimates of parameters, standard errors, and confidence intervals. Application of our procedures to the analysis of data from two smoking cessation studies also indicated that it effectively accounts for correlations among responses.

The simulation study showed that: **(1)** terminating the study too early can substantially reduce the precision of parameter estimates, especially the estimate of the proportion that will never fail (the cure rate); and (2) the study should be continued until the time at which at least 80 percent of the subjects that will eventually fail have been observed to fail. For smoking cessation studies, this is typically no longer than 6 to 12 months. In smoking cessation programs, the size of the treatment groups may influence the effectiveness of the program, and this must also be considered in selecting group sizes. The

simulation study also indicated that the bootstrap procedure is superior to the jackknife procedure in most situations.

To summarize, the semiparametric procedures developed through this project have been shown to be very effective and reliable in dealing with correlated survival data, and a FORTRAN program has been developed for implementing these procedures.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-44020
Project Period: 9/1/86-5/17/88

Cognitive and Social Support Mediators of Response to a Televised Smoking Cessation Intervention

Principal Investigator: Frederick J. Kviz, Ph.D.
Performing Organization: University of Illinois at Chicago

This project was a prospective, longitudinal study of the role of cognitive and social support factors as mediators of participation and behavior outcomes for an intensive smoking cessation intervention (televised program, self-help manual, and maintenance procedures). These relationships were studied at the individual level and by considering the intervention experience as a process consisting of registration, participation, and repeated response episodes. The project elaborated on the process of participating in a television-based smoking cessation clinic to enhance understanding of factors that influence participant self-selection, nature and extent of participation, and behavioral outcomes and expectations.

Specifically, this project addressed the following aims: (1) to identify configurations of factors that predispose individuals to register in the program; (2) to examine the ability to predict the nature and extent of program participation from the predisposing factors; (3) to examine the ability to predict the change in cognitive and social support factors during the intervention from predisposing factors and program participation; (4) to examine the ability to predict short-term (within 3 months), intermediate (within 12 months), and long-term (24- and 36-month) behavior outcomes from the predisposing factors, change in cognitive and social support factors, and program participation; (5) to identify natural social support resources available to and used by program participants according to the predisposing factors and behavior outcomes; (6) to examine the relationships among social support and cognitive mediators of response to the intervention; (7) to examine differences in use and perceived helpfulness of maintenance procedures; and (8) to identify a parsimonious, longitudinal model of the smoking cessation process.

The analysis focused on repeated measures (pretest, posttest, and followups at 3, 12, 24, and 36 months) collected by telephone interviews with program participants and a one-shot, cross-sectional survey of a sample from the target population at the pretest.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 2)
Project Period: 7/86-6/89

Psychosocial Aspects of Response to a Televised Smoking Cessation Intervention

Principal Investigator: Frederick J. Kviz, Ph.D.
Performing Organization: University of Illinois at Chicago

This is an ongoing, prospective longitudinal study of the role of psychosocial factors in the smoking cessation process for registrants in a televised, community-based intervention program. The project is designed to enhance our understanding of the dynamic influence of psychosocial factors in the smoking cessation process. The goal of this project is to identify psychosocial factors that influence registration for a televised smoking cessation program, the nature and extent of program participation, and behavioral outcomes over time.

Relationships between program participation and behavioral outcomes will be examined with cognitive structure and social environment variables. The smoking cessation process is viewed as extending beyond the initial program cycle to incorporate subsequent cycles that include maintenance, relapse, late quitting, and recycling. The main analytical focus is on specifying and testing structural models of the smoking cessation process within a conceptual framework that incorporates the health belief model and self-efficacy theory along with aspects of social support and attribution of causation.

The project will study two independent random samples of registrants in a televised smoking cessation intervention conducted in 1987. A pre-post panel has been interviewed by telephone at preintervention and at four postintervention followup points (at the end of the program and at 3 months, 6 months, and 12 months postintervention); a post-only panel has been interviewed at the postintervention followup points. A 24-month followup will be conducted near the end of the current project year, and a final followup interview is proposed at 36 months, for a total of six postintervention followups.

Analyses will be conducted of data collected, analytical ideas will be pursued as insights emerge, and 36-month followup data will be collected and analyzed to assess the long-term smoking cessation process over a 3-year period.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 2)
Project Period: 7/89-12/91

Measurement of Smoking Cessation Interventions

Principal Investigator: Laura Catalin Leviton, Ph.D.
Performing Organization: University of Pittsburgh

This project developed and tested an instrument to measure variation in treatments and setting for smoking cessation interventions.

Twenty sites were studied: five behavioral interventions at worksites, five behavioral interventions at churches or other community organizations, five public service interventions at worksites, and five public service interventions at community organizations.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-41207
Project Period: 9/01/85-8/31/87

Smokeless Tobacco Use Among KY Youth: A Feasibility Study

Principal Investigator: Melody P. Noland, Ph.D.
Performing Organization: University of Kentucky

This project was a feasibility study that: (1) tested the efficacy of a survey designed to identify various characteristics associated with smokeless tobacco use, (2) tested the practicality of implementing a smokeless tobacco intervention program at the eighth grade level, and (3) field tested the procedures for measuring changes in the use of smokeless tobacco.

The survey was administered to 1,067 students in grades 7-12 in one metropolitan and one nonmetropolitan county in Kentucky. The nonmetropolitan county was a high-production area for tobacco. Saliva samples were collected from all subjects just before the administration of the survey, and 471 of these samples were later submitted for biochemical testing. In phase one of the study, saliva cotinine was used to distinguish self-reported tobacco users from nonusers and a combination of saliva cotinine and thiocyanate (SCN) tests was used to distinguish smokeless from cigarette users. The combination of cotinine and SCN was effective in distinguishing smokers from smokeless users but was not effective in distinguishing mixed use from the other two types of use. In the second phase of the study, 85 eighth graders in the metropolitan county were exposed to a three-session (55 minutes each) educational intervention program designed to prevent smokeless tobacco use. The primary features of the intervention included a peer teaching component, emphasis on the short-term effects of smokeless tobacco use, and student practice of resistance to persuasive appeals.

Analysis of survey data demonstrated that students' tobacco usage increased dramatically as the degree of personal involvement in raising tobacco increased. Of senior high school boys who had household involvement in tobacco, 100 percent had tried snuff and 42 percent had used it in the past 6 days; 80 percent had tried cigarettes and 53 percent had used them in the past 6 days. Compared with studies summarized by Boyd that used biochemical validation, the usage rates of the nonmetropolitan males in this study exceeded rates reported in all other studies.

The project also found that: (1) use of snuff was more popular than chewing tobacco; (2) a large number of male smokeless users also reported cigarette use; (3) of the nonmetropolitan high school boys who used snuff, 44 percent said they dipped during classes at school; (4) 80 percent of the students felt cigarette smoking was very harmful while only 28 percent believed smokeless tobacco use was very harmful; and (5) nonmetropolitan boys listed "free samples" as a significant factor influencing them to use smokeless tobacco.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-44004
Project Period: 9/01/86-3/31/88

Analysis of Laws Restricting Smoking in Public Places

Principal Investigator: Nancy A. Rigotti, M.D.
Performing Organization: Harvard University

Reducing the prevalence of cigarette smoking is an essential component of cancer control efforts. Public policies are social interventions that have the potential to reduce the prevalence of smoking by encouraging current smokers to quit and discouraging potential smokers from adopting the habit. Over the past decade, a growing number of states and communities have passed laws, often called Clean Indoor Air Acts, that restrict smoking in public places and workplaces. This legislation has the potential for widespread impact on both nonsmokers' involuntary smoke exposure and the prevalence of smoking. Both effects would contribute to reducing the incidence of cancer.

The goal of this project was to describe the prevalence and analyze the content of state and community legislation restricting smoking in public places for the eventual study of its impact on smoking behavior. To accomplish these ends, the project:

- Identified and collected all state laws enacted as of July 1, 1988, which restricted smoking in public places and/or workplaces.
- In a stratified random sample of U.S. cities, identified and collected local ordinances enacted as of July 1, 1988, which restricted smoking in public places and/or workplaces.
- Analyzed this information to estimate the prevalence of state and local clean indoor air laws, summarize the variability in their contents, and describe geographic and temporal trends in prevalence and content.
- Developed an index to qualify the degree of restrictiveness or comprehensiveness of these laws and used it to analyze geographic and temporal patterns in the strength of state and community clean indoor air laws.

The products of the study included: a current data base of state and local clean indoor air laws, methodology useful for future monitoring of the trend, analysis of the current status of these laws, and an index of policy strength for future evaluations of the impact of these laws.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-48386
Project Period: 8/1/88-7/31/89

Types and Timing of Relapse in Cigarette Smoking

Principal Investigator: Thomas C. Schelling, Ph.D.
Performing Organization: John F. Kennedy School of Government

This study described patterns in the types and timing of the return to smoking by 186 men and women who resumed smoking within 3 months of a quit attempt. In contrast to studies that seek to differentiate subjects who maintain abstinence from those who return. to smoking, this study focused exclusively on the experience of relapse. The sample was drawn from a larger prospective study of smoking cessation conducted by Arthur J.Garvey, Ph.D., of the Veterans Administration.

Data confirmed the existence of substantial variation in patterns of return to smoking. The majority of subjects did *not* immediately return to their new maximum level of regular consumption on smoking their first cigarette; rather, just over one-quarter, 27 percent, of the sample returned "immediately" after their first postcessation cigarette. Forty-two percent returned "gradually," with uninterrupted increased consumption. Thirty percent returned in an "interrupted" pattern, with intermediate periods of abstinence lasting more than 1 day. Detailed descriptive data on other behavioral and cognitive characteristics of the relapse and of prior smoking and quitting history were also reported.

The existence of a transitional period, sometimes protracted and sometimes incorporating intermediate attempts at renewed abstinence, suggests heterogeneity in processes of relapse and also the potential for interventions aimed at this time. Greater baseline motivation and optimism about the quit attempt and greater experience with quitting were associated with a greater likelihood of the more complex and protracted patterns of return to smoking after the first cigarette. Smokers with higher baseline motivation and quitting experience may thus be the best targets for direct relapse prevention efforts.

The baseline correlates of the more complex and protracted returns are consistent with a positive model of cumulative experience and confidence in quitting. However, correlations of characteristics of relapse with variables bearing on outlook for future cessation sugggest that the number of days of sustained abstinence before the first postcessation cigarette, and not the length or complexity of the subsequent return to smoking, is related to the attitudes the individual holds toward future quit attempts.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-41121
Project Period: 8/1/85-11/30/86

Tobacco Use and Attitudes Among Rural Youth

Principal Investigator: Kenneth J. Simon
Performing Organization: West Virginia University

This study was a survey of smokeless tobacco attitudes and practices among 4,230 West Virginia public school students in grades 5-12 selected by stratified random sampling procedures. The survey also included items on cigarette use. The primary goals of the project were to gather data that would facilitate the development of smokeless tobacco prevention and cessation programs for this population and to support the development of a more detailed phase III-V study in which the effectiveness of such intervention programs could be evaluated.

West Virginia residents have the highest per capita consumption of smokeless tobacco products of any state. West Virginia also has socioeconomic, cultural, and geographical characteristics that make it an excellent setting for studying smokeless tobacco use. The state is rural, yet industrial, with one of the lowest per capita incomes in the Nation and with a population that is poorly educated by national standards.

A detailed questionnaire was teacher-administered in schools selected through a sampling process. Data collection took place during a regular class period utilizing a standard administration protocol. Reliability estimates were adequate for all grade levels. Smokeless tobacco use was confirmed to be rather prevalent among this population. A majority of males had tried smokeless tobacco-54 percent in grades 5-6, 73 percent in grades 7-9, and 82 percent in grades 10-12. Corresponding figures for females were 17, 21, and 20 percent, respectively. The mean age for first use was around 10 years, and about 90

percent of those who had tried it had done so by age 13. Of importance was the finding that the younger the age of first use, the greater the chance of reporting current use.

Current smokeless tobacco users accounted for 16 percent of the total sample. Former users accounted for 10 percent, while 74 percent were never regular users. There were pronounced differences by gender: 17 percent of males in grades 5-6 were users, climbing to 29 percent in grades 7-9, and 39 percent by grades 10-12. Corresponding values for females were 3 percent, 1 percent, and 1 percent, respectively. There were also marked differences in beliefs by user status. Users tended to agree more often than non-users that smokeless tobacco helps people relax, helps athletes play better, helps people think better, can be a fun thing to do, and is safer than smoking; they less often agreed that smokeless tobacco is harmful to health. A majority of males reporting current use were daily users whereas only 20 percent of females were daily users. It is noteworthy that 20 percent of users reported a parent or older relative as the usual source for their smokeless tobacco. This underscores the cultural support that will need to be addressed in any program that hopes to reduce use.

The results of this project point out the importance of developing a multifaceted approach to smokeless tobacco use among young people, an approach that should be designed to reach families, community members, teachers, and coaches as well as youth themselves.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-46477
Project Period: 9/1/87-7/30/89

A Televised Self-Help Program for Smoking Cessation

Principal Investigator: Richard B. Warnecke, Ph.D.
Performing Organization: University of Illinois at Chicago

The purpose of this project is to identify how a televised self-help smoking cessation program reaches various segments of the smoking population and who among this group elects to participate.

Behavior changes in a population of smokers who watch the evening news will be modeled and compared with the behavior of a population who registered for the televised self-help intervention. In addition to assessing the long-term patterns of behavior with survival analyses, regression will be used to assess the incremental impact of various elements of the intervention, including the televised program, the manual, the maintenance condition, and social influence. Finally, the mediating processes that link the intervention to behavior will be modeled using covariance structure modeling techniques.

Existing data will be analyzed to answer questions about selection, competing perturbations, and the intervention. These analyses will be conducted on panels of the population and registrants who have been interviewed through 2 years' postintervention. Additional data will be collected at 36 months to expand the timeframe and to examine new hypotheses generated by the ongoing analyses. A new sample of the population will also be collected to determine measurement effects and to test hypotheses on a new sample of smokers.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 1)
Project Period: 7/89-12/91

Cigarette Advertising and Cancer Control

Principal Investigator: Kenneth E. Warner, Ph.D.
Performing Organization: University of Michigan

The objectives of this project were to assess the mechanisms by which the promotion of tobacco encourages use of tobacco and thereby contributes to related mortality and to examine the policy issues surrounding a national ban on tobacco promotion.

Traditional concern about the influence of tobacco promotion has focused on the impact of cigarette advertising on the direct enticement of young people to initiate smoking habits and for existing smokers to continue to smoke. An often-cited related influence is in advertising's contributing to a social environment in which smoking is deemed acceptable and even desirable. A second indirect mechanism is the impact of the media's dependence on cigarette advertising revenues. The threat of loss of essential revenues, it is argued, has encouraged editors and publishers to restrict coverage of smoking and health, to avoid it when possible, and to "tone it down" when not.

The critics of the media's self-censorship occasionally have alluded to the health implications of the resultant lack of coverage. No one, however, has effectively combined understanding of this self-censorship phenomenon with scientific understanding of the determinants of smoking and health knowledge and its impact on smoking behavior. Through a careful review and interpretation of the literature, this study traced and integrated the impact of advertising on media coverage; the effect of media coverage on consumer knowledge and attitudes; the effect of knowledge and attitudes on behavior change; and the impact of behavior change on health.

Regarding a national ban on tobacco promotion, the research examined the historical context, both within and outside the United States; the diverse political, economic, legal, and philosophical issues; and the likely effects on tobacco use and hence disease. Consideration of the issues included vigorous assessment of the empirical, largely philosophical examination of quantitative issues (e.g., freedom of expression through advertising versus the public's right-to-know).

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-39106
Project Period: 9/1/84-8/31/85

Project Abstracts:Phase III/IV
Intervention Trials

Accelerating Worksite Smoking Control Programs

Principal Investigator: David B. Abrams, Ph.D.
Performing Organization: Brown University/University of Rhode Island

Worksite smoking control programs can help reduce smoking prevalence and hence smoking-related cancers. Worksites provide access to all smokers regardless of their motivation to change and can reach high-risk subgroups such as blue-collar workers. Previous research conducted at 12 worksites (3,823 individuals; response rates 63 to 80 percent) confirms that, in terms of motivation to change, 7.5 percent of all smokers are ready for action, 20 percent and 61.3 percent are in contemplation or precontemplation stages, respectively, and 11.1 percent are not motivated at all.

This project extends to defined populations, the center's prior and current research in development of measures, and in controlled intervention trials. The aim is to recruit a representative sample of worksites within a geographic area. Of 106 worksites to be contacted, an estimated 74 (70 percent) will refuse entry and 32 (30 percent) will accept. A social marketing companion study of the refusals will be conducted to better understand the barriers to entry.

The 32 worksites that accept entry will be randomized into one of two conditions (n=16). The objective is to evaluate the efficacy and cost-effectiveness of a comprehensive organizational approach in comparison to a usual care (control> condition. The comprehensive organizational intervention will be sustained for 1 year to maximize diffusion within each workforce and includes interventions for both individual self-change as well as organizational change such as incentives, competitions, and policy. For efficiency of effort and cost, the interventions will be disseminated through a worksite resource center.

Outcome evaluation will be accomplished by means of three surveys of the workforce conducted at baseline and then repeated at 1 and 2 years. A focus will be on intermediate outcome evaluation (program, process, and mediating mechanisms). A cost-effectiveness analysis will be conducted. Final outcome will consist of 7-day and continuous abstinence rates, using saliva cotinine validation postintervention, at 1 year and at 12-month followup (2 years).

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-50087 (Project 2)
Project Period: 9/89-8/94

Self-Help Smoking Cessation at the Worksite

Principal Investigator: David B. Abrams, Ph.D.
Performing Organization: Miriam Hospital/Brown University

This 5-year program of research provided a controlled evaluation of the short- and long-term effectiveness of self-help smoking cessation programs at the worksite.

In phase I, three worksites participated in a randomized trial to compare individual self-help to two forms of group self-help (support and brief behavioral skills training). Results indicated that individual self-help was more cost-effective than group self-help ($196 versus $450 and $700 per quitter) using 12-month cotinine-validated followup data. Furthermore, there were no significant differences between conditions on overall

outcomes (20 percent; 11 percent; 10 percent) 7 day point prevalence abstinence although the trend was in the direction of the individual condition.

In phase II, four worksites were assigned to a comprehensive organizational intervention versus a more traditional "one-shot" individual approach. The focus here was on all the smokers in the workplace rather than simply those motivated to quit. Multiple, sustained, and serial interventions, including incentives, competitions, and a variety of treatment programs, were offered over an 8-month intervention. Preliminary results revealed that contact was made with more than 25 percent of the population of smokers as opposed to less than 10 percent of those ready to quit in traditional one-shot programs. Reductions in overall prevalence were in the range of 14 percent for the organizational approach versus 7.5 percent for the comparison minimal treatment condition.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38309
Project Period: 9/20/84-8/31/90

High-Risk Adolescent Smoking Cessation

Principal Investigator: Dennis V. Ary, Ph.D.
Performing Organization: Oregon Research Institute/Kaiser Foundation Research Institute

This is an experimental evaluation of a program to reduce smoking among adolescent members of an HMO. Affecting adolescent smoking through contacts with health care providers offers a promising complement to school-based and other attempts to affect teenagers' smoking.

The program consists of office-based screening and intervention, followup contacts. contacts with significant others, provision of additional cessation services, and outreach activities. The intervention is built around an expanded nursing role supported by HMO-wide program resources and will continue over a 2-year period.

Study subjects will consist of 700 adolescents ages 14 and 15 who self-report smoking one or more cigarettes in the week before screening. They will be identified through a process of questionnaire and telephone surveys of all HMO subscribers in the target age category. Those reporting smoking will be assessed in their homes, and data will also be collected from the mother. Brief questionnaire data and expired air carbon monoxide will be obtained from both the mother and the adolescent, Saliva samples will be obtained from the adolescents for later analysis of cotinine.

Following the pretreatment assessment, subjects will be randomly assigned to either receive the treatment or to be in a nontreatment control condition. Subjects will be assessed again at 1- and 2-year followup visits.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-44648 (Project 4)
Project Period: 4/87-3/90

Mass Media and Prevention of Adolescent Smoking

Principal Investigator: Karl E. Bauman, Ph.D.
Performing Organization: University of North Carolina at Chapel Hill

Three mass media campaigns were designed, implemented, and evaluated to assess their impact on the initiation of cigarette smoking by adolescents.

The campaigns were based on behavioral science theory and extensive formative research, and they were designed to be capable of ready distribution throughout the United States. The campaigns featured different combinations of 30- and 60-second radio and television messages on the expected consequence of smoking. Two campaigns included a peer-involvement component to stimulate young people to personally encourage others their age not to smoke cigarettes.

Ten Standard Metropolitan Statistical Areas in the southeast United States were in the research design; six areas received campaigns and four served as controls. Baseline data were gathered in the homes of adolescents and mothers. The campaigns were implemented during a 6-month period. Followup data were gathered 2 years after baseline.

The findings suggest that the consequences expected from smoking and the perception of friend approval of smoking were influenced as much by the least expensive radio campaign as by the more expensive campaigns that involved television and the peer-involvement component, that the peer-involvement component was not effective, and that the detection of effects for smoking was precluded by unexpectedly large variance within treatment conditions.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38392
Project Period: 7/1 l/84-5/31/90

Compliance With Nicotine-Bearing Chewing Gum

Principal Investigators: J. Allan Best, Ph.D., Douglas M.C. Wilson, M.D.
Performing Organization: University of Waterloo

Two randomized trials of physician-initiated smoking interventions were completed. Initial results appeared in the *Journal of the American Medical Association* (1988, 260(11):1570-4) and in the *Journal of Family Practice* (1989, 128(1):49-55).

The first study involved 83 physicians in 70 practices. The 70 practices were randomly allocated to one of three treatments: usual care (UC), gum only (GO), or gum plus (GP). Patients arriving at the physician's office for regularly scheduled visits were approached for study participation by the office receptionist. UC physicians were told to treat patients who were smokers in their usual manner. They were not alerted as to which patients had been enrolled in the trial by the receptionist. GO physicians were told to advise smokers to quit and to offer a prescription of nicotine gum. These physicians were alerted by the receptionist when a patient was recruited for the study. The GP physicians were given a 4-hour training session that dealt with the elements of a smoking cessation intervention. They were taught how to approach and advise patients about smoking cessation, to offer a prescription for nicotine gum and explain its appropriate use, to contract a quit date with the patient, and to make an offer of a quit date visit and four additional followups.

A total of 1,942 patients was recruited by the study physicians. The primary endpoint in the study was saliva/cotinine-validated smoking cessation at 1 year in addition to self-reported abstinence of at least 3 months. The results showed that GP physicians attained higher quit rates than the GO and UC groups, which did not differ from one another. The cessation rates, adjusted for differences in baseline covariates, were 8.8 percent, 6.1 percent, and 4.4 percent in GP, GO, and UC groups, respectively. Although the benefit of the GP intervention was not absolutely large, its impact on a population level is potentially very important.

The second study involved a comparison of two interventions. All physicians in this study received a training session similar to that received by GP physicians in the first study. Patients were recruited by office receptionists when they arrived at physician offices for regularly scheduled visits. Patients were randomly allocated to receive an intervention involving advice, self-help literature, contract for a quit date, and offer of followup support or a similar intervention with the added offer of a prescription of nicotine gum. The objective of this study was to determine whether the offer of gum had an effect on outcome when added to a relatively intensive intervention in a primary care setting.

A total of 223 patients was recruited to the study. The primary endpoint was saliva/cotinine-validated cessation at 1 year in addition to self-reported abstinence of at least 3 months. No difference between treatments was observed, but the confidence interval on the difference was sufficiently large that a meaningful benefit of gum could not be excluded. The absence of a gum effect is consistent with other findings on the effect of nicotine gum in primary care.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38334
Project Period: 9/30/84-8/31/87

A Comprehensive Approach to the Prevention of Smoking

Principal Investigator: Anthony Biglan, Ph.D.
Performing Organization: Oregon Research Institute

The purpose of this project was to develop and experimentally evaluate the effects of a comprehensive school-based smoking prevention program. The research had three major aims: (1) to compare the effects of the program with a no-treatment control condition at the end of 1, 2, 3, and 4 years of intervention; (2) to experimentally test whether deterrence is increased by a greater number of years of intervention; and (3) to determine whether smoking prevention effects are stronger when the program is targeted in middle schools or high schools.

The prevention program focused on teaching young people skills for dealing with social pressures to smoke. The program was presented in grades 6 through **12,** and all students in a given school receive the program. The in-class elements of the curriculum were supplemented by a schoolwide component and by features that increased parental influences not to smoke. Video instructional programs were developed for grades 6 through 12. Schoolwide activities were implemented in high schools.

The study was designed so that high schools and junior high schools that fed into it were randomly assigned to treatment or control. A total of 37 schools in Lane County and Portland, Oregon, participated in the study.

The project is completing its final year of data collection in 1989. Those data will be analyzed and the results presented in manuscripts for publication, The curriculum program will be printed and disseminated to all schools that participated in the study.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38273
Project Period: 8/1/84-8/31/90

Cancer Risk Reduction Through Smoking Prevention

Principal Investigator: Gilbert J. Botvin, Ph.D.
Performing Organization: Cornell University Medical College

This study was designed to extend previous research conducted with a promising smoking prevention approach called life skills training (LST). The LST approach attempts to reduce students' susceptibility to social influences to smoke and to enhance their general coping skills. This study tested the effectiveness of the LST prevention strategy both alone and in combination with schoolwide support activities in a heterogeneous population, including a mix of urban and suburban students.

Schools were randomly assigned to one of the three conditions after first blocking on variables associated with smoking onset. The final research sample consisted of 3,963 students from 20 schools in the New York City area who were assessed at the beginning of the seventh grade (pretest) and at the end of the seventh grade (posttest). A total of nine schools (1,438 students) were in suburban areas, and 11 schools (2,525 students) were in urban areas. The sample was 58 percent white, 20 percent black, and the remaining 22 percent were from other ethnic groups. Followup data were collected at the end of both the eighth and ninth grades.

Significant program effects were found for cigarette smoking at the initial posttest and again at the 2-year followup using individual-level data. Significant reduction in cigarette smoking was also obtained for the school-level analysis at the 2-year followup. These findings are of particular interest because program effects were determined with respect to daily smoking, which is the most significant with respect to cancer risk reduction. However, although the results were in the predicted direction for both treatment conditions, significant effects were only obtained for the individuals receiving both the classroom-based LST program and the schoolwide antismoking support activities. Significant intervention effects in the predicted direction were also evident for several mediating variables. Implementation evaluation data, along with the pattern of results concerning the mediating variables, suggest the presence of implementation difficulties in the urban schools. The presence of such difficulties, as well as the rather high truancy evident among urban students, suggests that effective implementation of smoking prevention programs in urban schools may be difficult to achieve. Additional research is needed to identify and overcome obstacles to effective implementation to affect high-risk populations that may be difficult to reach.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R18-CA-33917
Project Period: 8/1/83-7/31/86

Primary Prevention (Smoking) of Cancer for Black Populations

Principal Investigator: Gilbert J. Botvin, Ph.D.
Performing Organization: Cornell University Medical College

This study is designed to evaluate the effectiveness of a promising smoking prevention approach with black youth in grades seven through nine. The skills-based prevention approach will be evaluated using a combination of behavioral self-report items concerning cigarette smoking and hypothesized mediating variables.

Data collection instruments and project protocols have been completed and given approval by OMB. A pilot study designed to test the feasibility and acceptability of this prevention approach has been completed. The data from 900 seventh graders from nine schools have been collected and analyzed. A pilot test report was completed in June 1989, and the full-scale study involving 30 schools and approximately 4,000 students began in September 1989. Half of the 30 schools are assigned to the experimental condition and half to the control condition.

Project **Officer:** Gregory M. Christenson, Ph.D.
Identification Number: N01-CN-65006
Project Period: 9/30/86-9/29/91

Smoking Prevention Among New York Hispanic Youth

Principal Investigator: Gilbert J. Botvin, Ph.D.
Performing Organization: Cornell University Medical College

This study is evaluating the long-term effectiveness of the Life Skills Training Program in preventing onset of cigarette smoking among urban Hispanic students. Instruments and curriculum materials were reviewed and, where necessary, revisions were made to ensure a high degree of cultural sensitivity and acceptability. The results of a pilot study ($n = 471$) provided evidence of the feasibility, acceptability, and effectiveness of this prevention approach for reducing cigarette smoking in this population. In addition, this study indicated that Hispanic students who were more acculturated and had smokers as friends were more likely to smoke.

Following the conclusion of the pilot study, a large-scale prevention study was initiated with predominantly Hispanic, urban, minority students from 47 New York City public and parochial schools. Schools were randomly assigned to experimental and control conditions after blocking on school type, ethnic composition, and smoking prevalence. Students were pretested and posttested by questionnaire, and carbon monoxide samples were collected. First-year data from 3,153 seventh graders revealed significant program effects, using school as the unit of analysis, for cigarette smoking and several hypothesized mediating variables. These results extend the findings of previous research and demonstrate the generalizability of this approach to predominantly Hispanic, urban minority students attending public and parochial schools. Followup data will be collected during the eighth and ninth grades to determine the durability of these effects.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R18-CA-39280
Project Period: 7/1/85-6/30/90

Motivating and Mobilizing the Confirmed Smoker

Principal Investigator: Dee Burton, Ph.D.
Performing Organization: University of Illinois at Chicago

A strikingly high percentage (about 30 percent) of smokers in the population panel of a previous study have never tried to quit smoking. This group of "confirmed smokers" cuts across all socioeconomic and ethnic groups. Although clinical literature has reported a rich amount of data describing smokers who are motivated to quit, there is no comparable body of literature describing unmotivated or confirmed smokers.

The confirmed smoker appears to be an average-amount smoker who is unconcerned about smoking from the standpoint of health, social influences, or personal mastery; smokes for pleasure; enjoys stronger cigarettes; is fatalistic about causality as it relates to smoking; and is less likely than other smokers to have confidence in his/her ability to quit if he/she were to try to do so.

This project will conduct a series of assessments aimed at identifying factors with potential for motivating the confirmed smoker to want to quit smoking and mobilizing the confirmed smoker to participate in a televised self-help smoking cessation program. This set of assessments will take place in five phases. Phase one will consist of focus groups and structured interviews aimed at obtaining relatively in-depth qualitative information about potential motivators and mobilizers. Phase two will analyze data comparing confirmed smokers with other smokers from a new cross-sectional population telephone survey of 1,200 subjects. Phase three will analyze selected data from three projects, including smokers who are attempting to quit for the first time. Phase four will consist of a small laboratory experiment comparing three sets of motivational materials based on information gathered in the first three phases. Data analyses and report writing will comprise phase five.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 6)
Project Period: 7/89-12/91

Smoking Prevention in Hispanic Adolescents

Principal Investigators: Emilio Carrillo, M.D., M.P.H., 9/85-7/89, Sarah A. McGraw, M.A., 8/89-8/90
Performing Organization: New England Research Institute

This is a 5-year project to develop, implement, and evaluate a program aimed at smoking prevention in Puerto Rican adolescents in Boston, Massachusetts.

A baseline survey of 1,242 households that contain at least one eligible adolescent in both Boston, Massachusetts, and Hartford, Connecticut, was carried out during 1986-1987. The data from this survey, along with data from a behavior analytic study, provided necessary information for program development and content. The program consisted of multichanneled interventions designed to provide individual adolescents with the skills to resist both peer and media pressure to smoke and to create an environment in the adolescents' communities that is supportive of nonsmoking behaviors. The program was presented in schools, community festivals, the Hispanic media, family households, street

corners, and health centers. To date, 3,703 individuals are documented as having had contact with the intervention program.

The outcome evaluation will consist of a followup interview with the adolescents who were initially surveyed in Hartford and Boston. Hartford will serve as a comparison site for the Boston intervention.

The program was implemented and is being evaluated using a pretest and posttest design in the intervention (Boston) and comparison (Hartford) communities. The cohort of adolescents identified in the baseline (1986-87) survey of both cities will be reinterviewed following the intervention. Pretest and posttest measures were also obtained on the intervention program participants as part of the process evaluation. Analyses will focus on comparisons of pretest and posttest changes in smoking behavior between subjects in the intervention and the comparison communities.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R18-CA-39304
Project Period: 9/1/85-8/31/90

Physician Counseling for Smoking Cessation

Principal Investigators: Thomas J. Coates, Ph.D., Steven R. Cummings, M.D.
Performing Organization: University of California at San Francisco

This program, involving 200 private practice and HMO physicians and more than 17,000 patients, included a seminar to teach physicians about smoking cessation and several brief office-based procedures, the provision of specific cessation materials, instructions on the use of nicotine gum, and techniques for establishing a quit date. Particular attention was given to minimizing patient relapse and maximizing physician compliance.

Physicians could help many people quit smoking, but they receive little training about counseling smokers. An intensive program ("Quit for Life") was developed to teach physicians strategies for helping smokers quit: ask if patients smoke, motivate smokers to quit, plan quit dates, schedule followup appointments, and give smokers self-help pamphlets. To test the efficacy of this program, 40 internists in Kaiser-Permanente Medical Centers were randomly assigned to receive the training while 41 other internists served as controls. Internists enrolled in the program discussed smoking with more patients who smoked, spent more time counseling them about smoking, helped more patients set dates to quit smoking, gave out more self-help booklets, and made more followup appointments to discuss smoking than internists in the control group. One year later, the rate of biochemically confirmed, long-term (9 months) abstinence from smoking was 1 percent higher among all patients of trained internists than among patients of controls (95-percent confidence interval: -0.2 percent to +2.2 percent) and 2.3 percent (+0.2 percent to +4.3 percent) higher among the trained internists' patients who most wanted to quit smoking.

In another test of the program, physicians in private practice were recruited into a randomized trial. Physicians who received the experimental program counseled more of their smokers (64 percent) than did physicians in the control group (44 percent), spent more time counseling (7.5 vs. 5.2 minutes), set more dates to quit (29 percent vs. 5 percent of those counseled), scheduled more followup appointments about smoking (19 percent vs. 11 percent of those counseled), and gave more self-help pamphlets (37 percent vs. 9 percent). Despite these differences in counseling, no significant differences were found in long-term biochemically validated rates of smoking cessation between patients

in the experimental (3.2 percent) and control groups (2.5 percent, 95-percent confidence interval for the difference: -1.7 percent to +3.1 percent).

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38374
Project Period: 7/1/84-11/30/89

Stress and Social Support in the Self-Quitting of Smoking

Principal Investigators: Sheldon Cohen, Ph.D., Edward Lichtenstein, Ph.D.
Performing Organization: Carnegie-Mellon University

This research studied the influence of psychosocial factors, including stress and social support, on maintenance or relapse in persons attempting to quit smoking with little or no formal support. One outcome of prototypical ways by which smokers try to quit was also evaluated. Subjects were recruited from participants in the American Cancer Society Fresh Start programs, individuals who requested self-help materials from the Christmas Seal League (American Lung Association) and persons who quit without assistance as a New Year's resolution.

Strong evidence was found for a relation between decreases in stress and quitting and for increases in stress and relapse. Although causal inferences cannot be made from the data, arguments are made that smoking is stressful for persons wanting to quit and that quitting reduces stress. Social support from spouses and partners was found to relate to successful quitting. The *proportion* of positive (cooperation and reinforcement for quitting) to negative (policing and nagging) behaviors delivered by a spouse or partner was an excellent predictor of long-term maintenance of abstinence. The frequencies of positive and negative behaviors (alone or combined) were associated with short-term abstinence, but only the ratio of these behaviors was associated with long-term abstinence.

Project **Officer:** Gayle Boyd, Ph.D.
Identification Number: R01-CA-38243
Project Period: 9/1/84-8/31/88

Physician/Dentist Interventions for Smoking Cessation

Principal **Investigators:** Stuart Cohen, Ed.D., George Stookey, Ph.D.
Performing Organization: Indiana University School of Medicine and Indiana University School of Dentistry

The goal of this research program was to develop and validate practical methods that help physicians and dentists encourage their patients to stop smoking cigarettes. In parallel studies, 116 primary care physicians and 50 dentists in private practice and their entire panel of patients who smoked were randomly assigned to receive either fluorescent reminders attached to the charts of all smokers, free access to nicotine gum, neither, or both. To determine the amount and nature of the smoking counseling, research assistants interviewed smokers immediately after their regularly scheduled office visit. During the

exit interview, patients were asked about their current smoking status and were tested for breath carbon monoxide.

For physicians, the use of chart reminders or the availability of nicotine gum significantly increased the amount of time they spent counseling patients about smoking and resulted in a twofold to sixfold increase in validated patient quit rates 1 year later (Ann Intern Med 1989;110[8]:648-52). For dentists, only the nicotine gum conditions produced such results (J Am Dent Assoc 1989;118:41-5).

Stage I results showed that the interventions were efficacious when the implementation of the reminder stickers was done by the research assistants and the nicotine gum was provided at no cost. A second set of studies was designed to test the effectiveness of these interventions when implemented by the regular office staff. A new cohort of 36 primary care physicians from a large-staff model HMO and 38 dentists in private practice and their patients who smoke were randomly assigned to either an educational control group, to the best stage I intervention implemented by the "research staff," or the best stage I intervention implemented by their own office staff. For the office staff condition, offices were provided with a weekly list of names of their patients who were smokers and a supply of chart reminders and nicotine gum instruction sheets. In addition, nicotine gum prescriptions were the financial responsibility of the patients. Preliminary results were based on assessment of the office conditions and interviews with 1,168 medical patients and 1,036 dental patients. For placing stickers on charts of smokers and attaching nicotine gum instruction sheets to the charts, the office support in the dental offices appeared to be considerably better than in the medical offices. The behavior of the office staff in following the smoking program protocol was associated with the nature and amount of counseling that physicians and dentists gave to their patients who smoke.

It appears that the success of office-based smoking cessation efforts depends on changing the nature of the practice system and not just the counseling skills of the practitioners. The factors that expedite or inhibit the change of office systems to foster preventive care remain to be determined.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38337
Project Period: 8/1/84-11/30/89

Cancer Control by Self-Help Smoking Interventions

Principal Investigator: K. Michael Cummings, Ph.D., M.P.H.
Performing Organization: Roswell Park Memorial Institute

This experimental study was designed to evaluate the effects of two features of self-help smoking cessation booklets: format (i.e., day-by-day plan for quitting versus a less-structured menu format) and quitting instructions (i.e., "cold turkey" versus gradual reduction) on smoking cessation.

Four separate self-help booklets were developed for comparison in this study. Each varied on a combination of the two study factors but were similar in content, length, style, and readability. The four booklets provided similar advice on how to quit smoking, emphasizing behavioral self-management principles. In addition to the experimental booklets, a fifth control booklet provided general information about smoking and its adverse effects but no specific advice on quitting.

Study subjects included 1,534 adult cigarette smokers who called a stop-smoking hotline in Buffalo, New York, seeking information on how to quit. Subjects were followed up by phone 1 month and 6 months after enrollment to assess changes in smoking behavior.

Overall, 18 percent of subjects reported being off cigarettes for at least 1 week at the time of the 6-month followup interview. The format of the booklet and quitting instructions had no effect on smoking cessation rates. In addition, the four booklets emphasizing behavioral self-management skills were no more effective than the control booklet (6-month nonsmoking prevalence rate: 17 percent versus 19 percent). It is recommended that future self-help, quit-smoking booklets include information aimed at motivating cessation and focus less attention on teaching strategies for quitting.

Project **Officer:** Gayle Boyd, Ph.D.
Identification Number: R01-CA-36265
Project Period: 2/1/84-1/31/86

Effectiveness of Targeted Antismoking Communications

Principal Investigator: K. Michael Cummings, Ph.D., M.P.H.
Performing Organization: Roswell Park Memorial Institute

The aim of this research is to develop and test targeted communication strategies designed to motivate and assist cigarette smokers to stop smoking. This study will involve the collaborative efforts of investigators at two cancer centers: Roswell Park Memorial Institute (RPMI) in Buffalo, New York, and the Fox Chase Cancer Center (FCCC) in Philadelphia, Pennsylvania.

The theory underlying the proposed research is that communications tailored to specific population segments will be more effective than communications that are not targeted. Women cigarette smokers with children (under the age of 6) are the target population for this research. The proposed research involves two separate but theoretically related and coordinated experiments.

The first experiment involves the testing of a targeted mass media campaign designed to motivate smokers to call the Cancer Information Service (CIS) for information on quitting. The campaign will use a mix of professionally produced Tv and radio spots and print material executed in two 3-month waves over a 12-month period. The campaign will be tailored to appeal to the interests and media use habits of the target population, although response to the campaign from other smokers will be assessed. The campaign will be implemented in 7 of 14 media markets located in New York State, Pennsylvania, New Jersey, and Delaware. Response to the campaign will be assessed by monitoring the number of calls to the CIS offices at FCCC and RPMI from smokers residing in the experimental and control market areas.

The second experiment involves a comparison of the effectiveness of three self-help smoking cessation booklets. The study population will include women smokers with preschool-age children who call CIS seeking information on how to stop smoking. Study subjects will be randomly assigned to one of three groups. Group 1, the targeted group, will receive a booklet entitled "Quitting Times," which was written specifically for women with preschool-age children. Smokers assigned to group 2 will receive the American Lung Association's recently revised quit-smoking booklet "Freedom From Smoking for You and Your Family." A third group will receive "Clearing the Air," a self-help booklet developed

by NCI. Subjects enrolled in the booklet study will be followed up by telephone 6 months after calling CIS to assess changes in smoking behavior.

Project **Officer:** Barry Portnoy, Ph.D.
Identification Number: R01-CA-45930
Project Period: 9/30/87-8/31/90

Curtailing the Use of Smokeless Tobacco Through 4-H ("Project 4-Health")

Principal Investigator: Carol D'Onofrio, Ph.D.
Performing Organization: University of California at Berkeley School of Public Health

Project 4-health is a 5-year research and education project aimed at curtailing the use of smokeless tobacco and cigarettes by young people participating in California's 4-H Youth Program. Patterns of tobacco use and factors related to this behavior were identified through an initial period of exploratory research followed by a formal survey of 2,600 4-H members belonging to 77 community clubs in 25 California counties. Results guided the development of an interactive tobacco education program designed for cost-effective delivery in out-of-school youth organizations by volunteer leaders. The program emphasizes the development of personal and family policies about tobacco use as well as the development of youth leadership to curtail tobacco use by friends in the school and community. Parent participation is encouraged.

To evaluate the program, 78 4-H community clubs from 26 California counties were matched for size and geographic proximity. Baseline data were collected from 2,023 club members ages 10 to 14; clubs in each matched pair were randomly assigned to a program or control condition. Trained leaders delivered the five-session program to designated clubs, and a followup survey of young people in both treatment and control conditions was conducted. A final followup survey will be conducted in spring 1990 to test long-term program effects. In addition, the cost-effectiveness and feasibility of delivering tobacco intervention programs through 4-H and other out-of-school youth organizations will be assessed through extensive process evaluation.

This project is being conducted within the University of California through collaboration between the School of Public Health at Berkeley and the 4-H Youth Program of the University of California Cooperative Extension.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-41733
Project Period: 9/30/85-9/29/90

Primary Prevention (Smoking) of Cancer in Black Populations

Principal Investigator: William Darity, Ph.D.
Performing Organization: University of Massachusetts at Amherst

This project is designed to test the effectiveness of a community intervention to reduce smoking among low- and middle-income blacks. Matched experimental and control communities from four geographical areas of the northeastern and southeastern sections of the United States are participating in the project.

A pilot test of the procedures, methods, and intervention was completed during the summer of and the full trial began in the fall of 1989. A complex sampling methodology is being used to identify household units where in-home personal interviews will be conducted. It is anticipated that approximately 3,600 individuals will participate in the study.

Project Officer: Gregory M. Christenson, Ph.D.
Identification Number: N01-CN-65006
Project Period: 9/30/86-9/29/91

Prevention of Smokeless Tobacco Use During Adolescence

Principal Investigator: Thomas M. DiLorenzo, Ph.D.
Performing Organization: University of Missouri

The major objective of this study was to assess the prevalence and characteristics of tobacco use among 5th, 8th, and 12th grade students in the State of Missouri. Self-report information was obtained from a representative sample of 5,431 students in 78 schools throughout the State of Missouri. An 87-item student questionnaire was utilized that provided information designed to assess the following variables: cigarette use, smokeless tobacco use, marijuana use, alcohol and other drug use (including past use, present use, expected future use, and quitting attempts); parental, sibling, and significant other substance use; and psychosocial issues important in the initiation and continuation of tobacco and drug use. A seven-item school personnel questionnaire was utilized to obtain information concerning the assessment of the current use of tobacco, marijuana, alcohol, and other drug use of the children/adolescents involved in the school.

Findings indicated that both cigarette smoking and smokeless tobacco use were more common among males than females for each grade level except the 12th grade, where 30 percent of females and 28 percent of males had smoked during the previous week. Smoking prevalence was considerably lower in blacks than in whites. Smokeless tobacco use was rare among both blacks and females. Smokeless tobacco use was more common than cigarette smoking in rural areas, among whom 17 percent of 8th graders and 33 percent of 12th graders had used smokeless tobacco during the previous week. The mean age of first use of cigarettes was slightly lower in the rural area than in the urban area, whereas the mean age of initial smokeless tobacco use was more than a year earlier in the rural area. Data regarding the perceived difficulty of quitting smoking and quit rates suggested that adolescent females have more difficulty quitting smoking than males. Male smokeless tobacco users appear to be more addicted than male cigarette smokers. The preferred

brand of smokeless tobacco by grade level indicated that users may switch to progressively stronger types of smokeless tobacco as a nicotine tolerance is developed.

These findings support the conclusion that tobacco use is a serious problem with Missouri adolescents. In addition, the results indicate that for prevention programs to be optimally effective (i.e., to be presented before adoption of weekly use) intervention should occur between the fifth and eighth grades.

Project **Officer:** Gayle Boyd, Ph.D.
Identification Number: R01-CA-45576
Project Period: 9/30/87-3/31/89

Project SHOUT_: Smokeless Tobacco Prevention in Public schools

Principal Investigator: John Elder, Ph.D.
Performing Organization: San Diego State University

Project SHOUT (Students Helping Others Understand Tobacco) is a 5-year program designed to evaluate the effectiveness of a refusal skills training approach for preventing both cigarette and smokeless tobacco use among adolescents. During the pilot year, two classrooms from 16 junior high schools were randomly assigned to one of three conditions: intervention, incentive only, or control. Intervention students received 10 hours of instruction over two semesters, including lessons on health and social consequences of tobacco use, tobacco industry advertising techniques, and social skills training to resist peer pressure. Students earned tokens for participating in the program. Tokens were reimbursed for prizes donated by local businesses at the end of the program. Teams of volunteer undergraduate students received 20 hours of training before implementing the 10 lessons.

Incentive-only students were not exposed to the intervention package. Instead, these students received three spot-check visits during which students anonymously provided tobacco use prevalence rates. Three volunteers per classroom per visit were then asked to verify their reported nonuse via a carbon monoxide breath exam. Nonusers received nominal prizes on the spot for being tobacco free. Control students received no education other than "usual care." Students from intervention and control conditions completed a written and physiological assessment (saliva for cotinine). Analysis of this short pilot program yielded positive results that approached statistical significance.

Evaluators also developed and pilot-tested a behavioral skills test. Students from four randomly selected intervention and control schools (N = 78) were selected for measurement. Students listened to 20 tape-recorded situations and were asked to respond aloud to the tobacco offers. Responses were recorded and analyzed for length and content. Results indicated no significant differences between conditions on response length. Content analysis revealed that intervention students used significantly higher quality responses.

The volunteer health facilitators were observed and rated on their performance by evaluators during class presentations. Facilitators rated themselves on personality characteristics. Staff members also rated facilitator "manageability" in terms of their ability to cooperate, be responsible, etc. Results indicated that the most effective facilitators were more difficult to manage and were more extroverted.

During the second year of research, we recruited 23 new junior high schools throughout San Diego County (approximately 4,000 students). These students will be followed during their 7th, 8th, and 9th grade years. Following distribution of either passive or active consent forms, evaluators administered a pretest survey to all students. Schools were then randomly assigned to either the intervention or control condition after matching the schools' tobacco use prevalence rates and size. Again, intervention students received 10 hours of instruction but also participated in the Fresh Mouth Contest (breath test procedure). Tokens were again distributed and reimbursed for prizes.

Evaluators replicated the behavioral skills tests with some modifications. Four hundred students determined at pretest to be at high risk for future tobacco use were selected for testing and responded to 14 tobacco situations. Students from both conditions completed a posttest survey and submitted another saliva sample. Results from these assessments are pending.

During the second year of main phase intervention, students will continue rehearsing refusal skills. They will also be working on six community action projects designed to motivate students to spread their antitobacco message to others in the community. Parents will be invited to a teen/parent communication workshop and will be recruited to join a student-sponsored smoking cessation contest.

The final year of implementation will consist of behavioral reminders and the written survey, distributed through the mail.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-44921
Project Period: 7/1/87-6/30/92

The Effect of Pharmacists' Advice on Smoking Cessation

Principal Investigator: Allan Ellsworth, Pharm.D.
Performing Organization: University of Washington

Clear-cut, unambiguous, simple physician advice to patients on the importance of smoking cessation has a significant impact on quit rates, Pharmacists are perceived as health professionals to whom patients can turn with their health problems. Patients have easy accessibility to pharmacists and consistently rate them highly in terms of professional honesty and ethical standards. The objective of the proposed study is to determine whether pharmacists' advice and patient education against smoking during routine prescription dispensing can have an impact on the quit rates of smoking patients. If such a relationship exists, a collective patient education effort mounted by practicing pharmacists during routine dispensing could yield large numbers of exsmokers.

The proposed study will involve a consortium of practicing pharmacists and test interventions that can realistically be fit into day-to-day pharmacy practice. Following a uniform, concentrated review of tobacco abuse and smoking cessation strategies, these pharmacists will randomly perform one of the following four study interventions on consenting patients requesting prescription service during a l-month study period: (1) administer nonintervention control questionnaires; (2) administer smoking-related control questionnaires; (3) administer smoking-related questionnaires, advise patients to stop smoking, and provide patients with printed material from the Pharmacists' "Helping Smokers Quit" Kit (American Pharmaceutical Association and National Cancer Institute); (4) same as group 3 with the addition of a Nicorette® prescription and scheduled followup visits for patients without contraindications to the drug.

Followup questionnaires will be sent to patients at 3 months and 1 year for self-reported outcome, and biochemical validation will be attempted at 1 year in self-reported quitters.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: R03-CA-48607
Project Period: 9/1/88-2/28/90

WorkWell—Cancer Prevention for Rural Energy Workers

Principal Investigator: Michael P. Eriksen, Sc.D.
Performing Organization: The University of Texas, M.D. Anderson Cancer Center

The purpose of this study is to develop, implement, and evaluate a comprehensive health promotion/cancer prevention program called "WorkWell" designed specifically for rural, blue-collar energy transmission workers. Matched worksites will be randomized to receive either a comprehensive or a minimal intervention. Changes in the tobacco and nutrition behaviors of the "WorkWell" sites will be compared with matched comparison sites using an experimental design with the worksite serving as the unit of analysis. Six organizations (five natural gas pipeline companies and the National Rural Electric Cooperative Association) are participating in the study, comprising a total of 73 worksites.

The intervention will seek to reduce tobacco use and improve dietary behaviors and is directed at three components of each worksite: (1) the organizational and administrative characteristics of the employer, (2) the immediate work environment, and (3) the individual worker and his family. Diffusion theory, social learning theory, and the transtheoretical model provide the conceptual foundation for the interventions. This integrated approach will serve the needs of individuals in all stages of the change process—from those who are intransigent about their behavior to those who have entered the action stage. Measurement and evaluation procedures will determine: (1) a reduction in the use of tobacco products and fat consumption and an increase in dietary fiber, (2) change from baseline in organizational policies and practices, (3) environmental incentives and support, and (4) the extent of program implementation.

It is expected that this study will result in a program and process that will be generalizable for use in all worksites, especially for those with blue-collar, hard-to-reach workers. The findings of the study will contribute to applied social science, both to the theoretical foundations of individual change and also to an understanding of organizations and environments that promote and enable positive health behavior change, particularly in blue-collar populations.

Project Officer: Jerianne Heimendinger, Ph.D
Identification Number: U01-CA-51671
Project Period: 9/30/89-8/31/94

Late Adolescent Smoking: Process Analysis and Deterrence

Principal Investigator: Richard I. Evans, Ph.D.
Performing Organization: University of Houston

Based on a preintervention cross-sectional survey of a representative sample of 9th-, 10th-, and llth-grade students (n = 4,150), the cognitive-psychosocial-behavioral processes related to adolescent smoking were assessed. This information has been used to develop, implement, and evaluate a specially designed health promotion program (which includes smoking deterrence) in seven high schools in six school districts (n = 1,000).

This program is providing information and strategies for coping with pressures to engage in health-threatening behaviors, including cigarette smoking, through a curriculum that includes personal involvement techniques, audiovisual presentations, and feedback. Expanded multisubstance measures and intervention materials are allowing the project to address issues of synergism related to multiple substance use in addition to the primary focus of deterring the acceleration of smoking from early experimentation to addiction over the high school years. Program presentation under curriculum conditions has increased measurement efficiency for research staff and has substantially reduced problems related to tracking over time and attrition due to complex informed consent procedures. Such a "natural-setting" approach has increased the cooperation of school personnel who perceive it as less intrusive. Designing teacher training sessions to meet the guidelines of the state education agency's continuing education program, which allows participating classroom teachers to gain professional credit for the training program, has served as a well-received incentive to school personnel. A smoking-only study in a seventh school district (n = 500) will allow comparisons to assess the effects of a single-focus versus a multisubstance focus.

Information is being obtained concerning psychosocial-behavioral processes, smoking abstinence and infrequent smoking, and acceleration of smoking through the high school years. Similar data are being collected on other addictive substances, including alcohol. Effectiveness of program delivery by teachers with or without special training provided by the project and by research staff is being evaluated.

The scope of the project has been expanded through the award of a Minority Investigator Supplement to the parent project. The appointment of Dr. Linda A. Jackson as a research associate has provided the project with a more sophisticated and indepth approach to important issues emanating from a triethnic population. In addition to her substantial involvement with the parent project, she is planning and implementing a pilot program for increasing self-esteem among black students as a contributing factor to decreased health-threatening behaviors.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-41471
Project Period: 6/1/86-5/31/91

Teenage Smokeless Tobacco Use: Process/Prevention

Principal Investigator: Richard I. Evans, Ph.D.
Performing Organization: University of Houston

This 5-year investigation involves three stages: (1) assessment of the psychosocial-behavioral processes involved in the initiation and use of smokeless tobacco among

young males, (2) development of a prevention-deterrence program based on the theory-guided assessment of the target population, and (3) implementation and evaluation of this program in a 3-year longitudinal study using little league baseball players as the study population. Players with major league baseball teams (Houston Astros, Texas Rangers) are involved in various facets of this investigation, capitalizing on their obvious influence as role models for little league players.

The implementation and evaluation of the intervention program include randomized block assignment of 250 little league baseball teams with players ages 9 to 12 ($n = 2,500$) and 250 senior league baseball teams with players ages 13 to 15 ($n = 2,500$). Teams will be assigned to one intervention and two control groups in an experimental, repeated-measures design. Dependent measures will include "pipeline"-influenced self-reports reflecting cognitive and behavioral components of intention and behavior related to smokeless tobacco use as well as chemical assays (saliva thiocyanate and cotinine). The results are expected to provide information concerning the determinants of smokeless tobacco use and a program that can be used to deter its use among what is apparently a high-risk group.

A major component of the first phase of the project has been completed, involving access to the study population through a series of steps designed to gain the cooperation of Little League Baseball, Inc., from the national level through the local team level. Cooperation at the upper administrative level of Little League Baseball, Inc. (national, state, and district) continues to be excellent. An assessment of incentives to agree to participate and maintain participation over time has resulted in the development of an incentives package that is perceived as highly attractive by coaches and players and well within the scope of the project to supply. A subject pool has been established that should allow the project to implement the program with little league and senior league players so that developmental factors may be evaluated in subjects ranging from ages 8 through 15. The interest and cooperation of little league district administrators in areas adjacent to Harris County allow the project a subject pool for instrument and program material development and refinement without drawing on the originally projected study population in the greater Houston area.

Data analyses of the results of the proposed cross-sectional psycho-social-behavioral process survey undertaken in the first phase of the study are continuing. A series of followup focused interviews with a sample of survey respondents is in the process of being completed. Program development for the intervention (designated as the Smokeless Tobacco Education Program or STEP) is well under way. The first draft of the initial intervention program has been designed and pretested, including the development of signature cartoon characters and other communication devices to be used in a number of ways throughout the intervention program.

Based on the successful implementation of a Minority Investigator Supplement (MIS) with another NCI-funded parent program, this project has been awarded an additional MIS to expand the investigation with a particular emphasis on a number of Hispanic subjects available in the present study population. Dr. Jose Saavedra has been appointed as a research associate. He is in the process of developing a pilot program to be carried out with a subsample of subjects identified by the parent project.

Project Officer: Thomas Glynn, Ph.D.
Identification **Number:** R01-CA-41772
Project Period: 9/30/87-9/29/92

Effect of Competence and Peer Support on Women's Smoking

Principal Investigator: Edwin B. Fisher, Ph.D.
Performing Organizations: Washington University
University of Missouri at Columbia
Missouri Department of Health

This project is developing and implementing a series of smoking cessation and maintenance programs designed specifically for women. In the first study, subjects participated in cessation and maintenance programs modeled after the American Lung Association group cessation clinics with emphasis placed on peer support and competence training. The second study will include two surveys of self-quitters to assess salient procedures in their continued abstinence. The first survey focused on social support for smoking cessation. The second survey will include assessment of social support as well as competence and self-management skills.

Data from the first two studies will be analyzed to identify social support and competence factors that may be useful in revising smoking cessation procedures aimed at women or in disseminating and promoting the use of existing smoking cessation procedures among women. Such revisions will be field tested through: (1) a predominantly female work force within a worksite smoking cessation program; (2) professional or civic organizations that may serve as avenues for reaching high-priority groups such as black nurses; (3) women subscribers to an HMO; or (4) participants in outpatient activities (e.g., women's wellness centers) aimed at women.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-41703
Project Period: 7/1/86-6/30/91

Five- and Six-Year **Followup** of the Waterloo Study

Principal Investigator: Brian R. Flay, Ph.D.
Performing Organization: University of Southern California

The long-term effect of the Waterloo Smoking Prevention Program (WSPP) was tested among youth in grades 11 and 12 who were first exposed to the program when they were in grade 6. The WSPP consisted of six l-hour sessions that focused on the provision of information, skills development, decisionmaking, and public commitment. This study offered one of the few opportunities to gauge the long-term effectiveness of a smoking prevention program that has already proven to be effective in the short term.

Ninety percent of study students were located, and data were obtained from more than 80 percent of them 6 years after the beginning of the intervention. However, lack of cooperation from one of the two school districts prevented complete tracking or data collection. Thus, many analyses were limited to data collected up to grade 8.

An important finding, reported in Flay et al. *Am J Public Health* 1989, was that subjects who had left school before grade 12 were smoking at more than twice the rate (68 percent) of subjects still in school (28 percent).

Overall long-term program effects were assessed using a linear logit model that revealed that, by grades 11 and 12, there was no longer a significant overall program effect. Significant effects observed at grades 7 and 8 had totally decayed. Similarly, no program effects were found on the smoking behaviors of parents, siblings, or friends of students at grades 11 and 12. Both pretest smoking and pretest social risk were significant predictors of whether subjects were smoking 6 years later.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38268
Project Period: 9/30/84-11/30/87

Tests of Approaches of Comprehensive Smoking Prevention

Principal Investigator: Brian R. Flay, Ph.D.
Performing Organization: University of Southern California

This study involved the analysis of short-term data and the collection and analysis of long-term followup data for a media/school smoking prevention program aimed at school-age children and their parents, The media portion of the intervention involved five 5-minute commercial TV segments during 1 week in conjunction with the nightly news. The school portion involved five corresponding 45- to 60-minute classroom sessions that were delivered to junior high school health education classes by the classroom teachers during the same week.

This television and school-based smoking prevention program used the social influences approach, focusing on peer, family, and media influences on adolescents to become smokers and providing grade 7 students (ages 12 to 13) with the knowledge and skills to resist them. The evaluation allowed for assessments of (1) the value of coordinated television programming in increasing school, student, and parent availability and acceptance of the program; (2) the effects of program context (whether all or half of a grade cohort received the program in school) on participation and subsequent smoking behavior; and (3) the effects of parental participation in prevention activities on subsequent student smoking.

Strong effects of television programming and context on availability, acceptance, and participation were found. Significant associations were also found between each television viewing and parental involvement and subsequent student smoking, but a lack of overall program effects on smoking outcomes limits their interpretation.

Constraints on programming and research design suggest (1) possible limitations to program effects we might reasonably expect in real-world applications of the social influences approach and (2) the need for future true experimental efficacy trials to determine exactly what level of programming will be needed to achieve significant real-world effects.

Project **Officer:** Gayle Boyd, Ph.D.
Identification Number: R01-CA-34622
Project Period: 9/15/83-9/14/86

A Study of Self-Help Smoking Cessation and Maintenance

Principal Investigator: Stephen P. Fortmann, M.D.
Performing Organization: Stanford University

This research sought to develop a powerful self-administered maintenance program for nonsmoking; assess the relative effectiveness of nicotine gum, placebo gum, or no gum in promoting long-term abstinence; compare the relative efficacy of ad lib versus continuous nicotine gum use regimens; assess the effects of a psychological self-help maintenance program; compare the relative effectiveness of different strategies for administering the psychological maintenance program; and provide biochemical validation of subjects' smoking status for 2 years following cessation. Two-year followup of all participants was completed in June 1989. Results to date are discussed in the following paragraphs.

Nicotine polacrilex combined with a minimal-contact psychological intervention is significantly more effective in preventing relapse 6 months following a 4%hour self-directed quit than psychological treatment given either with placebo gum or alone.

The data strongly suggest that heavy smokers (25 or more cigarettes per day) are more dependent on cigarettes compared with light smokers (15 or fewer cigarettes per day). Heavy smokers reported greater difficulty quitting, were more troubled by withdrawal symptoms, experienced stronger urges and cravings, and had higher scores on a modified version of the Fagerstrom tolerance questionnaire. Contrary to expectation, heavy smokers were more obese as measured by body mass index.

Participants' weight at baseline and at 2-month followup was compared. Abstainers gained more than four times the weight gained by relapsers. Sixty percent of abstainers gained more than 1 kilogram with most (39.4 percent) gaining between 1.1 and 3 kilograms. About 31 percent of the abstainers maintained their weight, and about 9 percent lost more than 1 kilogram. Users of nicotine polacrilex gained significantly less weight than nonusers, although the difference was small. A dose-response relationship was observed between the number of cigarettes per day and weight gain.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38303
Project Period: 9/1/84-8/31/90

A Collaborative HMO and Workplace Approach to Smoking Cessation

Principal Investigator: Russell E. Glasgow, Ph.D.
Performing Organization: Oregon Research Institute/Kaiser Foundation Research Institute

This project will investigate the effects of monetary incentives and HMO-based low-intensity interventions on worksite smoking cessation. It will evaluate a model for collaboration between HMO's and large employers (such as state governments) in addressing a significant public health problem.

Employees who work for the State of Oregon in each of 12 worksites containing at least 250 staff members will serve as subjects. Worksites will be randomly assigned to receive or not receive the financial incentive program. Kaiser Permanente HMO members within each worksite will be randomly assigned to receive or not receive the HMO-based smoking cessation materials and mailings. Incentive procedures involving contributions from the employee, the employer, and the program project will be used to provide both monthly individual awards and longer term group competition prizes. The HMO will coordinate, through a clearinghouse/resource center and a monthly newsletter, an integrated program of low-intensity intervention options.

Carbon monoxide and saliva cotinine will be used to verify self-reports of abstinence and data will be collected to evaluate both short-term and longer term program effects. Outcome measures will include the percentage of all baseline smokers in the worksite who quit smoking, the cost-effectiveness of the different interventions, absenteeism, and employee attitudes toward smoking. Analyses will also be conducted of both the extent of participation and predictors of participation in various intervention activities.

This study will lay the groundwork for the establishment of comprehensive and collaborative HMO-employer programs for smoking cessation and provide the foundation for future research on the linkage between employee smoking cessation interventions and both health status and economic productivity.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-44648 (Project 1)
Project Period: 4/87-3/91

Accelerating Physicians' Adoption of Smoking Protocols

Principal Investigator: Michael G. Goldstein, M.D.
Performing Organization: University of Rhode Island

This project is a phase IV trial to assess the efficacy of a multicomponent intervention to increase the degree to which physicians adopt, implement, and maintain smoking cessation interventions with their patients.

All primary care physicians in a distinct Rhode Island geographic area will serve as untreated contiguous controls. After 15 months, a crossover feature will be implemented and a second area will be targeted for intervention while physicians in the third area will remain untreated for the entire S-year period.

The intervention will be designed to maximize diffusion of smoking cessation interventions into the general medical care sector by matching existing resources to the physician's initial stage of adoption. The investigators will enlist the aid of intermediary organizations to recruit physicians into the study, provide them with available resources, and maintain their involvement in smoking cessation practices. Resources will include educational materials for physicians and their office staff, smoker identification and tracking systems, physician self-instructional manuals, and formal counseling skills workshops. Through repeated contact, it is hypothesized that physicians will become more likely to adopt and implement smoking cessation interventions, resulting in greater success in treating smoking patients.

Efficacy of the intervention will be assessed by: (1) measuring changes in physician knowledge, attitudes, and behavior regarding smoking cessation interventions and (2) patient smoking outcome measures. It is hypothesized that, after 3 years, physicians who receive the intervention will have significantly increased their knowledge about smoking

and smoking cessation, increased the frequency and intensity of their smoking cessation-related practices, and developed more positive attitudes about smoking cessation. Moreover, this will result in a significant reduction in the proportion of patients who smoke in target intervention versus control areas.

The results of this study will have important implications for understanding the dissemination and diffusion of smoking cessation practices into the medical sector. This knowledge can then be used to guide large-scale public health initiatives to prevent smoking-related cancers.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-50087 (Project 3)
Project Period: 9/89-8/94

Self-Help Smoking Cessation and Nicotine Dependence

Principal Investigator: Michael G. Goldstein, M.D.
Performing Organization: The Miriam Hospital

This project was designed to determine whether the effectiveness of a self-help smoking cessation treatment can be improved by matching cigarette smokers, on the basis of nicotine dependence, to programs that differ in their inclusion of nicotine chewing gum, a pharmacologic nicotine dependence-based treatment.

A sample of 200 smokers, referred by physicians, was screened to determine their degree of tobacco dependence utilizing the Fagerstrom Tolerance Questionnaire (FTQ). An equal number of high (FTQ≥7) and low (FTQ≤6) nicotine-dependent subjects were randomly assigned to a self-help treatment, with or without nicotine gum. This yielded a four-fold classification, with 50 subjects per cell.

The 3-week self-help treatment was based on materials available from the American Lung Association. For subjects receiving nicotine gum, a 4-month prescription was provided. Self-reported smoking outcomes, verified biochemically, were assessed 6 and 12 months after treatment.

The project found that:

- Cigarette smokers who are matched, on the basis of the level of their nicotine dependence, to treatment programs that differ in their inclusion of nicotine chewing gum (nicotine resin complex) have significantly better short-term quit rates than smokers who are mismatched.
- Smokers with high levels of nicotine dependence who are treated with a combination of nicotine gum, a self-help manual, and brief counseling have higher short-term quit rates than those treated with the same intervention but without nicotine gum.
- Smokers with low levels of nicotine dependence who are treated with a self-help manual and brief counseling have higher short-term quit rates than those treated with the same intervention plus nicotine gum.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-44022
Project Period: 8/1/86-7/31/88

Adherence to Smoking Cessation in Head and Neck Cancer Patients

Principal Investigator: Ellen R. Gritz, Ph.D.
Performing Organization: University of California at Los Angeles (UCLA)/Jonsson Comprehensive Cancer Center

The goal of this 5-year study is to develop, implement, and evaluate a provider-delivered intervention that will substantially improve adherence to advice to stop smoking and remain abstinent for patients with squamous cell carcinomas of the head and neck, which have been causally associated with smoking tobacco. Although the health care team (medical and dental) routinely delivers strong advice to quit smoking because rates of second primary cancers are linked to continued smoking, rates of adherence to such advice are less than desired.

This research provides an opportunity to study the adherence behavior of both patients and providers (physicians, dentists) to an intervention designed to be integrated into the standard course of diagnosis, treatment, and followup, and, therefore, generalizable to the health care system nationwide. The intervention will consist of standardized, strong advice to quit smoking reinforced by targeted written self-help and social support materials for the patient and spouse/family member and a contracted quit date, followed by booster advice sessions.

This study will utilize a randomized controlled trial design. Patients (N=360) at UCLA and the Veterans Administration Medical Center West Los Angeles who currently smoke or who have recently stopped smoking and who have a life expectancy of more than 1 year will be recruited into the study. Patient adherence to smoking cessation recommendations will be measured by self-report as well as objectively validated by saliva cotinine analysis. Health care provider adherence to the protocol will be monitored by tape recorder and by patient exit interviews. Profiles of patient as well as provider adherence will be developed. Exploratory analyses of biomedical outcomes, including disease-free interval, recurrence, and/or diagnosis of second primary cancer, will be performed.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-43461 (Subproject)
Project Period: 7/87-6/92

Smoking Cessation for Women in an HMO Population

Principal Investigator: Ellen R. Gritz, Ph.D.
Performing Organization: University of California

This study is evaluating the impact of a self-help smoking cessation program on a population of women cigarette smokers who have not volunteered for treatment.

A randomly selected sample of 1,410 adult women cigarette smokers who are members of the Maxicare HMO in Southern California received from Maxicare either a mailed, unsolicited self-help smoking cessation program designed to address the specific needs and concerns of women smokers or usual Maxicare services. All experimental subjects receiving the intervention were asked to complete an assessment of the intervention materials.

All impaneled women in the "preventive health behavior" study will provide baseline and followup information (1, 6, 12, and 18 months postintervention) regarding smoking behavior and attitudes, cessation attempts, and current motivation to quit embedded in an assessment of a variety of preventive health behaviors such as seat belt use, nutrition, weight control, and exercise.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-41616
Project Period: 12/1/85-11/30/90

Smoking Cessation in Registered Nurses

Principal Investigator: Ellen R. Gritz, Ph.D.
Performing Organization: University of California at Los Angeles/Jonsson Comprehensive Cancer Center

This project studied the effectiveness of a smoking cessation "blitz" program in lowering smoking rates among registered nurses, a largely female health care profession lagging far behind the predominantly male health professions (e.g., physicians) in smoking cessation. Because of their role in direct patient care, exemplar status, and teaching function, reducing smoking prevalence among nurses has great public health significance in addition to serving as a primary prevention cancer control measure.

The major component of this study was a phase III controlled trial to test the efficacy of a relatively low-cost intervention in this population, preceded by a phase II questionnaire study that further defined the precise control measures used. Accordingly, a phase II questionnaire study of 1,000 randomly selected registered nurses in the State of California was conducted using mail-back questionnaires. The phase III intervention, a smoking cessation "blitz" program specially tailored for nurses, was then implemented and evaluated in a controlled experimental design in the greater Los Angeles area. Half of the selected hospitals (experimental group) were randomly assigned to an intervention consisting of self-help smoking cessation aids drawn from available packages and supplemented with materials specific to the needs of nurses (e.g., stress management techniques, buddy system in the workplace). The remaining hospitals served as nonintervention controls but received later treatment.

The effect of the intervention in promoting immediate and maintained cessation was measured by comparing quit rates in experimental and control groups, using both self-report and objective validation of smoking status.

Project Officer: Carlos Caban, Ph.D.
Identification Number: **POl-CA-34609** (Subproject)
Project Period: 7/84-6/87

Social Support in Smoking Cessation and Maintenance

Principal Investigator: Charles L. Gruder, Ph.D.
Performing **Organization:** University of Illinois at Chicago

To enhance the maintenance of abstinence from cigarette smoking achieved through a televised self-help cessation program, participants in this project were instructed in the use of social support and, following the conclusion of the television program, in techniques to prevent and minimize the adverse effects of relapse.

The design of the study involved three conditions. In the first two, social support training plus continued contact and attention control, subjects attended three weekly group meetings during the course of the television program, "Freedom From Smoking in 20 Days." In the third, a baseline no-contact control condition, subjects did not attend. Smokers in all three conditions expressed interest in participating and agreed to have a nonsmoking "buddy" take part as support person. Buddies themselves attended a training session.

This design tested the effectiveness of:

- Attending small group meetings that took place weekly at HMO health centers and community hospitals that were led by trained health care professionals.
- Having a self-selected, nonsmoking "buddy" who is trained to provide effective social support.
- Receiving continued contact from the group leader via telephone in the 3 months following the end of the program period. Data relevant to the processes through which social support influences smoking cessation and maintenance were also gathered. These processes included direct support for quitting and the availability of general support.

Project Officer: Carlos Caban, Ph.D.
Identification Number: POl-CA-42760 (Project 4)
Project Period: 7/86-6/89

Social Support in Smoking Cessation and Maintenance

Principal Investigator: Charles L. Gruder, Ph.D.
Performing Organization: University of Illinois at Chicago

The primary goals of this project are to develop and evaluate a brief, group-based intervention that focuses on social support and relapse prevention as a supplement to a televised self-help cessation and maintenance program.

The design of the study comprises three conditions: (1) experimental (group meetings providing training in social support and relapse prevention and including continued telephone contact), (2) attention control (group meetings providing review of "Freedorn From Smoking" and including telephone contact), and (3) no-contact control.

The results through the 6-month followup show that the two group conditions had higher abstinence rates than the no-contact control and that the experimental condition was superior to the attention control. Four models of social influence processes in cessation and maintenance have been examined and evidence that different processes operate

at different stages in cessation and maintenance has been found. Further followup data are needed to examine the long-term effects of the experimental intervention and to elaborate the role of the different support processes in maintenance.

The results thus far indicate that long-term abstinence rates can be improved by making the following changes: using a self-help manual that is easier to read and offers more flexibility, using counselor-initiated telephone calls instead of group meetings, and focusing on enhancing recycling efforts following a failed quit attempt or relapse.

Developmental research will be conducted to evaluate an experimental treatment targeted at smokers who either fail to quit or who relapse. The design will comprise two conditions (N=120 in each), each of which will receive the new American Lung Association (ALA) self-help manual "Freedom From Smoking for You and Your Family" and telephone contacts. In the recycling condition, the telephone contacts will build on the content of the experimental condition in the current project with the important addition of instruction and encouragement for recycling. In the control condition, the content of the telephone contacts will be nondirective and provide encouragement for the quit attempt, using the new ALA manual as a guide.

Compared with the control condition, it is hypothesized that the recycling condition will result in higher abstinence rates at 12 months, more successful recycling attempts, and shorter latencies to the first recycling attempt.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 4)
Project Period: 7/89-12/91

Practical Of&e-Based Smoking Intervention

Principal Investigator: Jack F. Hollis, Ph.D.
Performing Organization: Kaiser Foundation Research Institute

The potential of medical offices nationwide to reduce smoking among patients is not being realized. What is needed are practical, effective intervention packages that require minimal physician time and effort but that enhance the motivation, skills, and support that smokers need to achieve abstinence.

This is a project to develop, evaluate, and organize for widespread dissemination sophisticated physician-nurse team approaches to patient counseling. The interventions include brief physician advice but largely rely on office support staff to utilize the "teachable moment" to stimulate, guide, and support cessation attempts. Motivation will be enhanced by carbon monoxide feedback, self-help materials, and l-month telephone support. In addition, patients will either view a short video program describing and modeling effective cessation strategies or be exposed to systematic and repeated efforts to recruit them into an effective group stop-smoking program.

Comparisons of the approaches in terms of long-term cessation and cost-effectiveness will be undertaken.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-44648 (Project 2)
Project Period: 4/87-3/91

School- and Family-Oriented Cancer Prevention Program

Principal Investigator: C. Anderson Johnson, Ph.D.
Performing Organization: University of Southern California

Two studies were carried out to assess the effectiveness of specific cancer risk reduction programs: (1) a school program at the seventh grade level and (2) a community-based program for parents of children at the junior high school level.

Study 1 tested the effectiveness of a social resistance skill training program for preventing cigarette smoking and alcohol and other drug use and promoting reductions in dietary fat intake and increased levels of voluntary aerobic exercise. Schools were stratified by socioeconomic data and randomly assigned from within strata to treatment and control conditions. At l-year followup, students in program schools were observed to have lower levels of cigarette smoking, dietary fat intake, and total caloric intake and higher levels of aerobic fitness (PWC170/kg) than students in control schools. The program had no measurable effect on alcohol and marijuana consumption.

Study 2 tested the effectiveness of a community-based program designed to teach parents skills in dietary fat reduction, aerobic exercise, and obesity control. At 3- and 10-month followup measures, adults in the experimental program evidenced greater reductions in dietary fat intake, body weight, percent body fat, and serum cholesterol and a greater increase in aerobic fitness (V02 max) than those in the control condition. Significant correlations between student and parent behaviors were observed for smoking, drinking, dietary fat intake, caloric intake, and exercise,

Project **Officers:** Thomas Glynn, Ph.D./Barry Portnoy, Ph.D.
Identification Number: R18-CA-35596
Project Period: 1/1/84-12/31/88

Primary Prevention (Smoking) of Cancer in Black Populations

Principal Investigator: Regnal Jones, Ph.D.
Performing Organization: Illinois Institute of Technology

A three-part smoking cessation and motivational education program for mothers of Head Start children is being tested. A pilot test of the research procedures, methods, and intervention material was completed during the summer of 1989. The full study began in the fall of 1989.

The effect of this program on the proportion of mothers who quit smoking and the reduction of tobacco consumption among those who have not quit is being evaluated. Self-report and expired air carbon monoxide data are collected. Three hundred participating mothers from 40 schools compose an experimental group, and 300 mothers from an additional 40 schools compose the control group. Approximately 100 women have refused the program. The intervention program consists of eight 2-hour group sessions.

Project Officer: Gregory M. Christenson, Ph.D.
Identification Number: N01-CN-65006
Project Period: 9/30/86-9/29/91

Decreasing Adolescent Use of Smokeless Tobacco

Principal Investigator: S. Stephen Kegeles, Ph.D.
Performing Organization: University of Connecticut/Yale University

This study began with a series of group discussions in which male adolescents talked about the history and reasons for their use of smokeless tobacco. An extensive self-administered questionnaire was developed from a content analysis of these discussions and given to all male and female junior and senior high school students in participating Connecticut schools. This questionnaire established baseline rates of use of smokeless tobacco as well as demographic, behavioral, social, structural, and attributional correlates of its use.

Using the knowledge gained from the group discussions and the questionnaire, the study implemented different interventions to be used for groups of male junior high and high school students within their health class curriculum. Each of the three interventions used a different behavioral technique for inducing reduction, cessation, and/or prevention of the use of smokeless tobacco.

The change in attitudinal, intentional, and behavioral measures among subjects in each of the three interventions was contrasted with measures of subjects in two control groups: a no-information and an information-only control. Before and after the interventions, students produced a saliva sample and were told of its high reliability in assessing nicotine levels. Subsequent self-report of nicotine use by students was presumably more accurate due to the bogus pipeline inducement.

Written feedback from students and teachers was used to assess the effectiveness of the interventions throughout. A subsequent intervention stage was built on the first to refine the best techniques for use in a factorial design and allow for analyses of the additive and cumulative effects of the various interventions.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-42101 (Project 3)
Project Period: 4/86-3/88

Smoking Cessation Delivered in Physicians' Offices

Principal Investigator: Thomas E. Kottke, M.D.
Performing Organization: University of Minnesota

The goal of Doctors Helping Smokers was to help physicians deliver routine smoking intervention services while providing comprehensive service to their patients. Doctors Helping Smokers consisted of three rounds of trials.

In the first round, **66** physicians were randomized to one of three categories: (1) a workshop plus patient education materials, (2) patient education materials alone, or (3) a control group. This trial demonstrated that patient education materials and a workshop could increase physician involvement and that, over a 1-year period of followup, approximately 40 percent of patients would attempt to quit smoking. A physician or physician advice to quit smoking was associated with a 15-percent increase in cessation attempts and a 4-percent increase in sustained cessation, but the relapse rates were very

high. This suggested that physicians should not only focus on asking their patients to quit but must include reinforcement of cessation attempts.

In the second round of Doctors Helping Smokers, 40 internists were randomized to the same three groups with the same effect.

The third round of Doctors Helping Smokers emphasized providing an office system to support the physician to provide advice and to reinforce the patient for stopping smoking. The trial was carried out in 31 clinic locations, and more than 10,000 smokers were identified in the 18 months of the trial. The data demonstrate that the intervention technique is compatible with the day-to-day operation of a primary care office and is acceptable to both patients and physicians. Sustained cessation rates in the development site, Nokomis Clinic, demonstrate that the probability of cessation increases from 22 percent for patients with two visits to more than 30 percent for patients with more than 12 visits to the physician. These data suggest that with a support organization, the physician in primary care can effectively increase sustained cessation by his or her patients.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38361
Project Period: 7/1/84-11/30/89

Self-Efficacy and Coping With Risk in Quitting Smoking

Principal Investigator: Laura Catalin Leviton, Ph.D.
Performing Organization: University of Pittsburgh

This project is examining physician advice to stop smoking as a risk communication that may represent a health threat, especially to smokers at high risk of cancer. The project seeks to determine whether this threat exists, whether it impedes progress toward cessation for some smokers, and whether counseling and followup can overcome any negative impact of this threat. Two groups of smokers are receiving physician advice: smokers at high risk of bladder cancer and smokers who are at relatively low risk of smoking-related diseases. A randomly assigned one-half of smokers are receiving nurse-educator counseling designed to increase self-efficacy to quitting smoking. The control group is receiving an attention placebo. The study is testing the impact of such advice on several stages of smoking cessation: contemplation of quitting, short-term quitting, and long-term quitting. Behavioral measures include smokers' actions to seek additional information and requests for aids in smoking cessation.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R29-CA-47093
Project Period: 9/30/88-9/29/91

Smoking Relapse Prevention for Pregnant Women

Principal Investigator: John B. Lowe, Dr.P.H.
Performing Organization: University of Alabama at Birmingham

During the past decade, numerous reports have confirmed the detrimental effects of smoking during pregnancy on the health of the fetus, newborn infant, and mother. More recently, efforts are being made to increase awareness and to inform both mother and the physician about the effects of smoking during pregnancy. These public information campaigns and warnings appeared to be motivating some women to attempt to quit smoking once becoming pregnant (approximately 20-25 percent). It is apparent from early work, however, that a significant problem exists in the resumption of smoking following successful cessation. Efforts need to be directed toward providing these motivated women with experiences to encourage continued success during pregnancy.

The purpose of this project is to develop a multicomponent intervention to prevent smoking relapse among pregnant women in public health maternity clinics. The effectiveness of an intervention composed of three principal components will be evaluated: (1) a lo-minute standardized relapse prevention skill training session, (2) social support, and (3) clinic reinforcement. A randomized, prospective pretest/posttest group design will be employed to evaluate the effectiveness of the intervention. A total of 110 recent quitters will be randomized into two groups and followed until the end of pregnancy. Self-reports of abstinence will be verified using saliva thiocyanate testing.

New, critical information in this formative evaluation is being sought on: (1) what type of program will fit into a busy prenatal care clinic (feasibility) and (2) the level of effectiveness of these methods (behavioral impact).

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-48326
Project Period: 9/1/88-8/31/90

Cancer Prevention Strategies Among Urban Low-SES Black Women

Principal Investigator: Clara Manfredi, Ph.D.
Performing Organization: University of Illinois at Chicago

The objective of the study was to evaluate intervention strategies to reduce smoking among urban black women of low socioeconomic status (SES). The project had three main goals.

The first goal was to compare the results of the televised intervention obtained from the study population with those obtained from other populations. Comparison was between low-SES urban black women and women from the general population categorized by income and race subgroups.

Second, a quasi-experimental design was used to determine whether the effectiveness of the mass media program could be increased by concomitant interpersonal interventions geared specifically to this target audience: Conditions in the quasi-experiment were spontaneous exposure to the televised smoking cessation program and accompanying self-help manual; exposure to the televised smoking cessation program and

accompanying self-help manual following recruitment and with prompting to watch; and exposure to the televised program, accompanying self-help manual, and participation in classes conducted by local lay health educators. The outcome of the intervention was evaluated by the degree to which subjects reduced smoking, measured in an immediate posttest and 6-, 12-, 24-, and 36-month followups.

Third, the effectiveness of classes conducted without the televised intervention but using videotapes of the same was conducted. Because this intervention could be continued at any time beyond the period of the mass media program, its development could be observed over time.

Program process outcomes and local community commitment to the maintenance of the program was observed and recorded during years 2, 3, and 4 of the project.

Project **Officer:** Carlos Caban, Ph.D.
Identification **Number:** P01-CA-42760 (Project 5)
project Period: 7/86-6/89

Cancer Prevention Strategies Among Urban Low-SES Black Women

Principal Investigator: Clara Manfredi, Ph.D.
Performing Organization: University of Illinois at Chicago

The purpose of this project is to evaluate intervention strategies to reduce smoking among urban black women of low socioeconomic status. The study compares the responses of young black women living in subsidized public housing in Chicago and of women in the general population to a basic televised smoking cessation intervention. In addition, the study assesses the effectiveness in the target population of local, interpersonal interventions implemented concomitant to the TV intervention and at later times.

This project has three major goals. The first is to complete the analysis of previously collected data and follow leads that have emerged from it. The second goal is to further explore, through focus groups, factors that lead to the motivation to quit and to the willingness to participate in structured smoking cessation programs. Our experience with the project indicates that these two variables are crucial and problematic for interventions aimed at the target population. The third goal is to validate findings from the current data and from the focus groups on a new sample of women in the target population and low--income black and white women in the general population.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-42760 (Project 5)
Project Period: 7/89-6/91

Media/Community Demonstration: Programa a su Salud

Principal Investigator: Alfred L. McAlister, Ph.D.
Performing Organization: University of Texas Health Science Center at Houston

Mass media and community organization are being used to reduce cigarette smoking in low-income Hispanic populations near the Mexican border in south Texas and in one border community in Mexico. Comparisons are being made of the effectiveness of the media, community organization, and social support for stress coping. Random household interviews are being used to assess smoking and related variables.

Three levels of health promotion intervention were evaluated during the first 3 years of the 3-year community study of smoking cessation: regional media campaigns, media campaigns combined with community participation, or media campaigns combined with community participation and individual and family counseling.

A rate of 13.6 percent verified cessation of smoking has been observed in a panel of 192 moderate-to-heavy smokers in the more intensively treated community compared with 2.4 percent in the media-only region.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38347
Project Period: 1/1/85-12/31/90

Longitudinal Evaluation of School-Based Smoking Prevention

Principal Investigator: David Murray, Ph.D.
Performing Organization: University of Minnesota

The long-term effects of a seventh grade smoking prevention program were evaluated by following program participants through the age of 21. These programs included a peer-led social influences program, a peer-led social influences program with a video component, an adult-led social influences program with a video component, and an adult-led general health consequences program. Smoking behavior and environmental and psychosocial variables were assessed.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38275
Project Period: 7/1/84-6/30/90

A Statewide Approach to Adolescent Tobacco Use Prevention

Principal Investigator: David Murray, Ph.D.
Performing Organization: University of Minnesota

This project seeks to evaluate the effect of a 2-year, $4 million statewide initiative to promote smoking prevention and cessation among adolescents through school programs,

community activities, and statewide campaigns. Representative schools from Wisconsin and Minnesota will be surveyed annually for 5 years to test for any divergence in prevalence trends. A randomized trial in Minnesota will provide additional evidence on the causal linkage between the Minnesota Nonsmoking Initiative and adolescent prevalence rates.

The preliminary results of the study are encouraging. The Minnesota program, if effective, could provide a model to other states for the large-scale prevention of tobacco use by adolescents.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-43323
Project Period: 7/1/86-6/30/91

Primary Prevention (Smoking) of Cancer in Black Populations

Principal Investigator: Albert Niden, M.D.
Performing Organization: Charles Drew Postgraduate Medical School

This program is designed to test the effectiveness of a primary care physician counseling program to reduce or stop smoking behavior in adult black smokers. Approximately 2,000 English-speaking black smokers, 18 years and older, who have no evidence of life-threatening illness will be assigned to experimental and control groups.

The project is designed to evaluate the effects of the counseling program on both short- and long-term patient quit behavior as well as physician compliance with the smoking cessation counseling protocol. Chemical validation will be taken from those who report quitting at 6 and 12 months.

Project Officer: Gregory M. Christenson, Ph.D.
Identification Number: N01-CN-65006
Project Period: 9/30/86-9/29/91

Evaluation of Physician/Dentist Interventions for Smoking Prevention and Cessation

Principal Investigator: Judith K. Ockene, Ph.D.
Performing Organization: University of Massachusetts Medical School

This randomized clinical trial was designed to test the effect of six different combinations of physician smoking interventions and followup by ancillary staff on patients' smoking behavior. All interventions were designed to fit easily into the context of outpatient medical practice. There were 1,649 adult patients who were seen by general medicine or family practice residents participating in the project.

The interventions tested involved three physician-delivered smoking interventions: (1) the provision of brief advice to quit smoking, (2) counseling the patient regarding his or her smoking behavior using a "patient-centered" technique, and (3) counseling plus the prescription of nicotine gum, either combined or not combined with followup letters

and telephone followup counseling by health counselors. All patients were followed for a period of 2 years.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38360
Project Period: 9/26/84-8/31/89

Carotene and Retinol Efficacy Trial (CARET)

Principal Investigator: Gilbert S. Omenn, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

The Carotene and Retinol Efficacy Trial (CARET) is a phase IV study of the safety and efficacy of vitamin A and beta-carotene in decreasing the incidence of lung cancer in persons at high risk for the disease. CARET is funded by the National Cancer Institute through the Division of Cancer Prevention and Control.

The goal of CARET is to recruit and randomize 17,000 high-risk participants. The high-risk participants comprise two groups: 13,000 heavy smokers and 4,000 asbestos-exposed workers, These participants will be recruited over a 5-year period and followed for an additional 3 years. Half will be randomly chosen to receive 30 mg per day of beta-carotene and 25,000 IU per day of vitamin A (as retinyl palmitate), while the other half will receive placebos daily. Participants will take their study vitamins for 5 to 8 years.

Study activities are performed at five study centers around the country, under the direction of the CARET Coordinating Center, located in Seattle, Washington. The participating centers are selected on their ability to recruit and randomize individuals in one of the two high-risk populations. The five study centers and date of entry into the study are:

Study Center	Entry Year	Principal Investigator
Baltimore	1988	Dr. James Keogh
New Haven	1988	Dr. Mark Cullen
Portland	1988	Dr. Barbara Valanis
San Francisco	1988	Dr. James Cone
Seattle	1983	Dr. Gary Goodman

Project Officer: Carlos Caban, Ph.D.
Identification **Number:** P01-CA-34847 (Project 2)
project Period: 7/1/88-6/30/93

Worksite Smoking Cessation and Relapse Prevention

Principal Investigator: Gilbert S. Omenn, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

This investigation was concerned with the development and evaluation of effective, mass-distributable programs for smoking cessation. The objective was to assess the efficacy of different versions of a self-help correspondence program for smoking cessation

developed in previous research. The research design capitalized on the availability of computer facilities for generating prepackaged, personalized treatment materials.

A secondary goal was the development of a computerized data base for providing program participants with therapeutic feedback during the course of treatment. The amount of feedback included in the program (none, nonpersonalized) was varied to generate three correspondence treatment programs.

Subjects (N=440) were randomly assigned to receive one of these programs; a fourth, the control group, was also included. Subjects in the three experimental conditions were required to mail in progress reports; the control group received a no-feedback program without being required to mail in any progress reports. All subjects were followed for 1 year.

Program efficacy was assessed from the following perspectives: (1) number of subjects completing the program, (2) number of cessation attempts, (3) initial posttreatment abstinence rates, (4) long-term abstinence rates, and (5) cost per cessation and cost per long-term success.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P50-CA-34847 (Subproject 5)
Project Period: 7/83-6/87

Prevention and Cessation of Smoking by Nursing Students

Principal Investigator: Mario A. Orlandi, Ph.D., M.P.H.
Performing Organization: American Health Foundation

This study is evaluating a smoking control intervention for nursing students that focuses on both smoking prevention and smoking cessation. The long-term goals are (1) to increase the number of nurses who counsel people to stop smoking, (2) to encourage nurses to act as advocates for smoke-free policies, and (3) to reduce smoking among student and graduate nurses while they are in nursing school.

The primary component is an intervention designed to teach nurses how to help others stop smoking and ways to resist or stop smoking themselves. Other components include a health information and consultation service for students interested in health promotion, a health marketing campaign targeted at nursing students, and various activities designed to stimulate faculty-initiated smoking control initiatives. Twelve nursing schools were pair matched and then randomly assigned to intervention and control groups. In the fall of their final year in nursing school, students in the intervention schools received a specially designed workshop and other intervention activities; control schools did not receive the intervention. Two cohorts of students graduating from diploma, associate degree, and B.S.N. nursing schools were administered pretest baseline surveys and posttest surveys immediately after the intervention and at l-year followup after entering the work force.

The primary outcome evaluation will focus on (1) reductions in the onset of smoking among nonsmoking students, (2) increases in smoking cessation behavior among smoking students, (3) the implementation of smoking control practices by nurses with their patients, and (4) the promotion of smoking control policies by nurses in their work settings.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-41621
Project Period: 5/1/86-4/30/90

Smoking Prevention: The Youth Health Promotion Project

Principal Investigator: Mario A. Orlandi, Ph.D., M.P.H.
Performing Organization: American Health Foundation

This project was a 5-year longitudinal study to examine the effects of a school-based intervention designed to prevent cigarette smoking among a multiethnic sample of adolescents.

Twenty-six participating schools within each of three New York City community school districts were randomly assigned to one of three experimental conditions: (1) a multiple component health promotion intervention that included smoking prevention, (2) a single-component intervention (smoking prevention only), or (3) a no-treatment control group. Starting in sixth grade, a survey was administered twice each year to all students in the study cohort. The multiple-component intervention was based on the Know Your Body Health Promotion Program, and the single-component intervention was the smoking prevention component of the Know Your Body program.

Primary evaluation endpoints focused on posttest knowledge, attitudes, and practices related to tobacco use. Secondary endpoints included environmental, psychosocial, attitudinal, cognitive, and behavioral factors known to be related to tobacco use initiation. In addition, a comprehensive process evaluation was carried out to identify other factors related to program success.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38219
Project Period: 9/1/84-8/31/90

Clear Horizons: Adherence to a Smoking Cessation Program for Adults 50 to 74 Years of Age

Principal Investigator: C. Tracy Orleans, Ph.D.
Performing Organization: Fox Chase Cancer Center

Older Americans, especially those ages 50 to 74 years, can achieve significant health benefits from smoking cessation. Yet, in the past, smoking cessation programs have not been directed at older smokers. Moreover, there is recent evidence that, in the absence of a smoking-related illness, physicians do not routinely offer a strong cessation message to older smokers.

This project will: (1) identify the extent of and correlates of smoking and cessation of older adults (phase I); (2) test the efficacy of two cost-effective strategies, mailed and telephone reinforcements, for promoting adherence to a self-help quitting regimen among older adults accrued through community and worksite settings (phase II); and (3) assess the impact of the most effective regimen in combination with a strong physician cessation message (phase III) from primary physicians practicing in an IPA-model HMO.

The evaluation is based on randomized research designs that will permit an assessment of the impact of more intensive interventions for both phases on quitting behavior and health status correlates of cessation. Data will be collected through self-administered questionnaires at baseline and telephone followups at 3, 6, 12, and 24 months for phase II

and 6, 12, and 18 months for phase III with the most important outcome being self-reported quitting status. Measures of process, impact, and outcome will be obtained, and a sample of self-reports will be biochemically verified.

Study collaborators include Mathematica Policy Research (MPR), US Healthcare, the American Lung Association (ALA), ACORN (a large employee assistance program), and the American Association of Retired Persons (AARP).

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-34856 (Project 1)
Project Period: 7/88-6/93

Self-Help Strategies in Long-Term Smoking Cessation

Principal Investigator: Deborah J. Ossip-Klein, Ph.D.
Performing Organization: University of Rochester

The relative effectiveness of three smoking relapse prevention strategies was evaluated among individuals who use a smoking cessation telephone hotline. A second study focused on the effectiveness of a hotline when used in conjunction with standard self-help materials. In both studies, hotline counseling sessions were analyzed for predictors of successful maintenance or relapse.

Data collection is complete, and data are currently being coded and entered for final analyses. Preliminary results show a small, nonsignificant increase in long-term abstinence rates in hotline compared with control counties. Controlling for method of enrollment, a significant hotline effect on long-term abstinence was found for subjects who enrolled in person; no hotline effect was demonstrated for subjects who enrolled by mail or phone. These results suggest that there may be a subpopulation for whom the hotline is effective.

Project Officer: Gayle Boyd, Ph.D.
Identification Number: R01-CA-38238
Project Period: 8/1/84-7/31/89

Smoking Cessation Intervention in Hispanics

Principal Investigator: Eliseo Perez-Stable, M.D.
Performing Organization: University of California at San Francisco, School of Medicine

The effectiveness of a community-wide, culturally appropriate smoking cessation intervention for Hispanics is being evaluated in a census-tract-based target area in the counties of San Francisco and San Mateo.

A needs assessment to compare the subjective culture of smoking between 263 Hispanic and 150 non-Hispanic white (Anglo) smokers has been completed. Cultural differences were found in three areas among Hispanics: Social smoking has a greater significance; concerns for the effects of smoking on the family are greater; and the bad smell of cigarettes is viewed more negatively.

These findings have been incorporated into a multicomponent antismoking campaign using electronic and printed media, community meetings, contests, and health care

providers to deliver the intervention. A culturally appropriate Spanish-language smoking cessation guide (*Guía Para* Dejar de Fumar) was developed and is being used as the principal intervention component. Cessation groups or consultations are provided in person or by telephone.

The major outcome variables are smoking prevalence, information about the adverse effects of smoking, and awareness of available smoking cessation services. Two baseline telephone surveys were conducted using random digit dialing techniques before the onset of the intervention, Preliminary results indicate an increase in information and awareness, especially among the less acculturated Hispanics. The Guía, groups, and contest are also being evaluated in self-selected samples with biochemical validation of quit status among self-reported nonsmokers.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-39260
Project Period: 6/1/85-5/31/90

Hutchinson Smoking Prevention Project

Principal Investigator: Arthur V. Peterson, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

The Hutchinson Smoking Prevention Project is an ongoing, statewide phase IV cancer prevention randomized controlled trial. Its long-term objective is to evaluate the effectiveness of a school-based smoking prevention intervention in reducing smoking prevalence among elementary and junior high school children and maintaining that reduction throughout and beyondhigh school. The multicomponent, grade 3-10 intervention will be tested rigorously, in a realistic setting, for both effectiveness and practicality. Cost-effectiveness analyses will contribute to the assessment of practicality. The intervention includes components aimed at the early preparatory stage of smoking onset and is sustained throughout the entire period of adolescent smoking onset.

The study population is 8,402 children in 40 geographically and demographically diverse school districts in the State of Washington. With the school district as the unit of intervention, two consecutive cohorts in each of 20 experimental and 20 control school districts are being followed for endpoint determination throughout elementary, junior high, and high school and 2 years beyond high school.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-38269
Project Period: 9/1/84-8/31/94

Prevention of Smokeless Tobacco Use in Children

Principal Investigator: Arthur V. Peterson, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

This project is a phase IV prevention study with the long-term objectives of testing the effectiveness of an integrated school-based smokeless tobacco prevention

intervention in deterring smokeless tobacco use in children and characterizing the onset process for smokeless tobacco use among children.

The specific aims of this project are to: (1) integrate realistic and behaviorally and educationally sound school-based tobacco prevention components with an existing school-based smoking prevention curriculum for grades 6 and 7; (2) implement the integrated smokeless tobacco prevention intervention in a realistic fashion; (3) using a randomized controlled design, evaluate the extent to which the integrated tobacco prevention intervention can reduce the prevalence through and beyond high school; (4) evaluate the cost and cost-effectiveness of the intervention; and (5) characterize the smokeless tobacco use onset process among children. The integrated nature of the smokeless tobacco prevention intervention, which responds to educators' need for interventions that are comprehensive and can fit into a crowded school curriculum, is designed to enhance the likelihood of subsequent successful dissemination.

The excellent existing collaborative relationship between the Fred Hutchinson Cancer Research Center and 40 school districts in the State of Washington and the ongoing randomized controlled trial in school-based smoking prevention will be used as timely and cost-efficient vehicles for the school-based implementation and long-term evaluation of the smokeless tobacco prevention intervention.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-34847 (Project 9)
Project Period: 7/88-6/93

Enhancing Smoking Cessation by Weight Gain Prevention

Principal Investigator: Phyllis Pirie, Ph.D.
Performing Organization: University of Minnesota

This project has enrolled 417 women smokers, ages 20 to 64 with an expressed concern about postcessation weight gain, in a randomized clinical trial of four smoking cessation programs. The goal of the research is to study the efficacy of behavioral and pharmacological weight gain prevention strategies in smoking cessation and maintenance.

The treatment conditions are (1) a small group smoking cessation program (the American Lung Association's Freedom From Smoking program), (2) the smoking cessation program plus nicotine chewing gum, (3) the smoking cessation program plus a behavioral weight maintenance treatment, and (4) the smoking cessation program plus both nicotine chewing gum and a behavioral weight maintenance treatment. The behavioral weight maintenance treatment focuses on minimizing weight gain and enhancing acceptance of small but common postcessation weight gains. Followup assessment is planned at 6 and 12 months posttreatment.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-41647
Project Period: 5/1/87-4/30/90

Cancer Prevention Research Unit

Principal Investigator: James 0. Prochaska, Ph.D.
Performing Organization: University of Rhode Island

The goal of this project is to establish a multidisciplinary program of research designed to accelerate the process of change in factors that result in the prevention of cancer. The research program includes five interrelated projects to evaluate the treatment effectiveness and cost-effectiveness of replicable strategies for accelerating progress through each stage of changing lifestyle factors that can prevent cancer in high-risk populations.

The strength and synergism of the project is enhanced by such elements as: (1) a common stages of change model for accelerating progress in cancer prevention; (2) the use of provocative recruitment procedures; (3) the sharing of a representative phase IV sample of people at risk for cancer; (4) a similar set of intervention principles that includes motivational and educational strategies for people in the precontemplation and contemplation stages of change, action and relapse prevention strategies for people ready for action and in action, and recycling approaches for people who regress to high-risk patterns; and (5) the use of core instruments and common classes of constructs so that the projects' intakes will be greater than the sum of their parts. The projects are as follows:

- Project 1: Self-Help Programs for Accelerating Smoking Cessation.
- Project 2: Accelerating Worksite Smoking Control Programs.
- Project 3: Accelerating Physicians' Adoption of Smoking Protocols.
- Project 4: Accelerating Screening Mammography Rates in Rhode Island.

These projects are supported by two cores: leadership and evaluation. The phase IV cancer prevention research projects test interventions that will accelerate the process of contemplating, acting on, and maintaining proven cancer prevention regimens. The interventions are potentially cost effective, can be applied in a variety of settings, and can be adopted for use with phase V high-risk populations.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-50087
Project Period: 9/89-8/94

Self-Help Models and Materials for Smoking Cessation

Principal Investigator: James 0. Prochaska, Ph.D.
Performing Organization: University of Rhode Island

Effective self-help models and materials for smoking cessation are being developed. An enhanced transtheoretical model is used that involves 10 change processes that receive differential use during four stages of change: precontemplation, contemplation, action, and maintenance. Longitudinal phase III experiments are comparing four self-help programs: (1) a package of the leading self-help manuals available; (2) individualized manuals for each stage of change; (3) individualized manuals plus interactive

computer-generated progress reports; and (4) individualized manuals, interactive computer-generated reports, and personalized counselor calls.

Results at l-year followup favor the two programs that include interactive interventions. Longer term followups are currently in progress as are process-to-outcome analyses to detect which change processes are affected by which self-help interventions.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-27821
Project Period: 5/1/80-6/30/90

Self-Help Programs for Accelerating Smoking Cessation

Principal Investigator: James 0. Prochaska, Ph.D.
Performing Organization: University of Rhode Island

Although smoking is the most preventable cause of cancer, 50 million Americans continue to smoke. Most smokers report that they would not attend formalized treatment programs but would use self-help materials. This phase IV study will build on 7 years of retrospective, cross-sectional, longitudinal, causal modeling and intervention studies of self-change and self-help approaches to smoking cessation.

These studies have enhanced a transtheoretical model that involves 10 change processes receiving differential use during four stages of change: precontemplation, contemplation, action, and maintenance. Self-help programs based on this model have been found to be effective in current phase III research.

The proposed study will test the most promising phase III self-help interventions on a more representative phase IV sample of 3,840 smokers. The vast majority of these smokers can be expected not to be ready to take action. Unlike most prevention programs, the self-help programs that will be tested are not designed just for smokers who are ready for action. These programs are matched to smokers in each stage of change.

By randomizing the sample of smokers into treatment and control conditions, the treatment effectiveness and cost-effectiveness of the phase IV self-help programs can be evaluated.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-50087 **(Project** 1)
Project Period: 9/89-8/94

Preventing Tobacco Use Among Native American Adolescents

Principal Investigator: Steven P. Schinke, Ph.D.
Performing Organization: Columbia University

In a randomized 2 X 2 design, this 5-year study is testing personal and environmental interventions to prevent smokeless and smoked tobacco use among American Indian (Native American) youth in Colorado, Idaho, Oklahoma, and North and South Dakota.

The personal intervention, delivered to groups of Native youth, covers ethnic pride and values, health, and self-image content and problemsolving, coping, and communication skills. The environmental intervention, delivered to Native youths, families, and peers, develops social and situational supports to prevent tobacco use. Subjects are approximately 3,500 Native American females and males, 11 to 13 years old at time of initial involvement. Recruited from 28 sites, consenting subjects have been pretested and, by site, randomly divided into four conditions. Subjects in three conditions are receiving either personal intervention or environmental intervention or both interventions; subjects in one condition receive no intervention. All subjects will be posttested, then followed every 6 months. Semiannually, intervention condition subjects will receive pairs of booster sessions. To check within-condition reliability, process measures are being taken of both interventions. Outcome measures will quantify subjects' smokeless and smoked tobacco use and will assess variables associated with tobacco use. Saliva collections, subsequently assayed for thiocyanate and cotinine, will precede subjects' tobacco use reports. Community surveys with random subsets of households will occur at each collaborating site. Data analyses will describe the study sample, inferentially test condition differences, and partition influences on Native youths' tobacco use. The study is supported by Native tribal, reservation, and public schools in the states involved.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-44903
Project Period: 5/1/88-4/30/93

Smoking Prevention Training for High-Risk Youth

Principal Investigator: Steven P. Schinke, Ph.D.
Performing Organization: Columbia University School of Social Work

This investigation extends the smoking prevention approach to tobacco use among adolescents at above-average risk for smoking. The school-based study focuses primarily on youth in districts selected based on such criteria as percent of families receiving Aid to Families with Dependent Children and percent of youth receiving free or reduced-cost school meals. The study, revised as a result of suggestions arising from a site visit, currently is engaged with two cohorts of youth from fourth through ninth grades. At completion in June 1991, data will have been amassed on more than 4,100 youth in grades 4 through 11.

The revised study has five major aims:

- Development and validation through extensive pilot testing of an instrument battery capable of identifying youth at the extreme upper bound of the risk continuum for tobacco use.
- Complete revision of selective interventions targeted specifically at the cognitive, behavioral, and situational characteristics revealed by the instrument to be predictive of high-risk tobacco use among lower socioeconomic status adolescents and early adolescents.
- Use of the instrument battery to recruit panel 2 and delivery of the interventions to this cohort, along with continued delivery of revised assessment instruments and booster curriculums to panel 1, originally recruited in 1985.

- Evaluation of both the instrument for its selective properties and the interventions for their preventive potential.
- Rigorous tracking of both panels and differential assessment of study attrition,

Outcome measures will cover demographic information, biochemical samples, and self-reports of tobacco use as well as self-reported health behavior, locus of control, self-reinforcement, problem-solving, interpersonal coping, assertiveness, social networks, and self-efficacy. Followup batteries will measure contagion relative to prevention curriculums. Drawing from recent advances in prevention technology, the current study places particular emphasis on social support networks and development of communication skills necessary to best draw upon them.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-29640
Project Period: 4/1/85-8/31/90

A Self-Help Quit Smoking Program for Black Americans

Principal Investigators: Victor J. Schoenbach, Ph.D., C. Tracy Orleans, Ph.D.
Performing Organization: University of North Carolina at Chapel Hill

A mediated, self-help smoking cessation intervention oriented toward black smokers has been developed and its effectiveness tested among 2,000 policyholders of North Carolina Mutual Life Insurance Company, the largest black insurance company in the United States. The intervention features a new, well-illustrated, easy-to-read quit-smoking manual developed by the American Lung Association and tipsheets and other materials to increase adherence. The quitting packet was presented by N.C. Mutual sales agents following video-based training. Brief telephone counseling calls were made to half of the intervention subjects. Preliminary results indicate increased reported quitting among smokers receiving the intervention, with the highest quitting rates among those receiving telephone calls.

Project Officer: Thomas Glynn, Ph.D.
Identification **Number:** R18-CA-39279
Project Period: 7/1/85-6/30/90

Effectiveness of Self-Help Smoking Cessation Strategies

Principal Investigators: Victor J. Schoenbach, Ph.D., C. Tracy Orleans, Ph.D.
Performing Organization: University of North Carolina at Chapel Hill

Three promising self-help approaches to smoking cessation, developed during the first year of the project, were evaluated in a randomized controlled trial among 2,000 smokers enrolled in Group Health Cooperative of Puget Sound, a large consumer-managed HMO in western Washington state. Results indicate that a minimal contact intervention (several brief telephone calls from a counselor) can increase cotinine-verified, 16-month nonsmoking prevalence among recipients of a mailed self-help quitting packet.

Further analyses are under way. These results demonstrate an effective approach for disseminating smoking cessation assistance.

Project **Officer:** Gayle Boyd, Ph.D.
Identification Number: R01-CA-38223
Project Period: 8/1/84-6/30/89

Smoking Prevention Through Mass Media and School Programs

Principal Investigator: Roger H. Seeker-Walker, M.D.
Performing Organization: University of Vermont

The combined effectiveness of a media campaign and a school-based intervention was compared with a school program only in preventing the onset of adolescent smoking. It was hypothesized that a program modifying perceptions and attitudes and conveying cigarette refusal skills through a series of television and radio messages would provide a significant complement to a school-based prevention program. A longitudinal cohort of fifth through seventh graders with a focus on high-risk youth is being followed through grades 8 to 10.

Project **Officer:** Thomas Glynn, Ph.D.
Identification Number: R01-CA-38395
Project Period: 9/1/84-8/31/90

Smokeless Tobacco Cessation for Adults in a Dental HMO

Principal Investigator: Herbert Severson, Ph.D., Victor J. Stevens, Ph.D.
Performing **Organization:** Oregon Research Institute; Kaiser Permanente Center for Health Research

The objective of this research project is to assess the use of smokeless tobacco among adults who are regular users and develop and assess a dental office-based intervention program designed to assist users in quitting.

During the first 12 months of this project, the patterns of smokeless tobacco use among adult males was assessed. Additionally, a survey of dentists, hygienists, and patients was done to assess the perceptions and practices with regard to advising patients to quit their use of tobacco products. Video and self-help intervention materials and an oral health examination protocol were also developed, and a feasibility trial of the intervention was conducted.

In the second phase, 750 dental patients who are regular users of smokeless tobacco will be randomly **assigned to one of two conditions:** (1) **usual care and** (2) quit advice from their dentist plus an office-based intervention conducted by a dental hygienist that involves viewing a video, a self-help quit manual, and one followup telephone call. Subjects will be followed for 2 years. At l-year followup, an oral exam will be conducted, and self-reported tobacco cessation will be biochemically verified.

The study will provide an assessment of a low-intensity, easily disseminable, office-based smokeless tobacco cessation program. Economic analysis and cost-effectiveness analysis will provide a further assessment of the feasibility of disseminating the intervention.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-44648 (Project 3)
Project Period: 4/87-3/91

A Smoking Cessation Program for Low-Income Pregnant Women

Principal Investigator: Robert A. Simmons, M.P.H.
Performing Organization: American Lung Association of Los Angeles County

This project assessed the effectiveness of a smoking cessation and maintenance intervention for low-income, predominantly black, pregnant women who currently smoked cigarettes or who had quit because of pregnancy. The search was conducted in 10 pair-matched sites of the women, infants, and children (WIC) federally funded supplemental nutrition program. Sites were matched by smoking prevalence of clients, race/ethnic&y of clients, monthly enrollment, geographic proximity, and WIC administrative organization. More than 500 pregnant women were assigned to treatment and control groups by virtue of the WIC clinic they attended.

In the intervention condition, the smoking cessation and maintenance program, STOP SMOKING AND TAKE CHARGE FOR YOU AND YOUR BABY, extended from prenatal intake to 3 months postpartum. During monthly visits to WIC centers to receive free food vouchers, the trained WIC staff provided brief individual smoking cessation counseling, two specially designed cessation booklets, three illustrated reminder postcards, a congratulatory certificate, and a baby bib with a reinforcing smoking cessa-, tion message.

Baseline interviews by trained data collectors determined participants' smoking history and current smoking behavior, motivation and intention to quit, perceived health risk to themselves and their babies, self-efficacy, social support, and perinatal history. A similar interview was conducted at the visit before delivery and at 6 months and 12 months postpartum. Self-reports of abstinence were validated via expired carbon monoxide analysis. WIC providers' smoking-related attitudes and behavior, factors important to client outcomes, were also assessed. The effectiveness of the smoking cessation and maintenance program was evaluated both during pregnancy and in the postpartum periods as well as key independent variables and their effect on the outcome measure of smoking behavior.

Given several limitations of the study, such as the low motivation of the study population to quit smoking and the limited intervention opportunities in a public health setting, it can be concluded that the intervention had a positive impact on antismoking attitudes and may likely have affected smoking behavior had the sample been larger. Improved client motivation, screening for readiness to quit smoking, increased health care provider training, increased access for prenatal care, reimbursement for smoking cessation

services, and political and social antitobacco action in low-income communities were recommended.

Project Officer: Carlos Caban, Ph.D.
Identification Number: R03-CA-46578
Project Period: 9/15/87-4/30/89

Worksite Cancer Prevention Project

Principal Investigator: Glorian C. Sorensen, Ph.D.
Performing Organization: University of Massachusetts Medical School

The primary aim of this project is to implement and evaluate the effects of a comprehensive worksite cancer prevention model that integrates messages about nutrition, smoking, and occupational health. Occupational health and health promotion have rarely been integrated in a single program. This project proposes to develop and test an innovative interdisciplinary model that addresses broad health concerns of workers and worksites. Using a randomized controlled study design, this study will assess the impact of a standardized intervention protocol on individual behavior change, including intake of fat and fiber and smoking cessation, and on the worksite environment, including the availability of low-fat, high-fiber foods in worksite cafeterias and vending machines, exposure to environmental tobacco smoke and exposure to occupational carcinogens. Major aims of the proposed intervention are (1) to address the objectives of both health promotion and occupational health and safety programs in a single coordinated effort and (2) to develop a model that can be readily incorporated into a statewide system by collaborating with the Massachusetts Department of Public Health. Twenty-four worksites already recruited to the study will be matched and randomized to intervention and comparison conditions. Comparison sites will receive intervention assistance from the Massachusetts Department of Public Health at the conclusion of the study.

The intervention model is based on principles of community organization and social marketing and includes the following steps: (1) mobilize workers to promote program activities and risk factor messages through participation in an employee advisory board in each worksite; (2) tailor intervention programming to individual worksites based on recommendations from these boards; (3) implement intervention programming aimed at individual workers that will have maximum penetration worksite-wide to increase readiness to change health behaviors and that will build skills among those ready to make behavior changes; (4) promote environmental changes supportive of risk reduction, including cafeteria and vending machine modifications, implementation of effective nonsmoking policies, and reduction of exposures to occupational carcinogens; and (5) plan for incorporation of the program in participating worksites and statewide beyond the study period. Process objectives have been established for each phase.

Components of the evaluation include assessment of the effects of the intervention on the defined impact objectives; achievement of the process objectives; the quality of the intervention delivery; potential competing explanations for observed changes; and the cost-effectiveness of the intervention. Products of the study will include a tested model of a worksite intervention program that integrates nutrition, smoking cessation, and occupational health, including an implementation manual with program materials for use in other worksites; a system of dissemination of the model through state health departments, implemented on a pilot basis through the Massachusetts Department of Public Health; a tested food service food frequency questionnaire to assess the availability of low-fat,

high-fiber foods in cafeterias and vending machines; a tested method and protocol for quantitative, specific assessment of changes in environmental tobacco smoke as a result of worksite smoking policies; and an assessment of the cost-effectiveness of the tested model.

Project **Officer:** Jerianne Heimendinger, Ph.D.
Identification Number: U01-CA-51686
Project Period: 9/30/89-8/31/94

HMO Smoking Ban: Effects on Employees and Hospitalized Patients

Principal Investigator: Victor J. Stevens, Ph.D.
Performing Organization: Kaiser Foundation Research Institute

This project will study the direct and indirect effects of a stringent organization-wide no-smoking policy being implemented in a large HMO. The project will be conducted in two phases.

Component one will evaluate the effects of the smoking ban on more than 4,600 employees in 30 different worksites. The HMO has been regularly collecting data on employee attitudes and smoking behavior for the past 10 years. The ban is being instituted at different points in time in the various facilities, which results in a quasi-experimental interrupted time series with a switching replications design. The effects of the smoking ban on baseline smokers and a number of employee attitudes will be investigated.

The second component of the study will research the effects of the organization-wide smoking policy on hospitalized patients. The short- and long-term cessation rates of smokers in three experimental conditions will be contrasted: a quasi-experimental group of patients hospitalized before the ban is instituted will be compared with subjects randomly assigned to two true experimental groups, patients exposed to the smoking ban, and patients receiving an innovative low-intensity relapse prevention program.

This study has significant policy implications and will result in cost-effective interventions that can be disseminated.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P01-CA-44648 (Project 5)
Project Period: 4/87-3/91

Physician Smoking Cessation Counseling: Patient Outcomes

Principal Investigator: Victor Strecher, Ph.D.
Performing Organization: University of North Carolina at Chapel Hill

Antismoking efforts by physicians appear to have great potential in getting patients to quit or reduce their smoking. However, despite the fact that most physicians believe it is

their responsibility to encourage their patients who smoke to stop, most do not feel well prepared to counsel patients about the quitting process.

This project was an extension of an ongoing randomized controlled trial of two interventions to increase and improve smoking cessation counseling by physicians by adding an evaluation of the effect of counseling on patient behavior. The two interventions were a physician tutorial and an intake/promoting system. This study biochemically verified the claims of patients who reported having quit smoking 12 months following the interventions and collected and analyzed data collected from this 12-month followup.

This study was developed in conjunction with the researchers who conducted the randomized trial. The trial involved nine sites across North Carolina with 250 resident physicians and approximately 2,000 patients.

The primary outcome of the trial was change in physician counseling behavior. This project also evaluated more important (but more expensive-to-collect) l-year changes in patient smoking behavior.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: R03-CA-43994
Project Period: 9/l/86-2/28/89

Smokeless Tobacco: Onset, Prevention, and Cessation

Principal Investigator: Steve Sussman, Ph.D.
Performing Organization: University of Southern California

This is a school-based prevention and cessation program that is taking place in 50 rural and urban junior high schools in the Los Angeles and southern California areas and in 24 rural and urban high schools in southern California and Illinois.

During the first 2 years, predictors and parameters of smokeless tobacco use have been assessed, and four tobacco use prevention curriculums have been developed and tested. In addition, two tobacco use cessation recruitment strategies have been tested.

The prevention intervention will begin in the third year with a 2-year followup. Fifty junior high schools will be randomly assigned to four different prevention curriculum conditions or a no-intervention control condition, The cessation intervention will begin in the fourth year with a l-year followup. Twenty-four high schools will be randomly assigned to two cessation clinic conditions or a no-intervention control condition.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-44907
Project Period: 7/1/87-6/30/92

Community Mobilization for Smoking Cessation

Principal Investigator: Leonard Syme, Ph.D., 9/85-8/88,
Enid M. Hunkeler, M.A., 9/88-8/90
Performing Organization: Kaiser Foundation Research Institute

An intensive community-based smoking cessation and prevention campaign with an emphasis on the black population will be developed, implemented, and evaluated

in Richmond, California. An intensive intervention program involving key community organizations is planned that includes community-wide "Quit Nights" employing the latest motion picture and videotape technology and printed media. The prevalence of cigarette smoking in the community will be assessed before and after the intervention. A second prevalence study will be performed, and analyses will be conducted to measure and evaluate the reduction in prevalence of cigarette smoking among blacks and non-blacks in Richmond compared with similar populations that have not been exposed to the intervention.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R18-CA-39262
Project Period: 9/30/85-8/31/90

A Stepped Approach to Smoking Reduction

Principal Investigator: Beti Thompson, Ph.D.
Performing Organization: Fred Hutchinson Cancer Research Center

The objective of this study is to assess the feasibility, effectiveness, and costs of a stepped approach to increasing long-term smoking cessation rates in the defined population of a worksite. Key features of this study include: (1) identifying all smokers at the worksite; (2) providing ongoing active encouragement to each smoker to participate in smoking cessation activities; (3) offering each smoker increasingly intensive assistance in quitting smoking; (4) offering each smoker who achieves initial cessation a series of increasingly intensive aids to maintain cessation; (5) recycling those who fail to achieve initial cessation, or who relapse, through the increasingly intensive cessation activities; and (6) estimating the costs of this approach per worksite smoker and per long-term quitter.

This stepped approach model is consistent with the medical model in which increasingly intensive and/or expensive therapies are successively tried until a cure is achieved. The participating employer in this study is King County. King County employs 5,000 workers, including both white-collar and blue-collar employees, in 32 separate work units. Half of the work units will be randomized to the intervention arm and half to usual care.

The procedures for this study include: (1) a recruitment sequence, (2) a cessation sequence, and (3) a relapse prevention sequence. In the recruitment sequence, all smokers will be contacted and invited to participate in the study. In the cessation and relapse prevention sequences, four steps (ordered from least to most intensive) are possible: (1) hotline counseling, (2) self-help materials, (3) group-help sessions, and (4) referral to smoker's physician for more intensive therapy.

There are two primary outcomes of this study: (1) long-term smoking cessation rates (continuous abstinence from cigarettes for at least 6 months at the time of the final assessment), and (2) costs of the stepped approach per long-term quitter. This comprehensive, stepped approach, if successful and cost effective, can easily be exported to other worksites and settings.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-34847 (Project 10)
Project Period: 7/88-6/91

Tobacco Reduction and Cancer Control (TRACC)

Principal Investigator: Thomas Vogt, M.D., M.P.H.
Performing Organization: Kaiser Permanente Center for Health Research

This program project focuses on the integration of cancer control activities into the medical care setting of a 350,000-member health maintenance organization (HMO). The current program models the general approach using five projects designed to reduce tobacco use by HMO members.

The projects deal with approaches the HMO can use to boost smoking cessation rates within the workplace of State of Oregon workers, with consistent, comprehensive, and low-cost interventions aimed at the medical office, the dental office, hospitalized persons, and adolescent members who are smoking. Each project incorporates into its approach specific advantages provided by the individual setting. For example, the hospital intervention study involves patients who have been required to temporarily quit smoking because the practice is banned in the hospital. This situation, combined with the existence of disease requiring hospitalization, provides a uniquely teachable moment. The dental office project focuses on reducing the use of smokeless tobacco; the other four projects concentrate on reducing cigarette smoking.

The approaches being tested are all generalizable to other cancer control interventions and to settings outside the HMO.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-44648
Project Period: 5/87-4/91

Prompting Smoking Cessation in Family Practice

Principal Investigator: William Wadland, M.D.
Performing Organization: University of Vermont

The objective of this study was to test whether a prescription for nicotine gum aids physician advice against smoking cessation when given to all smokers in the primary practice setting where patients pay for physician visits and prescriptions. Intervention was a randomized clinical trial comparing physician advice and followup visit plus nicotine gum in terms of quit attempts and long-term smoking cessation outcomes.

Six hundred adult smokers were recruited from two rural Vermont family practices during routine office visits. Measurements of quit attempts and smoking cessation were made by various methods, including followup physician visits at l-2 weeks, mailed questionnaires to patients and family observers at 2 weeks and 6 months, telephone followup in nonresponders, and biochemical verification for claimed quitters.

The protocol for brief physician advice against smoking (10 minutes) had been developed and tested in two previous studies, and the prescription for nicotine gum was accompanied by explicit instructions on its use.

The project found that there were no significant differences between sites concerning' socioeconomic status, rates of quitting, or quit attempts. Six-month followup showed no difference between the nicotine gum and no gum groups in quit attempts and actual

smoking cessation. The study also found that private practices may have greater potential for subject recruitment than academic sites, the use of study personnel improves recruitment, and having study personnel actively involved in informed consent does not improve recruitment.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: R03-CA-43987
Project Period: 9/30/86-9/29/88

Community Interventions for Cancer Prevention

Principal Investigator: Richard B. Warnecke, Ph.D.
Performing Organization: Illinois Cancer Center

This program project evaluated a community-based strategy organized around an accessible intervention for enhancing smoking cessation in a large urban area. The components were designed to test various public health strategies, each of which were intended to reach large numbers of the population and to foster collaboration with organizational sites that have a commitment to health promotion and disease prevention.

The basic televised intervention was aimed at smoking cessation with a self-help orientation. Additional components addressed maintenance and various forms of social support. The evaluation of the televised self-help intervention and maintenance was the focus of project 1. Project 2 examined cognitive and social support mediators of response associated with behavioral changes in project 1. The remaining projects evaluated specific interventions and followup maintenance procedures related to the televised intervention. Project 4 was a study involving social support, and project 5 was a study of strategies to promote smoking cessation among black women in public housing developments.

The interventions were evaluated using a common longitudinal design and a shared set of instruments. On July 1, 1989, the program was reviewed to allow completion of the evaluation of the results and planning for the next generation of intervention.

Project **Officer:** Carlos Caban, Ph.D.
Identification Number: P01-CA-42760
Project Period: 7/1/86-6/30/89

Community Interventions for Cancer Prevention

Principal Investigator: Richard B. Wamecke, Ph.D.
Performing Organization: University of Illinois at Chicago

The underlying objective of this program project is to continue the evaluation of a community-based strategy organized around an accessible intervention for enhancing smoking cessation in a large urban area. The components are designed to test various public health strategies designed to reach large numbers of the population.

The basic televised intervention, conducted between March 22 and April 10, 1987, was aimed at smoking cessation with a self-help orientation. Additional components have addressed maintenance and various forms of social support.

The evaluation of the televised self-help intervention and maintenance has been the focus of project 1. Project 2 has examined and will continue to focus on the cognitive and social support mediators of response associated with the behavioral changes in project 1. Project 4's focus has been on social support, and project 5 has studied strategies to promote smoking cessation among black women in public housing developments.

The interventions have been executed using a common longitudinal design and a shared set of instruments, The investigators will collect a fifth wave of postintervention data, conduct a tracking effort to ascertain the smoking status of respondents who have fallen out of the panel, utilize a series of focus groups with selected groups of respondents to explore indepth ways to motivate and mobilize continuing smokers to participate in cessation programs, and select a new cross-sectional sample from the general population of smokers to examine the changing composition of smokers in the general population and test results from the focus groups.

Two pilot studies will be conducted. Project 4 will test variations of a new intervention using the American Lung Association's new manual, "Freedom From Smoking for You and Your Family," to encourage those smokers who have not achieved abstinence to try again. Project 6 is designed to evaluate new materials that address the problem of motivating and mobilizing the confirmed smoker to consider cessation.

Project Officer: Carlos Caban, Ph.D.
Identification Number: POl-CA-42760
Project Period: 7/89-12/91

Televised Self-Help Program for Smoking Cessation

Principal Investigator: Richard B. Warnecke, Ph.D.
Performing Organization: University of Illinois at Chicago

This project examined the effectiveness of a televised smoking cessation program in reaching target populations in an urban setting who are at risk for cancer due to smoking. The study contained two components. The first, a population-based analysis, focused on issues of selection, maturation, and the process of behavior change. The second addressed change in individual behavior resulting from the televised intervention and self-help manual and a maintenance intervention following the televised portion on a sample of those who requested the self-help manual.

The dependent variable was smoking cessation or modification. The independent variables were extent and type of exposure to the televised clinic and self-help manual and to the subsequent maintenance condition plus social support, motivation to quit, prior smoking history, history of attempts to quit, and demographics.

The project tested the theory that participation in a public health smoking cessation program results from initial motivation to quit at some level of intensity. The televised program created an opportunity to act on the motivation by viewing the program, requesting the manual, or taking some combination of actions. Once this action is taken, a response occurs that can be reinforced by maintenance and/or social support.

There were seven data collection points in the population-based component: two preintervention and five postintervention telephone interviews. In the requester component, there were five postintervention telephone interviews with the preintervention

data obtained from the registration form. Analysis included efforts to model the sequence of behavior change resulting from the intervention.

Project Officer: Carlos Caban, Ph.D.
Identification Number: P0l-CA-42760 (Project 1)
Project Period: 7/86-6/89

Smoking Cessation Intervention Trial for Pregnant Women

Principal Investigator: Richard Windsor, Ph.D.
Performing **Organ+ization:** University of Alabama at Birmingham

The purpose of this trial is to develop and evaluate the impact on the cessation and reduction rates of a multicomponent smoking cessation intervention among pregnant women. A total of 800 pregnant smokers, 400 randomly assigned to the intervention and 400 randomly assigned to the control group, will be tested.

This trial is adapting and revising existing methods found successful in motivating pregnant smokers in maternity clinics to quit smoking or to reduce cigarette consumption. Behavioral reports and saliva thiocyanate and cotinine samples are being collected at baseline, midpregnancy, end of pregnancy, and 6 weeks, 6 months, and 12 months postdelivery. This trial will apply a three-component intervention program consisting of a self-help smoking cessation guide and skills training to enhance cessation (component 1). Systematic reinforcement by chart reminder (component 2) and encouragement and systematic application of social support (component 3) will also be applied.

Project Officer: Thomas Glynn, Ph.D.
Identification Number: R01-CA-41648
Project Period: 7/1/86-6/30/91

Project Abstracts: Community Intervention Trial for Smoking Cessation

The Community Intervention Trial for Smoking Cessation (COMMIT) was initiated in September 1986 to establish a nationwide cooperative intervention program in 22 communities in the United States and Canada. Following a 2-year planning and protocol development phase, the most promising intervention methodologies from all other ongoing STCP research trials were selected for use in this trial. Interventions have been designed for use in health care settings, worksites, community organizations, and schools; through the media; and through community smoking cessation programs. The protocol will be tested during a 4-year intervention period, and the impact will be monitored among both heavy and light-to-moderate smokers. The primary endpoint of the trial will be the smoking cessation rate among cohorts of heavy smokers in intervention and comparison communities. Smoking prevalence in each community will also be monitored, as well as a variety of other variables measured in surveys of special populations. The intervention protocol and trial results will provide a model to communities around the Nation who want to establish effective community-wide smoking control programs. Thus, the results of the trial will be a central element in nationwide efforts to expand community-based smoking control efforts. Because each site will deliver similar interventions throughout the community, this section's abstracts represent a description of the intervention community's population and the channels through which specific interventions will be delivered to the community.

Community Pair: Brantford and Peterborough, Ontario, Canada

Principal Investigator: J. Allan Best, Ph.D.
Performing Organization: University of Waterloo/McMaster University

The intervention site, Brantford, has a population of 90,520 and is located approximately 60 miles west of Toronto. Although the city is close to several medium-size cities, the agricultural use of the surrounding land and lack of urban sprawl serve to maintain Brantford's identity as a separate community. The demise of the small farm and the movement of industry and population to major metropolitan areas since 1950 have caused Brantford to become an economically depressed area; however, the recent location of new retail and business establishments in the downtown area has caused the economy to be on the upswing. The Massey Combines Corporation, which had approximately 1,000 employees, has recently ceased operations and withdrawn from the community. However, capital incentives are available from the provincial government, and the city's division of economic development is working to attract new industry. The presence of tobacco farming in the rural area surrounding Brantford may negatively affect the development of a clear antitobacco norm. However, despite their large capital investments in equipment and land, tobacco farmers are generally making a transition to other crops. The two major health providers are Brantford General Hospital and St. Joseph's Hospital. Two local radio stations provide regional information and news, but most television coverage is from major centers in southern Ontario. The *Expositor* is a daily newspaper distributed within Brant County and provides municipal, national, and international news. A community weekly, the *Brant* News, provides primarily local news and information. Public schools and local legislation promote and encourage nonsmoking, but at the same time public support and enforcement of a comprehensive city bylaw restricting smoking in public places are lacking.

Project **Officer:** Terry Pechacek, Ph.D.
Identification **Number:** N01-CN6-4093
Project Period: 9/30/86-3/31/95

Community Pair: Utica and Binghamton/Johnson City, New York

Principal Investigator: K. Michael Cummings, Ph.D., M.P.H.
Performing Organization: Roswell Park Memorial Institute

The intervention site, Utica, with a 1980 population of 85,490, is the county seat and the largest city between Syracuse and Albany. It is surrounded by a sparsely populated rural area. An economic foundation in industrial manufacturing plants has been replaced within the past 15 years by lower paying service, clerical, and retail jobs as many of these plants have experienced severe cutbacks or have closed down. Eighty-two percent of employed residents work either in the city or in one of the two suburbs. Two relatively new large shopping malls in Utica's immediate suburbs have brought many new retail outlets to the area, and building construction rates are rising. The population is largely of

Italian, Polish, German, and Irish descent, with a substantial Lebanese segment as well. Black and Hispanic segments are small. Utica's ethnic background is reflected in its conservative values and resistance to change. Most of the neighborhoods have distinctive ethnic characteristics, but the residents as a whole tend to look to government, rather than self-help, to solve community problems. The city has three hospitals (combined total of 719 beds) and three HMO's (combined membership of 17,000). Hospital consolidation is a major community controversy, and turf issues need to be considered in dealing with the hospitals. One daily newspaper, the *Observer-Dispatch*, 14 radio stations, two local network television carriers, and a local PBS affiliate station make up the media services in Utica. Business and government leaders are influential in directing the city's agenda, and local offices of national voluntaries such as the American Lung Association offer community services.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4098
Project Period: 9/30/86-3/31/95

Community Pair: Raleigh and Greensboro, North Carolina

Principal Investigator: Tyler D. Hartwell, Ph.D.
Performing Organization: Research Triangle Institute

The intervention site, Raleigh, is the state capital and is located in the state's most rapidly growing metropolitan area. With a population estimated at more than 200,000, it is the second largest city in North Carolina and the largest city in the eastern part of the state, functioning as the retailing hub for the region and as the county seat. The major employer is the state government, and the economic climate is favorable, with an unemployment rate of only 2.5 percent. Most jobs are found in the technical sector (37 percent), with 34 percent in management, 12 percent in service, and 9 percent in labor sectors. Only about 16 percent of Raleigh's families are below the poverty level. As of 1980, more than 70 percent of the population was white, 27 percent black, and 9 percent of Spanish origin. Three hospitals are located in Raleigh, and five active HMO's have a combined physician membership of more than 2,000. Although the health care community is enthusiastically receptive to smoking-related issues, tobacco interests are not to be ignored in the city. Large companies have been reluctant to participate visibly in antismoking initiatives, and although the city and state governmental units endorse wellness efforts for employees, they do not offer cessation as a part of those programs. All of the four television stations (three network affiliates and a cable station) are active in local community affairs. Radio and print media are also well represented in Raleigh, with two daily newspapers, a wide assortment of community weeklies, and many radio stations. The Tobacco News Network is dedicated to distributing tobacco news throughout the state. Raleigh neighborhoods have served as the grassroots origins for many community initiatives relating to education and schools, road improvements, etc. Coalition-forming and networking between and among groups and local/state agencies are common.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4096
Project Period: 9/30/86-3/31/95

Community Pair: **Bellingham** and **Longview/Kelso,** Washington

Principal Investigator: Maureen M. Henderson, M.D.
Performing **Organization:** Fred Hutchinson Cancer Research Center

The intervention site, Bellingham, is located in the northwest corner of Washington state, 90 miles north of Seattle. Originally settled as a port and lumbering town, those industries remain important today. Bellingham is also the center of a fertile agricultural and dairy region, and Western Washington University is an important part of the community. It is an economically strong city. The population of Bellingham is relatively well educated, with a median family income of $19,572. The workforce is almost evenly divided between white- and blue-collar occupations. Caucasians make up 95.5 percent of the population. Political leaders are drawn from all sectors of the community and from diverse backgrounds. Bellingham is served by two hospitals whose rivalry is an important issue in the community despite some areas of cooperation. The local newspaper, the Bellingham ***Herald,*** is read by 84 percent of residents and plays an important role in defining local issues. There are also five other publications ranging from 5 days/week to monthlies. One local television station and six local radio stations carry local news. There is an established pattern of public participation in Bellingham from members of all community sectors such as business, industry, health, local government, and religious groups. Many sectors of the community are involved in smoking issues, and municipal regulations extend beyond the state regulations by prohibiting almost all smoking in public buildings.

Project **Officer:** Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4100
Project Period: 9/30/86-3/31/95

Community Pair: Paterson and Trenton, New Jersey

Principal Investigator: Norman Hymowitz, Ph.D.
Performing Organization: University of Medicine and Dentistry of New Jersey

The intervention site, Paterson, with a mixed ethnic population of approximately 138,300, is located in northern New Jersey about midway between Newark and New York City. Historically, Paterson has been known for its silk mills, and 60 mills are still located in the district today. The population, relatively young, reflects the urban inner-city nature of the community, and 36 percent of the inhabitants earn under $15,000/year. Although the city is undergoing revitalization and growth, there is much poverty and many people depend on social security, unemployment, or welfare assistance. Two major hospitals serve the community, for a combined patient flow of about 32,500 per year. There is a full array of electronic and print media, many of which come from nearby New York City. Local newspapers include the ***Herald & News*** and the *Bergen* ***Record,*** as well as three Chamber of Commerce publications. In addition to the New York stations, there are two local television stations, a Spanish-language station, and cable television, as well as many radio stations, both local and from New York. Grassroots movements have come together to fight social ills, as observed in the mobilization of the entire community in response to

a "crack for sex" ring involving 12-year-old children in prostitution. Although there are many different community groups and leaders, they do not seem to hesitate in joining together to better their community.

Project **Officer:** Terry Pechacek, Ph.D.
Identification **Number:** N01-CN6-4099
Project Period: 9/30/86-3/31/95

Community Pair: **Medford/Ashland** and **Albany/Corvallis,** Oregon

Principal Investigator: Edward Lichtenstein, Ph.D.
Performing Organization: Oregon Research Institute

The intervention site, Medford/Ashland, is a community of two neighboring cities with a combined population of approximately 58,000 located near the Oregon-California border. Ashland is seen as an educational and cultural center, and Medford, the county seat, is known as the industrial, trade, and service center of the region. These characteristics capture the essence of the differences between the two towns while suggesting the basis for their interdependence. Lumber, agriculture, manufacturing, health care, retail trade, and governmental services are the key components in Medford's economy. Oregon's fifth largest city, Medford is also a community popular with retired people in addition to being the hub of a large marketing region. Ashland's primary businesses are education (Southern Oregon State College), tourism, retail commerce, and light industry. Educational and public sector agencies, along with tourism, provide about two-thirds of all job opportunities. Light industry, which accounts for less than 10 percent of employment, is based on wood products, and the city is eager to expand and diversify its industrial base. Both communities are organized under the council/manager form of government. Ashland has a reputation for political activism, whereas Medford tends to be more conservative. There are three major hospitals in the community, as well as numerous traditional and alternative health care providers. There are two daily county newspapers widely read in Medford/Ashland. In addition, Southern Oregon State College publishes a daily paper during the school year, and three alternative publications (two weeklies and one monthly) are also available. Three local commercial television stations and one public broadcasting system affiliate serve the Medford/Ashland area. There are 11 radio stations, 10 commercial and 1 strong public station. Community involvement was apparent in a recent air pollution controversy. The community remains split over the issue and resentful about outside interference from the Federal EPA. Local jurisdictions encourage citizen participation and rely on citizen advisory committees as one vehicle for ongoing involvement.

Project **Officer:** Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4094
Project Period: 9/30/86-3/31/95

Community Pair: **Fitchburg/Leominster** and Lowell, Massachusetts

Principal Investigator: Judith K. Ockene, Ph.D.
Performing Organization: University of Massachusetts Medical School

The intervention site, Fitchburg/Leominster, is a combination of two bordering towns that make up a single community. The area has a total population of about 74,000 and is located in north central Massachusetts, approximately 60 miles from Boston. A historic rivalry has given way in recent years to economic cooperation as a means of organizing a response to the difficult economic times faced by the two towns. Local companies are mostly small and are generally based on the plastics industry. The working population is primarily blue collar. As a result of the high unemployment rate (7 percent), private and public sectors have begun to cooperate more actively. A recent influx of immigrants into the area includes Puerto Ricans and Southeast Asians. Historically, Leominster was settled primarily by Italians, Fitchburg by Finns, Irish, and French. Recently, young professionals who work in Boston have begun to move into the area but are not well accepted by longtime local residents. However, the two cities still maintain a smalltown culture. Two hospitals serve the area: Burbank Hospital (Fitchburg) and Leominster Hospital. Despite an attempt to maintain an outward image of cooperation, these two hospitals compete with each other, and there is little overlap of physicians across hospitals. The broadcast media in these communities are likely to be supportive of program efforts. Of three radio stations, two have a history of supporting health and social issues. The Fitchburg ***Sentinel*** publishes information on community events. The area has a strong history of collaborative efforts in addressing social and health issues such as aid to the homeless, teenage pregnancy, suicide, and drug use. The community has also been fairly active in addressing the issues of smoking cessation in response to a new state law requiring smoking restrictions in all state and city buildings.

Project **Officer:** Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4091
Project Period: 9/30/86-3/31/95

Community Pair: Yonkers and New **Rochelle,** New York

Principal Investigator: Mario A. Orlandi, Ph.D., M.P.H.
Performing Organization: American Health Foundation

The intervention site, Yonkers, located 16 miles from the center of New York City, is the fourth largest city in New York and the largest city in the county. The population is 85 percent white, with 81 percent of the minority residents located in the Southwest quadrant. Although Yonkers comprises 38 distinct neighborhoods, all functioning autonomously, the city government operates in a more centralized capacity. Housing varies from deteriorating low-income dwellings to upper-class homes; half of all the homeless in Westchester County reside in Yonkers. The base of the Yonkers workforce is blue collar. Major employers include Loral Electronics, Refined Sugars, and the City of Yonkers; many small businesses provide employment as well. The court-imposed housing desegregation

issue is a controversial area that has sent the city to the verge of bankruptcy several times due to fines levied for noncooperation. This will continue to be a controversial issue for some time. The Yonkers community is served by three hospitals offering specialized ser-. vices with no overlap. An HMO provides medical services outside of survey boundaries. Although Yonkers produces its own local newspapers, cable shows, and radio programs, much of the electronic and printed media come from New York City. Local issues are covered in the daily newspaper, which has a section devoted to health topics, and a cable health program is hosted by a city councilman and COMMIT board member. The city, known for its separate "villages," nevertheless bands together when issues affecting the city's financial stability arise. In spite of the political and financial strains of the last decade, the city is dedicated to enhancing a sense of community spirit. Faced with the complexities inherent in a large city, Yonkers still upholds the values of a smalltown setting and community leaders interact regularly to share resources.

Project **Officer:** Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4095
Project Period: 9/30/86-3/31/95

Community Pair: **Sante** Fe and **Las Cruces,** New Mexico

Principal Investigator: Neil1 F. Pilland, Dr.P.H.
Performing Organization: Lovelace Medical Foundation

The intervention site, Sante Fe, is the state capital, and is the second largest city in New Mexico with a 1984 population of 52,274. Employment opportunities have been steadily expanding in Santa Fe because of growth in state government, tourism, and the arts. The population comprises an ethnic mix of Spanish, Native American, Hispanic, and Anglo groups. There are many examples of community cooperation for city-wide improvements in Santa Fe, including cleanup projects, fundraising for and construction of a new library, and human services. Santa Fe has one short-term, not-for-profit general hospital with 212 beds; the community has access to eight health maintenance organizations, although not all eight are based in Santa Fe. There is one local television station that reaches a wide local viewing audience. There are 11 local radio stations, and the remaining television and radio stations broadcast from Albuquerque. The *Santa Fe New Mexican* is a daily newspaper with a large local readership and a smoke-free facility. A Friday supplement is aimed at the Hispanic community. The weekly Santa *Fe Reporter* reports on art and cultural events and has a small readership. The community also has several major programs that target tobacco use such as the New Mexico Committee on the Public Health Impact of Smoking, *HealthNet New* Mexico, and the State of New Mexico's Office of Smoking and Health.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4101
Project Period: 9/30/86-3/31/95

Community Pair: Cedar Rapids/Marion and Davenport, Iowa

Principal Investigator: Paul R. Pomrehn, M.D., M.S.
Performing Organization: University of Iowa

The intervention site, Cedar Rapids/Marion, occupies a central location in east-central Iowa. The metropolitan area's population of approximately 140,000 is relatively stable, well educated, and homogeneous (white) with a median household income of about $20,000. The economic base of the community is agriculture and related products. A previously thriving heavy equipment industry has given way to booming high-technology, skilled, and food processing industries. Cedar Rapids has two hospitals with a combined capacity of approximately 960 beds and a large number of primary care providers. There is a full range of electronic and print media serving the area: The daily newspaper has a large circulation; there are several free special interest publications; and the community has a cable television system, 5 television stations, and 16 radio stations. Community activism and leadership reflect a smalltown style, and civic and social integration are high. Leadership is diffuse, reflecting diverse interest groups, and there is a commitment to broad-based involvement and a cooperative rather than adversarial approach to decision-making.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4092
Project Period: 9/30/86-3/31/95

Community Pair: Vallejo and Hayward, California

Principal Investigator: Lawrence Wallack, Dr.P.H.
Performing Organization: Kaiser Foundation Research Institute

The intervention site, Vallejo, is the largest city in Solano County. This port city of about 90,000 inhabitants is located at the northeast corner of the San Francisco Bay area. In 1980, slightly less than half of the population was between the ages of 25 and 64, with more than half of the work force employed in white-collar occupations such as technical and administrative support. The economy has traditionally been dominated by the Mare Island Naval Shipyard, where 5,000 military persons are stationed and where 12,000 to 15,000 civilians are employed, many of whom are Vallejo residents. The two major health care providers in Vallejo are Kaiser Hospital and Sutter Solano Medical Center. The Kaiser-Permanente Medical Plan serves 51 percent of the population. Bay area television and radio stations provide the majority of electronic media for Vallejo; hence, the local newspaper, the Vallejo ***Times Herald,*** is the primary local media resource. The city has an active sense of community identity and purpose, yet there is also a struggle between the "old guard" and emerging influential newcomers within the city council where prodevelopment and conservationist forces maintain an uneasy balance. Community mobilization and cooperation are apparent in several social issues such as drug and alcohol abuse, cancer awareness, and smoking ordinance issues.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN6-4097
Project Period: 9/30/86-3/31/95

COMMIT Coordinating Center

Principal Investigator: Janis Beach
Performing Organization: Information Management Services, Inc.

The coordinating center's primary responsibilities are data management, coordination of communication among research institutions, and administrative and logistical support to the program office. The coordinating center plays a major role in the design, implementation, and execution of the study. The staff of the coordinating center has the responsibility of collecting, editing, storing, and analyzing all data received from the research institutions. The coordinating center is represented on all major committees and subcommittees to provide input on data analysis, quality-control procedures, and data survey/collection design. Conference and logistical support is provided for all steering committee meetings. Minutes and task assignment lists from steering committee meetings are prepared by the coordinating center.

Project Officer: Terry Pechacek, Ph.D.
Identification Number: N01-CN7-5406
Project Period: 12/24/86-06/23/95

COMMIT Survey Organization

Principal Investigator: Jay Levinson, Ph.D.
Performing Organization: Research Triangle Institute

Research Triangle Institute's (RTI) role in the baseline survey was to program the six-part survey instrument into a computer-assisted telephone interview to facilitate the actual survey interviewing process. The purposes of the survey were to determine smoking prevalence and record demographic characteristics of each community before COMMIT intervention. A quota of 500 heavy smokers was established for each community. Using telephone numbers provided for each community, RTI conducted half of the survey interviews in the 22 intervention and comparison communities, as well as in two additional test sites where Hispanic populations were present. The survey was translated into Spanish to gather information from these Hispanic communities. All survey response data were recorded on a tape database that contained two files: (1) household screening data and (2) extended interview data. RTI then provided the data tape to the coordinating center. In addition, RTI computed the sample weighting for each community.

Project Officer: Margaret Mattson, Ph.D.
Identification Number: N01-CP7-1099
Project Period: 08/31/87-10/30/88

COMMIT Survey Organization

Principal Investigator: Mark Schulman, Ph.D.
Performing Organization: Schulman, Ronca& Bucuvallas, Inc.

This project involves the conduct of worksite, religious organization, and school surveys in 1989 and 1993 to determine the type and extent of smoking control policies and smoking cessation programs available in these settings for both the intervention and comparison communities. From a listing of all worksites of 50 or more employees in the community, a stratified sample will be drawn based on number of employees (50-99; 100-249; 250+). Parallel surveys will be conducted of religious organizations to determine the proportion that have smoking restriction policies, offer cessation information or services to members, and participate in community-wide cessation campaigns such as the Great American Smoke-Out or similar quit-smoking events. All religious organizations in the yellow pages under "churches" and "synagogues" will be included in the surveys. The survey of religious organizations will serve as the objective indicator of the success and penetration of the intervention efforts into local organizations as a whole. Finally, administrations of all middle and high schools in both the intervention and comparison communities will be surveyed to assess student and employee smoking policies.

Project Officer: William Lynn
Identification Number: N01-CN9-5189
Project Period: 10/1/89-6/30/90

COMMIT Survey Organization

Principal Investigator: David Macklan, Ph.D.
Performing **Organization:** Westat, Inc.

Westat's role in the baseline survey was to program the six-part survey instrument into a computer-assisted telephone interview system to facilitate the actual survey interviewing process. The purposes of the survey were to determine smoking prevalence and record demographic characteristics of each community before COMMIT intervention. A quota of 500 heavy smokers was established for each community. Using telephone numbers provided for each community, Westat conducted half of the survey interviews in the 22 intervention and comparison communities, as well as in two additional test sites where Hispanic populations were present. The survey was translated into Spanish to gather information from these Hispanic communities. All survey response data were recorded on a tape data base that contained two files: (1) household screening data and (2) extended interview data. Westat then provided the data tape to the Coordinating Center. In addition, Westat provided input on the method of implementing the survey and performed quality control on results from both its own survey and on the survey results provided by RTI.

Project **Officer:** Margaret Mattson, Ph.D.
Identification Number: N01-CP7-1098
Project Period: 08/31/87-08/30/88

COMMIT Survey Organization

Principal Investigator: David Macklan, Ph.D.
Performing Organization: Westat, Inc.

Westat, Inc.'s role in the Evaluation Cohort Survey was to conduct a followup survey in the 22 intervention and comparison communities 1 year after the baseline survey was conducted. Westat was provided with a selection of participants from the baseline survey, as well as 100 never-smokers who had not been previously contacted. The purposes of the followup survey were to learn the current smoking status of those individuals and to survey their views, values, and awareness of smoking-related issues. The survey also collected demographic information on the never-smokers who had not been included in the baseline survey. Data collection is continuing, and Westat will provide the coordinating center with a tape database containing one file with the followup data when the survey is completed.

Project Officer: William Lynn
Identification Number: N01-CN8-5 120
Project Period: 09/28/88-l 1/30/89

Appendix C: Intervention Materials

This appendix includes an annotated listing of the various intervention materials developed and/or tested for efficacy as part of the STCP intervention research initiatives. These materials are grouped according to the following categories:

- Smoking control advocacy and policy.
- Cessation manuals and guides.
- Curriculum, educational, and information products.
- Informational/motivational products.
- Media products.
- Patient tracking system.

An address list for obtaining the materials from the indicated sources appears at the end of the appendix.

Intervention Materials

Smoking Control Advocacy and Policy

Clean Air Health Care. Smoke-free hospital manual. Available from the Minnesota Smoke-Free Coalition. Cost: $9.75 for one copy, $8.75 each for two or more.

Major Local Smoking Ordinances in the United States: Detailed Matrix of the Provisions of Workplace, Restaurant, and Public Places Smoking Ordinances. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Media Strategies for Smoking Control. Guidelines for working with the print and broadcast media to influence their coverage of the smoking issue. The 44-page handbook is based on the results of an expert consensus workshop convened by the National Cancer Institute and the Advocacy Institute. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Smoking Policy: Questions and Answers. Ten-part series of factsheets on the establishment of worksite smoking policies. Addresses such topics as the health effects of environmental tobacco smoke, legal issues concerning policy implementation, and working with labor unions in establishing policies. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Cessation Manuals/Guides

Clearing the Air. Booklet containing methods and techniques to assist smokers in giving up cigarettes. Also includes information on fighting withdrawal symptoms and handling relapse. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Conducting a Smoking Cessation Group for Hispanics-A Leader's Guide. Guide to assist leaders who want to conduct cessation interventions with Hispanics. Available from the University of California's Hispanic Smoking Cessation Research Project. Cost: Available for cost of duplication.

Cool Turkey. Self-help smoking cessation guide. Available from the Stanford Health Promotion Resource Center. Cost: $2.

Enough Snuff. Self-help quitting manual for smokeless tobacco users. Available from the Oregon Research Institute. Cost: Contact source for availability and price.

Free & Clear: A Guide to Quitting Smoking on Your Own. Four-part, quit-smoking guide designed for smokers quitting on their own, with brief toll-free telephone counseling for users and a quit kit containing adherence aids. Counselor Guide available for group sessions. Available from the Center for Health Promotion of Group Health Cooperative of Puget Sound or Health Enhancement Systems. Cost: *$35,* with volume discounts.

Freedom From Smoking in 20 Days. Self-help guide to smoking cessation. Available from local American Lung Association offices. Cost: $5.

Great American Smokeout (GASO) Materials. Promotional and self-help materials for the GASO. Available from local American Cancer Society offices. Cost: Varies.

Guía para Dejar de Fumar. Full-color self-help smoking cessation booklet developed specifically for Spanish-speaking Americans. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Helping Latino Smokers Quit. Guide for health care providers to help their Latino patients quit. Adapted from the Quit for Life seminars. Available from the University of California's Hispanic Smoking Cessation Research Project. Cost: Free.

Helping Smokers Quit. Smoking cessation kit for pharmacists that contains a guidebook for pharmacists, 25 sets of patient materials, and a counter card and poster to prompt interested patients to ask pharmacists about the program. Focuses on smoking and drug interactions. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

How To Help Your Patients Stop Smoking: A National Cancer Institute Manual for Physicians. Step-by-step handbook on instituting smoking cessation techniques in medical practices. The 65-page manual, with resource lists and tear-out materials, is based on the results of NCI smoking intervention trials, Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Making a Difference. Smoking intervention manual for occupational health nurses. Available from the Minnesota Smoke-Free Coalition. Cost: $9.25 for one copy, $8.25 each for two or more.

Personal Growth and Smoking Cessation. Manual that integrates personal competence or self-management skills and skills for seeking social support for use in smoking cessation clinics. Available from the Washington University. Cost: $5 (estimate).

Physician-Delivered Smoking Intervention Program. Multifaceted program designed to provide physicians and other health care providers with the skills and tools necessary to intervene effectively with their patients who smoke. Includes facilitator's manual and teaching guide, slide package, video, participant handouts, and office procedure kit. Available from the University of Massachusetts Medical School. Cost: Contact source for availability and price.

Preparing To Quit With Nicotine Gum. Self-help smoking cessation guide. Available from the Stanford Health Promotion Resource Center. Cost: $2.

Promoting Worksite Smoking Control. Intervention field manual. Available from Center of Health Promotion of the Miriam Hospital. Cost: Contact source for availability and price.

Quit-and-Win. Self-help manual. Available from the Minnesota Smoke-Free Coalition. Cost: $6.50 for one copy, $5 each for two or more.

Quit for Good. Smoking cessation program for physicians, dentists, and other health professionals to use in counseling their patients. The kit contains a health professional's guide, patient stop-smoking contracts, "smoker" chart stickers, copies of the self-help booklet "Clearing the Air," and waiting room materials. Materials for 50 patients. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Quit for Life: Get the Most Out of L&-Kick the Smoking Habit. Self-help, quit-smoking kit designed especially to address the needs and concerns of black smokers. The kit includes a brief black-focused guide to using materials, a copy of the multiracial **1988** American Lung Association guide "Freedom From Smoking for You and Your Family," refrigerator tipsheets for following the program, and a package of adherence aids, Available from the North Carolina Mutual Life Insurance Company. Cost: $6.

Quit for Life Booklet. Self-help manual for smoking cessation. Available from the University of California at San Francisco Medical Center. Cost: Originals available for reproduction.

Quit for Life Training Package. Syllabus designed for two sessions with two 11-minute videos demonstrating techniques, with quit Rx pads and reminders to counsel. Available from the University of California Medical Center. Cost: Originals available for, reproduction.

The Quit Kit. Self-help smoking cessation guide. Available from the Stanford Health Promotion Resource Center. Cost: $2.95.

Quitting With the Help of Nicorette. Physician's guide for using Nicorette gum in their practices. Available from Merrell Dow Lakeside Pharmaceuticals. Cost: Contact source for availability and price.

Review and **Evaluation** of Smoking Cessation Methods: The United States and Canada, **1978-1985**. 200-page monograph on smoking cessation methods, including 883 references and a comprehensive table of cessation methods that have been used over the past three decades. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Smoker's Challenge User's Guide Plus. Self-help smoking cessation guide. Available from the Stanford Health Promotion Resource Center. Cost: $24.50.

Steps to Stopping: The Script. Brochure linking nursing process with script for stop smoking counseling and followup. Available from the American Health Foundation. Cost: Contact source for availability and price.

Stop for Life. Modular system for maintenance of nonsmoking suited to worksites, hospitals, and other settings where a coordinator is available to receive participants' weekly progress reports, After smokers quit, they begin with the module "How To Cope With the Urge To Smoke"; once a week for the next 7 weeks, they receive one of the modules they have selected. The modules are targeted at coping with high-risk situations without smoking. Available from the Stanford Health Promotion Resource Center. Cost: Sample set of 16 with User's Guide: $15. Cost per smoker (part of program): $15.

Stop Smoking: A Nurse's Guide. Softcover manual that describes the health effects of smoking, steps to stopping script, and strategies for creating smoke-free environments. Available from the American Health Foundation. Cost: Contact source for availability and price.

Tobacco Advice Line at Kaiser (TALK Line) TALK Line Scripts. Toll-free telephone hotline, answered by trained staff. Individuals accessing this service have the opportunity to talk with experienced cessation counselors and can request tipsheets and self-help manuals. Uses 12 most basic issues (steps to quit smoking, steps to quit chewing, coping with urges, tobacco as a drug, how to use the self-help manual, smoking cessation and weight, exercise, relaxation, low-tar/low-nicotine cigarettes, health risks of smokeless tobacco, smoking and pregnancy, and passive smoke) and tape-recorded scripts. Available from the Kaiser Permanente Center for Health Research. Cost: Contact source for availability and price.

TRACC Quit Kit. Self-help kit with toothpicks, a TALK magnet with the TALK line phone number, TRACC key chain with logo, cinnamon sticks, chewing gum, calendar, project-specific tipsheets for quitting tobacco, binder clips and gadgets to play with and keep hands busy. Provides smokers with substitutes for smoking and gives them aids to quit smoking. Available from the Kaiser Permanente Center for Health Research. Cost: Contact source for availability and price.

Curriculum, Educational, and Information Products

Cancer Prevention Brief: Tobacco. Overview of the science relating tobacco use to cancer and other health problems. Summarizes recent trends in the use of tobacco and outlines key strategies for prevention. Includes a selected bibliography. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Chew or Snuff Is Real Bad Stuff. Brochure highlighting the adverse health and social effects of using smokeless tobacco. Designed for boys ages 10 to 13; includes a foldout poster. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Chew or Snuff Is Real Bad Stuff: A Guide To Make Young People Aware of the Dangers of Using Smokeless Tobacco. Lesson plan for teachers that contains additional facts about smokeless tobacco, suggested classroom activities, and selected education resources. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Choices. Grade 7 smoking prevention program. Available from the American Health Foundation. Cost: Contact source for availability and price.

Crossroads. Grade 7 multiple component health promotion program (substance abuse prevention, diet, exercise, life skills). Available from the American Health Foundation. Cost: Contact source for availability and price.

FREEDOM LINE? Smokers' hotline, a joint project of the University of Rochester and the American Lung Association-Finger Lakes Region, Inc. Available from the University of Rochester or the American Lung Association-Finger Lakes Region, Inc. Cost: Contact source for availability and price.

Life Skills Training. Tobacco, alcohol, and drug abuse prevention program for seventh graders, Emphasizes resistance skills training within the context of teaching a broad range of personal and social life skills. Available from Smithfield Press. Includes teacher's manual ($85), student guide ($6), and audiocassette tape ($10) for seventh grade curriculum and teacher's manuals for eighth ($50) and ninth grade curriculums ($35).

The Minnesota Smoking Prevention Program (MSPP). School-based program designed to reach students at the most opportune time for tobacco use prevention, ages 12 to 14. A key strategy for the success of MSPP is the involvement of peer leaders in the classroom experience; nearly half of the activities in MSPP are led by students. Available from Hazelden Health Promotion Services, Cost: Teachers' manual, 100 pages, $24.95 plus shipping and handling.

Project 4-Health Action Team Guidebook. Booklet to organize and conduct special group projects aimed at preventing and curtailing tobacco use. Available from the University of California School of Public Health. Cost: Materials provided at cost as long as supplies last. In return, feedback and suggestions are requested. Sample provided that recipient may reproduce for mailing costs (about $5).

Project 4-Health Tobacco Education Program-Leader's Guide. Overview of program, detailed instructions, and camera-ready materials for leading five educational sessions. Available from the University of California School of Public Health. Cost: Materials provided at cost as long as supplies last. In return, feedback and suggestions are requested. Sample provided that recipient may reproduce for mailing costs (about $5).

Project 4-Health Tobacco Education Program-Member's Booklet. Activity booklet that provides individual puzzles, games, and projects to follow up on group sessions and encourage further exploration. Available from the University of California School of Public Health. Cost: Materials provided at cost as long as supplies last. In return, feedback and suggestions are requested. Sample provided that recipient may reproduce for mailing costs (about $5).

Resources for Smokeless Tobacco Education. Descriptions of and ordering information for a variety of print and audiovisual materials related to smokeless tobacco that have been developed by both public and private health organizations. Available from the National Cancer Institutes's Office of Cancer Communications. Cost: Free.

Saying No! To Tobacco/More Saying No! To Tobacco. Student workbook and booster workbook. Available from the Columbia University School of Social Work. Cost: Contact source for availability and price.

Saying No! To Tobacco/More Saying No! To Tobacco. Trainer's manual and booster training manual. Available from the Columbia University School of Social Work. Cost: Contact source for availability and price.

SHARP Teacher Handbook. Healthy lifestyles curriculum for students. Available from the University of Southern California's Institute for Health Promotion and Disease Prevention. Cost: $50.

SHOUT (Students Helping Others Understand Tobacco)-Lessons 1-9 and Facilitator Instructions for Lessons 1-9. Curriculum emphasizing health effects, advertising, self-esteem, decisionmaking, and refusal skills for both cigarettes and smokeless tobacco (1-6 main course, 7-9 review). Includes instructions on how to implement nine SHOUT lessons for pairs of facilitators. Available from the San Diego State University Graduate School of Public Health. Cost: Copying and mailing, $10.

SMART Parent Program. Adult healthy lifestyles program materials. Available from the University of Southern California's Institute for Health Promotion and Disease Prevention. cost: $50.

Smoke-Free Class of 2000 Classroom Kit. Smoking prevention school-based curriculum. Available from Lovelace Medical Foundation. Cost: $5.

Smoking Prevention Curriculum Grades 5-10. Media and school-based program designed to prevent the onset of regular cigarette smoking. Available from the University of Vermont's Office of Health Promotion Research. Cost: Contact source for availability and price.

TNT (Toward No Tobacco Use) Teacher Handbook. School-based tobacco use prevention curriculum for students. Available from the University of Southern California's Institute for Health Promotion and Disease Prevention. Cost: $50.

Informational/Motivational Products

Challenge of Carlos (La Reta de Carlos). English and Spanish cartoon/novela in booklet form for handout or mailing. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Clean Air Health Care Poster. Poster to identify a smoke-free hospital or inform visitors hospital is smoke free. Available from the Minnesota Smoke-Free Coalition. Cost: $7.

Cuatro Asesinos **Andan Sueltos.** Brochures on smoking cessation in English and Spanish for handout or mailing. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Give Them Breathing Room Pamphlet and Poster. One pamphlet and one poster (4-color) designed to get women smokers to call NCI's Cancer Information Service. Available from Roswell Park Memorial Institute. Cost: Printing costs.

Help Free Smokers. Poster for use in nursing schools, hospitals, and other health care settings. Available from the American Health Foundation. Cost: Contact source for availability and price.

Newspaper Role Model Stories. 162 stories on smoking, fatty foods, alcohol, and medical checkups among youth and adults in English and Spanish (50 percent female). Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Nurses Thank You For Not Smoking. Cloth tote bag. Available from the American Health Foundation. Cost: Contact source for availability and price.

Programa A Su **Salud Calendar. Six** bilingual monthly calendars on the topics of smoking, avoiding drugs and alcohol, losing and maintaining weight, holiday health tips, exercising, preventive medicine and checkups, and summary of other five calendars. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Project **4-Health** Tobacco Education Pro**gram—Parents'** Pamphlet. Pamphlet explaining education program, inviting parent participation, and providing tips for parents if they and/or their children smoke or chew. Available from the University of California School of Public Health. Cost: Materials provided at cost as long as supplies last. In return, feedback and suggestions are requested. Sample provided that recipient may reproduce for mailing costs (about ***$5).***

Quit for Life Poster. Poster encouraging patients to ask physicians for help in quitting. Available from the University of California Medical Center. Cost: Originals available for reproduction.

Seis Asesinos **Andan** Sueltos. Brochures on smoking cessation in English and Spanish for handout or mailing. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

The TRACC Record. Six bimonthly newsletters that promote and tie together low-intensity services as well as serve as an intervention channel. Published in a colorful four- to six-page 8-1/2" x 11" format. Includes a question-answer column, interviews of individuals in the study, cartoons, and information items appropriate to various stages of quitting. Available from the Kaiser Permanente Center for Health Research. Cost: Contact source for availability and price.

Why Do You Smoke? Self-test that helps smokers determine some of the reasons they smoke and which cessation techniques may work best for them. Available from the National Cancer Institute's Office of Cancer Communications. Cost: Free.

Media Products

Calling It Quits. Video quitting guide for groups. Available from the Stanford Health Promotion Research Center. Cost: $40.

Four Killers. 30-second video/audio PSA's in English and Spanish for media presentation. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Give Them Breathing Room. Three 30-second TV spots designed to motivate women smokers to call a hotline for assistance in stopping smoking. Available from Roswell Park Memorial Institute. Cost: Duplication costs only.

High Risk Assessment Battery for Early Adolescents. Measurement of risk and quantification of use rates. Available from the Columbia University School of Social Work. Cost: Contact source for availability and price.

HMO Smoking Cessation Videos. Five videos that use testimonials mixed with on-camera narration to sell the concept of nonsmoking specifically in an HMO setting. Titles

of the videos: Health Incentives Program, Introduction to Freedom From Cigarettes, Quitting on Your Own, Two Options for Quitting, Smokeless Tobacco Cessation, Quitting on Your Own-For Teens, and Hospital Cessation. Available for research purposes only from the Kaiser Permanente Center for Health Research. Cost: Contact source for availability and price.

Male Quit-Smoking Role Model. Thirty-second video/audio PSA's in English and Spanish for media presentation. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Peer Pressure Resistance Skills for Adolescents: Teacher's Guide. Participation video activity to help sixth- to eighth-grade students avoid tobacco, alcohol, and drugs. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Say No (Smoking, Fatty Foods, Alcohol). Thirty-second video/audio PSA's in English and Spanish for media presentation. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Saying No! To Tobacco. Intervention-specific videos designed to teach assertion/refusal skills to high-risk early adolescents. Available from the Columbia University School of Social Work. Cost: Contact source for availability and price.

Smoke and Chew-What To Do? Twelve-minute video to trigger discussion about health effects of smokeless tobacco use and cigarette smoking. Features San Francisco Giants and Mary T. Meagher (Olympic swimming champion). Available from the University of California School of Public Health. Cost: Limited copies available; seeking an independent distributor. Available for cost of reproducing and mailing (about $12).

Spanish Public Service Announcements. Antismoking messages in Spanish (TV and radio). Available from the University of California's Hispanic Smoking Cessation Research Project. Cost: Available for cost of duplication.

Stop Before You Drop. "Trigger" rap video to motivate students in grades 1-12 to think: about stopping or not starting to smoke. The music video was made by more than 300 young people from the predominantly black community of Richmond, California, as part of a community mobilization effort supporting nonsmoking. Available from Kaiser Permanente's Division of Research. Cost: Contact source for availability and price.

Quitting Chew. Video to motivate chewers and snuffers to quit (9 minutes). Available from the Oregon Research Institute. Cost: Contact source for availability and price after research is completed.

Quitting With Nicorette. Video on the use of Nicorette for smoking cessation targeted to the physician's office. Available from Hall-Foushee Productions. Cost: $60.

Video/Audio Role Model Segments. Twenty-four local Southwest Texas video/audio media segments appropriate for clinic waiting rooms and teaching settings. Available from the University of Texas Health Science Center. Cost: Contact source for availability and price.

Ya Basta. Slide, audio, or video presentation to introduce an antismoking message in Spanish at community meetings. Available from the University of California's Hispanic Smoking Cessation Research Project. Cost: Available for cost of duplication.

Patient Tracking System

Computerized Patient Tracking System (TRACK). Integrated data system to maintain demographic, event, and outcome data about participants in large clinical trials. This automated tracking system, composed of generalized data structures and cross-reference tables, also efficiently supports and oversees specific process controls for mailings, telephone contacts, appointment scheduling, and the like. Accumulates a historical record of intervention activities. Designed to run using the System 1032 relational database, a widely used system on minicomputers and mainframes. However, the "genetic code" of TRACK resides in its database structure, not in its programming code. An equally functional system could be duplicated on many other relational database systems, including products such as dBase IV. Many of these products run on personal computers such as those found in many physicians' offices. Available from the Kaiser Permanente Center for Health Research. Cost: Contact source for availability and price.

Address List

American Cancer Society
(Check for local listing in
the white pages of your
telephone directory)

American Health Foundation
320 East 43rd Street
New York, NY 10017
(212) 953-1900, ext. 249

American Lung Association
(See local listing)

American Lung Association-Finger Lakes Region, Inc.
1595 Elmwood Avenue
Rochester, NY 14620
(716) 275-8710

The Columbia University School of Social Work
622 West 113th Street
New York, NY 10025
(2 12) 854-8506

Group Health Cooperative of Puget Sound
Center for Health Promotion
521 Wall Street
Seattle, WA 98121
(206) 448-4396

Hazelden Health Promotion Services
1400 Park Avenue South
Minneapolis, MN 55404
(612) 349-4310 or (800) 257-8700

Health Enhancement Systems
9 Mercer Street
Princeton, NJ 08540
1-800-437-6668

Kaiser Permanente
Division of Research
3451 Piedmont Avenue
Oakland, CA 94611
(415) 987-3248

Kaiser Permanente Center for Health Research
Kaiser Foundation Hospitals
4610 Southeast Belmont Street
Portland, OR 97215-1795
(503) 239-6765

Merrell Dow Lakeside Pharmaceuticals
P.O. Box 429553
Cincinnati, OH 45242-9553
(513) 948-9111

Minnesota Smoke-Free Coalition
Suite 314
2221 University Avenue, S.E.
Minneapolis, MN 55414
(507) 280-9444

The Miriam Hospital
Center for Health Promotion
Brown University
164 Summit Avenue
Providence, RI 02906
(401) 274-3700
or (401) 331-8500, ext. 4315

North Carolina Mutual Life Insurance Company
Mutual Plaza
Durham, NC 27710
(919) 6829201

Office of Cancer Communications
National Cancer Institute
National Institutes of Health
Building 31, Room 10A-24
Bethesda, MD 20892
1-800-4-CANCER

Office of Health Promotion Research
University of Vermont
Division of Health Sciences
235 Rowe11 Building
Burlington, VT 05405
(802) 656-4187

Oregon Research Institute
Suite 2
1899 Willamette Street
Eugene, OR 97401
(503) 484-2123

Roswell Park Memorial Institute
Elm and Carlton Streets
Buffalo, NY 14263
(716) 845-2300

San Diego State University
Graduate School of Public Health
College of Health and Human Services
San Diego, CA 92182-0405
(619) 594-1976

Smithfield Press
P.O. Box 856
Lenis Hill Station
New York, NY 10021

Stanford Health Promotion Resource Center
1000 Welch Road
Palo Alto, CA 94304
(415) 723-7049

University of California at Berkeley
School of Public Health
Suite 204
1919 Addison Street
Berkeley, CA 94704
(415) 643-7314

University of California at San Francisco
Hispanic Smoking Cessation Research Project
400 Parnassus Avenue, A-405
San Francisco, CA 94143-0320
(415) 476-4362

University of California at San Francisco
Medical Center
400 Parnassus Avenue, A-405
San Francisco, CA 94143-0320
(415) 476-4362

University of Massachusetts Medical School
Division of Preventive and Behavioral Medicine
55 Lake Avenue North
Worcester, MA 01655
Attention: Program Director, PDSIP
(413) 545-1931

University of Rochester Smoking Research Program
Meliora Hall
River Station
Rochester, NY 14627
(716) 275-8710 or 2080

University of Southern California
Institute for Health Promotion and Disease Prevention
Suite 200
35 North Lake Avenue
Pasadena, CA 91101
(818) 405-0472

University of Texas Health Science Center
Programa A Su Salud
Center for Health Promotion
University Plaza, Room 333B
San Antonio, TX 78284-7979
(512) 471-5801

Washington University
Second Floor
33 South Euclid
St. Louis, MO 63108
(314) 361-4808

Appendix D: STCP Bibliography

This appendix includes the publications of the STCP staff and investigators that pertain to the program's intervention research efforts. It contains materials that were published or in press during the period 1985 to 1989.

STCP Bibliography

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