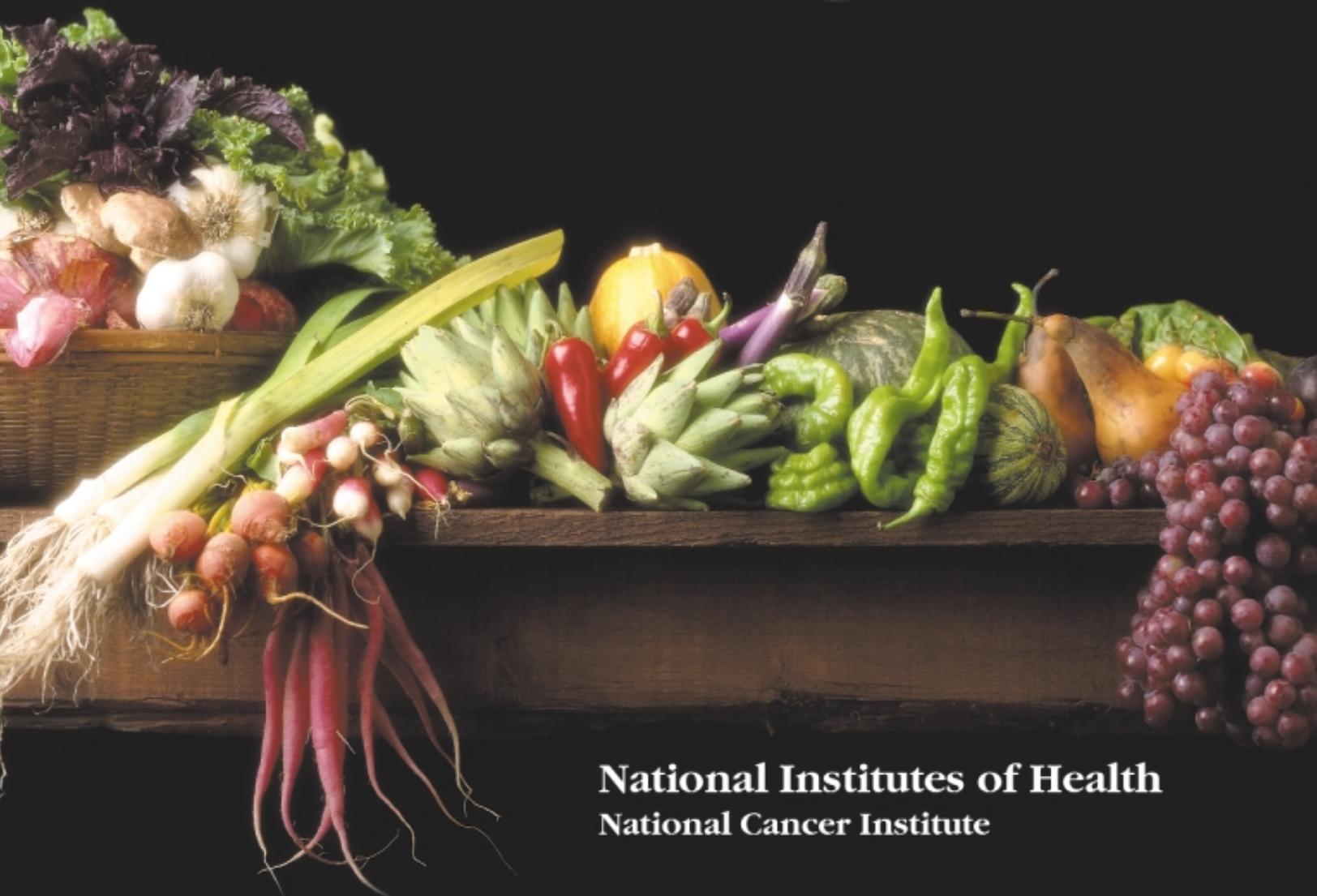


M O N O G R A P H

# 5 A Day for Better Health Program



**National Institutes of Health  
National Cancer Institute**

M O N O G R A P H



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NATIONAL INSTITUTES OF HEALTH



NATIONAL CANCER INSTITUTE



# Foreword

Cancer is the second leading cause of death in the United States, killing more than half a million people a year. About one-third of all cancers are attributable to dietary factors. Nutrition may be a contributing cause of up to 80 percent of cancers of the large bowel, breast, and prostate. Given current trends, cancer will replace cardiovascular disease as the leading cause of death early in the 21st century.

The National Cancer Institute initiated the national 5 A Day for Better Health Program to reduce cancer risk in America. The Program was and continues to be a unique public/private partnership between the National Institutes of Health's largest Institute and the vegetable and fruit industry. The program was designed to test the notion that a close partnership with private industry could be used to leverage limited government resources to effect dietary behavior changes among the U.S. population.

With the completion of the first decade of 5 A Day for Better Health, it was appropriate to review its history and accomplishments. Many of the lessons learned by the numerous dedicated individuals involved in the Program are described here. Although it is impossible to capture and describe the entire breadth of activities related to the Program, the model of collaboration that it

exemplifies can be applied to many domains of public health. As NCI strengthens its commitment to support the development and dissemination of evidence-based interventions, we encourage public health program managers and others to use the growing evidence base to inform their planning.

The publication of this monograph celebrates the tenth anniversary of the 5 A Day for Better Health Program. It serves not only as a historical document but also as a valuable resource for organizations and communities to replicate, modify, or build upon elements of the Program to promote the simple message that eating five or more servings of vegetables and fruit daily can reduce the risk of cancer and many other chronic diseases. We thank the Produce for Better Health Foundation and our many industry, academic, government, and community partners for their tireless efforts on behalf of the nation. The 5 A Day for Better Health Program represents, among other things, perhaps the best example in public health today of the impressive dissemination highway that can be built when these sectors collaborate.

*Barbara K. Rimer, Dr.P.H.  
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# Preface

Throughout the 1980s, a growing body of evidence indicated that higher levels of vegetable and fruit consumption were associated with reducing the risk of many cancers. Responding to this evidence and a mandate to diffuse and disseminate research results to improve the health of the population, the National Cancer Institute (NCI) of the National Institutes of Health initiated the development of the national 5 A Day for Better Health Program.

Then, in the 1990s, evidence for an association between increased vegetable and fruit consumption and a reduced risk of cancer and other diseases increased in strength and in complexity. Global experts reviewed the world literature on the relationship between diet and cancer, using a consistent method of assessing the scientific evidence, and produced an extensive report. They estimated that “a simple change, such as eating the recommended five servings of fruits and vegetables each day, could by itself reduce cancer rates more than 20 percent.” (WCRF/AICR 1997, p. 540).

The national 5 A Day for Better Health Program is a large-scale, public/private partnership between the Produce for Better Health Foundation, representing the vegetable and fruit industry, and NCI. The goal of the Program is to increase the average consumption of vegetables and fruit in the United States to five or more servings every day, in order to reduce the incidence of cancer and other chronic diseases.

Several noteworthy milestones contributed to the production of this monograph. At the release of this publication, the 5 A Day Program will have accumulated 10 years of experience in the use of media, social marketing, community-based interventions, coalition-building, and the provision of programmatic support to 54 state and territorial coordinators, in addition to sponsored research and evaluation. In 2000, the NCI initiated an evaluation of the success of the Program’s first 10 years. A national panel of experts evaluated the

Program’s performance and produced a report (“5 A Day for Better Health Program Evaluation Report” discussed in Chapter 13) that affirmed the Program’s value and provided recommendations for its expansion and improvement. NCI also commissioned, with the Agency for Healthcare Research and Quality, an authoritative, systematic review of evidence regarding the efficacy of behavioral interventions for dietary change to increase vegetable and fruit consumption and reduce fat consumption. This report recognizes that carefully designed and targeted interventions, including many of the interventions based upon the 5 A Day message, can achieve important changes in dietary behavior. A summary of this report is available online at [www.abrq.gov/clinic/dietsumm.htm](http://www.abrq.gov/clinic/dietsumm.htm), and access to an executive summary of the 5 A day for Better Health Evaluation Report is available at [www.cancercontrol.cancer.gov/5ad\\_exec.html](http://www.cancercontrol.cancer.gov/5ad_exec.html). Finally, over the past few years, promising international efforts to promote vegetable and fruit consumption, based on the 5 A Day model, have been developed in several nations (see Chapter 12).

The purpose of this monograph is to provide a detailed description of the national 5 A Day Program, so that this model of a public/private partnership can be used by others, including other food sectors, public health programs at the State and local levels, policymakers, nutrition professionals, programs for the prevention of chronic diseases, and behavioral and other research scientists, as well as governmental agencies and food industries in other nations.

The first few chapters of the monograph describe the Program’s origins via a capacity-building grant to the California Department of Health Services, the steps taken to develop the national program, and the supporting legal and policy documents. The next few chapters provide details about program components, such as the industry, media, and community-based programs.

The following chapters describe the process and outcomes research that support the program's effectiveness in increasing consumption of vegetables and fruit in a variety of populations. To conclude, some of the international efforts to develop similar programs are described, along with a summary of the program's national evaluation and future vision.

The national 5 A Day Program is now entering a new phase during which NCI hopes to expand and strengthen the partnerships both within and outside of government, simultaneously enhancing the programmatic and research components of the Program. Key challenges for the future include how best to fund State health department programs, how to incorporate the model into broader chronic disease prevention programs (such as cardiovascular, diabetes, physical activity and diet); how to increase the use of evidence-based communications and other programmatic activities, and how to build collaborations between the industry and behavioral researchers.

NCI is proud of this unique public-private partnership and welcomes involvement and advice from interested parties. We hope that this monograph will be useful to all of those dedicated to improving the health of their Nation's citizens.

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## 5 A Day for Better Health Program Monograph Development Process

The initial idea for this monograph grew out of discussions between the publication's co-editors, Gloria Stables and Jerianne Heimendinger (respectively the current and former directors of the 5 A Day for Better Health Program). These discussions were a response to an increasing number of international inquiries to NCI about how to proceed with implementing a similar program in their own countries.

The first formal planning meeting, which included the lead authors for each proposed chapter, was held in May 1998. From that point, initial chapter drafts were developed, and a rigorous review process was implemented. Each chapter, underwent an initial review by the scientific editor, peer reviews by two or three individuals, refereeing of peer-reviewers' comments by the scientific editor, and resolution by respective chapter authors of refereed peer reviewer queries. Then, chapters were again revised, and all were sent to each of the three full document reviewers, whose comments were then refereed by the scientific editor. Once again, respective chapter authors resolved the refereed queries, and a final draft of the chapter was prepared for approval and signed off on by the scientific editor.

The 5 A Day for Better Health Program monograph is the culmination of a long and dedicated effort. It is organized into 13 chapters and contains five appendices, as laid out in the Table of Contents that immediately follows.

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# Chapter 1

## The Scientific, Policy, and Theoretical Foundations for the National 5 A Day for Better Health Program

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### INTRODUCTION

The national 5 A Day for Better Health Program (5 A Day), which was initiated in 1991, is a large-scale, public/private partnership between the vegetable and fruit industry and the U.S. Government. Its goal is to increase the average per capita consumption of vegetables and fruit in the United States to five or more servings every day. The long-range purpose is to help reduce the incidence of cancer and other chronic diseases through dietary improvements. The specific program objectives are to increase public awareness of the importance of eating five or more servings of vegetables and fruit every day and to provide consumers with specific information about how to incorporate more servings of these foods into their daily eating patterns.

The private side of the partnership is coordinated by the Produce for Better Health Foundation (PBH), a nonprofit organization composed of approximately 1,000 members of the fruit and vegetable industry. The public side of the partnership is coordinated by the National Cancer

Institute (NCI) of the National Institutes of Health, U.S. Department of Health and Human Services (DHHS). The goal of the Program coincides with one of the national health objectives for the country, which encourages the population to eat five or more servings of vegetables and fruit each day, and is also consistent with all other national dietary guidance provided by the U.S. Government (DHHS, 1990, 1998; U.S. Department of Agriculture (USDA)/DHHS, 1995, 2000; USDA, 1992).

The purpose of this monograph is to provide a detailed description of the national 5 A Day Program so that this model of a public/private partnership can be used by others. The introductory chapters (1 and 2) describe the Program's origins, scientific rationale, and structure, and model agreements are provided in the appendices. Case studies and specific examples of activities are provided for the Program components and partners, including the industry, the State health agencies, and the media (Chapters 3 through 6). Overviews of process and outcome evaluation research are

provided (Chapters 7 and 8). The nine randomized community intervention research projects supported through the 5 A Day Program, as well as their outcomes, are described (Chapters 9 through 11). The closing chapters present an overview of international efforts and future directions (Chapters 12 and 13).

This chapter provides the foundation for the rest of the monograph. It describes the scientific rationale for the Program, the Program policy context, the need for the Program based on national vegetable and fruit consumption levels, the history of the Program's origins through an NCI grant to the California Department of Health Services in 1986, and the behavioral theories that were proposed to guide program implementation at all levels.

## SCIENTIFIC RATIONALE FOR THE 5 A DAY PROGRAM

### The Diet and Cancer Link

The development of the national program required a strong scientific rationale, which was just emerging in the early 1990s from progress in diet and cancer research. The concept that diet has an influence on cancer risk can be traced to the first century A.D. However, during the 20th century, the dietary link was increasingly discounted in favor of theories about genetics, exposure to viral or chemical carcinogens, and increased research into the effectiveness of cancer treatments, such as surgery, radiotherapy, and chemotherapy (World Cancer Research Fund (WCRF), 1997).

In the 1960s, the interest in dietary causes of human cancer was slowly revived by both the diffusion of the experimental model of laboratory chemical carcinogenesis and by migrant epidemiological studies suggesting that cancers are largely environmental in origin (Tannenbaum and Silverstone, 1957; Doll, 1967; Higginson and Muir, 1973). Specific hypotheses about diet and cancer emerged in the 1970s. Interest grew in the effects of fat, fiber, alcohol, and pickled foods (Nestle, 1992). Insights into the cancer process increasingly suggested that diet might play a role in all stages of cancer development.

### Vegetables, Fruit, and Cancer

It was not until the late 1980s and early 1990s, however, that recognition of the role of plant foods in the diet began to coalesce. Summaries of the epidemiological literature specific to the relationship between vegetables and fruit and cancer were just emerging (U.S. Public Health Service (PHS), 1988; National Research Council (NRC), 1989; Willett, 1990; Negri et al., 1991; Steinmetz and Potter, 1991a,b; Ziegler, 1989, 1991; Block et al., 1992).

Block and her colleagues at NCI produced one of the early review articles (Block et al., 1992). They found that in 128 of 156 retrospective and prospective dietary studies calculating relative risk, a statistically significant inverse association was found between vegetable and fruit consumption and the occurrence of cancers in 13 different anatomical sites. These were cancers of the oral cavity, esophagus, pharynx, larynx, stomach, pancreas, colon, rectum, lung, bladder, endometrium, cervix, and ovary. Similar findings had been published the previous year by Steinmetz and Potter (1991a,b). It became clear for the first time that, of all the dietary factors postulated to be related to cancer, the evidence was most consistent for an inverse association between the risk of cancer and vegetable and fruit consumption.

### The Strength of the Evidence

The epidemiological evidence has many characteristics—consistency, evidence of a dose-response relationship, and plausible biological mechanisms—that strengthen the case for a valid inverse association between vegetable and fruit consumption and the risk of cancer.

#### Consistency

In the 1992 Block and colleagues analysis, 82 percent of studies demonstrated such a statistically significant inverse association. Similar results were found in the 1991 Steinmetz and Potter analysis. Such a high proportion of studies with similar results is an indication of the strength of the evidence. It is reasonable to question whether there are other demographic or lifestyle factors associated with high vegetable and fruit consumption that are the true causative agents. However, many studies have controlled for smoking and other potential dietary confounders, such as fat, calo-

ries, and alcohol, and the beneficial effect of higher vegetable and fruit consumption remains. It is unlikely that nondietary factors totally explain the risk. Furthermore, studies reviewed by Block and colleagues were conducted in 17 different countries with diverse populations, such as those in The Netherlands, China, India, and the United States. Despite the diversity of lifestyle correlates in these cultures, these studies reached similar conclusions related to the value of vegetables and fruit in cancer reduction. In addition, these studies have used varied methods, designs, and dietary instruments. Thus, the consistency of results provides support for the validity of the association.

### ***Dose-Response Relationship***

The results are not only statistically significant but also clinically important. In the majority of studies, a dose-response relationship was found. People in the lower quintiles of vegetable and fruit consumption experienced a cancer risk approximately twice as high as people in the higher quintiles of consumption. The best estimates of U.S. population consumption levels, at the time the national 5 A Day Program originated, came from national surveys. The National Health and Nutrition Examination Survey (NHANES) II, using a single 24-hour recall, indicated that adults in the bottom quintile of consumption averaged one serving per day; adults in the top quintile averaged five servings per day (Patterson et al., 1990). Although no studies have tested the impact of specific numbers of servings on cancer risk, the data suggest that consuming more is better.

### ***Plausible Biological Mechanisms***

Adding to the weight of the evidence is the existence of plausible biochemical mechanisms for the effects of vegetables and fruit. Vegetables and fruit are sources of vitamins and minerals (including vitamins A, C, and E and folate), carotenoids and other antioxidants, and various phytochemicals such as dithiolthiones, flavonoids, glucosinolates, and allium compounds. Each of these substances may play a role in reducing cancer risk. More likely, it is a combination of these factors, and others not yet explored, that may confer protection.

Although little research on this topic was available at the beginning of the national 5 A Day Program in 1991, recent research has begun to

explore potential hypotheses and mechanisms. For example, one hypothesis is that oxidative cellular damage to DNA may produce mutations, which in turn may result in the development of cancer cells. Several recent studies have demonstrated a reduction in oxidative DNA damage by increased consumption of single vegetables, such as brussels sprouts and spinach powder (Pool-Zobel et al., 1997; Verhagen et al., 1995). In addition, a recent study has compared the effects of two diets: one low in vegetables and fruit (3 to 4 servings) and one high in vegetables and fruit (10 or more servings). There was a significant reduction in DNA and lipid oxidation attributable to the consumption of a high vegetable and fruit diet (Thompson et al., 1999). In the future, more studies of this nature will be attempting to define the mechanisms by which vegetables and fruit confer protection.

### ***Recent Reviews***

Since the Program was initiated, several other extensive reviews of the world literature have added weight to the accumulated evidence. The review edited by Trichopoulos and Willett (1996) indicated that the evidence for a positive association is accumulating even for hormone-modulated cancers. The most extensive review to date was published by the WCRF. This review analyzed the evidence by anatomical cancer site, dietary constituent, and food group and concluded with a set of dietary recommendations. The relationship between cancer risk and vegetable and fruit consumption was assessed in 37 cohort, 196 case-control, and 14 ecological studies. The authors noted that, "Overall, when cancers of all anatomical sites are taken together, 78 percent have shown a significant decrease in risk for higher intake of at least one vegetable and/or fruit category examined" (WCRF, 1997, p. 441). Recommendation 4 of the review states: "Eat 400-800 grams (15 to 30 ounces) or five or more portions (servings) a day of a variety of vegetables and fruits, all year round" (WCRF, 1997, p. 512). Thus, the recent data continue to support the recommendations of the 5 A Day Program.

### ***Randomized Clinical Trials***

The major criticism of the current evidence is the lack of randomized clinical trials indicating that

diet-related interventions would reduce cancer risk, incidence, or mortality. Such trials have been attempted with some of the phytochemicals found in vegetables and fruit that were judged to be promising in the 1980s. Three examples that were funded by NCI—the Alpha-Tocopherol, Beta-Carotene (ATBC) study, the Beta Carotene and Retinol Efficacy Trial (CARET), and the Physicians' Health Study—did not support a beneficial effect of these particular components. In the ATBC study, 29,133 male Finnish smokers, ages 50 to 69, were supplemented for 5 to 8 years with alpha tocopherol, beta carotene, or both. An 18-percent increase in lung cancer was observed for men taking beta carotene. Although there was a decrease in prostate cancer for men taking alpha tocopherol, there was also an increase in hemorrhagic stroke (ATBC Study Group, 1994). Investigators of the CARET study terminated the intervention prematurely, after 4 years of intervention, because interim results indicated a 28-percent increase in lung cancer in subjects taking beta carotene and vitamin A (Omenn et al., 1996). The Physicians' Health Study ended on schedule in 1995, after 12 years of treatment of 22,071 male physicians taking 50 mg of beta carotene or placebo every other day. Results indicated no evidence of either benefit or harm from beta carotene supplements on either cancer or cardiovascular disease (Hennekens et al., 1996).

One possible interpretation of these findings is that scientists have not successfully isolated the combination of bioactive substances in vegetables and fruit that confer protection and, consequently, food consumption remains preferable to supplement consumption. This concept is supported by the authors of the WCRF review, who concluded: "The most appropriate approach to the prevention of cancer by dietary means is to emphasize foods and drinks in the contexts of whole diets, within existing cuisines and cultures" (WCRF, 1997, p. 17).

Clearly, more research needs to be done to elucidate the roles of vegetables and fruit in cancer etiology and to examine the mechanisms by which they may confer protection. Several randomized, controlled clinical trials with foods are under way, and these should supply valuable data.

In the meantime, even without more precise etiological data, there is abundant evidence to

suggest that substantial health benefits could be achieved by increasing the population's consumption of vegetables and fruit. Based on the evidence available in 1991, which has only grown stronger, the national 5 A Day Program was launched. This evidence also contributed to a national nutrition policy, which further supported the development of the 5 A Day Program.

## POLICY CONTEXT

Part of the foundation for the development of the national 5 A Day Program was provided by a series of scientific publications, which formed the basis of national nutrition policy in the 1980s and 1990s. In 1981, Doll and Peto published a paper, commissioned by the U.S. Congress, indicating that approximately 35 and 30 percent of all cancer deaths were related to nutrition and smoking, respectively. The range for nutrition was 10 to 70 percent, and the estimates for some specific sites included the following: 90 percent for stomach and colon cancers; 50 percent for endometrium, gallbladder, pancreas, and breast cancers; and 20 percent for lung, larynx, bladder, cervix, mouth, pharynx, and esophagus cancers. The estimate that at least 35 percent of cancer deaths are diet-related has been affirmed more recently by several sources (NRC, 1989; Doll, 1992; Ames et al., 1995; WCRF, 1997).

In 1982, NRC published the seminal document, *Diet, Nutrition, and Cancer* (Assembly of Life Sciences, 1982), which summarized the research literature on the relationship between various chronic diseases and dietary patterns. Other Federal documents followed, such as *Healthy People 2000* (DHHS, 1990), the first *Surgeon General's Report on Nutrition and Health* (PHS, 1988), *Nutrition and Your Health: Dietary Guidelines for Americans* (USDA/DHHS, 1990), and *The Food Guide Pyramid* (USDA, 1992).

Another important document was NCI's *Cancer Control: Objectives for the Nation, 1985-2000* (NCI, 1986). In this monograph, NCI projected that 30,000 lives could be saved annually through modification of dietary habits. It was noted that the same dietary changes would also reduce the occurrence of heart disease.

The monograph estimated that by the year 2000, cancer mortality could be reduced by 8 percent through diet, 8 to 15 percent through tobacco control, 3 percent through early detection, and 10 to 26 percent through improved cancer treatments (NCI, 1986). These projections made primary prevention as quantitatively significant as medical approaches.

The NCI's cancer control objectives called for the population to reduce fat consumption to 30 percent or less of calories and to increase fiber consumption (including vegetables and fruit) to 20 to 30 grams per day. The appropriate roles for NCI, as stated in the publication, included guiding and supporting research on the cancer-related effects of dietary fat and fiber, chemoprevention, and dietary behavior and conducting public education programs about the health advantages and cancer risks of relevant dietary components. A list of recommended actions for State and local health agencies was also provided and included 1) reviewing school menus and educational programs in relation to NCI's dietary recommendations, 2) assisting private-sector groups to modify health promotion programs to include cancer risk reduction, 3) encouraging restaurants to provide sufficient information to consumers for choosing nutritious foods, 4) coordinating activities with State departments of agriculture and aging, 5) working with local mass media to educate the public, and 6) addressing the needs of high-risk populations (NCI, 1986). All of these roles for State health agencies were ultimately incorporated into the State component of the national 5 A Day Program (see Chapter 3).

In summary, NCI staff used all the documents previously listed to ensure that policies for developing the 5 A Day Program would be consistent with all national nutrition policies. In addition, open dialog was maintained with those developing initiatives in other Federal Government agencies, such as the food labeling regulations under development by the Food and Drug Administration. Issues or concerns raised by industry or public partners about the Program criteria were debated by convening ad hoc advisory groups of experts.

Although NCI staff could establish a scientific rationale for the Program and ensure its consistency with national nutrition policy, it was also necessary to document the need for such a program.

## NEED FOR THE PROGRAM: VEGETABLE AND FRUIT CONSUMPTION

### Consumption Data Available in 1991

Dietary consumption data indicated a need for the program. National survey data that were readily available in 1991 were from the 1976-80 NHANES II study (Patterson et al., 1990) and the 1985 Continuing Survey of Food Intakes by Individuals (CSFII) (USDA, 1986). Both the NHANES II dietary data on adults and the CSFII data on women indicated that mean intake of vegetables and fruit was 2.9 servings, including french fries (USDA, 1987; Patterson and Block, 1991) (see Table 1). (French fries are not included in measurements of intakes by the 5 A Day Program because their consumption is prevalent in the population, they are a significant source of fat, and an increase in the consumption of french-fried potatoes was not considered a desirable Program outcome.)

In response to industry enthusiasm, the PBH Foundation promised its members a 5 A Day Program kickoff at the Produce Marketing Association annual convention in October 1991. As a result, the NCI and PBH Foundation staffs moved quickly to get a baseline survey in the field by the summer of 1991, before industry initiatives might affect public awareness. Data on a nationally representative sample of 2,837 persons, with an oversampling of African-Americans and Hispanics, were collected by telephone using a food frequency questionnaire (see Chapter 7 for more details). The results indicated that the median intake was 3.4 servings a day and the mean intake was 3.8. Differences between the 5 A Day baseline and the NHANES II and CSFII surveys reported above are a combination of actual change over time, differences in methods (including assessment instruments and methods of calculating servings), and populations surveyed (see Table 1). Only 23 percent of the population was consuming five or more servings of vegetables and fruit per day.

### Consumption Data Available Since 1991

These numbers were further supported when the CSFII data on 8,181 adults became available for 1989-1991. Researchers at NCI and USDA

**Table 1. U.S. Vegetable and Fruit Consumption.**

| <i>Survey</i>          | <i>Dates</i> | <i>Sample</i> | <i>Instrument</i>                | <i>Mean Vegetable and Fruit Intakes</i> | <i>Percentage of Population Eating 5+ Servings</i> |
|------------------------|--------------|---------------|----------------------------------|---|--|
| NHANES II <sup>1</sup> | 1976-1980    | 10,313        | Single 24-hour recall            | 2.9 <sup>2</sup>                        | 9% <sup>2,3</sup>                                  |
| CSFII <sup>4</sup>     | 1985         | 915           | Four 24-hour recalls             | 2.9 <sup>2,5</sup>                      | —  |
| CSFII                  | 1989         | 4,063         | Food records and 24-hour recalls | 3.4 <sup>2</sup>                        | —  |
| 5 A Day                | 1991         | 2,837         | Food frequency questionnaire     | 3.8 <sup>6</sup>                        | 23% <sup>6</sup>                                   |
| CSFII                  | 1989-1991    | 8,181         | Food records and 24-hour recalls | 4.3 <sup>2</sup>                        | 32% <sup>2</sup>                                   |

<sup>1</sup> NHANES II = National Health and Nutrition Examination Survey II.

<sup>2</sup> Includes french fries.

<sup>3</sup> 5 A Day defined as three mentions of vegetables and two of fruits.

<sup>4</sup> CSFII = Continuing Survey of Food Intakes by Individuals.

<sup>5</sup> Women only.

<sup>6</sup> Excludes french fries.

collaborated on a method for disaggregating foods into their component ingredients. All vegetable and fruit ingredients were assigned weights to correspond to a dietary guidance serving, and total numbers of servings were tallied. This method ensured that vegetables and fruit in mixed dishes or those consumed in smaller amounts than a serving (e.g., a leaf of lettuce on a sandwich) all contributed to the final tally. Thus, the results reflected more servings than those previously measured with other methods. The mean intake for adults, including french fries, was 4.3 servings. Mean intake, excluding french fries, was 3.9 servings, which is close to the 5 A Day baseline results reported above. Even with this meticulous inclusion of all possible sources of vegetables and fruit, including those in baked goods, only 32 percent of Americans were consuming five or more servings per day. It should be noted that the epidemiological data that helped establish the number “5” did not include vegetables and fruit as parts of pies, soups, or other mixed dishes. Therefore, it is not obvious that inclusion of the disaggregated foods is an appropriate benchmark by which to judge whether Americans are approaching a cancer-protective level of vegetable and fruit intake.

All of the data above pointed to the need for action. The 5 A Day baseline survey indicated that all age, ethnic, and gender groups in the

population were eating less than the recommended amount of vegetables and fruit. A national campaign seemed appropriate if leading health agencies such as NCI were to seriously contribute to achievement of the year 2000 objectives. Once the need for the program was clear and the scientific rationale seemed adequate, the next question to be addressed by NCI staff was how the program would change consumption levels. For answers, the staff turned to the behavioral science literature and existing examples of community-based interventions.

## BEHAVIORAL SCIENCE JUSTIFICATION FOR A NATIONAL PROGRAM

Some of the questions that NCI staff needed to address included: How can a national partnership increase vegetable and fruit consumption? How do people change behaviors? What strategies are necessary to help them?

These questions led to a thorough investigation of what was known at the time about behavior-change theories and community-based interventions. This section contains portions of the justification for a national program provided to the NCI’s board of external advisers in 1991.

## Role of the Media

Various studies have shown that the media play a vital role in increasing consumer awareness of health issues and, in some instances, even in changing individual patterns of behavior (Levy and Stokes, 1987; Davis, 1988; Russo et al., 1986). Public confidence in messages from a credible health agency such as NCI has been shown to be a key factor in affecting consumer buying patterns (Hammond, 1986). In addition, credible health messages promoted through industry via the media have been shown to be effective in influencing consumers. For example, sales of high-fiber cereals rose dramatically after a national advertising campaign by the cereal industry utilized NCI-approved health information (Levy and Stokes, 1987). Hammond's study also found that an individual's stated behavioral intentions seem to be affected by the perception of the credibility of the information source. Thus, in the high-fiber cereal campaign, public confidence in NCI was a key factor in changing consumer buying patterns.

Data suggest that although the public is concerned about diet and health, there is a lack of the detailed knowledge needed to act effectively on these concerns (Levy et al., 1988). Although use of the media alone can produce behavioral change, the effect is increased when its use is supplemented by other community-based educational efforts (Farquhar et al., 1977; Puska et al., 1985; Flay, 1987). These efforts can build on the awareness created by the media to provide the skills necessary for people to make lifestyle changes.

## Community-Based Health Promotion Trials

In 1991, the published papers from the community-based cardiovascular health promotion trials were showing positive results. The Stanford Three-Community Study was successful in reducing the coronary risk factors of people in two communities when compared with a control community (Farquhar et al., 1977). It demonstrated that the health of a community could be improved by an educational message delivered through the media and interpersonal channels. Mass media campaigns brought about favorable changes in dietary practices after about 2½ years (Stern et al., 1976). Even more rapid changes occurred when personal

counseling and intensive instruction were combined with mass media.

The North Karelia Project in Finland was able to demonstrate decreases in cardiovascular mortality and morbidity as well as risk factor reduction through a comprehensive community health promotion program that included public education strategies (Puska et al., 1983). The Pawtucket Heart Health Program, which reached blue-collar consumers through successful social marketing strategies, was able to attract low-literacy populations through simple, specific messages. Simplicity of message has been shown to be a key factor in successful mass media campaigns (Wallack, 1981).

The Stanford Five-City Project, which tested whether communitywide health education could reduce stroke and coronary heart disease risk, showed significant net reductions in community risk-factor averages in the treatment cities. The risk-factor changes resulted in important decreases in both composite total-mortality risk scores and coronary heart disease risk scores (Farquhar et al., 1990). The treatment cities received a 5-year, low-cost (about \$4/person/year), comprehensive program based on community organization principles and social marketing methods, including use of mass media. Total exposure to educational messages of various types and duration was calculated to be 100 messages per year, totaling 5 hours per capita. Yearly radio and television exposure was less than 1 hour per adult per year. Researchers concluded that such low-cost programs can have an impact on risk factors in broad population groups.

A later overview of the Minnesota Heart Health Program, one of the cardiovascular health promotion trials, indicated that after 13 years, the overall program effects were modest in size and duration and were not statistically significant, although many intervention components were effective in targeted groups (Luepker et al., 1994). It is postulated that secular trends make it difficult for community-based research programs, such as the ones discussed above, to produce significant results. However, evidence would still suggest that the theoretical constructs and strategies used in these intervention programs can be effective.

## BEHAVIORAL THEORIES USED IN THE 5 A DAY PROGRAM

Three major theories, based on the theoretical models used by the cardiovascular health promotion trials, were chosen to guide the national 5 A Day Program, and the California 5 a Day Campaign provided the model for the national program (discussion follows). These theories were the Health Belief Model (Janz and Becker, 1984), Social Cognitive Theory (Bandura, 1977, 1986), and Transtheoretical or Stages-of-Change Model (Prochaska and DiClemente, 1992). In addition to these theories, the techniques of social marketing have guided the communications strategies for the program. These theories and models have been clearly presented elsewhere (Glanz et al., 1997), and further information on them can be found in Chapters 6 and 8 to 11.

As the 5 A Day Program began to be implemented, the most important constructs or ideas from these theories were consistently applied to the guidelines provided to each partner category: retailer, produce marketer and supplier,

merchandiser and service supplier, noncommercial food service, commercial food service, and health agency. Table 2 provides the schema that was used to guide program implementation.

In the schema, the channels are specific avenues or settings for reaching the population, such as worksites. Each setting has specific characteristics that might be used to help change behaviors. For example, the ability to reach children through classrooms and lunchrooms makes schools attractive as a channel for improving dietary behaviors. The column headings in the schema cover most of the components necessary to change behaviors. Some level of awareness is required. If people are eating two servings of vegetables and fruit per day and do not know that they should be eating at least five, they are unlikely to recognize the need to change their behavior. In addition to awareness, individuals must be motivated to make a change, and motivational factors may vary widely with age, cultural background, income, and gender. It may be necessary to teach the skills necessary to make dietary changes; these may include knowledge of appropriate choices, habits of food preparation, and methods of enhancing convenience. Changing

**Table 2. Matrix of Theoretical Constructs by Channel.**

| <i>Channels (examples)</i> | <i>Awareness/ Knowledge</i> | <i>Motivation</i> | <i>Skills Building</i> | <i>Environment</i> | <i>Social Support</i> | <i>Policy</i> |
|----------------------------|-----------------------------|-------------------|------------------------|--------------------|-----------------------|---------------|
| Media                      |                             |                   |                        |                    |                       |               |
| Supermarkets               |                             |                   |                        |                    |                       |               |
| Schools                    |                             |                   |                        |                    |                       |               |
| Worksites                  |                             |                   |                        |                    |                       |               |
| Food assistance programs   |                             |                   |                        |                    |                       |               |
| Churches                   |                             |                   |                        |                    |                       |               |
| Food service/ restaurants  |                             |                   |                        |                    |                       |               |
| Health care settings       |                             |                   |                        |                    |                       |               |

**NOTE:** The channels are settings for reaching the population. The constructs are important components that various theories suggest are necessary to change behaviors.

food environments might consist of working with schools' food-service staff to increase vegetable and fruit choices or preparation methods, working with worksite cafeterias to do the same, and working with restaurants to enhance their vegetable and fruit offerings. Social support from family and friends is usually quite helpful in creating and maintaining new food habits, and institutional policies can also be supportive. For example, a worksite catering policy might be that all worksite-sponsored meals and breaks (e.g., at meetings) have vegetable and fruit choices: if bagels are offered, fresh fruit would also be offered.

These theoretical constructs have been incorporated into the guidelines for all licensed 5 A Day Program participants, and some were used in the community-based research grants. (See Chapter 2 for a discussion of licensing agreements with 5 A Day partners.) The use of common constructs by all partners in all channels has kept the Program focused on the activities and messages most likely to create behavior change.

## THE PROGRAM ORIGIN

### California Department of Health Services

The staff of the California Department of Health Services used the scientific and policy documents available in 1986 to successfully compete to receive a 5-year NCI capacity-building grant for about \$1.5 million. The purpose of the grant was to develop staff abilities within the State health department to conduct cancer prevention and cancer control programs. The California grant focused on nutrition, one of the least-researched components of cancer control. Staff developed a model for statewide dietary change, based on community cardiovascular research, with three types of simultaneous activities: public awareness and professional education, food system change, and organizational change.

Program initiation took 9 months and consisted of recruiting specialized staff in nutrition education, epidemiology, and marketing and then meeting with prospective public and private collaborators. The planning phase involved small-area surveys of consumption and a structured planning process that resulted in the decision to

narrow the effort to the promotion of vegetables and fruit. Because California is a major producer of vegetables and fruit in the United States, collaboration between the State health department and agriculture was advantageous. With the help of the State Department of Food and Agriculture, health department staff members formed a steering committee of recognized leaders in the produce industry. This committee advised the program to take a campaign approach, which was familiar to industry. Heeding this advice, the health department developed a campaign logo and slogans, and a public/private partnership was born.

For each campaign, staff identified a theme, secured media coverage, developed print material for the public, and helped retail partners reinforce the message at the point of sale. Free brochures were offered through NCI's toll-free telephone line, the Cancer Information Service. The supermarket partners received theme-related, camera-ready advertising copy; line art; signs; tip-sheets; consumer brochures; and scripts for radio announcements or in-store audio. This level of effort cost about \$150,000 annually for the 2 years of the public campaign.

Impact evaluation of the campaign was not possible because the campaign lacked an experimental design. Nevertheless, in addition to the favorable process measures of media coverage and industry participation, statewide population surveys indicated that consumption had increased, hinting at the campaign's success. Between 1989 and 1991, vegetable and fruit consumption rose by 0.3 serving for both White and African-American adults in California, a rate four times higher than for secular trends (Foerster and Hudes, 1993).

### Beginnings of the National Program

Over the years, coverage by the trade press and presentations at professional meetings had resulted in considerable interest in the campaign outside of California. The campaign was perceived as successful by the industry partners and by staff in other health departments, who wanted to replicate the program in their own States.

Rather than work with individual States, the industry members were more interested in a national campaign that would be compatible with

their national distribution systems. Therefore, the board members and staff of the California project approached NCI to suggest the development of a national program.

Preliminary work to build this collaborative process began with a meeting in December of 1990 with 15 industry representatives, 3 representatives from the California program staff, and NCI staff. The case for a national program was made, and all industry representatives indicated their desire to participate. However, the mechanics of how to proceed were not clear. NCI is a research organization and has no appropriate infrastructure for operating a national program of this nature, and the industry operated competitively, with little history of the collaboration that would be necessary on a national level with a proactive marketing program like 5 A Day. Prior collaborations had centered on responses to public concerns about food safety.

It was the formation of PBH in May 1991 that enabled the plans for a national program to proceed. Approximately 60 companies or commodity groups contributed \$415,000 to create the Foundation, which then worked with NCI to launch a national 5 A Day Program. The nonprofit PBH functions as a partner with NCI and oversees industry participation, enabling NCI to interface with only one industry organization.

The Program logo and slogan had been service-mark protected by the California Department of Health Services. Therefore, it was necessary to develop a series of agreements between California, NCI, and PBH to enable the Program to develop at the national level. These agreements are described in Chapter 2.

### **NCI Approval**

When it appeared that legal agreements would be possible with California and the industry, NCI staff initiated the procedures for obtaining Federal Government approval for funding such an effort. It was necessary to convince the Board of Scientific Counselors (external advisers) of NCI's former Division of Cancer Prevention and Control (now the Division of Cancer Control and Population Sciences) that such an effort was needed and would enhance the Institute's research portfolio. The Program's vision had to be both specified and justified. To this end, a concept

paper was developed, with research objectives, scientific justification, a project description, and a budget.

The Program concept was presented to the board by NCI staff. Discussion ensued among the board members, NCI staff, and an industry representative about the scientific evidence supporting the vegetable and fruit cancer prevention connection and the relative priority of such an effort. The primary emphasis of the concept was on research, with some resources for a media effort. The plan was that PBH would complement NCI's efforts by focusing its resources on a campaign to reach the public with the 5 A Day message.

The NCI concept was approved in October 1991 with a budget of \$27 million for 5 years, with the option to continue the program for a second 5-year period. (See Chapter 2 for more budget information.) The concept formed the basis of a request for research applications, which provided the bulk of the designated dollars (\$16 million) to community-based research efforts to test in controlled trials the impact of 5 A Day interventions on dietary behaviors (see Chapter 8).

## **THE PUBLIC/PRIVATE PARTNERSHIP**

Because the national program grew out of the public/private partnership that emerged in the California 5 a Day—For Better Health! Campaign, such a partnership became an assumed feature of the national program. Previous attempts at partnerships between the food industry and health agencies had suffered from what appeared to be antithetical missions (e.g., the desire of health agencies to reduce fat consumption in the population and the concern by the meat and dairy industries that such a message would reduce sales of their products). The new and refreshing feature of the national 5 A Day partnership was the potential for a win/win collaboration—the health message to eat five or more servings of vegetables and fruit was consistent with the vegetable and fruit industry's desire to sell more of its products. Thus, the missions of the public and private sectors converged.

In addition, the public health partner, NCI, brings a scientific credibility to the message to eat more vegetables and fruits that the industry would

not have on its own. (See the section above titled “Behavioral Science Justification for a National Program” for more discussion.) The public sector also provides health professionals who have the necessary scientific expertise, health promotion skills, and collaborative experience, as well as a focus on research and evaluation, to keep the program moving ahead.

Major attributes that the industry brings to the partnership are direct access to consumers, communications expertise, and resources. Industry members have the consistent ability to reach nearly all consumers with messages at the point of purchase (e.g., supermarkets, restaurants, other food venues). They have staff and consultants trained in effectively selling products to consumers. They also have sizable budgets dedicated to marketing, special promotions, advertising, and other media campaigns. The redirection of some of these marketing dollars into the promotion of a generic health message assists the public health sector in reaching many more consumers than ever could be possible using public health budgets alone.

Thus, the final scenario is really a win/win/win situation. The public health sectors of the United States win by using industry communications expertise, access to consumers, and marketing dollars to diffuse an important public health message. If the public increases vegetable and fruit consumption, the public wins by improving long-term health and the quality of life. Finally, the private sector wins by increasing current and future sales (assuming that a healthier population buys more and may live longer, leading to even more sales).

## THE NUMBER “5” AND PROGRAM STRATEGIES

The California program set the goal of “5” servings using several parameters. The number had to be biologically significant and clear, actionable, and memorable to consumers. The definition of servings had to be understandable, consistent with common household portions, and perceived as reasonable. Servings used in the USDA’s dietary guidelines were chosen (see Table 3).

**Table 3. 5 A Day Vegetable and Fruit Servings.**

|   |
|---|
| 1 medium-sized piece of fruit   |
| $\frac{1}{2}$ cup of raw, cooked, canned, or frozen vegetables or fruit                                 |
| 1 cup of leafy salad greens   |
| $\frac{1}{4}$ cup of dried fruit  |
| $\frac{3}{4}$ cup (6 ounces) of 100% fruit or vegetable juice   |
| $\frac{1}{2}$ cup of cooked or canned beans or peas (legumes, e.g., lentils, pinto beans, kidney beans) |

**SOURCE:** NCI, *5 A Day for Better Health Program Guidebook*, October 1999.

The California project chose the number “5” before it was well supported in published literature. The national program sought confirmation of this number choice. Rough calculations from the Block review indicated that people who were at lower risk of cancer were consuming about five servings of vegetables and fruit a day (Block et al., 1992). In addition, work by Cronin and her colleagues at USDA helped determine the range of servings (five to nine) needed to maintain good health (Cronin et al., 1987). Finally, the recommendation to eat five or more servings a day was used by NRC in its *Diet and Health* report (1989), USDA/DHHS in their dietary guidelines (1990), DHHS in its year 2000 objectives (1990), and USDA in its *Food Guide Pyramid* (1992).

Although the need to consume vegetables and fruit has been a part of dietary guidance in the United States for more than a century, the importance of the number “5” was new to most Americans. The 5 A Day baseline survey, conducted in October 1991, indicated that only 8 percent of the population was aware that people should be eating five or more servings per day.

The use of a single number was part of a broader program strategy. Several important strategies of the 5 A Day Program set it apart from past nutrition interventions. First, by providing the public with a number, similar to the strategy for cholesterol education, it gave people a measurable goal. They could easily calculate this goal for

themselves, unlike determining the percentage of calories from fat. In addition, it is not necessary to be tested by a health professional to know whether the goal is being achieved. Quantification raised people's awareness of how far they were from the goal. In fact, at baseline, 66 percent of the population thought two or three servings were adequate for good health.

Second, the focus on vegetables and fruit greatly simplified the information people needed to understand in order to make dietary changes. The complete set of dietary guidelines is a lot of information for people to absorb at one time. Good communications strategies suggest that shorter, simpler, and actionable messages are more likely to be heeded than complex ones. In addition, the program always promoted vegetables and fruit in a low-fat total diet context so that an increase in vegetable and fruit consumption should also help decrease fat consumption.

Third, this campaign promoted a positive message about diet, telling people they could eat more of the foods they liked. This was in contrast to the low-fat message, which encouraged people to eat less of what they liked. For the produce industry, this was a win/win campaign. Previous public health campaigns suggesting dietary fat reduction were initially resisted by the meat, dairy, and processed-food industries. In this case, the produce industry could sell more product without needing to make many product modifications and could easily redirect some of its advertising dollars to help promote a public health message. In constructing this program, care was taken to not disparage other food groups.

## SUMMARY

The top leadership of NCI in the 1980s and early 1990s recognized the role of nutrition in cancer prevention and expanded the research and policy frontiers. Support of the high-fiber cereal message opened the door for the concept of health claims on food labels. NCI's policy documents promoted the development of chemoprevention research and research in dietary behavior change. The summary of vegetable and fruit research by NCI epidemiologists supported the 5 A Day effort. In addition, it was the creative public health

perspective of NCI leadership that enabled a hybrid program (part research, part national educational program) such as 5 A Day to develop.

The national 5 A Day Program was based on a trendsetting project developed by the California Department of Health Services. It was founded on a sound epidemiological scientific basis and was backed by a number of national policy documents. The best concepts that community-based research had to offer at the time were incorporated into the Program. The design has served the Program well and has proven to be flexible and robust over time. Major components of the program—point-of-sale initiatives (supermarkets and food service), media, community, and research—have created a breadth of focused activity designed to change behaviors (see Chapters 2 to 6). With its extensive infrastructure, the Program can continue to be effective if the intensity and creativity of the media, the community, and research efforts are renewed and sustained.

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## Chapter 2

# National Program Structure and Components

.....  
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.....

## **INTRODUCTION**

The national 5 A Day Program partnership has a vision for modifying national dietary behavior by capitalizing on the scientific credibility of the National Cancer Institute (NCI) and on the ability of the vegetable and fruit industry to reach the entire U.S. population. Development of a national partnership between NCI and the industry was made possible by the formation in late 1991 of the Produce for Better Health Foundation (PBH), a nonprofit consumer education organization that represents the highly diverse vegetable and fruit industry. The 5 A Day Program is the first large-scale collaboration of the vegetable and fruit industry with a health partner for a common proactive objective that promotes fresh, frozen, canned, and dried products. The prototype California 5 a Day Campaign had demonstrated the feasibility of a State health agency's working in partnership with agricultural boards and commissions, branded vegetable and fruit companies, and supermarkets to deliver large-scale messages with modest government resources. It also demonstrated the existence of substantial interest in participation by States and industry groups

outside of California. With the formation of PBH, it became feasible to elevate the partnership to a national level.

In part, the national 5 A Day Program structure was dictated by the Program's origin, the California 5 a Day Campaign (Foerster et al., 1995), although structures of other programs, such as Project LEAN (Low-Fat Eating for America Now) (Samuels, 1993), also were examined. The California prototype program had registered its logo as a service-mark (trademark) to protect the integrity of the program. To enable development of the national program, the California Department of Health Services signed a memorandum of understanding with NCI, transferring responsibility for the service-mark to NCI. It was this initial, sentinel agreement that paved the way for the written agreements between PBH and NCI.

To establish the program, agreements about how it would operate were made between NCI and PBH, and a national structure was designed that integrated the industry and public health agencies at the State and local levels. The basic agreements are a memorandum of understanding

between NCI and PBH, a license agreement between NCI and PBH, and license agreements between PBH and its industry members (see Chapter 5 and Appendix A-1 for a copy of the industry license agreement) and NCI and State health agencies (see Appendix A-2 for a copy of the NCI and health authority license agreement). The legally binding licensing agreements, with corresponding criteria and guidelines for logo use, have kept all partners adhering to the same goals and objectives when utilizing the 5 A Day message. The service-marked logo with license agreements has been the sole monitoring tool available and has been the key element in keeping all partners united under one program. This is particularly important in working with industry when, invariably, there arise differences of opinion on how to promote vegetables and fruit for healthy lifestyles. This chapter describes the structure and components of the national program.

## MULTILEVEL PUBLIC/PRIVATE PARTNERSHIP STRUCTURE

The 5 A Day Program was founded on the idea of a collaborative promotion by the entire vegetable and fruit industry, with scientific support from its Government partners. The organizational structure of the multilevel public/private partnership—whereby public and private sectors work together at the national, State, and local levels—is shown in Figure 1. NCI and PBH are the main national partner organizations. They collaborate with several other national governmental agencies with similar goals and objectives and with professional organizations in the public and private sectors. Together, NCI and PBH provide nationwide leadership, an infrastructure, and a template for action transferable to State and local levels. In this national public/private partnership between the Federal Government and the vegetable and fruit industry, NCI granted PBH a license for overseeing the industry's 5 A Day activities, including industry participants' use of the 5 A Day for Better Health logo and related program materials. The Program is strengthened by the scientific credibility of NCI and the State health agencies. NCI licenses all

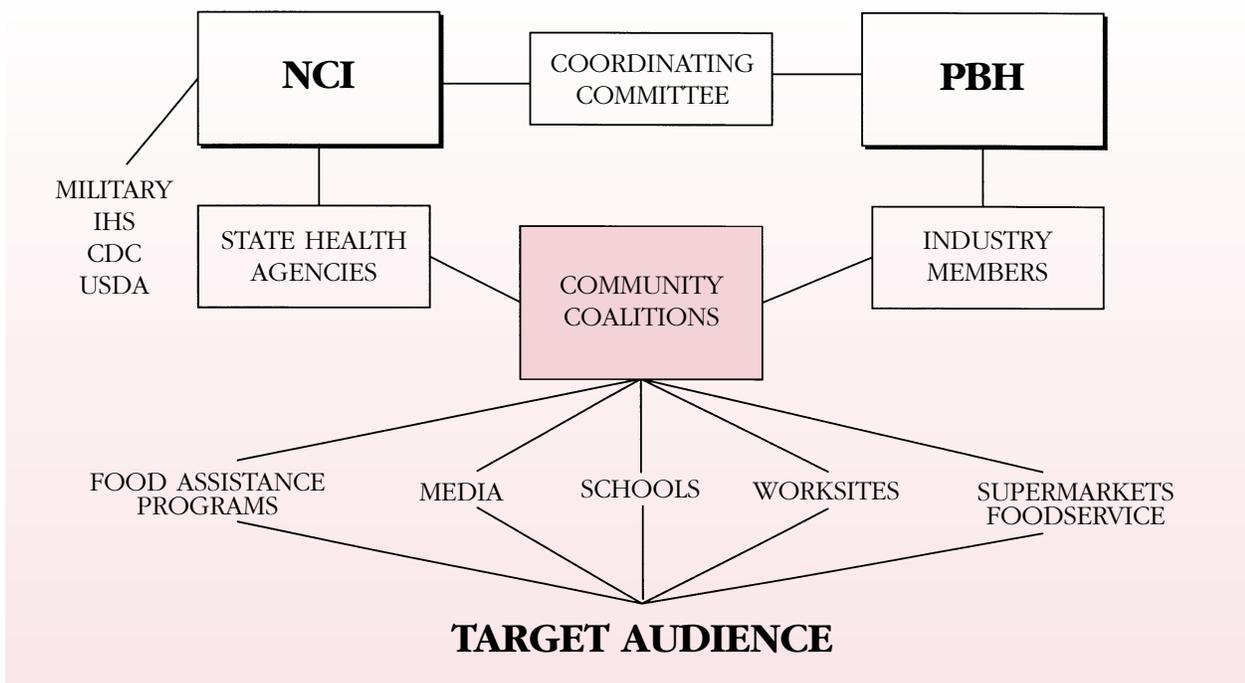
State and territorial health departments to use the 5 A Day logo and message. PBH licenses industry and private-sector partners to do the same. The State health authorities and organizations and the local-level industry participants work together via community coalitions to bring the 5 A Day message and programs to targeted populations in a variety of settings.

As national partners, NCI and PBH conduct periodic strategic planning meetings involving PBH board members and NCI staff. Strategic planning provides an opportunity to analyze achievements over time, review campaign missions and values, and assess internal and external issues likely to affect those missions. Strategic planning also provides a forum for developing a basic level of trust among partners and for building on that trust in a positive way.

Early in the formation of the public-private partnership, it became necessary to create a scientific advisory committee (SAC) of community nutrition professionals and an NCI/PBH coordinating committee to help advise and guide the program. In guiding science policy and guidelines development, the SAC was helpful in the formative stages of Program planning. Once the science policy and Program guidelines were in place, it was determined that the SAC would work more effectively on an ad hoc basis. The NCI/PBH coordinating committee, however, has a continuing function: to coordinate the activities of the Program by establishing and monitoring the Program operating procedures and by clarifying responsibilities between NCI and PBH. The coordinating committee serves as the major decisionmaking body of the national program, except on issues regarding the Program's scientific integrity and the nutritional accuracy of the messages. These decisions are under NCI's purview, as stated in the NCI/PBH memorandum of understanding.

The coordinating committee membership consists of three members from PBH (the chair and the secretary/treasurer of the Foundation board of directors and the president of PBH) and three members from NCI (the program director, a senior nutrition scientist, and the director of communications). The coordinating committee meets at least semiannually to address the Program's business and to monitor the strategic plans.

Figure 1. 5 A Day Program Public/Private Partnership



## NATIONAL-LEVEL 5 A DAY RESOURCES

### National Cancer Institute

In 1991, as part of the original NCI 5 A Day concept approval process, a 5-year, \$27 million budget was approved for 1992-1997. This budget plan included \$16 million for 5 A Day diet and behavioral change research, \$5 million for media/communications, and \$6 million to support program activities, such as State health agency research, via an interagency agreement with the Centers for Disease Control and Prevention (CDC), and program evaluation. Table 1 shows the actual expenditures of the NCI (Federal Government) for the fiscal years 1992-1999 in the major budget categories. Administrative costs are not included in this chart. As an example, in 1999 approximately \$700,000 was estimated for administrative operating costs, which included staff salaries, travel, professional services contracts, printing costs, equipment, and meeting support.

Even though the original 5-year, \$27 million budget was allocated and spent, the diet and behavioral change research addressing vegetables and fruit has continued through competitive continuations of the original 5 A Day grants and through dissemination of the 5 A Day behavioral change strategies into new investigator-initiated research. Also, from 1997 to the present, the NCI budget continues to fund 5 A Day communications, State health agency research, and Program evaluation activities.

The NCI does not provide funding to States or territories to disseminate the 5 A Day Program in communities. Each State or territory garners its own funding for community-level 5 A Day initiatives. In 1994 and 1995, CDC allocated grants for a total of approximately \$1 million for State nutrition interventions. Of that total, more than half of the funds went to States for 5 A Day interventions. Although it was a small amount of money, it was very important seed money that helped start many State 5 A Day programs, and it was used primarily for coalition building. NCI and CDC do fund six to eight States annually to evaluate State-generated interventions.

**Table 1. National Cancer Institute 5 A Day Program Expenditures**

| <i>Fiscal Year</i> | <i>Nutrition and Behavioral Change Research<sup>1</sup></i> | <i>State Health Agency Research<sup>2</sup></i> | <i>Media</i> | <i>Program Evaluation</i> | <i>Total</i> |
|--------------------|---|---|--------------|---------------------------|--------------|
| 1992               |   |   | \$0.4M       |                           | \$0.4M       |
| 1993               | \$4.0M  |   | \$1.0M       |                           | \$5.0M       |
| 1994               | \$4.0M  | \$0.3M  | \$1.0M       |                           | \$5.3M       |
| 1995               | \$4.0M  | \$0.4M  | \$1.0M       | \$0.68M                   | \$6.08M      |
| 1996               | \$4.0M  | \$0.5M  | \$1.0M       | \$0.66M                   | \$6.16M      |
| 1997               | \$2.0M  | \$0.55M   | \$0.75M      | \$0.42M                   | \$3.72M      |
| 1998               | \$2.4M  | \$0.5M  | \$1.5M       | \$0.25M                   | \$4.65M      |
| 1999               | \$3.3M  | \$0.65M   | \$1.1M       | \$0.15M                   | \$5.2M       |

**NOTE:** This budget does not include administrative costs, such as staff salaries, travel, printing, and professional services contracts; decimals are rounded to the nearest hundred.

<sup>1</sup> Reflects funds spent to support 5 A Day community-based research (using RO1 grant mechanism) conducted in specific intervention channels (see Chapters 8 to 11).

<sup>2</sup> Reflects funds spent on State health agency evaluation research of State-generated 5 A Day interventions (via an interagency agreement with CDC).

In terms of staffing, in 1991 the national 5 A Day Program had a Program director and a communications specialist. As of 1999, there were six professional positions working directly on the program, including a Program director, nutrition program manager, State program manager, nutritionist, evaluation specialist, and communications specialist.

### Produce for Better Health Foundation (PBH)

Funding for PBH began in 1991 through the efforts of the Produce Marketing Association (PMA), one of the trade associations for the vegetable and fruit industry. The leadership staff at PMA worked with the Dole Food Company and Sun World International to redirect funds that these companies had provided to PMA for commodity nutrient analysis. These funds were reappropriated as seed funding necessary to begin the Foundation. Once agreement was reached with Dole and Sun World, this money was used to leverage funds from other produce industry members. Once a total of \$200,000 was pledged from the industry, the announcement was made by PMA that PBH would be incorpo-

rated to work with NCI as the industry partner on the national 5 A Day Program. Largely through PMA efforts, more than \$400,000 was raised by the end of 1991.

From 1991 to 1998, the Foundation was housed in the PMA building in Newark, Delaware. PMA provided several in-kind services, including use of office space, phones, desks, financial administration, a distribution center, information systems staff, and a receptionist, and also donated a full-time PMA staff person. PBH purchased computers, and the rest of the money went directly into implementation of the program. Initially, there were two paid staff members at the Foundation. It was not until 1995 that PBH financial reports recorded this in-kind service from PMA. Other organizations offered free advertising space and design expertise, which also were categorized as in-kind services (see Table 2). These figures, however, do not take into account the cost of industry activities to support the 5 A Day Program through various marketing, promotional, and communications efforts.

Between 1991 and 1994, PBH staff worked to implement sound programs. In 1991, the first

**Table 2. Produce for Better Health Foundation (Industry)—Revenues/Expenditures<sup>1</sup> (1991-1999)**

| <i>Revenue</i>                                    | 1991 | 1992 | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  |
|---|------|------|-------|-------|-------|-------|-------|-------|-------|
| Contributions                                     | 422  | 554  | 699   | 1,027 | 1,035 | 1,137 | 1,282 | 1,512 | 1,226 |
| Contributed Goods and Services                    |      |      |       |       | 151   | 358   | 296   | 245   | 265   |
| Licenses  | 8    | 39   | 68    | 135   | 133   | 139   | 242   | 180   | 136   |
| Sales   |      | 4    | 48    | 25    | 19    | 15    | 8     | 3     | 279   |
| Sponsorships/Special Events/Other                 | 2    | 4    | 29    | 4     | 7     | 51    | 199   | 357   | 398   |
| <b>Total Revenue</b>                              | 433  | 601  | 844   | 1,191 | 1,345 | 1,700 | 2,027 | 2,297 | 2,304 |
| <i>Expenses</i>                                   |      |      |       |       |       |       |       |       |       |
| Communications                                    |      | 124  | 314   | 735   | 535   | 325   | 484   | 662   | 731   |
| Retail/Food Service/Education/<br>Training/Events | 57   | 111  | 318   | 186   | 239   | 582   | 801   | 843   | 1,172 |
| Research  | 98   | 8    | 59    | 71    | 103   | 107   |       |       | 2     |
| Administration                                    | 189  | 224  | 241   | 288   | 105   | 92    | 150   | 132   | 135   |
| Development and Membership                        |      | 20   | 48    | 2     | 308   | 507   | 176   | 152   | 220   |
| <b>Total Expenses</b>                             | 344  | 488  | 979   | 1,282 | 1,289 | 1,613 | 1,611 | 1,789 | 2,260 |
| <b>Net Assets (end of year)</b>                   | 88   | 113  | (135) | (91)  | 56    | 87    | 416   | 508   | 44    |

<sup>1</sup> Figures given in thousands and rounded to the nearest thousand; small discrepancies due to rounding.

major effort licensed the industry partners to use the 5 A Day logo, and attempts were made to encourage retailers to use the 5 A Day materials in supermarkets. By 1992, however, the Foundation's board of directors, frustrated by the lack of national media coverage, wanted PBH to also target the media with a communications program. A comprehensive campaign was undertaken that complemented NCI's efforts (see Chapters 5 and 6). By 1994, the Foundation had a staff of 10, including a president, retail marketing manager, communications manager, membership coordinator, nutrition director, development director, and four support staff. Income increased by 40 percent that year alone. Funds, however, were not raised fast enough to maintain the escalating program, and 1994 ended with no assets remaining for PBH.

Changes were made in 1995 and 1996 to raise more funds and to redirect how funds were spent. NCI had wanted the Foundation to track

the use of the 5 A Day logo by retailers, but this very expensive clipping service—\$70,000 spent in 1994 alone—had to be discontinued. A newsletter to members and health professionals was discontinued, and a public relations firm contract was not renewed. Some staff members were lost to attrition and were not replaced. Many traditional and nontraditional methods of non-profit fundraising were used. The development staff that had been in place was reassigned to other less traditional fundraising efforts in 1995 and 1996. It wasn't until mid-1996 that the original development position was replaced with two professional fund-development staff members. PBH raised enough money by the end of 1997 to hire another public relations firm, take over catalog sales and inventory, expand programs, and move into its own office space the following year. The Foundation had 13 employees at that time.

From the beginning, with limited staff time, there has been a problem with managing program

implementation simultaneously with fund development. Both efforts need to occur with the right amount of balance. An organization needs programs in order to raise funds, but program implementation cannot be done at the expense of raising funds.

## LICENSE AGREEMENTS/ SERVICE-MARKED LOGO

The use of the licensing process and the service-marked (trademarked) logo to enlist participation in a national nutrition campaign is unique to the 5 A Day Program. The 5 A Day service-marked logo and the corresponding licensing agreements and Program guidelines have been essential in conducting a program of 5 A Day's magnitude. The legal documents provide the basic rules and regulations by which all partners must abide when conducting 5 A Day activities. The logo requirements and Program guidelines provide the unwavering framework from which each public- and private-sector partner can create its own signature program. The need for such a point of control and consistency cannot be overemphasized. NCI uses a license agreement to grant participants the permission to use the service-marked 5 A Day logo, slogan, and materials, an approach successfully used in the prototype California program.

### License Agreement

The license agreement serves as a mechanism for NCI to obtain formal commitment to the program from industry and State health agencies. NCI has licensed PBH to sublicense the use of the 5 A Day logo and other materials to industry participants for activities that are designed to be consistent with the Program guidelines. NCI licenses State health agencies; PBH licenses industry members on the State, regional, and local levels. PBH licensees are currently assessed a \$500 fee for participation, whereas NCI health licensees are exempted from any licensing fees. The health agencies can sublicense either coalitions (State or local) or single entities to build a State-level, public/private partnership. In a coalition sublicense agreement, the chair of the coalition or organization represented serves as the sublicensee.

In signing the license agreement, participants agree to comply with the terms and conditions set forth in the *5 A Day for Better Health Program Guidebook* (PBH/NCI, 1994, revised 1999), which contains all Program participation requirements. These include specific participation rules for various types of licensed partners, license agreements, and criteria for promotable recipes and products. (See Appendix A-3 for general guidelines for all participants and Appendix A-4 for guidelines for State health authorities; industry guidelines can be found in Appendix A-5.) Participants are expected to conduct 5 A Day initiatives with other community organizations and industry members and to do so in a manner that presents vegetables and fruit as low-fat foods, increases consumer understanding of diet and health relationships, and helps consumers develop skills to choose a nutritious diet. All these efforts are to be consistent with the *Dietary Guidelines for Americans*, which first appeared in 1980 and is now in its fifth revised edition (U.S. Department of Agriculture/U.S. Department of Health and Human Services (USDA/DHHS), 2000).

### Service-Mark

The 5 A Day logo is registered as a service-mark, a symbol used to identify a specific brand of service. In the 5 A Day Program, the service is health education. Ideas, products, inventions, and services constitute highly valued intellectual properties that serve as the basis of many successful businesses. The legally strong service-mark must successfully identify the brand's products or services in the consumer's mind. Over time and through repetition, consumers come to recognize the symbol without a lengthy explanation about the details of the program or service. The more simple the symbol, the more effective the message because it can be carried in many different forms. The purpose is to have people recognize the source of the service so that they know the quality to expect as a result of past services. To maintain the marketing value and strength of the service-mark and to prevent dilution of its significance, the trademark rights must be enforced (Milgrim, 1999). NCI has the responsibility to legally protect the 5 A Day logo in the case of real or perceived logo infringements, such as putting the logo on food products or dietary supplements that do not meet program

criteria. Most logo infringements are taken care of with a simple cease and desist letter from the NCI National 5 A Day Program Office or from NCI lawyers. Thus far, one case has been referred to the Federal Trade Commission for resolution. In addition, PBH monitors the industry licensees for logo use infractions, and the State health authorities are also vigilant in detecting any misuse of the logo and corresponding program guidelines.

The NCI license agreement is designed to facilitate community-level program implementation while maintaining NCI's role. The license provides for the following: 1) a nonexclusive, nontransferable, royalty-free right to use the Program logo and related materials in promotion of the Program throughout the Nation or a State; 2) the maintenance of a standard of quality through the proper use of the logo and related materials and an agreement to provide evaluation reports and examples of logo use on materials; and 3) methods for termination of the agreement.

The first license provision grants licensees the right to use the service-marked logo, which is the anchor for the health promotion message and is integral to unifying the nationwide program. All licensed participants use the logo to identify their affiliation with NCI and the produce industry's program. For widespread dissemination of the 5 A Day message, licensees are encouraged to use the 5 A Day logo on materials, recipes, and vegetable and fruit products in a manner consistent with the 5 A Day Program guidelines, such as indicating that the products have no added fat or sugar.

The second provision concerns the maintenance of a quality standard as defined by the guidelines on logo use. Constant vigilance on logo use by the vast community of Program participants greatly facilitates NCI's oversight role. Program partners have a vested interest in maintaining the integrity of the logo, because their organization's name is now linked with the logo. Participants are also expected to submit evaluation reports to NCI and to comply with all applicable laws and regulations pertaining to food labeling and health claims.

The third provision provides for the severance of the agreement by NCI for breach of any of its provisions by the licensee or sublicensee. On termination of the agreement, the licensee is required to discontinue all use of the Program logo and materials and to destroy all printed materials bearing the logo and slogan.

All public- and private-sector Program participants are required to sign the license agreement to properly utilize the Program logo and related materials in accordance with, and in the form and manner prescribed in, the guidebook for participation in the 5 A Day Program. This agreement serves as the point of consistency for Program activities.

## Guidelines

The 5 A Day guidebook (PBH/NCI, 1994, revised 1999) contains general rules (see Appendix A-3) that describe the level of expected participation from the private-sector partners and State health authority partners and explain the need for adherence to the Program logo criteria. Other 5 A Day Program guidelines include:

- **Cross-Promotion Guidelines**, which define the criteria for promoting vegetables and fruit with other food group products such as grains, meat, and dairy;
- **Materials Development Guide** (see Appendix A-4, section C), which provides guidance for development of 5 A Day educational materials; and
- **Ancillary Product Guidelines**, which define those products that may be licensed and are integral to publicizing and furthering the goals of the Program but that are not used directly to sell vegetables and fruit, such as storage bags for vegetables and fruit or books for children (see Appendix A-5, section VI).

## Products-Promotable Criteria

The Program's key criteria are those for promotable products, denoting the vegetables and fruit that may carry the 5 A Day logo on packaging, and those for recipes, defining the standard for logo use on recipes. Products-promotable criteria define those vegetable and fruit products that may be promoted with logo use in association with the Program. The 5 A Day Program has elected to maintain fairly stringent criteria concerning which vegetables and fruit may be promoted as exemplary choices. Criteria were developed to reflect the Program's aspirations of modifying consumer behavior and encouraging the vegetable and fruit industry to provide a more supportive environment in which to facilitate that behavior

change. The goals are to 1) change consumer attitudes toward healthier eating by providing innovative ways in which to use the full array of tastes in vegetables and fruit and 2) provide incentives for the private sector to develop more vegetable and fruit products without added fat or sugar.

The following vegetable and fruit products (called promotable products) may carry the 5 A Day logo:

- All fresh vegetables and fruit, with the exception of avocados, coconuts, olives, and nuts;
- All vegetables and fruit processed by drying, freezing, or canning (except avocados, coconuts, olives, and nuts), provided that no fat or sugar (sucrose, glucose, dextrose, fructose, etc.) has been added; and
- All juice products that are 100 percent juice or juice concentrate, without added fat or sugar.

The major rationale for the products-promotable criteria is to keep the 5 A Day Program consistent with the *Healthy People 2000* objectives (DHHS, 1998), the *Dietary Guidelines for Americans* (USDA/DHHS, 2000), and the Food and Drug Administration's food labeling regulations (Nutrition Labeling and Education Act, 1990). When the Program was initiated, the definition of products promotable did not allow for added fat and sugar and was thereby kept simple. The definition provided consumers with easy-to-identify exemplary or ideal choices and promoted vegetables and fruit within the context of a low-fat, high-fiber diet. The strict products-promotable criteria also were meant to provide industry with the motivation to develop more processed vegetable and fruit products without added fat and sugar. Data from national dietary surveys have shown that dietary fat intake remains higher than optimal and that the prevalence of overweight people has increased since 1980 for both sexes and nearly all age and ethnic groups in the United States (DHHS, 1998). Thus, the Program should not be promoting added fat and sugar while the population at large is slow to meet the desired nutrition objectives.

### Recipe Criteria

The 5 A Day recipe criteria set the standard used for all recipes in program activities and materials that promote vegetables and fruit low in fat and cholesterol. The use of whole grains and minimal

use of salt and sugar are strongly suggested. It is also recommended that 5 A Day recipes be simple and fast to prepare and contain readily available, moderately priced ingredients. To carry the 5 A Day logo, recipes must meet the following criteria:

- They must contribute at least one serving of a vegetable or fruit per recipe serving.
- They may not contain more than 30 percent of calories from fat or 3 grams of total fat per 100 grams, more than 10 percent of calories from saturated fat or 1 gram saturated fat per 100 grams, more than 100 milligrams of cholesterol per serving, or more than 480 milligrams of sodium per serving.

For 5 A Day Program recipes and consumer education activities, a serving of vegetables or fruit is defined as a medium-sized piece of fruit,  $\frac{1}{2}$  cup of vegetables and fruit (raw, cooked, canned, or frozen), 1 cup of leafy salad greens,  $\frac{1}{4}$  cup of dried fruit,  $\frac{3}{4}$  cup (6 ounces) of 100 percent vegetable or fruit juice, or  $\frac{1}{2}$  cup of cooked or canned peas or beans (legumes).

The Program logo and corresponding criteria and guidelines have facilitated partnering. Use of the logo ensures consistent execution of the message in all channels by setting standards and establishing agreements with all partners participating in the Program.

## PROGRAM COMPONENTS

The 5 A Day Program disseminated the message and behavioral change activities through four main Program components: media and communications, point-of-sale interventions, community-level programs, and research efforts. Using social marketing techniques and theory-based strategies, the 5 A Day Program and all of its partners worked together to develop, implement, and evaluate a variety of interventions.

### Media and Communications

Media and communication activities play an essential role in the national 5 A Day Program. Building on lessons learned from other community-intervention programs, the 5 A Day communications component uses a theory-driven, social marketing approach based on the Health Communications

Model (Lefebvre et al., 1995). The media component of the Program is implemented in a complementary way at the national level by NCI's Office of Cancer Communications and by PBH. The national media and communications plans, as well as products for key media activities, are disseminated to the 5 A Day State health authorities and industry participants for localization. Disseminating national media and communications plans to community-level public health agencies and industry participants dramatically increases the reach of the messages and leverages other resources for further dissemination.

### Point-of-Sale Interventions

The point-of-sale (supermarkets, food-service operations) intervention channel is a key component of the Program, particularly because of the large industry presence in the Program. Interventions in supermarkets have the potential of reaching consumers in all demographic strata. The State health coalitions have worked with supermarket retailers to conduct supermarket tours and taste tests to attract the attention of consumers and actively engage them in the Program.

### Community-Level Programs

Under the leadership of a coordinator in each State health department, the 5 A Day Program is implemented by using existing public health nutrition funding and voluntary industry in-kind support at the community level, where health authorities and industry licensees conduct 5 A Day events. Most States have developed coalitions involving representatives from the public and private sectors. Examples of coalition members include State departments of health, education, and agriculture (see Chapter 3); cooperative extension services; voluntary agencies; hospitals and cancer centers; food banks; and licensed 5 A Day industry participants. The purposes for collaborating are to reach consumers more effectively, maximize the use of scarce resources, coordinate State and national media efforts, encourage innovation, and create working relationships between the public and private sectors at both the State and local levels.

The Program's community intervention relies on a theoretical foundation of health behavior change, including Social Cognitive Theory,

consumer information processing, the Health Belief Model, social marketing, and the Stages-of-Change Model. These models and theories help guide the State licensees and 5 A Day participating grantees (see Chapters 8 to 11) in the development of activities and materials that should be effective in changing eating behaviors. The focus is on behavioral change—theory-based and interactive activities to build skills for healthy dietary change. Community efforts target a range of ages and population groups through a variety of intervention channels, such as schools, worksites, media, supermarkets, and community organizations. Schools, supermarkets, and worksites are commonly used channels for disseminating 5 A Day activities.

### Research Efforts

The research component is essential for long-term success of the Program. NCI funds university-based research grants in communications and media, program evaluation, and nutrition and behavioral change to increase vegetable and fruit consumption. PBH has funded research grants in evaluations of point-of-sale intervention and media activities (see Chapter 5). The behavioral change research component (detailed in Chapters 8 to 11) consisted of nine community-based research studies funded by NCI in 1993 for 4 years (Havas et al., 1994). The purpose of the grants was to implement and evaluate interventions aimed at increasing vegetable and fruit consumption among specific population segments in specific community channels. Chapter 6 details the ongoing formative and impact evaluation research on media and communications. Program and process evaluation research is conducted to determine Program effectiveness and quality. The entire plan for evaluation of the 5 A Day Program, which capitalized on both qualitative and quantitative methodologies, is addressed in Chapter 7. Evaluation research focused on the national baseline and followup surveys to measure vegetable and fruit consumption and the corresponding psychosocial factors; in addition, a process evaluation was performed for intervention activities by States and the industry. To assess State-generated educational interventions, NCI funded, in cooperation with CDC, several State-level grants to evaluate 5 A Day activities implemented within specific community channels.

## PRODUCE FOR BETTER HEALTH FOUNDATION AND INDUSTRY PARTNERS

The agreement between NCI and PBH calls for NCI to serve as the program's scientific voice to the public, to secure health and Government partners, to conduct evaluation, and to advance intervention research. The role of PBH is to facilitate implementation in the food industry, to work with NCI to develop guidelines and program direction, to ensure that Program standards are maintained by industry partners, and to raise funds within the produce and health-related industries as well as to garner corporate sponsorship. NCI acts as the official health authority for this Program and has licensed PBH to sublicense the use of the 5 A Day logo and related materials to industry participants for activities consistent with the Program guidelines (see the section in this chapter on license agreements). Because NCI is an agency of the U.S. Government, use of the logo and related materials is a privilege that must be exercised in a responsible manner through adherence to the Program's guidelines.

PBH has a structure similar to many other operating foundations. There are staff members and a 70-member board of directors representing the major financial donors to the Foundation. The board of directors elects a chairperson, vice chairperson, and secretary/treasurer. In addition, each PBH board committee (food-service marketing, retail marketing, communications, nominating, and executive) elects a chairperson. The Foundation has licensed approximately 1,000 industry participants, including retailers, growers, shippers, packagers, merchandisers, commodity boards, trade associations, and producers of branded products, to conduct 5 A Day efforts. The retail members represent more than 30,000 supermarkets nationwide. PBH members sign a licensing agreement and pay a nominal annual licensing fee. In return, members are given the right to use the logo and corresponding materials within the specifications and criteria in the 5 A Day Guidebook (PBH/NCI, 1994, revised 1999).

The 5 A Day industry participants agree to conduct three promotional waves per year, and all partners are encouraged to participate. Materials

specific to these promotions are available in advance of each scheduled promotion. In general, artwork and copy for the Program logo, consumer materials, official recipes, and official NCI-approved advertising and promotional copy are made available to members. Directions on the use of these materials are provided to comply with Federal regulations on health messages. PBH maintains regular communications with licensed members.

Because most Americans purchase their food in supermarkets, point-of-sale marketing of vegetables and fruit is a key program element. As part of the licensing agreement, supermarket retailers agree to conduct at least two 5 A Day promotions per year in addition to the National 5 A Day Week, which is held each September. These two promotions should include both large and small in-store signs that include the logo, prominently displayed in the produce department for at least 1 month, coupled with both distribution of consumer education materials and weekly advertising (including broadcast whenever feasible) of the 5 A Day logo. The recommended activities create awareness, motivation, skills development, social support, and food system and environmental support appropriate to the target population and are based on NCI's theoretical behavior change framework for the program (see Chapter 1).

Produce marketers, suppliers, and merchandisers are encouraged to link their products with the program's promotional themes and the activities of other participants, such as with displays, cross-promotions with other food groups, food demonstrations, and videos. Other means of leveraging the 5 A Day message include development and distribution of materials that support retail promotions; Program events sponsored by participating health organizations; public relations and media activities; and participation with other Program participants in cooperative projects, such as recipe development, photography, and market research.

Noncommercial and commercial food-service operators agree to conduct major theme-related program events yearly. These promotions must include use of signs, table tent cards, menu boards, and posters that include the program's logo. Approved messages are to be prominently displayed for at least 2 weeks with concurrent distribution of 5 A Day brochures and advertising. Foods promoted for 5 A Day events must meet

program criteria for promotion (see previous discussion of promotable products and recipe criteria). Use of activities that encourage behavior change is recommended.

## STATE HEALTH AGENCY PARTNERS AND COALITIONS

In 1993, NCI began licensing State and territorial health agencies to coordinate and deliver 5 A Day interventions and activities through multiple community channels. The rationale for involving health authorities at the State and local levels in the national 5 A Day Program is to develop a national network of State and local health organizations that are scientifically credible to consumers. The licensed State health authorities assist NCI in maintaining the scientific integrity of the national program and provide the necessary state-of-the-art, interactive components of successful behavior change interventions at the community level. Health agencies deliver interactive programs and activities that motivate consumers, teach and model the skills necessary to increase vegetable and fruit consumption, and develop both social support and local food system support of dietary changes. An important part of the State health agency partner role is to provide leadership in coordinating industry and health activities at the State and local levels by serving as the first point of contact for other eligible participants within the State, by encouraging cooperative endeavors, and by sublicensing appropriate participants. Health authority partners report program activities to NCI in order to share successful strategies with other States and to contribute to the national 5 A Day knowledge base.

The licensing requirements are aimed at attaining the above functions and at ensuring the proper and legal use of the 5 A Day service-marked materials and logo. The licensing requirements help develop a consistent effort based on scientific principles of behavior change that should produce synergy to promote dietary behavior change (see the section in this chapter on license agreements). Currently, all 50 States, the District of Columbia, and four of the six U.S. territories (American Samoa, Guam, Puerto Rico,

U.S. Virgin Islands) are licensed by the NCI 5 A Day Program. Community efforts to implement the Program at the local level are coordinated primarily by the State and territorial licensees. The 5 A Day theme and social marketing strategies are incorporated into public health nutrition programming in a variety of governmental and non-governmental health organization initiatives. Statewide coalitions, involving both State and industry licensees, are instrumental in introducing 5 A Day into communities. Coalition participants include State and county health agencies, vegetable and fruit industry members, State departments of education and agriculture, cooperative extensions, supplemental food programs, voluntary agencies (e.g., the American Cancer Society and American Heart Association), businesses, media organizations, universities, hospitals and health maintenance organizations, and State dietetic associations. The coalitions conduct a variety of interventions designed to reach Americans, including media campaigns and retail promotions; distribution of vegetable and fruit recipes and tips in supermarkets; and sponsorship of channel-specific education efforts and community events, such as 5 A Day activities in schools, cafeterias, and worksites. Chapter 3 provides more detail on State health agency activities.

## FEDERAL GOVERNMENT AGENCY PARTNERS AND OTHER NATIONAL PARTNERS

The 5 A Day Program has created several partnerships with Federal agencies and national organizations that have similar public health goals and objectives. Because the CDC Division of Nutrition and Physical Activity works closely with State health departments, a partnership was created with CDC to collaborate on State-level 5 A Day activities. NCI and CDC agreed to cooperate to plan and conduct 5 A Day-related training for State health agency professionals, to conduct monthly teleconference calls with all States, to conduct communication and media activities, and to seek funding to support 5 A Day activities in each State. To aid in the evaluation of State-generated 5 A Day interventions, NCI and CDC have

collaborated via an interagency agreement to fund six 5 A Day State evaluation research projects yearly since 1994. The intent is to document the effect of State-generated 5 A Day interventions in specific channels for targeted populations. The evaluation research projects are described more fully in Chapter 7.

In 1996, NCI expanded the 5 A Day licensees to include the health promotion programs of the U.S. uniformed services (Air Force, Army, Coast Guard, Marines, Navy) and the Indian Health Service. This expansion served the goal of reaching those populations not reached by State and local health agencies. Programming decisions are made by the uniformed services' health promotion programs and the Indian Health Service as to how each will deliver the 5 A Day message to their targeted populations.

In 1997, NCI and USDA's Food and Nutrition Service agreed to collaborate on 5 A Day activities by using the 5 A Day logo in USDA nutrition education materials and communications activities. The agreement set forth the notion of the 5 A Day State health authority coordinators partnering with the USDA's State nutrition contacts, especially at three key times during the year—National 5 A Day Week in September, National School Lunch Week in October, and National Nutrition Month in March—in addition to any other appropriate times. The collaboration of NCI with USDA and its multitude of nutrition programs—including food assistance programs (Special Supplemental Nutrition Program for Women, Infants, and Children, food stamps and the corresponding nutrition education program), nutrition education programs (Expanded Food and Nutrition Education Program, Team Nutrition), and Cooperative Extension Service activities—broadens the reach and influence of the program.

The 5 A Day Program forged an alliance with the American Dietetic Association (ADA) in 1995. ADA is the world's largest organization of food and nutrition professionals, with more than 69,000 members in the United States and other countries. ADA members serve the public by offering prevention and wellness services and medical nutrition therapy in a variety of settings. The 5 A Day alliance with ADA is one that leverages the vast communications and technical resources of a huge professional organization. Information about scientific and nutritional

aspects of vegetable and fruit consumption is provided continually to ADA spokespersons, who in turn share it with influential groups, including media outlets.

The intent of the multiple partnerships with national nutrition and health organizations is to facilitate greater penetration of the 5 A Day message and to combine the limited funding and resources of many organizations to achieve mutual goals. The 5 A Day Program has been assertive in efforts to partner effectively with others and is continually planning for greater involvement by other national disease prevention and health promotion organizations, such as the American Cancer Society and the American Heart Association.

## **SUMMARY**

The national infrastructure of the 5 A Day Program was designed to forge partnerships with key industry and health authority groups at the national, State, and local levels. The ultimate goal is reaching all Americans with the 5 A Day message. Having a number of well-placed, high-quality partners is a major strength of the Program. The Program's structure leverages the resources of a wide variety of organizations and mobilizes a cadre of motivated professionals already in place at the national, State, and local levels. Public health innovations are easily diffused through this network, with the potential of benefiting each organization's goals and objectives.

The unique structural feature of the 5 A Day Program is an ongoing viable working relationship between NCI and PBH, complete with a strong commitment to strategic planning and open communication between the public and private partners at all levels. It has been demonstrated that the challenges of the public and private sectors working together can be overcome with frequent and open communication.

The service-marked logo, along with corresponding Program guidelines and criteria, is instrumental in establishing the common framework in which the 5 A Day Program is conducted and is central to the power and impact of the Program. Vegetables and fruit are uniformly promoted within the context of a low-fat, high-fiber diet. Uniformity is crucial to maintaining the sci-

entific credibility and, therefore, the value of the Program. The service-marked logo licensing process was essential in keeping the industry program efforts in line with the public health communities' program focus. This licensing process was deemed less essential with the public health partners but nonetheless has been important in holding all partners to the same criteria and standards. The licensing process also has been helpful for the State-level coalitions to define standards of practice.

An unexpected benefit of the public/private partnership has been the parallel sharing of resources. For example, PBH funded the 5 A Day baseline survey when it became apparent that NCI would not be able to conduct the survey in a timely manner. In the media and communications program, NCI has funded most of the formative research and tracking research, and both NCI and PBH fund consumer communications activities. Many of the national communications activities are designed so that the States can localize the media products.

This multilevel, public/private partnership model with the service-marked program logo can be used to plan other public health message programs. For example, an interagency diabetes health campaign and a bone health (osteoporosis) campaign are in the formative stages of planning partnership programs with their respective partners. The experiences of the 5 A Day Program have contributed to the development of new types of partnership programs.

In an era of Government-encouraged partnerships with the private sector, the 5 A Day Program structure is unprecedented in its size and its potential effect on public health programming in the United States. The first 5 years of the Program built the infrastructure with scarce programmatic funding. The challenge now is to garner sufficient funding and to utilize that infrastructure to diffuse not only the 5 A Day message, using state-of-the-science research findings, but also other important nutrition and health messages.

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## Chapter 3

# The 5 A Day State-Based Program: A Model of an Effective Infrastructure

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## INTRODUCTION

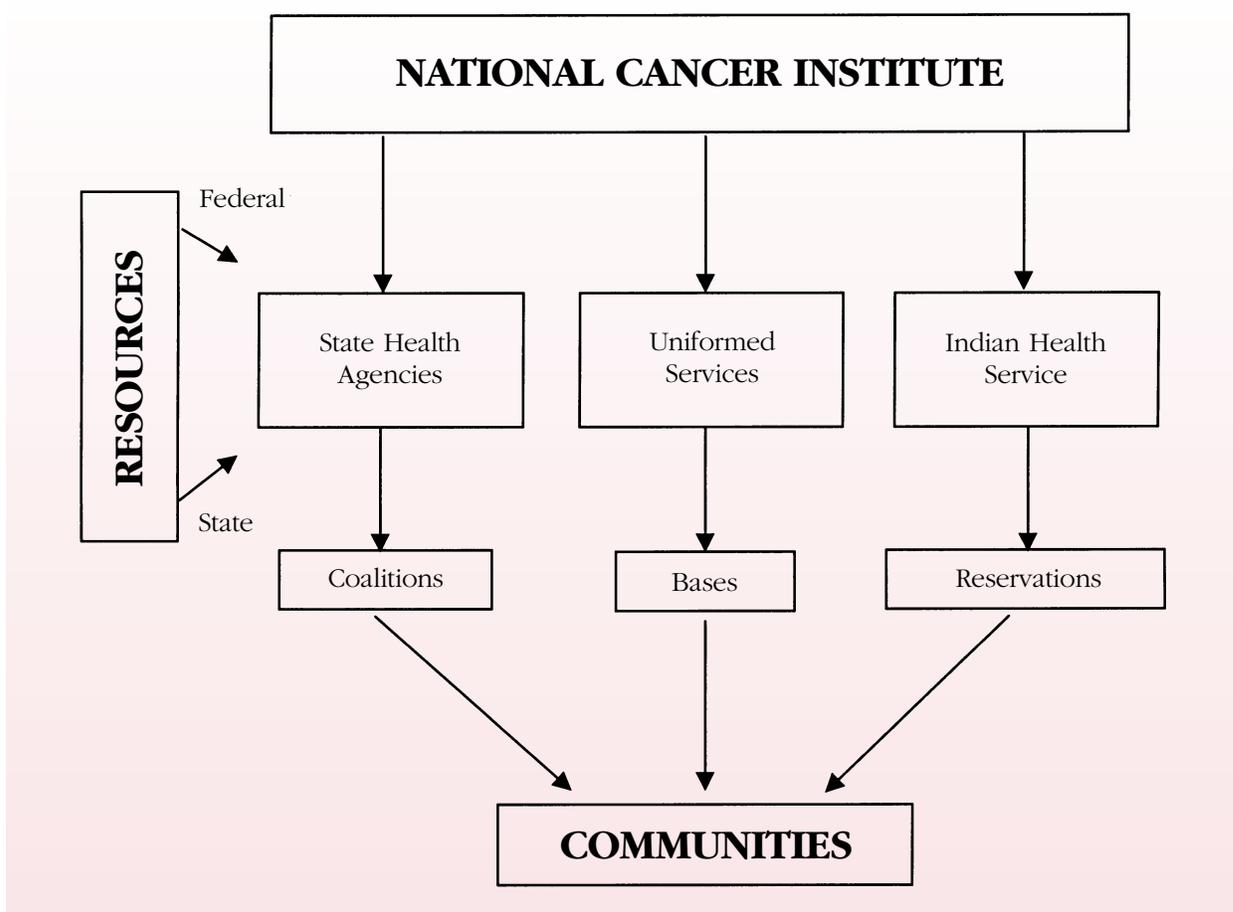
**A**t the State and community levels, the National Cancer Institute's (NCI's) 5 A Day Program attempts to develop and support an infrastructure and foundation from which research in the basic and behavioral sciences can be applied for the purpose of improving dietary behaviors in the U.S. population. Although the Program aspires to this vision, it is challenged by limited resources to attain this vision uniformly across the United States. Community programs are charged with 1) raising public awareness of the health benefits of eating five servings of vegetables and fruit a day and 2) conducting interactive activities to show people how to accomplish this goal. Those States with adequate resources and experience use a social marketing and theory-driven educational approach and conduct formative research in developing interventions. This chapter describes a model of State and community organization and intervention that has worked effectively for the 5 A Day Program.

There are two key aspects to this model: 1) the State program structure and its growth and 2) the resources that support it (see Figure 1). The State

structure derives from the process of licensing and enrolling State and territorial health agencies and their coalition partners. The tremendous growth in the State network of partners, essential for the widespread adoption of the 5 A Day Program, is reflected in the breadth and depth of the community Program's expansion, which also includes the uniformed services and Native American initiatives. Growth in the numbers of State and Federal Government licensees and their partners demonstrates the breadth of expansion, while the depth of expansion within each State is evidenced by the increasing diversity of participants, community organizations, 5 A Day initiatives, and mechanisms of program implementation.

The second key aspect of this model is the demand for resources needed to implement 5 A Day Program activities, which goes beyond the capability of any single funding source at either the State or Federal level. The latter part of this chapter will present the resources (fiscal/Federal, fiscal/non-Federal, nonfiscal/Federal, nonfiscal/non-Federal) that have supported community 5 A Day programs across the United States since 1993.

Figure 1. Organizational Framework for the Community Component



## COMMUNITY STRUCTURE AND GROWTH

A key facet of an effective model of community intervention is the working relationship within the organizational structure. The organizational structure and licensing process that are used in the national 5 A Day Program are addressed in Chapter 2. Because the Program’s goal is to encourage all Americans to increase consumption of vegetables and fruit, a conduit was needed that could effectively transmit the 5 A Day message into communities across the Nation. State public health agencies are ideally suited to take the lead in organizing community efforts to transmit the message because they employ

appropriate professionals, such as nutritionists, and because they have a mandate to protect and promote the health of the public. For this reason, NCI chose State health agencies to serve as State health authorities for the program. In this capacity, they coordinate State-based 5 A Day programs and provide an unbiased forum for various members of the private sector to collaborate with the public sector on a common mission.

### State Licensees

As State or statewide coalition structures were established through licensing agreements, State health officers appointed coordinators to do the following: 1) provide leadership for structuring and implementing State 5 A Day programs through a network of participants (i.e., the 5 A Day coalitions) to provide ongoing Program planning and

support; 2) represent State health agencies in upholding the scientific credibility of the national 5 A Day Program; 3) maintain high standards in the quality of interventions by emphasizing activities that motivate and assist target populations to change dietary behavior, based on the matrix presented in Chapter 1; and 4) serve as the contact for all communications with NCI, reporting program accomplishments to NCI to facilitate the sharing of ideas among contributing States and to contribute to the national 5 A Day database. As part of the Program's reporting requirements, the States submit semiannual progress reports to NCI. NCI uses these State data to evaluate the process of program implementation (see Chapter 7).

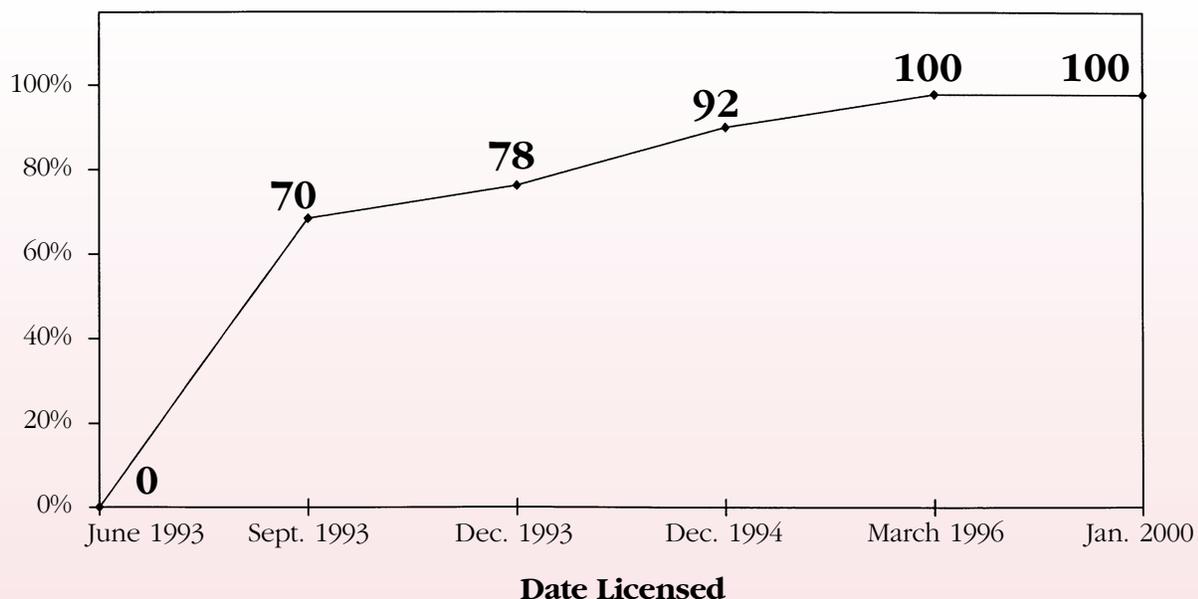
The national 5 A Day Program has experienced tremendous growth since the States began to join it in mid-1993 (see Figure 2). A majority (70 percent) of State health agencies signed the one-time license agreement (valid for an indefinite period) with NCI within the first 3 months of the process. As of March 1996, NCI had licensed 55 health agencies, including all 50 States, the District of Columbia, and 4 of the 6 U.S. territorial health agencies. Over the first 7 years of the community program, all NCI-licensed State and territorial health agencies maintained their commitment to the program.

## Coalitions

Through coalitions, the State and territorial licensees coordinate efforts and operationalize the national 5 A Day Program at the community level. In 1998, 90 percent of NCI's licensed States had statewide or local coalitions committed to implementing 5 A Day activities, and 76 percent of these State coalitions were created exclusively for 5 A Day Program support. These 5 A Day activities include social marketing campaigns, interactive nutrition education programs for schoolchildren, supermarket promotions, farmers market programs, and collaboration with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Coalitions are discussed in greater detail in the "Coalition Initiatives" section to follow. Approximately 36 percent of the State health agencies have signed sublicensing arrangements with these State or local coalitions to grant member organizations permission to use the service-marked 5 A Day logo and program materials. Nearly all States also sublicense single entities, such as local health departments and community organizations.

This vast network of diverse community participants demonstrates the depth of the national 5 A Day Program's expansion. The composition of

**Figure 2. Growth in Percentage of State Health Agency Licensees**

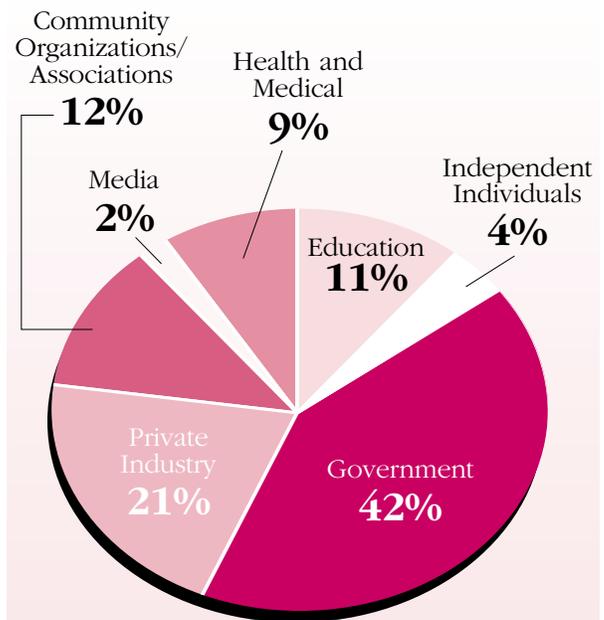


these community coalitions varies greatly from State to State. In some, coalitions or advisory groups are restricted to sublicenses with local health departments. In others, the coalition membership is as diverse as the State it represents. Nationwide, the State and local coalitions represent more than 2,600 member organizations.

Although the largest single category of coalition participants comprises State agencies or programs, the majority of individual coalition participants are nongovernmental entities. State coalition participants include State departments of health, agriculture, and education; military bases/academies; as well as local government agencies and programs. Government agencies and programs represent 42 percent of individual coalition participants. The food industry (including the vegetable and fruit industry—retailers, wholesalers, and commodity groups—as well as the restaurant industry) and the nonfood industry (the pharmaceutical and insurance industries and other businesses) represent 21 percent of coalition partners. Community organizations (e.g., churches, Scouts, Young Men's Christian Association), professional associations (the American Dietetic Association), and voluntary organizations (American Cancer Society and American Heart Association) represent another 12 percent of coalition partners. Schools and universities represent 11 percent, health care practices (hospitals, health maintenance organizations, and clinics) represent 9 percent, the media (i.e., public relations firms, television, radio, newspapers) represent 2 percent, and individuals represent the remaining 4 percent (see Figure 3).

The national 5 A Day Program also has benefited from the extensive and dedicated involvement at the State and local levels of two programs that are funded by the U.S. Department of Agriculture (USDA): the WIC Program and the Cooperative Extension Service. As of 1999, a total of 137 Cooperative Extension Service and 37 WIC representatives served on 21 State coalitions affiliated with the 5 A Day Program. Across the country, many States have developed WIC programs with farmers markets to deliver the 5 A Day message, creating and distributing materials that target the high-risk population of those receiving WIC services. The Cooperative Extension Service is very active in the 5 A Day Program, as shown by the level of its participation in coalitions. In fact, Delaware's Cooperative

Figure 3. 5 A Day State Coalitions Membership



Note: Percentages are rounded up, thereby causing the total to exceed 100.

Extension Service, instead of that State's health agency, directs the 5 A Day effort.

### Coalition Organization

The Program expansion determined by each coalition is described by four variables used in community organization theory: power sharing, coalition diversity, evolution of sophisticated coalition structures, and strategic planning. These variables were taken into account in the planning phase of the national program and were incorporated into the Program guidelines and subsequent training of State coordinators. Chapters 4 and 11 illustrate how this organizational theory is applied in the community.

The first aspect in coalition organization is the power-sharing structure (Rogers et al., 1993) between the State coordinator and the coalition. Members of this structure are collaborators in a common mission (Glanz, 1990). Although the coordinator may take the lead in establishing a 5 A Day coalition or a steering committee or incorporating the 5 A Day message into an existing coalition, all coalition members play a vital role in determining the programmatic direction of the coalition.

To be formally associated with a State 5 A Day program, the coalition chair must sign a sublicense agreement with the State, unless the chair represents the State. The organization represented by the chair can be highly influential by virtue of the chair's visibility and leadership position. For example, the Washington State 5 A Day coalition appointed an industry leader as the chair and thereby attracted greater involvement by that industry in 5 A Day Program activities.

Ongoing State coordinator responsibilities include membership recruitment and activation, which is facilitated by the license agreement. This ensures that a single lead agency is responsible for program continuity and adherence to program guidelines. Some 5 A Day coalitions have signed a State-developed memorandum of agreement between the coordinator and the members to obtain commitment to the program guidelines.

A second aspect of coalition organization is the coalition's diversity, which may be an asset but which may also reflect the potential for conflicting interests among the different members. The most obvious example is the public/private partnership, which shares both common interests and reconcilable differences (Glanz, 1990). The differences may lie in the respective partners' organizational structures, agendas, and ways of doing business (i.e., the speed at which business is accomplished). These differences are reconciled by the common interests and shared mission of increasing the demand for and consumption of vegetables and fruit.

The third aspect in coalition organization is the evolution of more sophisticated and enduring coalition structures. A few States (e.g., California, Kansas, Utah) have incorporated their State 5 A Day coalitions as nonprofit corporations. This has enabled the coalition to accept industry donations, to hold regular meetings, and to closely monitor progress. For example, the Utah 5 A Day association received \$12,000 in industry donations and \$3,000 in in-kind contributions during the first half of 1997. The entire association, which includes 1 local coalition and 12 local health districts, meets about 3 times per year; individual subcommittees meet bimonthly. All Utah 5 A Day activities are monitored through quarterly 5 A Day awareness surveys. Utah reports that awareness of the 5 A Day message has increased from 4.6 percent in July 1994 to 34.7 percent in January 1998 (Valley Research, Inc., 1994-1998).

The fourth aspect in coalition organization is the coalition's strategic planning. The organizational structures and issues selected for action are self-initiated by the coalition; NCI's role is ancillary, providing support where requested. This supports the aim of community ownership of a 5 A Day program. For example, several State coalitions (e.g., Florida, Washington, Pennsylvania, Illinois) held initial conferences to launch their partnership programs, developed mission statements, organized task forces, set action plans, and continued to hold regular meetings. State coalitions organize task forces or subcommittees by channels (in Washington, for example, into media, worksites/retail, and schools categories) or by resource utilization (Utah, for instance, developed a fundraising category).

### North Carolina: An Example of a Successful Coalition

A brief case study of the North Carolina 5 A Day program and coalition illustrates visionary strategic planning. The initial State 5 A Day coalition was small and lacked diversity, representing primarily governmental agencies. Lack of available State funding constrained the coalition's ability to meet the challenge of increasing vegetable and fruit consumption across the State, a particular challenge given North Carolina's lower consumption figures relative to other States (*Behavioral Risk Factor Surveillance System*, 1996). Recognizing the need for action, the 5 A Day Program director at the State health agency took the first step toward securing the necessary support to reverse this trend. The director approached the State leadership for cancer control funds to be set aside for prevention (specifically nutrition) and, through \$177,000 in funding for mini-grants, involved existing and new 5 A Day coalition members in implementing effective nutrition interventions. Mini-grant awardees joined the State 5 A Day coalition, helping to revitalize and move it toward a more diversified, community-owned organizational structure.

The energized coalition worked collaboratively with North Carolina's Advisory Committee on Cancer Coordination and Control to incorporate specific 5 A Day objectives into the statewide Cancer Strategic Plan. Funding to implement portions of the plan was requested and obtained from

the State legislature. The success of the mini-grant projects funded by the set-aside funds from the cancer control program (discussed in the section “Mini-Grants: Case Studies”) positioned the program/coalition to receive some of these new State funds for implementing 5 A Day activities. The Program/coalition was instrumental in overseeing the implementation of the five new community-based 5 A Day projects funded by \$85,000 of the total appropriation. Two of these projects focused on translating successful interventions from a 5 A Day Black Churches United for Better Health community-based research study to field application (see Chapter 11). Another project received seed funding for a comprehensive social marketing initiative, the 5 A Day Challenge, which is scheduled to be expanded to a multimillion dollar program, pending funding.

The quality of these projects, in turn, allowed the State to leverage Federal dollars from the Centers for Disease Control and Prevention (CDC) for additional support, particularly for the 5 A Day Challenge. In addition, the American Cancer Society donated \$10,000 to support the translation project; the Institute of Nutrition, University of North Carolina/Chapel Hill, provided in-kind support to the 5 A Day CD-ROM project; and the private sector gave monetary as well as in-kind support, such as donation of computers. This demonstrates how North Carolina’s long-term plans for improving the infrastructure for implementing health promotion were achieved through both the support of the State health agency by way of this evolutionary process and coalition partnerships, which grew to be vested in the program through their fiscal support and the contribution of other resources.

### Coalition Initiatives

The various coalition initiatives are delineated in terms of the intervention goals, community settings, intervention types, and size of target audiences. The goals of the 5 A Day interventions are defined in the “Guidelines for Health Authorities” of the program guidelines (see Appendix A-4). These include creating awareness, developing skills, developing social support networks (e.g., suggesting how to use peer influence at work to reinforce healthy eating habits), and promoting food systems or other environmental support

(e.g., developing worksite catering policies). The community intervention channels are diverse. These can include schools; media; worksites; supermarkets; food-assistance programs; and community settings, such as childcare centers, churches, and senior centers (see Chapter 1). Types of interventions conducted in communities range from simple presentations on the nutritional benefits of eating five servings of vegetables and fruit a day and supermarket tours for school-children to comprehensive, multichannel campaigns, such as California’s Power Play initiative (Foerster et al., 1995). The latter is addressed in more detail in Chapter 4. The size of the target audience also ranges from classroom to school-wide and from a radio listening audience to that of a statewide media campaign. The plethora of options made available to coalitions by the multitude of goals, settings, and types of interventions allows coalitions to select those methods that best meet their community’s needs and to utilize the available resources.

### How Do Coalitions Deliver Interventions?

Coalitions must leverage limited resources to conduct 5 A Day interventions and may use a variety of mechanisms for doing so. One mechanism is to integrate the 5 A Day concept into a variety of existing health agency programs, including those for food assistance, physical activity, diabetes, or cardiovascular disease, as well as those involving community systems, such as farmers markets and food recovery. This integration eases the demand on resources needed solely for a given 5 A Day program. Interventions also have been implemented by coalition member organizations or in partnership with other community-based groups and organizations on an ad hoc basis. Coalitions also raise their own funds and then use them for programming, such as the development of curricula or production of costumes and characters (e.g., Sir 5 A Day, in Colorado).

Another mechanism for delivering the 5 A Day interventions is through public/private partnerships with the vegetable and fruit industry. Florida’s Orlando Regional Partnership Program, led by NCI and the Produce for Better Health Foundation (PBH), is an example of a model partnership effort. This program develops and implements comprehensive 5 A Day

nutrition education initiatives in defined community channels around the greater Orlando area, which is a major media market. Partners involved in the regional program include industry, Government, and community organizations. PBH fundraising efforts help garner support for these initiatives, with targeted outcome measures that define how these funds will be utilized.

A third mechanism for conducting 5 A Day programming is through mini-grants funded by State health agencies. Mini-grants create new opportunities for organizations involved in health promotion to develop and evaluate initiatives more thoroughly than can be done in the absence of a defined budget. The State benefits by receiving detailed analyses on the design, implementation, and outcome of the projects. Two case studies on mini-grants, in Ohio and North Carolina, are described below.

## Mini-Grants: Case Studies

### Ohio

The Federal Preventive Health and Health Services Block Grant has funded four 5 A Day mini-grants to local health departments in Ohio, totaling \$100,000 per year for 3 years (1996-1999). Initial grants were aimed toward raising awareness through school-based nutrition education and featured a classroom 5 A Day curriculum and partnerships with Team Nutrition and Dole Food Company. Parts of the curriculum were incorporated into permanent exhibits at a county park serving over 50,000 schoolchildren per year. Subsequent mini-grants were directed toward policy and environmental change. One 3-year grant funded a community gardening project to introduce inner-city, low-income families to the concept of eating five servings of vegetables and fruit a day, in a partnership with the Ohio State University Extension, WIC, and Head Start programs.

### North Carolina

In 1996, the North Carolina Department of Health and Human Services awarded local health departments \$177,000 for eight mini-grants to promote the 5 A Day message. Research and evaluation included the use of surveys and focus groups to establish baseline knowledge and practice.

Several mini-grants also funded process and outcome evaluations, including 24-hour dietary recalls. The goals of the interventions encompassed each of those prescribed by the national 5 A Day Program guidelines. The mini-grant interventions featured more than 350 activities, including a media campaign with community liaison and health care facilities; interactive home-learning activities for elementary school children; market promotions in local groceries and farmers markets; and training of school food-service managers by culinary chefs. The mini-grant awards served as seed money for obtaining in-kind assistance valued at \$134,275 from various public and private partners, such as the American Cancer Society, the Culinary Association, schools, Government agencies, dietetic associations, the media, and retailers.

Because State health agencies do not have jurisdiction over all the subpopulations within their boundaries, it became apparent over time that other partners were required to expand the reach of the national 5 A Day Program. Therefore, several other Federal partners were enlisted to reach out to additional target populations, such as military personnel and Native Americans.

## OTHER FEDERAL PARTNERS

Particular populations that are not served by the States include the military on U.S. bases and Native Americans residing on reservations. Consequently, in 1997, NCI licensed two Federal Government agencies, the U.S. Uniformed Services Health Promotion Programs and the Indian Health Service (IHS), to deliver the 5 A Day message to these populations. The Federal Government license agreements are similar to the State health agency agreements but have some notable differences. The purpose of the Federal initiatives is to develop a network of national programs and to promote 5 A Day throughout the licensee's Federal agency, instead of building a network of community-level health organizations. Also, Federal licensees do not sublicense other participants but are encouraged to collaborate where possible with the State 5 A Day program coordinators (see Appendix A-6, "Guidelines for Federal Government Programs").

## U.S. Uniformed Services

By April 1997, NCI licensed the health promotion programs of all five U.S. uniformed services (Air Force, Army, Coast Guard, Navy, and Marines) to develop 5 A Day programs on military bases, stations (such as clinics, food services, and commissaries), air fleets, and ships and at the service academies. The target audience comprises active duty service members, their families, and retirees, encompassing more than 7 million military (noncivilian) personnel, as well as the civilian workforce in the U.S. Department of Defense (DOD). The DOD 5 A Day initiative was formed by a DOD 5 A Day team that consisted of 13 members from all the uniformed services, the Army-Air Force Exchange Service, and the Defense Commissary Agency. DOD's Nutrition Council, as part of its initiative to lower fat and increase fiber intake, embraced a comprehensive approach for the DOD 5 A Day initiative. This approach includes research, food-service training, interventions, materials, and communications.

First, the DOD 5 A Day Program research consists of pilot studies in the Army, Navy, and Air Force to evaluate the effectiveness of 5 A Day interventions at military bases. Also, the ongoing DOD health-behavior survey has been used to collect baseline awareness and consumption data. The health-behavior survey is conducted every 3 years (1992, 1995, 1998), either in person or by mail, on a study population totaling 31,000 adults meant to represent the entire military. These studies will provide a foundation for an expanded research effort within the military between NCI and DOD. In 1998, the Army's health promotion coordinators and medical treatment facility (MTF) dietitians conducted a pilot intervention in troop dining facilities at Fort Campbell, Kentucky. An initial survey to assess the intervention's effectiveness in raising 5 A Day awareness was conducted and revealed significant differences between the amount of vegetables and fruit that soldiers thought they should eat and what they actually consumed. Key findings showed that about 60 percent of the subjects had heard of the 5 A Day initiative and were more likely to understand its message versus those who hadn't previously heard the message. About 25 percent knew that "five or more" was the recommended number of daily servings one should consume; however, only 20 percent consumed five or more servings.

Second, food-service training programs encompassing the 5 A Day message have been developed by the Navy and Army to train military cooks in how to prepare healthier foods, including serving more vegetables and fruit. The Navy trains the fleet and food management teams twice a year.

Third, the DOD 5 A Day initiative provides for interventions that generate a continuous health message throughout the year, with special emphasis during National 5 A Day Week, which is held each September. The initiative includes collaboration with the food service (i.e., the Defense Commissary Agency) to promote 5 A Day at the point of sale. A CD-ROM featuring Graham Kerr, the gourmet chef and television personality, is promoted through the military media. The Kerr CD, "Do Yourself A Flavor," was developed by NCI to facilitate behavior change by providing practical tips on easy ways to eat more vegetables and fruit.

Fourth, the DOD 5 A Day team is developing nutrition education materials for use by the MTF dietitians in community nutrition education efforts that take place during National 5 A Day Week. Two nutrition videos are under development, including an overview of the DOD 5 A Day campaign and a demonstration of how military service members get their five servings a day in various situations. In addition, the 5 A Day message is being integrated into DOD policies (Army) and promotions on folate consumption. A folate/5 A Day booklet was developed for use in the Put Prevention into Practice initiative of the U.S. Department of Health and Human Services. Another educational aid under development is a CD-ROM with the 5 A Day slide presentation and various intervention strategies.

Fifth, the DOD 5 A Day team holds monthly conference calls to facilitate interservice communications and to develop dietary behavior change strategies for service members and their families. Within a short timeframe, the DOD has launched an extensive campaign to promote increased consumption of vegetables and fruit among U.S. military personnel. An atmosphere of open exchange of ideas and resources between the various services as well as directed leadership has contributed to the early success of this effort. The Navy and Army each dedicate an average of 0.25 of a full-

time equivalent and \$25,000 per year on 5 A Day efforts from the national program offices. The Air Force spends approximately \$30,000 per year on 5 A Day promotions. Air Force 5 A Day efforts are decentralized, and bases report dedicating between 0.5 to 0.9 of a full-time equivalent on 5 A Day.

### Indian Health Service

The Indian Health Service signed a license agreement with NCI in January 1997 to disseminate 5 A Day promotions to the Native American population. A 5 A Day advisory body that includes tribal representatives was established to provide guidance for the IHS 5 A Day program. During 1998-1999, IHS efforts were localized to the northwestern region of the country and entailed dissemination of 5 A Day materials and information at health fairs, schools, diabetes screenings, commodity programs, and health clinics on reservations. The breadth of the IHS 5 A Day program reach has expanded through the 300 IHS health center nutritionists located in 300 of the 500 tribes. The IHS 5 A Day coordinator builds partnerships with existing programs and groups on the reservations to implement promotions, policies, and environmental changes in order to encourage increased consumption of vegetables and fruit. These programs include the IHS farmers markets, the USDA's Commodity Program, the IHS Diabetes Program with 185 subprograms, WIC, and Head Start. There are 170 Head Start sites working with industry (such as local produce marketing, retail, and distribution) to improve access to vegetables and fruit in rural areas. In 1999, Alaska's Department of Health received an NCI/CDC evaluation grant to promote 5 A Day and increase the availability of vegetables and fruit in rural grocery stores. In addition, IHS plans to interface with the Native American colleges through university courses that teach healthy ways of preparing traditional foods.

Several CDC/NCI intervention grants to Native American tribes have produced strategies for reaching members of this population. The Penobscot project in Maine integrated 5 A Day interventions into existing programs by establishing a 5 A Day coalition. The intervention efforts included a variety of activities in the community, schools, and supermarkets as well as with the eld-

erly (CDC/NCI, 1994; 1995). In Wisconsin, the Ho-Chunk Nation project combined the 5 A Day message with physical activity and featured cooking classes on healthy and traditional Native American dishes. The Seminole Tribe project in Florida aimed to lower the risk for obesity among preschool and elementary school children by improving nutrition awareness and encouraging more exercise. The project featured school-based 5 A Day nutrition education for children, parents, faculty, and food-service staff. A few State health agency intervention grants also targeted the Native American population. For instance, South Dakota conducted focus groups with individuals from the Native American communities to develop culturally appropriate 5 A Day materials; in another case, New Mexico conducted food demonstrations for the Native American population.

## RESOURCES FOR IMPLEMENTING COMMUNITY 5 A DAY PROGRAMS

The Federal support for Program implementation at the State and community levels includes both fiscal and nonfiscal resources. The fiscal support from NCI is primarily research focused (see Chapter 8). However, NCI provides continuous technical assistance to all 55 licensees (States, the District of Columbia, and 4 U.S. territories), so that State-level 5 A Day coordinators can implement their programs at the community level.

### Fiscal—Federal

NCI does not provide direct funding to State health agencies to help implement their 5 A Day programs, nor to run their 5 A Day State coalitions. However, because 5 A Day has addressed one of the Healthy People 2000 Nutrition Objectives (see Chapter 1), NCI has successfully partnered with other Federal agencies, such as CDC, to share resources. NCI's joint efforts with CDC date to the start of the State and community component of the national 5 A Day Program. State-level interventions that include a 5 A Day component received a boost through the 1-year CDC intervention grants that were made to State and territorial health agencies and tribes (consisting of 38 grants that averaged \$25,000 each) in

fiscal years 1994 and 1995. These grants served as a catalyst to initiate and support 5 A Day programs in many States and through specific community channels. For example, a total of 13 intervention grants funded coalition development in Alaska, Arkansas, Maine, Michigan, Nebraska, New Mexico, and Washington as well as coalition expansion in Alabama, Hawaii, Minnesota, Missouri, Montana, and Vermont.

Another Federal partner, the USDA Economic Research Service, provided grant funding through the Food Assistance and Nutrition Research Program to promote the increased consumption of vegetables and fruit. In 1999, USDA funded 1-year grants totaling \$4.2 million to 16 states for Team Nutrition training and demonstration projects (USDA press release, July 1999). Efforts to incorporate the 5 A Day message into these projects are ongoing.

### **Fiscal—Non-Federal**

With limited direct Federal funding available for State program implementation, State health agencies must rely primarily on the resources available within their own agencies and communities to implement 5 A Day activities. State health agencies successfully leverage statewide resources to support their 5 A Day efforts through Preventive Health and Health Services Block Grant funds; tobacco tax dollars; Nutrition Education and Training (NET) Program funds; and other sources, such as the California/USDA matching grants. Several examples follow that illustrate the types of fiscal resources garnered for State 5 A Day programs. For a more comprehensive analysis of State fiscal resources, see Chapter 7.

Utah used an estimated \$25,000 in block grants to develop a fiber-optic interactive display that teaches children about 5 A Day. The State estimates that each year over 20,000 children will see the permanent display. North Carolina obtained \$60,000 (in staff time) from the block grants and nearly \$40,000 from NET funds to implement 5 A Day initiatives in schools. Maine garnered about \$20,000 from the block grant funds to sponsor a statewide 5 A Day coalition meeting that 200 people attended. The purpose was to present the research base for the 5 A Day Program, identify resources available to the coalition, and discuss

intervention strategies. The coalition applied the concepts and ideas shared at the meeting to the development of their strategic plan. Part of Michigan's 5 A Day Program is carried out through the Michigan Public Health Institute. The State passed a tobacco tax law that levied a tax of an additional \$ .50 per pack on cigarettes for a total tax of \$0.75 per pack. Six percent of this tax comes to the State health agency as the Healthy Michigan Fund for prevention programs, some of which has been used for 5 A Day activities.

### **Nonfiscal—Federal**

NCI, PBH, and CDC dedicate Federal nonfiscal resources in support of State 5 A Day programs. These resources are invaluable as they provide the stimulus for new programmatic direction in the States and the basic materials for conducting these programs. NCI provides ongoing technical assistance to all State licensees through four key mechanisms: regular communications, training opportunities, program materials, and media assistance.

First, a nationwide system for disseminating Program intervention strategies and research development was established at the launch of the community-level program in 1993. This streamlined system has only one key contact for NCI—the State coordinator—in each State. The State coordinator acts as the conduit for sharing information from NCI with coalition members. The logistics and expense of maintaining regular communications among 55 licensees present a challenge for a program with a small operating budget. Consequently, since 1993, NCI has partnered with CDC to hold national conference calls for NCI licensees and grantees each month. The conference calls enable NCI to regularly update the State licensees on national promotions, research news, and effective ways to implement 5 A Day behavior change interventions. The research updates were presented by the principal investigators from each of the nine NCI 5 A Day grants, and the NCI/CDC evaluation grants focused on the practical aspects of intervening in their target groups. Previous topics have included nutrition advocacy, collection and use of produce sales data, vegetable and fruit consumption data, partnering with industry and

USDA, and results of research grants. In 1996, NCI launched a 5 A Day Program Web site ([www.5aday.gov](http://www.5aday.gov)) and, in 1997, a listserv, an electronic network linking NCI with all 5 A Day State coordinators and national partners, to facilitate information exchange across the Nation and beyond. The Web site features an interactive consumer-tracking chart espousing 5 A Day and physical activity recommendations developed by NCI and CDC. This site is integrated into the NCI 5 A Day Program Web site and links to CDC's Web site on nutrition program activity.

Second, NCI collaborates with CDC to obtain support for national training conferences that have focused on behavior change strategies, program structuring, and implementation. Three national 5 A Day Program meetings were held in Kansas City (Missouri, 1993), Atlanta (1994), and Phoenix (1996) to provide States with the necessary tools to achieve the Healthy People 2000 nutrition objectives. NCI also worked with CDC on four national distance-education training sessions between 1994 and 1996 that addressed community-based nutrition interventions focused on working with the media and introducing behavior change strategies to supermarkets, worksites, and schools. Several of these televideo conferences used 5 A Day as an exemplary model. The televideo conferences are a part of the CDC-wide Public Health Training Network, a national distance-learning program for professionals.

Third, NCI developed 5 A Day materials for use by State licensees. These include the Program starter kit; bulk quantities of printed, theme-based promotional materials; sample educational materials; easy-to-use campaign kits (such as the 5 A Day Week community intervention kit) providing reproducible graphics, template press releases, intervention ideas, and stepwise instructions; a speaker's kit; and media materials. NCI printed nearly 3 million copies in 1997 and over 4 million copies in 1998 of 5 A Day materials and distributed these products to the State licensees and NCI's Cancer Information Service (CIS) outreach program. The CIS program, which includes more than 40 outreach coordinators across the United States, provides technical assistance and materials to conduct

cancer education, media campaigns, and community programs. In 1998, these materials focused on the topics of physical activity, elementary school children, issues relevant to the African-American community, and easy recipes.

In December 1996, NCI launched a national clearinghouse of 5 A Day materials to facilitate the exchange of nutrition intervention materials and strategies. This collection contains 284 nutrition education materials developed by 40 State licensees and their coalition partners and is accessible through the NCI 5 A Day Program Web site. The materials include brochures, curricula and lesson plans, resource kits and program materials, recipes, focus group and evaluation reports, posters, newsletters, survey instruments, press releases and kits, calendars, and audiotapes. For example, several Michigan resource packages were developed for professionals and for the general public to help increase awareness of the 5 A Day message.

Fourth, media assistance is provided to the State licensees through the CIS outreach program. CIS assists State coordinators through networking, distribution of printed materials and media lists, recruitment of speakers, and development of community programs. The CIS 1-800-4-CANCER phone number serves as a public resource and is listed in State 5 A Day media campaign kits. All States have used CIS in their promotions at least once.

### **Nonfiscal—Non-Federal**

Licensed State health agencies dedicate an average of 1.0 full-time equivalent per year to conduct 5 A Day-related program activities. This includes the staff time of State coordinators and other professionals (NCI, Semi-Annual Progress Reports, 1995-1998). The industry partner, the PBH Foundation, provides contacts in the vegetable and fruit industry that support community 5 A Day events by, for example, donating produce and staff time for State fairs. In-kind contributions by industry partners between 1991 and 1999 totaled approximately \$368 million (PBH estimate), including retail ads and promotions, lending indirect support to community 5 A Day initiatives. Industry partners donate staff time and produce, provide incentives, and sponsor publicity efforts.

## SUMMARY

Several unique features of the national 5 A Day Program model that facilitated the Program's rapid adoption and expansion at the State level include voluntary participation, flexibility in implementation, and ready-to-use materials. First, the licensing process offers State health agencies a choice of participation or refusal. Voluntary involvement brings forth those participants willing and able to embrace a new initiative without any fiscal incentives from the Federal Government. Participation requires a great level of commitment of staff support at the State health agencies. Although the lack of direct funding limits the level of State activities, this arrangement has been mutually beneficial. The Federal Government invested a minimal amount of seed money to launch a nationwide campaign, while the States adapted the 5 A Day Program to meet their State health needs—in most cases, funding for the programs originated from the regular State programming budgets.

Second, the Program offers a minimally directed intervention protocol. In lieu of a set protocol, 5 A Day provides a great degree of implementation flexibility. The Program guidebook specifies only that a minimum of one intervention activity be conducted by the State health agency per year. The number and type of activities, their settings, and the target audiences are not prescribed in the guidelines, but descriptive options are offered.

Third, the ready-to-use promotional materials help facilitate the adoption of the 5 A Day programs. NCI encourages State licensees to contribute and relate their ideas and field experiences back to NCI to help develop more relevant and useful materials. Together, these facilitating factors have helped NCI institutionalize the 5 A Day Program across the Nation.

NCI has created the kind of vast State and community infrastructure that is needed with any large-scale effort to change behavior. For policymakers in State health departments who previously had not operationalized nutrition within

chronic disease prevention, the 5 A Day Program convinced those professionals that they could make a difference in the nutrition arena and encouraged them to start allocating funds to promote better nutrition. The State health agency licensees are credited with helping the topic of nutrition gain prominence within their chronic disease prevention programs. In addition, the participation of industry and nonprofit foundations has made it possible to leverage Federal funds to reach larger numbers of people with more effective messages, and at less expense, than would be possible if the Government unilaterally undertook this effort. For example, Federal funds allow States to leverage other resources (especially volunteers) present in the community. To be successful at fulfilling their public health missions, coalitions require a lead umbrella agency, staff support to maintain the coalition, and leadership (Westat, 1998; personal interview with Brenda Motsinger, 5 A Day program leader, North Carolina). As a major nutrition program that is based on a simple, achievable, positive nutrition message, the 5 A Day Program's theme has been disseminated broadly to consumers through both industry and public-sector partners in communities across the United States.

Beyond its potential benefits for cancer control, the 5 A Day Program can serve as a model for other national programs, and its organizational framework can be utilized to incorporate other health promotion programs into the 5 A Day nutrition education strategy. In essence, the established infrastructure can be used to enhance technology transfer, expand and improve the public/private partnership, develop innovative approaches for increasing consumption of vegetables and fruit, and generate resources to support these initiatives and continue Program implementation. The public health infrastructure created by the 5 A Day Program can endure, but only through the continued dedication of those individuals and organizations that understand the vital role that nutrition plays in cancer prevention and other chronic diseases.

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## Chapter 4

# Statewide 5 A Day Campaigns: Targeted Initiatives in Connecticut, Kansas, South Carolina, Arizona, and California

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## INTRODUCTION

Chapter 3 described how State agencies provide the infrastructure for the national 5 A Day Program to implement interventions at the State and local levels. Even though agencies are licensed by the National Cancer Institute (NCI), there is no Federal categorical funding to support program activities. State 5 A Day coordinators have had to be creative by integrating 5 A Day initiatives into existing programs and generating multiple sources of support.

Through a national partnership between NCI and the Centers for Disease Control and Prevention (CDC), States received an important boost in 1994 and 1995 when CDC provided support for Program activities to about half the States through special Division of Nutrition grants. Simultaneously, NCI, working with CDC, began to supply funds for evaluation. In addition, States have used funds from CDC's Preventive Health and Health Services Block Grant and from the U.S. Department of Agri-

culture's (USDA) Food and Nutrition Service, including funds from the Nutrition Education and Training Program and the Food Stamp Nutrition Education Program. Most of the programs reported on in this chapter have received funds from at least one of these sources.

The purpose of Chapter 4 is to illustrate, through five case studies, the different approaches States have used to define priorities, find resources, develop new initiatives, and evaluate their programs. Because State programs have evolved independently, and grown as funds have permitted and new partners have signed on, they are not easily evaluated. Compared to research projects, such as those described in Chapters 8 through 11, State programs may be larger in scale, less intense, more subject to confounding factors in the environment, and lacking in good comparison data. Therefore, quasi-experimental, qualitative, and case study methods are deemed the most suitable evaluation approaches.

## CONNECTICUT'S 5 A DAY HEAD START INITIATIVE

Serving a population of 3.3 million, Connecticut chose to focus its 5 A Day initiative on families with young children because nutrition education programs begun in early childhood can positively affect health and learning into the adult years (Lawatch, 1990; Splett and Story, 1991; Kelder et al., 1994). Connecticut's Department of Public Health (DPH) selected Head Start, a federally funded enrichment program for 3- to 5-year-old children, as the model site for intervention. Head Start provides an environment conducive to change. Health messages are delivered and reinforced; teachers, children, and parents work together; nutrition education is mandated; and meals and snacks meeting Federal nutrition standards are served. The goal for this 5 A Day initiative is to increase vegetable and fruit consumption and promote increased physical activity among Head Start children and their families, resulting in improved health and reduced risk of chronic disease.

### Strategies

The Connecticut 5 A Day Head Start initiative sought to identify and build partnerships at the community, State, and Federal levels; to develop a 5 A Day education model for Head Start; and to continue quality enhancements to meet these objectives. The initiative focused on five areas for intervention: partnerships, parents, teachers, food-service staff, and children.

An important strategy in meeting the objectives was to build infrastructure at DPH. After funding was received from CDC in 1994, the program coordinator recruited a part-time consultant to assist with the development, implementation, and evaluation of the initiative. DPH also established a 5 A Day advisory committee to encourage networking, provide guidance, and build support for the initiative. Educators, parents, and partners contributed to the development of the education model for Head Start, and DPH designed the model with two complementary learning modules, one for children and one for parents.

As the initiative continues to grow, DPH develops new systems for training and distribution;

adds new sites, new products, and materials; refines evaluation methodologies; and maintains systems to ensure that objectives are met and that initiative processes stay on target.

### Program Design

DPH elicited support from State-level 5 A Day partners, including State and community service agencies, universities, nutrition-related groups, professional chefs, major grocery store chains, and 5 A Day State partners (e.g., Franklin Mushroom Farms). Many of these partners became members of the 5 A Day State advisory committee and continuously provide resources and opportunities for program expansion, such as grocers supporting poster contests and store tours. The Connecticut Department of Agriculture ensures inclusion of 5 A Day at the State "Ag Expo" and funds special projects. Thus, successful public/private partnerships were formed and continue as a result of this initiative.

DPH also selected two communities that were demographically diverse to pilot the educational model for Head Start. To participate in the initiative, each site had to recruit teaching and food-service staff, as well as at least 20 parents. DPH held focus groups with parents and teachers to select methods and materials that would stimulate participation in the initiative and encourage consumption of vegetables and fruit at home and at school.

With the input from the focus groups and consultants, DPH developed the two learning modules to strengthen the bond between home and school for the purpose of dietary change. Both modules built upon problemsolving skills (Singleton, 1994). DPH based the conceptual framework on developing knowledge and skills that lead to increased vegetable and fruit consumption. These include food selection, food preparation, food presentation, and child nutrition. Both modules are also highly interactive and emphasize having fun with 5 A Day. Each module features fictitious characters and links curricula with specially designed teaching aids.

Consultants designed the child module around the adventures of the costumed Captain 5 A Day. Head Start teachers and food-service personnel together attend workshops to become familiar with the Captain 5 A Day curricula, materials for classrooms and mealtime, and nutrition-oriented

resources designed for preschool-age children to further their sensory, cognitive, physical, social, and language development.

The centerpiece of the parent module continues to be the bilingual (English and Spanish) videotapes, “Supermarket Smarts: The 5 A Day Way” and “Ven Y Busca Cinco al Dia en tu Supermercado,” featuring 5 A Day Fiona. Consultants selected video as the vehicle for message delivery to show real-life scenarios and highlight perceived barriers and solutions to encourage eating vegetables and fruit. The video transports parents from the classroom to a virtual grocery store where they learn about unit pricing and reading labels as they tour the store. Chefs demonstrate easy and inexpensive ways to select and prepare vegetables and fruit for family meals and snacks. Group discussions centering on children’s eating behaviors encourage access to healthy meals and snacks (Hertzler, 1994; Branen and Fletcher, 1994).

DPH continues to refine the initiative evaluation. The first tool, for self-reported pre- and post-intervention assessments, captured child and adult consumption rates of vegetables and fruit, awareness of 5 A Day, food preparation preferences, and demographic data. Other tools used to measure process and outcomes were classroom observations, administrative feedback, workshop evaluation forms, and requests for workshops and materials. As the initiative grows, it changes. New materials and products are incorporated into the learning modules. Consultants continue to monitor and refine evaluation procedures to reflect program changes.

## Implementation

The Connecticut 5 A Day Head Start Initiative began with 2 programs as pilot sites in 1995 and grew to more than 21 Head Start sites as of 1999. For further descriptions, see Table 1.

DPH built the education model for children, teachers, food-service staff, and parents. The child module begins with teachers, who participate in one workshop. The focus of the learning is on their role as agents of change for better health, stressing the nutritional benefits of eating more vegetables and fruit while integrating Captain 5 A Day activities into classrooms and at mealtime. Teachers receive Captain 5 A Day materials for their classrooms. The centerpiece of the child

module is the Captain 5 A Day Adventure Box with the audiocassette, “The Adventures of Captain 5 A Day.” Through this module, children learn skills such as tasting new foods and exploring vegetables and fruit in fun and creative ways. The 5 A Day message goes from school to home via teachers and children. Teachers send home note cards to parents with 5 A Day messages, recipes, and suggestions for physical activity, and children bring home Captain 5 A Day headbands or taster’s badges from classroom activities. Through this learning process, both parents and children gain exposure to and familiarity with vegetables and fruit.

The parent module emphasizes skills development for selecting, preparing, and serving vegetables and fruit. Bilingual recipes as well as printed and audiovisual educational materials facilitate learning. In the first project year, parents attended two workshops: one featured chefs from the Connecticut Culinary Institute, and the second featured supermarket tours led by registered dietitians and store produce managers. In the third year of the program, the supermarket tour workshop was eliminated because of the availability of the “Supermarket Smarts” videotape.

Although some food-service personnel attended workshops for teachers, these workshops did not offer specialized culinary training. To bridge this gap, 5 A Day advisory committee partners organized a conference for food-service staff from all participating sites. Culinary demonstrations were followed by kitchen practice sessions. For the culminating activity, participants served 5 A Day entrees and snacks to a group of young children, who favorably judged the recipes. Each attendee left with a collection of 5 A Day recipes.

## Evaluation

Evaluation is a continuous process. DPH uses a combination of process and outcome measures to evaluate this initiative. The process measures were as follows: in 1997, 380 adults participated (40 percent were parents; the remainder were Head Start teachers and staff), and the initiative reached nearly 4,000 children; in 1998, more than 4,500 children and adults were exposed to the initiative; and between 1996 and 1997, the initiative reached 97 percent of the Head Start teachers and parents originally targeted. For the outcome measures, both parents and staff continue to positively rate

**Table 1. Stages in the Development of the 5 A Day Head Start Initiative in Connecticut**

| <i>Year</i> | <i>Head Start Programs</i> | <i>Staffing</i>                                | <i>Funding</i>     |   | <i>Total</i> | <i>Stages</i>   |
|-------------|----------------------------|--|--------------------|---|--------------|---|
| 1994-1995   | 2                          | 1 (1.5 FTE) consultant<br>1 (1.5 FTE) in-kind  | CDC,<br>\$30,000   | Maternal and Child<br>Health Services Block<br>Grant, \$5,640 | \$35,640     | Secure partners, plan, develop initiative,<br>design intervention<br><br>Implement and evaluate |
| 1995-1996   |                            |  | CDC,<br>\$10,000   |   | \$10,000     | Develop workshop training kit   |
| 1995-1997   | 8                          | 3 (1.5 FTE) consultants<br>1 (1.5 FTE) in-kind | USDA,<br>\$81,000  | State match,<br>\$81,012                                      | \$162,012    | Expand program<br><br>Evaluate dietary change   |
| 1997-1999   | 11                         | 3 (1.5 FTE) consultants<br>1 (1.5 FTE) in-kind | USDA,<br>\$114,225 | State match,<br>\$114,279                                     | \$228,504    | Develop audiovisual materials   |
| 1998        | 21                         | 3 (1.5 FTE) consultants<br>1 (1.5 FTE) in-kind | USDA,<br>\$121,900 | State match,<br>\$121,961                                     | \$243,861    | Refine, evaluate for program<br>effectiveness   |
| 1998-1999   | 21                         | 3 (1.5 FTE) consultants<br>1 (1.5 FTE) in-kind | USDA,<br>\$125,980 | State match,<br>\$125,988                                     | \$251,968    | Develop train-the-trainer protocol<br><br>Institutionalize, initiate self-sufficiency           |

FTE = full-time equivalent.

their workshops. Parents said that they learned most about unit pricing, selecting and storing fruit, and reading labels.

The first preliminary post-assessment, developed in 1995, was a self-reported paper-and-pencil instrument. Parents reported vegetable and fruit intake, 5 A Day awareness, and food preparation preferences. A statistically significant improvement in the fruit intake of children was attained among the intervention group ( $p = 0.05$ ), even though these baseline vegetable and fruit intakes were unusually high (6 to 14 servings per day). Although the survey defined portion size, portion size was not validated.

In 1997, DPH used a more sophisticated evaluation methodology: 31 economically challenged caregiver pairs (parent or grandparent with child) from 6 Head Start sites participated in face-to-face interviews to report vegetable and fruit intake. Staff randomly selected and assigned the caregivers into control or intervention groups; 15 were in the control group, and 16 were in the intervention group. Caregivers in the control group did not attend parent workshops or receive 5 A Day materials, while caregivers in the intervention group did. In both groups, 70 percent were Hispanic, 20 were Black, and 10 percent were White.

Pre-measures and post-measures consisted of a 24-hour recall, a 62-item Block-type food frequency questionnaire (Block et al., 1986), and a 2-day diet record. Consultants asked caregivers to recall their own consumption and that of their child using food models and measuring equipment to standardize serving size measurements. The general linear models procedure in SAS (a statistical software package) was used to determine whether the intervention was effective. Caregivers attending the nutrition education sessions reported consuming twice as many vegetables after the intervention as before (baseline:  $0.8 \pm 0.7$  serving per day; post-intervention:  $1.9 \pm 0.4$  serving;  $p < 0.05$ ). For caregivers, there were no other statistically significant differences between the control and intervention groups (see Table 2). Although there were no significant differences among the two groups of children, the results indicated movement in the right direction. Perhaps the reason why a greater difference was not seen between the groups of children is that both groups participated in Head Start (where vegetables and fruit are served daily), contributing to the daily vegetable and fruit intake of

both groups. The Head Start initiative was found to be a positive contributor to increased vegetable and fruit consumption by parents, and because parents are the gatekeepers of their children's home food supply, they may be expected to have a positive influence on the vegetable and fruit consumption of their children. DPH needs to develop more sensitive evaluation instruments to further document the impact of this 5 A Day initiative on the consumption of vegetables and fruit by Head Start children.

### Funding and Staff

Connecticut received \$30,000 from CDC in 1994. The Maternal and Child Health Services Block Grant contributed \$5,640, and the following year



**Table 2. Connecticut Vegetable and Fruit Consumption at Baseline and After the Nutrition Education Sessions— Intervention and Control Groups**

|                                    |           | <i>Nutrition Education</i>        |                                   | <i>Control</i>         |                        |
|------------------------------------|-----------|-----------------------------------|-----------------------------------|------------------------|------------------------|
|                                    |           | <i>Baseline</i>                   | <i>After Intervention</i>         | <i>Baseline</i>        | <i>Followup</i>        |
| Fruits                             | Child     | 2.0 ± 2.4<br>(0-3.2) <sup>a</sup> | 1.7 ± 0.9<br>(0-1.8)              | 1.9 ± 1.4<br>(0-1.9)   | 2.0 ± 1.8<br>(0-2.2)   |
|                                    | Caregiver | 0.9 ± 2.2<br>0-2.0                | 1.2 ± 0.7<br>(0-1.5)              | 0.2 ± 0.5<br>(0-1.2)   | 1.2 ± 1.2<br>(0-1.9)   |
| Juices                             | Child     | 1.4 ± 1.1<br>(0-2.9)              | 1.4 ± 0.7<br>(0-2.7)              | 2.0 ± 1.9<br>(0-6.1)   | 1.9 ± 0.6<br>(0.9-3.0) |
|                                    | Caregiver | 0.5 ± 0.4<br>(0-2.9)              | 1.3 ± 0.6<br>(0-2.5)              | 0.5 ± 0.8<br>(0-7.6)   | 1.3 ± 1.0<br>(0-2.6)   |
| Juice Drinks                       | Child     | 0.3 ± 1.4<br>(0-2.3)              | 0.8 ± 1.1<br>(0-1.5)              | 0.8 ± 1.1<br>(0-1.5)   | 1.1 ± 0.6<br>(0-2.7)   |
|                                    | Caregiver | 0.3 ± 0.8<br>(0-2.4)              | 0.5 ± 0.5<br>(0-2.7)              | 0.5 ± 0.5<br>(0-2.7)   | 0.2 ± 0.4<br>(0-1.3)   |
| Vegetables                         | Child     | 1.5 ± 1.3<br>(0-4.1)              | 1.5 ± 0.4<br>(0-9.1)              | 0.9 ± 0.5<br>(0-4.3)   | 1.3 ± 0.3<br>(0-5.7)   |
|                                    | Caregiver | 0.8 ± 0.7<br>(0-5.5)              | 1.9 ± 0.4 <sup>b</sup><br>(0-6.9) | 0.9 ± 0.6<br>(0-6.2)   | 0.8 ± 0.4<br>(0-4.0)   |
| Legumes/<br>Potatoes/<br>Plantains | Child     | 1.2 ± 0.9<br>(0-2.7)              | 1.5 ± 0.8<br>(0-3.1)              | 0.66 ± 0.66<br>(0-6.4) | 1.4 ± 0.2<br>(0-4.5)   |
|                                    | Caregiver | 0.9 ± 0.8<br>(0-2.0)              | 1.6 ± 0.1<br>(0.3-3.9)            | 1.5 ± 1.5<br>(0-3.8)   | 1.6 ± 1.0<br>(0-3.3)   |

<sup>a</sup> Serving range.

<sup>b</sup> Statistically significant: p ≤ 0.05.

CDC added an additional \$10,000. These funds enabled the hiring of one part-time nutrition consultant to assist with the development and evaluation of the initiative. In 1995, DPH identified a new funding source, USDA. Through its Food and Nutrition Service, USDA awards funds to States as part of its nutrition education for food stamp participants. DPH, in cooperation with the Connecticut Department of Social Services, submits the 5 A Day Head Start Initiative to USDA as part of the State nutrition education plan. USDA dedicates these funds to nutrition education for the food stamp population unless a waiver is granted.

USDA granted DPH a waiver to work with other economically challenged individuals in Head Start. This Federal funding requires a dollar-for-dollar State match. DPH contributes portions of in-kind salaries for the project director, coordinator, and other State personnel and absorbs the cost of storing and distributing Connecticut 5 A Day materials. This combination of Federal and State resources now supports the initiative at about \$250,000 annually. The grant funds three part-time nutrition consultants (1.5 full-time equivalents) and supports the development, production, and distribution of 5 A Day products and materials. Table 1 also

provides information on staffing and funding throughout the various stages in the development of the 5 A Day Head Start Initiative in Connecticut.

### Next Steps

DPH decided to institutionalize the initiative to encourage sustainability among local Head Start programs as well as to respond cost-effectively to the increasing number of requests for 5 A Day workshops. In the future, consultants will hold regional workshops using the train-the-trainer model. A turnkey kit will provide protocols and materials for implementation in the near future. Materials are now available to Head Start and other early childhood education programs throughout the State. DPH encourages early childhood programs to look to their communities for additional support, such as having hospital chefs provide food demonstrations to parents and staff. Consultants will continue to make presentations to State and national audiences, enhancing the technology transfer of this initiative to other early education programs.

### Lessons Learned

The partnerships, as well as the collaboration between Federal and State funding sources, provided the impetus for the success of the Connecticut initiative and in turn catalyzed the development of a strong 5 A Day public/private partnership. The partnerships created with participating sites have generated support for communitywide interventions and set the stage for the long-term continuation of this initiative. Additionally, early intervention (with young children) through multiple venues with unique experiential materials adds to the initiative's fruition. Working with children, parents, and teachers turned out to be the key to success of the educational model, learning modules, and materials. This was especially important for Connecticut's Hispanic Head Start families, and the bilingual program and materials greatly enhanced the penetration of the 5 A Day messages. The greatest barrier has been for busy parents to find the time to attend workshops.

In short, DPH built an innovative, transferable education model through this 5 A Day initiative, using Head Start as the gateway. This model provides other Head Start programs and various early

childhood education settings with a valuable resource to encourage family health-related behavior change.

## KANSAS LEAN 5 A DAY IN SCHOOLS INITIATIVE

With a population of 2.5 million (1990), Kansas chose to focus its efforts on elementary-school students in the classroom and cafeteria, with outreach to parents and/or caregivers. The overall goal of the Kansas LEAN (Leadership to Encourage Activity and Nutrition) 5 A Day in Schools Initiative was to increase opportunities for students to taste a variety of vegetables and fruit and to learn about their importance in the overall diet. Specific objectives were to increase the number and variety of vegetable and fruit servings consumed by students, increase the variety of vegetable and fruit items available through the school cafeteria, and increase opportunities for students to eat vegetables and fruit at home, including self-prepared items.

The project team designed strategies that they believed would affect the environment and increase students' knowledge as well as provide incentives for behavior change to all participants. They provided school food services with tested-quantity food recipes. Trainers gave teachers 5 A Day materials and trainings that were coordinated with cafeteria recipes and integrated easily into core subject areas. Students took home to parents practical, low-reading-level information on how to purchase, store, and prepare vegetables and fruit. Local supermarkets offered store tours for students, home-size versions of the school cafeteria recipes, and coupons for vegetables and fruit that students were learning about in class. A CDC 5 A Day evaluation grant funded the creation and testing of recipes and the development of some of the materials. The LEAN program grants from the Kansas Health Foundation and money from the Bureau for Health Promotion of the Kansas Department of Health and Environment (KDHE) funded all staff time and travel, some materials development, mailing costs, and the data analysis. Local supermarkets funded the coupons. The contributions of all partners in the Kansas LEAN 5 A Day in Schools Initiative are delineated in Table 3.

**Table 3. Kansas LEAN 5 A Day in Schools Partners**

| <i>Organization Name</i>   | <i>Activity</i>   | <i>Annual Funding</i> |
|--|---|-----------------------|
| Kansas LEAN, Kansas Department of Health and Environment, Bureau for Disease Prevention and Health Promotion | Overall project coordination, training and technical assistance, data entry and analysis of outcome measures, printing costs for 50,000 each of 12 study prints and reprinting cookbook/purchasing guide and low-literacy materials, and supplemental funding for pilot sites                   | In-kind + \$64,000    |
| NCI National 5 A Day Program   | Seed fund for the elementary school pilot project; overall guidance for the initiative in elementary schools; and identification of existing resources, including the 5 A Day speakers kit  | \$76,000              |
| Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention                      | Development of 22-item food frequencies for vegetables and fruit and for grain foods, in collaboration with the University of Texas Health Science Center   | In-kind               |
| University of Kansas Work Group on Health Promotion and Community Development                                | Paid contract for data entry and analysis of process measures   | N/A                   |
| Kansas State University Department of Hotel, Restaurant, Institution Management and Dietetics                | Paid contract for development and testing of school food-service recipes, identification and development of elementary school resources, training and technical assistance onsite, and some data collection   | N/A                   |
| Dillon Stores, a wholly owned subsidiary of Kroger, Inc.   | Provision of fresh fruits and vegetables for tasting parties in classrooms associated with study print activities, presentations in schools by produce managers, and underwriting of coupons for discounts on vegetables and fruit  | In-kind               |
| Locally owned, independent grocers   | Provision of fresh fruits and vegetables for tasting parties in classrooms associated with study print activities, presentations in schools by produce managers, and underwriting of coupons for discounts on vegetables and fruit in smaller communities where Dillon Stores are not available | In-kind               |
| Nutrition Services Office, Kansas Department of Education  | Dissemination of 5 A Day materials to school food service staff and inclusion of 5 A Day concepts in training for school staff  | In-kind               |
| Kansas State Research and Extension  | Dissemination of materials and provision of training in communities   | In-kind               |
| Local health departments   | Implementation and evaluation of local initiatives and assistance in school activities  | In-kind               |
| School districts   | Implementation and evaluation of school-based initiatives and participation in training   | In-kind               |

## Program Design and Development

Constructs from several behavioral theories were used to design the initiative. Activities to increase the availability and accessibility of vegetables and fruit in the school cafeteria, for snacks and parties, and at home were based on the Social Cognitive Theory (Bandura, 1986). The activities were designed to change awareness, knowledge, and attitudes, while increasing preferences for vegetables and fruit and enhancing self-efficacy. Skills-building instruction, demonstrations, and tasting parties facilitated trial behaviors, in accord with the Stages of Change Model (Prochaska and DiClemente, 1992).

To plan the initiative, the project staff conducted focus groups in several communities with school food-service staff, teachers, students, and parents. Information was gathered about resources, incentives, dissemination and training strategies, and student preferences. The focus groups, grocery store produce managers, and produce wholesalers identified five vegetables and fruit that were generally available in fresh and processed forms, were reasonable in cost, but were not listed among the students' favorites. The project team chose food items not listed as favorites so that they could introduce new vegetables and fruit to the students and increase variety in their regular intake. Teachers asked for a smorgasbord of resources, including recipes, point-of-purchase promotions, student contests, integrated classroom activities, posters, and fun facts. As a pilot test, training was provided in two communities to teachers, food-service staff and managers, and school administrator support staff, after which the staff members chose the activities that they would implement over the next 5 months. Regular, onsite, and telephone technical assistance was provided to participating schools (Harris et al., 1998).

## Process Measures and Results

Two pilot communities were selected based on their size and history of cooperation with the Kansas LEAN staff and the Program's partners. The medium-size community was typical in size of larger Kansas towns, and the smaller community was typical of the more rural communities in the State. In the medium-size pilot community (population 40,000), 63 percent of the elementary

grade teachers participated, implementing 47 percent of the activities. School food-service staff prepared and served 24 of 25 recipes and implemented 11 of 38 suggested activities and displays. Observations of students taste-testing new recipes were completed by 61 percent of teachers among 64 percent of the students. An average of 46 percent of the students in grades 1 through 5 tried the new recipes.

In the smaller pilot community (population 1,200), 100 percent of the teachers participated, using 33 percent of the materials. The school food-service staff also prepared and served 24 of 25 recipes and implemented 30 of 38 suggested activities and displays. Observations of students taste-testing new recipes were completed among 44 percent of the students. Generally, 100 percent of students in grades 1 through 3 and 85 percent of students in grades 4 through 6 tried the new recipes. The overall satisfaction was good, although teachers suggested that the number of resources provided at one time be limited and that the intervention be extended so that it would be longer than 5 months.

## Evaluation

A grant from CDC and NCI funded an outcome evaluation study. Self-administered, 22-item, pre-intervention and post-intervention vegetable and fruit frequency questionnaires (administered in mid-October and early April, respectively) were answered by 110 students (40 percent) in the medium-size community and by 72 students (99 percent) in the smaller community. The questionnaires were developed by CDC in collaboration with the University of Texas Health Science Center (Byers et al., 1997). Many teachers in the medium-size community failed to administer both the pre-intervention and post-intervention survey, explaining the low percentage of evaluation data available for that group. Teachers' incentives were based on intervention, not data collection, so these teachers were not motivated to seek a high participation rate in the two surveys.



KDHE epidemiologists analyzed survey data for changes in consumption for each specific food group, total vegetable and fruit consumption, and the variety of vegetables and fruit consumed. Epidemiologists conducted each comparison for all students and for those students defined as at risk based upon their being below the 50th percentile for either variety (fewer than 15 different items reported) or for low total vegetable and fruit consumption (fewer than 90 total vegetables and fruit consumed per month). Changes for all students were not significant in either pilot community, but changes in the at-risk groups were both significant and impressive. In the medium-size community, the at-risk students ( $n = 46$ ) reported a mean increase of 119 percent, from about 37 to about 82 servings per month ( $p = < 0.01$ ). Variety for this group increased 33 percent, from a mean of 9.5 different items vegetables and fruit to a mean of 12.6 different items. In the smaller community, the at-risk students ( $n = 75$ ) reported a mean vegetable and fruit increase of 92 percent, from about 45 to 86 servings per month. Variety for this group increased 35 percent, from a mean of 10.5 different items per month to a mean of 13.8 different items. These changes in the at-risk group are extremely impressive and likely can be attributed to the intervention.

### Statewide Implementation

The materials developed through this initiative have been disseminated statewide through one mailing of free materials to over 4,800 teachers, school nurses, school food-service directors, and Kansas State University Extension Family and Consumer Science agents. These groups have the potential to have an impact on more than 250,000 children in schools and youth organizations across Kansas. Funds have not been made available for further dissemination of these resources.

### Lessons Learned

Children and youth are important target groups for 5 A Day activities, and these groups can be accessed through schools, youth groups, and childcare centers. This project demonstrated that school-based 5 A Day interventions have the potential to affect students' behaviors and affect the school environment. Despite initial recommendations for a smorgasbord of materials from

teachers, the quantity of information offered was found to overwhelm them. Management of timed, progressive mailings cost more than the available resources allowed, so it was not possible to add this improvement. The development and testing of quantity school food-service 5 A Day recipes, combined with point-of-purchase materials and classroom ideas, were valued by schools and enjoyed by the students. Parents of all reading abilities appreciated simplified materials that they could read quickly. Finally, although supermarkets and local grocers make excellent partners for a 5 A Day initiative, sustaining statewide programs requires the existence of both producer organizations that will support ongoing 5 A Day programs and long-term, dedicated funding from the State health department, rather than in-kind contributions alone.

## SOUTH CAROLINA'S 5 A DAY PROGRAM

As a State with a population of 3.5 million (1990), South Carolina chose to focus on primary prevention for children in school. It was recognized that improvement was needed in children's eating patterns. The principal strategies for the State 5 A Day Program were to increase public awareness, knowledge, and support for policy and environmental change; build technical capacity by providing training and consultation to leaders, school staff, and community organizations; provide an information clearinghouse; develop and mobilize advocates; and support local programs.

### Partners

Partnerships are the cornerstone of South Carolina's 5 A Day Program. At both the State and community levels, partnerships include nutritionists; teachers; health educators; school food-service workers; nurses; agricultural extension and marketing staff; and leaders in community groups, churches, and businesses. The South Carolina Nutrition Council provided leadership in planning and implementing school-based 5 A Day activities. For the African-American community, health promotion partnerships were established with barbers and beauticians, churches, health care

providers, professional and fraternal associations, the media, and community leaders.

National partnerships also were important for the success of the State program. These partners included the California-based Dole Food Company; NCI's 5 A Day Program, which provided training and ongoing technical assistance; the Produce for Better Health Foundation (PBH), which provided an industry partner; and CDC, which supported development of the African-American community brochure.

### Rationale and Development of the School Program

In 1995, South Carolina conducted a Youth Behavioral Risk Factor Survey (CDC, 1996a), which showed that fewer than one in five high school students reported eating five or more servings of vegetables and fruit each day. This compared unfavorably with the national figure of nearly 30 percent of high school students eating five servings a day (CDC, 1996a). A national study of children ages 2 through 18 indicated that children ate, on average, only 3.4 servings of vegetables and fruit daily (NCI press release, 1997). A South Carolina study of fourth-grade students used a 24-hour recall method and found that only 21 percent of the students had eaten raw vegetables on the previous day, whereas 65 percent reported eating french fries or potato chips (Anderson, 1995).

The seven strategies recommended in CDC's *Guidelines for School Health Programs To Promote Lifelong Healthy Eating* (CDC, 1996b) served as underpinnings for South Carolina's 5 A Day Program in schools. The initiative began with collaboration between South Carolina's 5 A Day Program and the State Department of Agriculture, the State Department of Education, the University of South Carolina, and other organizations affiliated with the South Carolina Nutrition Council that wanted to find ways to improve school-based nutrition education.

In 1996, the State Nutrition Council's 5 A Day subcommittee became aware of the Dole Food Company's "5 A Day Adventures" CD-ROM and invited the company's director to present the program. Initial enthusiasm was high, and members began distributing information about the CD-ROM to schools throughout South Carolina early in 1997. In March, the State Department of Agri-

culture helped develop the *Fruit and Vegetable Fun Facts* coloring book and the companion brochure, *Win the 5 A Day Challenge*. The coloring book was designed for preschool through lower elementary grades and featured South Carolina produce and 5 A Day facts. The Office of School Food Services mailed letters with ordering information for the materials to about 600 teachers and other school personnel in May 1997. Several professional association newsletters, including USDA's *Market Bulletin* and the State Health Insurance Plan's *Prevention Partners*, featured 5 A Day articles and information about "5 A Day Adventures."



### Process Measures and Results

In September 1997, the 5 A Day subcommittee prepared a strategic plan facilitated by the University of South Carolina. Three objectives were set for June 1998: 1) 50 percent of elementary schools (300 schools) will have the "5 A Day Adventures" CD-ROM; 2) 25 percent of those 300 (75) will use it in some way; and 3) 5 percent of those 300 (15) will integrate it into cross-curricular activities. These objectives were evaluated by tracking the distribution of CD-ROMs through information provided by the Dole Food Company and by telephone surveys of CD recipients conducted in May 1997 and May 1998.

The measures chosen for evaluation were the number of elementary schools that ordered CD-ROMs and "5 A Day Adventures" support materials (cookbooks and growth charts); the volume of materials that were distributed; and use of the CD, especially in cross-curricular activities.

Surveys conducted by health department staff in May 1997 and May 1998 asked how recipients of the CD-ROM actually used the Program. In May 1997, questionnaires were mailed to the 358

schools that had received the CDs. After telephone followup for nonrespondents, a total of 129 survey forms were returned, for a response rate of 36 percent. Of 74 respondents who answered the question about CD-ROM usage, 22 percent said they were not using it, 30 percent used it with individual students, 23 percent used it with small groups, and 7 percent used it as an information source. About 17 percent of the 74 respondents reported integrating the CD and related materials into core subjects, such as science and math.

This information was used by the State Nutrition Council to design training activities for teachers to help them use the materials with small groups and in lesson plans for core subjects. Between September 1997 and June 1998, the Nutrition Council conducted more than 40 presentations, demonstrations, and exhibits. Venues included conferences for school nurses; health educators; Healthy Schools/Healthy South Carolina participants; school food-service coordinators; and the South Carolina Association of Health, Physical Education, Recreation, and Dance. An estimated 5,000 individuals attended these presentations, and about 2,500 information packets were distributed. In addition, 15 training sessions on the use of CD-ROMs were held for elementary school teachers and staff.

The distribution rate of CD-ROMs and support materials suggested that the State Nutrition Council's promotional efforts were effective for increasing dissemination of the materials (Table 4). Compared with the results in 1994, the first year that the Dole CD was offered, the total number of CDs distributed increased more than 500 percent by 1996, with the number distributed annually increasing from 728 to 4,087 between 1996 and 1997. Use of the cookbooks and growth charts more than doubled each year.

A second qualitative evaluation with teachers was conducted in May 1998 following the training. Questionnaires were mailed or faxed to 139 schools that had received the CD-ROM in 1998. This time, the response rate was 61 percent. Respondents reported using the CD in a variety of ways—58 percent reported using it as an information source, 50 percent used it for individual play time, 42 percent used it with small-group teaching, 39 percent made it available for teachers to borrow, and 8 percent used it for teacher train-

ing. Most positively, 53 percent reported integrating the materials into core subject areas. Of those who integrated the content, 77 percent chose science, 39 percent chose language, 29 percent chose math, and 19 percent chose the arts. These results suggested that the Nutrition Council's teacher training had been successful and that the State's objectives had been greatly exceeded. Almost 75 percent of the State's elementary schools had received the materials, compared with the original target of 50 percent. Of those that received the materials in 1998, nearly 60 percent of the respondents had used them, compared with the expected 25 percent, and more than 50 percent of the respondents reported using them with core subjects, compared with the expected 5 percent.

### Lessons Learned

Much emphasis has been placed in South Carolina on understanding cultural preferences and on featuring vegetables and fruit preferred by South Carolinians. Current program efforts include developing and pilot-testing supplementary materials for teachers to use with the CD-ROM program and offering training for school personnel. In 1998, the South Carolina 5 A Day Program established an Internet Web site with educational activities for children and links to other 5 A Day sites.

The partnership with the South Carolina Nutrition Council and the technical support provided by NCI's 5 A Day Program staff have been essential to the successful school promotion effort. During 1996 and 1997, the South Carolina 5 A Day Program had five different coordinators. The Nutrition Council provided continuity of leadership, and NCI provided training and consultation to each State coordinator.

## THE ARIZONA GROWN/5 A DAY FOR BETTER HEALTH PROGRAM

In *Arizona 2000—Plan for a Healthy Tomorrow*, the Arizona Department of Health Services (ADHS) identified improving dietary habits and increasing physical activity as the top health objectives for preventable diseases related to lifestyle for the State's population of 3.7 million (as

**Table 4. Annual and Cumulative Distribution of Dole 5 A Day Materials to South Carolina Elementary Schools, 1994 to December 1998**

|  | <i>Calendar<br/>Year 1994</i> | <i>Calendar<br/>Year 1995</i> | <i>Calendar<br/>Year 1996</i> | <i>Calendar<br/>Year 1997</i> | <i>Calendar<br/>Year 1998</i> |
|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <b>Annual Distribution</b>                               |                               |                               |                               |                               |                               |
| Elementary Schools<br>Placing First Order                | 62                            | 44                            | 80                            | 246                           | 47                            |
| Elementary Schools<br>Placing an Order                   | 62                            | 50                            | 111                           | 335                           | 107                           |
| Dole 5 A Day CD-ROMs                                     | 146                           | 114                           | 728                           | 4,087                         | 1,313                         |
| Dole Cookbooks   | 195                           | 716                           | 1,002                         | 2,738                         | 6,489                         |
| Dole Growth Charts                                       | 135                           | 673                           | 1,043                         | 2,399                         | 6,585                         |
| <b>Cumulative Distribution</b>                           |                               |                               |                               |                               |                               |
| Participating Elementary Schools<br>(Unduplicated Count) | 62                            | 106                           | 186                           | 432                           | 479                           |
| Dole 5 A Day CD-ROMs                                     | 146                           | 260                           | 988                           | 5,075                         | 6,388                         |
| Dole Cookbooks   | 195                           | 911                           | 1,913                         | 4,651                         | 11,140                        |
| Dole Growth Charts                                       | 135                           | 808                           | 1,851                         | 4,250                         | 10,835                        |

of 1990) (ADHS, 1993). Although Arizona is the third-largest producer of vegetables and citrus fruit in the United States, its Behavioral Risk Factor Surveillance System (BRFSS) (ADHS, 1991) showed that more than 80 percent of adults reported eating fewer than five servings of vegetables and fruit each day.

### Program Goal and Structure

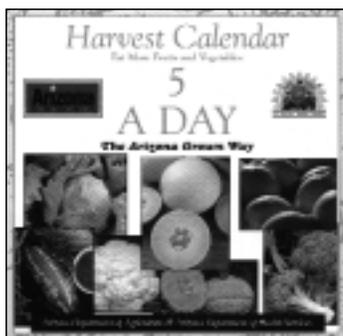
The Arizona Grown/5 A Day for Better Health Program is a collaboration between the Arizona Department of Agriculture, which conducts the Arizona Grown™ program, and ADHS, the NCI-licensed State health authority for the national 5 A Day Program. The goal of the Arizona Grown/5 A Day Program is to increase consumption of vegetables and fruit, including Arizona produce. Its objectives are to increase consumer and food industry awareness of the availability and quality of Arizona-grown produce and to provide the public with information on the significant health benefits of vegetable and fruit consumption.

The Arizona Grown/5 A Day Program was launched in September 1993 by the Arizona Department of Agriculture and ADHS. Budget decisions, program planning, implementation, and evaluation are conducted jointly. The Arizona Department of Agriculture serves as the lead agency for retail and agriculture efforts, whereas ADHS serves as the lead agency for community education and collaboration with health professionals. Key staff from the two agencies meet monthly, and working groups, including industry partners (such as ABCO, Albertson's, Bashas, Fry's, IGA, Safeway, Smith's, and Smitty's Food and Drug), meet frequently to work on materials and promotional events. No 5 A Day coalition has been formed in Arizona, so State efforts can focus on expanding the Arizona Grown program.

### Target Population, Strategies, and Channels

To take advantage of NCI resources, a target audience identical to the one chosen by NCI was

selected for the Arizona Grown/5 A Day Program, namely, “people who are trying to increase their fruit and vegetable consumption but eating fewer than 5 daily servings of fruits and vegetables” (NCI, 1993). The Arizona Grown/5 A Day Program includes activities in the media; retail grocery stores; and statewide community education channels, such as daycare settings, schools, and USDA’s Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics.



A consultant who is also a registered dietitian is the media spokesperson for the Arizona Grown/5 A Day Program. Media efforts include monthly updates of retail and community program activities and a generic harvest calendar featuring seasonal Arizona Grown-recommended vegetables and fruit as well as 5 A Day recipes. Collaboration with NCI’s Cancer Information Service (CIS) has been key because the program’s monthly materials are distributed through the CIS’s 1-800-4-CANCER toll-free number.

Retail participation has increased from three to eight supermarket chains since the launch of the program in 1993. This represents 70 percent of the retail grocery outlets in Arizona. Participating retailers have conducted many successful activities, including a coloring contest, consumer recipe contests, 5 A Day Week promotions, printing of bags with 5 A Day promotions (7.5 million bags with a customized 5 A Day fitness message printed by one chain), and supermarket tours for children.



Community education activities are carried out by community education contacts established in each of the State’s 15 counties. Activities are conducted through collaborative (rather than contractual) arrangements, and State support includes the provision of materials, technical assistance, and training. Innovative activities resulting from State support have been conducted in schools and senior centers and at community events. Twelve rural local agencies conduct process and outcome evaluations of 5 A Day activities through the State-funded Community Nutrition Program (CNP). In the 1998-1999 school year, CNP agencies and the county health department in the Phoenix area began introducing a 4-session Arizona Grown/5 A Day curriculum for more than 5,000 first- through third-grade students; the curriculum links classroom instruction with a 5 A Day produce tour in a retail grocery store.

## Funding

An initial \$60,000 received from the Arizona Iceberg Lettuce Promotion Council was used for 2 years to fund the registered dietitian/media spokesperson and program materials, such as brochures and posters. ADHS provided a half-time nutritionist, and the Arizona Department of Agriculture assigned 1.5 full-time equivalent professional staff; both agencies gave additional in-kind support.

In 1996, the agriculture industry obtained \$25,000 from the legislature for the Arizona Grown program. A 50-cent private match is required for each State dollar. In 1997, State funds generated by the private match were increased to \$50,000 for promotion of all types of products grown in Arizona. Private matches from produce growers support the media component of the Arizona Grown/5 A Day Program and the harvest calendar and school materials.

In 1997, the Arizona Department of Agriculture provided more than \$80,000 in support for the Arizona Grown/5 A Day Program, and the ADHS supplied nearly \$50,000, totaling more than \$130,000. For full-time equivalent staffing, the Arizona Department of Agriculture contributed 0.6 professional staff, whereas ADHS provided 0.45 professional staff, a decrease for both agencies from earlier levels. ADHS also gave \$390,100 to local agencies to facilitate

involvement of CNP, which implements the 5 A Day intervention for schoolchildren.

## Trends in Consumption

Arizona has included CDC's optional vegetable and fruit module in the BRFSS since 1991, and the proportion of adults who reported eating five or more servings per day increased from 17 percent in 1991 to 24 percent in 1996. Consumption increases in specific vegetables or fruit recommended in the Arizona Grown/5 A Day promotions were observed, including green salads (from 20 to 30 percent), juices high in vitamin C (from 38 to 48 percent), and carrots (from 7 to 12 percent). However, the 1996 consumption data reported in the BRFSS leveled out at 24 percent of adults reporting five or more daily servings. This plateau corresponded to lower funding and decreased media time in the last half of 1995 and the first half of 1996.

From July through December 1995, a telephone survey of 3,600 adults, more extensive than the BRFSS, was conducted to assess dietary intake, awareness of the 5 A Day message, and cardiovascular disease risk factors. The survey was funded by a 5 A Day evaluation grant from NCI, CDC, and the Federal Preventive Health and Health Services Block Grant to Arizona. Survey results were weighted to represent the population of Arizona and contained county-specific data for all but three rural counties.

The 1995 survey revealed Arizona adults' mean consumption of vegetables and fruit (including legumes and excluding fried potatoes) to be 3.3 servings per day, with a median of only 2.5 servings. Hispanic adults reported the fewest servings (2.4 servings/day), followed by African-Americans (2.9 servings/day), Native Americans (3.2 servings/day), Whites (3.6 servings/day), and Asian-Americans/Pacific Islanders (3.9 servings/day).

Twenty-seven percent of Arizonans surveyed reported hearing of the 5 A Day Program, and 72 percent of those respondents correctly indicated that "5 A Day for Better Health" means consuming at least five servings of vegetables and fruit a day. One-quarter of those surveyed reported learning of 5 A Day through media such as television, radio, newspapers, or magazines, whereas only 3 percent reported learning of it in grocery stores. A county-by-county comparison showed that awareness of 5 A Day was greatest in Maricopa County

(31 percent), where media efforts had been most intensive. Awareness in the other 14 counties ranged from 16 to 30 percent.

## Institutionalization and Adoption

Arizona Grown/5 A Day Program media efforts have resulted in several ongoing media features. The food section of *The Arizona Republic*, Arizona's largest newspaper (circulation 350,000), now features a monthly Arizona Grown/5 A Day Program shopping list with information on vegetables and fruit being harvested in Arizona and 5 A Day Program recipes. KPNX-TV, the NBC affiliate in Phoenix, carries two live segments every month: 5 A Day on the noon news and a morning spot featuring Arizona Grown-recommended produce.

State-funded CNP public health nutritionists have implemented most of the Arizona Grown/5 A Day Program community education activities without dedicated NCI 5 A Day Program funding. Their decision to move from a wide variety of community-based nutrition activities to a more focused and standardized 5 A Day intervention for schoolchildren resulted in more than 5,000 students receiving 5 A Day lessons in the 1998-1999 school year. Linkage with school-based programs such as USDA's Team Nutrition is providing new opportunities to reach students with 5 A Day activities (e.g., school gardens). Standardized evaluations will be conducted to assess the effectiveness of the program.

Incorporating 5 A Day into other public health programs has proven to be a successful and value-added way of reaching underserved audiences. For example, all Arizona WIC clients receive a 5 A Day message on the protective holder for their identification folder. The CDC-funded WISE-Woman project, a cardiovascular disease screening program for uninsured or underinsured women age 50 or older, now features a 5 A Day component.

## Lessons Learned

Distribution of State-developed materials on a monthly basis through NCI's toll-free CIS number has been key in the success of both the Arizona Grown/5 A Day Program media efforts and community education programs. Between 1994 and 1997, nearly 4,000 Arizonans called and requested

State-specific Arizona Grown/5 A Day Program materials.

Staffing for the 5 A Day State coordinator is inadequate (0.4 full-time equivalent), and the Arizona Department of Agriculture staffing for 5 A Day activities has decreased. This situation has important implications because of increased State funding for the Arizona Grown program and the need, as identified by partners, to expand Arizona Grown/5 A Day Program nutrition activities into health care and food-service channels.

The initial decision not to form a statewide 5 A Day coalition was made so that efforts would focus on expanding the Arizona Grown program. However, long-range funding for the Arizona Grown/5 A Day Program is more difficult without a formal coalition. More positively, linkage of Arizona Grown with NCI's 5 A Day for Better Health Program has been very successful. This is due to excellent collaboration between State agencies, industry support, a partnership with the University of Arizona's NCI-funded research project (5 A Day for the Overlooked Worker, described in Chapter 9), and participation from public health nutritionists throughout the State. At this time, there are no plans for a statewide 5 A Day coalition in Arizona. The 5 A Day message has been incorporated into the programs of the Arizona Nutrition Network, a nutrition education partnership targeting food stamp-eligible individuals. The initial target audience for the Arizona Nutrition Network messages consists of low-income Hispanic women and their children. A combination of social marketing strategies and more traditional nutrition education approaches will be used to reach the target audience in six Arizona counties.

## CALIFORNIA 5 A DAY— FOR BETTER HEALTH! CAMPAIGN

As noted earlier, the national program grew out of a 5-year NCI grant awarded to California in 1986. When the prototype California 5 a Day for Better Health! Campaign (1986-1991) was transferred to NCI in 1991 (Foerster et al., 1995), the California Department of Health Services (CDHS) continued to develop targeted campaigns for population segments and to monitor statewide vegetable and

fruit intake for this State of 30 million persons (as of 1990). A bill sponsored in 1992 by the California Dietetic Association that would have provided State funds for those campaigns was passed without an appropriation because of the State recession; nonetheless, it directed CDHS to continue the California 5 A Day Campaign by using Federal or private monies. Since then, the department has marshaled resources from multiple sources, including the Federal Preventive Health and Health Services Block Grant, CDC/NCI evaluation grants, the USDA Food Stamp Nutrition Education Program, and a foundation (The California Endowment).

## Strategic Priorities and Leadership

Over the past decade, State priorities have been based on strategic recommendations made in 1992 by the original industry steering committee and other interested individuals. Rather than continuing any State initiatives targeting the general population, they recommended that California develop social marketing campaigns to complement NCI's 5 A Day Program, with the priorities being children, Hispanic adults, restaurants/food-service outlets, and community coalitions. With this broader scope of work, the steering committee grew from the original 12 industry members starting in 1988 to well over 60 organizations in 1998, including three sister State departments; most of the State's vegetable and fruit marketing orders, boards, and commissions<sup>1</sup>; and the American Cancer Society. Using skills developed during the original NCI capacity-building grant, CDHS has continued conducting the biennial California Dietary Practices Survey (CDPS) and employing social marketing staff on contract through the nonprofit Public Health Institute.

## Children First

In mid-1992, \$300,000 of the State's Preventive Health and Health Services Block Grant from CDC became available annually for the California 5 a Day—For Better Health! Campaign. Contract staff

<sup>1</sup> *Growers of a particular commodity assess themselves a specific fee, the revenues of which are pooled into a fund. More information on marketing orders can be found in Appendix B.*

members were recruited to develop what became the California Children's 5 a Day—Power Play! Campaign for fourth and fifth graders and their parents, which included an intervention delivered in school; a community youth organization; and media, supermarket, and farmers market channels (Foerster et al., 1998a) (see also Chapter 10). In 1997, the positive results of the Power Play! evaluation study led to an award by The California Endowment of \$4.2 million over 5 years to CDHS for rolling out Power Play! in successive media markets. The grant also was matched by USDA food stamp Program funds, thereby providing longer awards for the regional coalitions and more materials for community partners that targeted children from low-income households. By 1999, Power Play! coalitions were in operation in the Fresno, Los Angeles, Sacramento, and San Diego media markets. The Kern County, Central Coast, Far North, Inland Empire, Orange County, and San Francisco Bay Area media markets were on board by 2001, and well over 40 percent of the State's 1 million fourth and fifth graders are expected to be involved in Power Play! activities each year.

### The Latino 5 a Day Campaign

The 1991 CDPS showed an unexpected 18 percent drop in vegetable and fruit consumption among Hispanic adults compared with 1989 figures, which contrasted with an 8-percent increase among African-American and White adults during the prototype campaign (Foerster and Hudes, 1994). Based on the new data, an additional \$460,000 was made available over 2 years from the Federal Preventive Health and Health Services Block Grant to develop a special Latino campaign that targeted the State's estimated 4 million adults who access the Spanish-language mass media. Focus groups were conducted; a special logo was developed; a variety of collateral materials, including a consumer guía (guide), were produced; and all materials for children and parents in the Power Play! campaign were adapted and translated into Spanish. The new California Latino 5 a Day Campaign was announced during National 5 A Day Month in September 1994, and the new guide was made available through NCI's toll-free CIS number. Starting in 1995, public service announcements (PSAs) were developed and



placed with Spanish-language television and radio outlets across the State, while other collateral materials were used widely at Latino festivals and in other community venues. The PSAs were aired more than 500 times on Spanish-language radio and television stations in 7 media markets, with media exposures totaling more than 17 million between 1994 and 1996.

Between 1993 and 1995, the reported consumption of vegetables and fruit by Hispanic adults jumped 34 percent, from 3.5 to 4.7 servings, the highest of the three major ethnic groups surveyed. These findings were instrumental in securing a grant totaling \$2 million over 5 years from The California Endowment to enhance the campaign through a Latino spokesperson program as well as through the development of special materials for ethnic festivals, educational videos, and cross-promotions in retail grocery stores and farmers markets.

### The Network 5 a Day Campaign for Lower Income Families With Children

In 1995, CDHS responded to a request for applications from USDA's Food and Nutrition Service to develop nutrition support networks using social marketing approaches. This large-scale initiative targeted an estimated 2.8 million food stamp recipients and similar low-income households, with the purpose of improving dietary intake. The initial 1-year planning grant required CDHS to establish a large public/private coalition, develop a strategic plan addressing overall healthy eating and physical activity, and identify State in-kind

funds that would qualify for ongoing Federal matching funds from the Food Stamp Program. The first-year Food Stamp Nutrition Education Program plan was approved for \$2.8 million late in 1996 (CDHS, 1996a). By building upon the infrastructure already established for the California 5 a Day—For Better Health! Campaign, the new program accomplished these objectives within 1 year, with the coalition growing to more than 200 partners.

The design of the strategic plan for the new California Nutrition Network for Healthy, Active Families built on the State's two social marketing campaigns, California Project LEAN and the California 5 a Day Campaign. It was organized around three 2-month promotional periods each year. In the spring, the promotions address low-fat eating or 30 minutes of daily physical activity, and in the summer and fall, the promotions feature the 5 A Day message. All 3 promotions urge 30 minutes of daily physical activity and are delivered bilingually through public service mass and ethnic media, retail grocery, and community channels. Starting in 1999, PBH (NCI's public/private partner) retail merchandising materials were used and adapted where necessary for the California Nutrition Network target populations. By April 1999, nearly 500 of the State's 2,000-plus supermarkets were scheduled to participate.

USDA's Federal financial participation (FFP) reimbursement mechanism for food stamp funds provides a one-to-one match with all State expenditures for qualifying nutrition education/social marketing activities, thereby providing an incentive for State public entities to sponsor nutrition education programs. In the second operational year, \$4.9 million in FFP funding was approved. Over 1998-1999, \$8.2 million was identified, of which more than \$3 million in additional FFP funding from USDA was directed to the California 5 a Day—Power Play! Campaign for children, to the Latino 5 a Day Campaign, and to other low-income households through the network. In addition, \$1 million was awarded to California Project LEAN, which included its promotion of the 5 A Day message through 10 regional coalitions. In view of the unexpected 7-percent downturn in vegetable and fruit consumption between 1995 and 1997 for the State as a whole (see Figure 1), and especially the 29-percent decrease for persons with annual household incomes of less

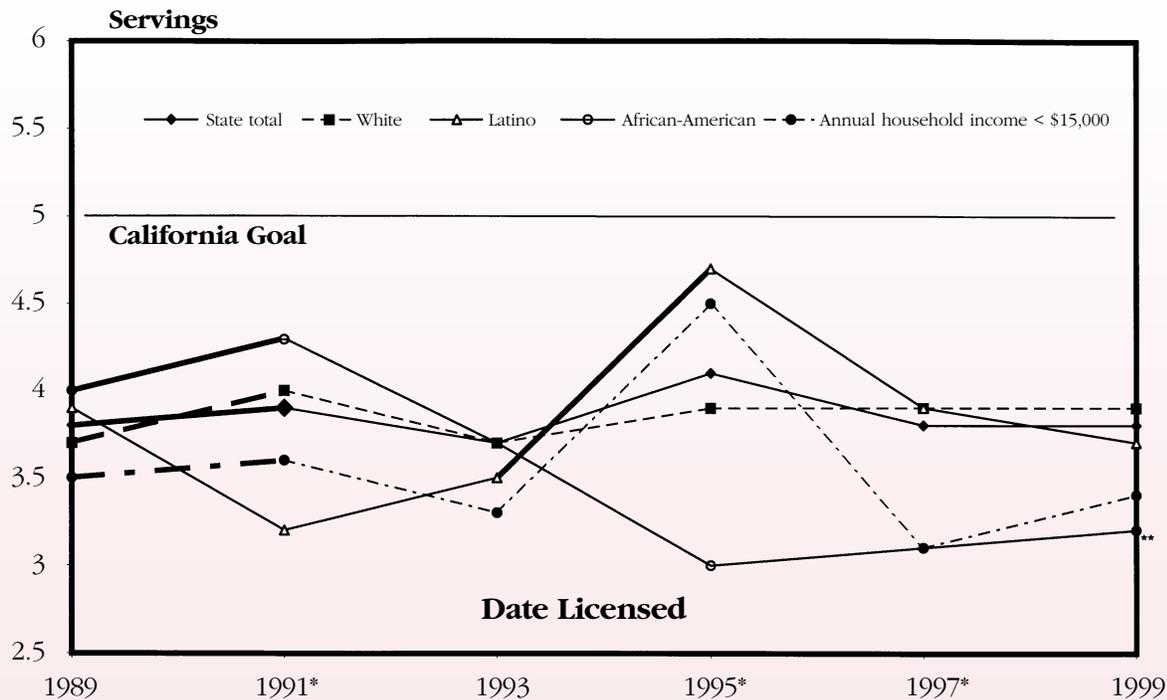
than \$15,000, USDA funds have provided financial resources at a critical time (Foerster et al., 1998b).

## Lessons Learned

The biennial State telephone surveys have proven critical in the ongoing development of special State 5 A Day initiatives. The surveys have identified multiple population segments that require more intense interventions, and they have dispelled popular perceptions that high availability of vegetables and fruit is enough to result in good eating practices. These surveys have shown an upturn in reported vegetable and fruit consumption by targeted population segments coinciding with State campaigns followed by downturns when the campaigns ended. For example, during the prototype campaign targeting English-speaking adults (1989 to 1991), consumption among White ( $p < .05$ ) and African-American (NS) adults rose 8-percent instead of the expected 2-percent secular change. Similarly, reported consumption among Hispanic adults rose over 30 percent (NS) following the Latino 5 a Day Campaign (1994 to 1996). In all cases, consumption returned to pre-campaign levels once the promotions ended. The surveys also have shown a consistent, positive association between consumption and the behavior-specific belief that five daily servings are a necessity as well as the ability to name vegetables and fruit as foods that help prevent cancer.

More sophisticated approaches and resources are needed to keep pace with the changing business environment, especially in supermarkets and the mass media. Consolidation in the supermarket industry has decreased the autonomy of produce department executives, caused many companies to focus less on community service, changed the responsibilities of consumer affairs personnel, and increased competition and therefore the cost of in-store support that industry partners needed, such as the addition of interactive computer kiosks instead of signage and brochures. The State government also is using mass media for many different types of campaigns. With the notable exception of Spanish-language media outlets (which remain committed to public service), commercial stations now expect paid advertising. There are more groups seeking limited public service time, and the major networks demand PSAs that require more costly production.

Figure 1. Servings of Vegetables and Fruit Consumed by California Adults, 1989-1999



\*  $p < .001$  significant differences among ethnic groups in a survey year.

\*\*  $p < .05$  significant differences from 1989 to 1997 for a population segment.

**Note:** Bolder lines represent years of prototypes for the California 5 a Day Campaign.

**Source:** California Department of Health Services, 1999.

Traditional print outlets such as the weekly food pages are still relatively available, but their reach into minority, less educated, or lower income market segments is limited.

It is apparent that to increase vegetable and fruit consumption, the California 5 A Day Campaign needs to support simultaneously various multimedia, retail, food-service, regional, and community projects. This strategy has worked in fields such as tobacco control (CDHS, 1996b; NCI, 1998), but it is a costly and complex undertaking.

## SUMMARY

This chapter has presented a variety of approaches to the development and evaluation of low-cost 5 A Day interventions in States ranging in populations from 2.5 to 30 million.

In Connecticut, the outcome evaluation of a State-developed preschool intervention showed

a doubling of vegetable and fruit consumption among adult caretakers, and the process evaluation subsequently documented use of the training sessions in a large number of Head Start sites. In Kansas, outcome evaluations in two schools showed that the State-developed program affected children with the lowest consumption rates, significantly raising both the amount and the variety of vegetables and fruit that they ate. These evaluation materials have since been distributed to elementary teachers statewide.

In South Carolina, outreach and training to multidisciplinary school personnel by members of the State Nutrition Council resulted in teacher utilization of the Dole Food Company's "5 A Day Adventures" CD-ROM and other materials by about one-third of the State's lower elementary school teachers. Following training, most teachers integrated the materials into the core subjects, such as science, math, language, and art.

In Arizona, the State Departments of Health Services and Agriculture worked with the mass media, grocery stores, and local health departments to increase and more narrowly focus community interventions on 5 A Day efforts over a period of 4 years. This was followed by a reported 40-percent increase in adults eating five or more daily servings between 1991 and 1996, and increases were highest for the specific vegetables and fruit that were promoted by the program.

In California, the State Department of Health Services worked with marketing orders from produce growers on two separate statewide campaigns using mass media and retail supermarket channels. The first English-language campaign was followed by a reported 8-percent increase over 2 years in vegetable and fruit consumption by White and African-American adults. The second campaign was conducted in Spanish and was followed by a reported 30-percent increase over 2 years in vegetable and fruit consumption among Hispanic adults. In both instances, reported consumption fell significantly when the campaigns ended.

Not surprisingly, these case studies also indicate that the interventions that work the best are interactive, focused, and sustained. Several States used strategies that extended the reach of the programs, such as use of CIS for the distribution of materials and the provision of materials in appropriate languages. Another successful strategy was to integrate 5 A Day activities into other programs (such as Head Start) and into schools and local health department operations.

Whether the State-level approach started small, with just one collaborator, or incorporated large coalitions, the 5 A Day coordinators established effective networks, integrating Government, university, and industry partners. The one State discussed in this chapter that did not use a coalition approach indicated that the lack of such a mechanism made it more difficult to secure funds for continuation of the Program. Table 5 summarizes the results of the 5 A Day efforts in all five States discussed here.

It is also clear that gathering data about Program effectiveness will help programs to expand and that data are sooner or later required for continued funding. However, even in programs that start without an experimental design, outcome and process evaluation results can be valuable. For example, the dramatic increase in

the size of the California program was aided by the decision to monitor trends from the outset of the program. In the locations where effective interventions were happening, statewide data indicated improved consumption levels. In fiscally lean years when interventions were cut back, effects were diminished, or consumption rates reverted to pre-campaign levels.

Although well-funded NCI research projects provide less equivocal evidence that 5 A Day interventions change dietary behaviors, knowledge, and attitudes, the State-level evaluations, which are funded at much lower levels and for only 1 year at a time, nonetheless make important and practical research contributions. States benefit by learning from intervention models that were designed and implemented by intermediaries in large systems or corporations that have tremendous reach to consumers. State-level programs also may generate findings that are immediately useful for policy recommendations and for funding decisions by these same intermediaries. This kind of applied research may, in fact, prove to be an extremely practical new strategy for future social marketing and large-scale national public/private partnerships. Such initiatives can target many different population segments through diverse intervention channels, while also reflecting the uniqueness of each State's situation.

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Table 5. Overview of State Case Studies and Their Results

| State                 | Outcome Evaluated   | Evaluation Method  | Main Findings  | Comment  |
|-----------------------|---|--|--|--|
| <b>Connecticut</b>    | Diets of Head Start caregivers and their children who did and did not attend educational sessions | 24-hour recalls, 2-day records, Block FFQ, pre- and postintervention | More than doubled vegetable consumption among caregivers, but no change among children   | Recruiting intervention participants was a challenge; staff randomly assigned participants to groups   |
| <b>Kansas</b>         | Vegetable and fruit consumption of elementary school students in two communities                  | 22-item FFQ <sup>1</sup>   | Increased vegetable and fruit consumption among only those with initially low intake in medium-size community  | Regression to the mean and possible bias by community  |
| <b>South Carolina</b> | Dole CD-ROM statewide distribution and use reported by teachers                                   | Teacher surveys by mail and fax                                      | Increase in curriculum integration from 1997 to 1998   | Low response rates limit conclusions   |
| <b>Arizona</b>        | Statewide vegetable and fruit consumption in adults   | BRFSS surveys, 1991-1996   | Vegetable and fruit consumption increased 17% from 1991 to 1996  | Plateau in rate of increase in 1996  |
| <b>California</b>     | Statewide vegetable and fruit consumption in adults   | Special biennial telephone surveys using 24-hour recalls             | Vegetable and fruit consumption increased 8% in White and African-American adults, and more than 30% in Hispanics, following the statewide campaigns; but it dropped after campaigns ended | Sample sizes were too small to show statistically significant changes (African-American and Hispanic segments), but patterns were consistent |

<sup>1</sup> FFQ = food frequency questionnaire.

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# Chapter 5

## Industry Initiatives

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### INTRODUCTION

A major strength of the national 5 A Day for Better Health Program is its unique partnership with the vegetable and fruit industry and the public health community. This partnership produces a win/win situation. The vegetable and fruit industry must continue to be profitable to survive, and the partnership provides an opportunity to increase sales as well as promote a public good—the increased consumption of vegetables and fruit. For industry, the value of the association with the public health sector is that it lends credibility. The public health community is interested in increasing national vegetable and fruit consumption because data indicate that such a change should decrease risks of heart disease, cancer, and other chronic diseases. The value of the industry partner to the public health sector is realized in marketing dollars and skills that can effectively reach all Americans with the message to eat five or more servings of vegetables and fruit every day. In addition, the partnership provides an opportunity to modify the food environment to be more supportive of increased vegetable and fruit consumption.

This chapter describes the industry side of the partnership: its origins and structure and its fundraising and programmatic initiatives through

the years. To put this chapter into perspective, see Appendix B, titled “Industry Overview.” This appendix describes the economic forces that affect the industry and affect the manner in which it functions in this Program. Profit margins, food marketing orders, and industry trends are discussed to help the reader understand the dynamics of the private sector of the public/private partnership.

### INDUSTRY PARTNERSHIP STRUCTURE

The Produce for Better Health Foundation (PBH), incorporated in 1991, works directly with the National Cancer Institute (NCI) in this public/private partnership. PBH, a nonprofit entity, manages the private-sector side of the national 5 A Day Program and was organized solely for this purpose. The concept for the Foundation emerged from discussions among industry board members involved with California’s 5 a Day—For Better Health! Campaign and several industry associations, following a 1990 NCI meeting held to discuss the development of a national program (see Chapter 1). The formation of PBH resolved questions about how the numerous independent com-

panies and commodity boards would interact with NCI in a proposed national partnership.

With agreement from key industry members, such as Sun World, Dole, the California Table Grape Commission, and others, an independent nonprofit corporation was formed with the assistance of the Produce Marketing Association, and a memorandum of understanding and a licensing agreement were signed with NCI (see Chapter 2). The purpose of the Foundation was to sublicense all industry members that wished to participate in the program, coordinate and monitor their activities, raise funds to implement industry initiatives and public relations efforts, and collaborate with NCI to develop a strategic plan and national program agenda. Initially, the potential industry members consisted of supermarket retailers, growers, shippers, suppliers, merchandisers, and commodity boards. Later, producers of frozen, canned, and dried products became involved with the Foundation. Several corporations also have educated their employees through their cafeterias and worksite wellness programs.

The formation of PBH was a major milestone. Before the Foundation's inception, the industry had never worked collaboratively to increase vegetable and fruit consumption. The structure of the industry helps explain why this was so (see Appendix B). The industry is fragmented, with over 350 different vegetables and fruit competing for sales in supermarkets and for a place at consumers' tables at any given time. Before 1991, more emphasis had been placed by individual industry members on how to sell more of their respective commodities than on how to increase consumption of all products. PBH is the only organization that promotes the consumption of *all* vegetables and fruit for better health, uniting the vegetable and fruit industry in a common proactive effort. Due to the fact that individual companies are concerned about profits from the commodities that they sell, the Foundation has had to develop programs that provide a more immediate impact on sales and also change awareness and long-term consumer behavior.

Initial PBH members were primarily the produce industry, but over time membership has included the canned and frozen product industries and others (health care, life insurance, pharmaceutical) that share an interest in the health of

consumers and employees. The Foundation relies on voluntary donations from the vegetable and fruit industry and other interests to conduct its marketing and nutrition education programs.

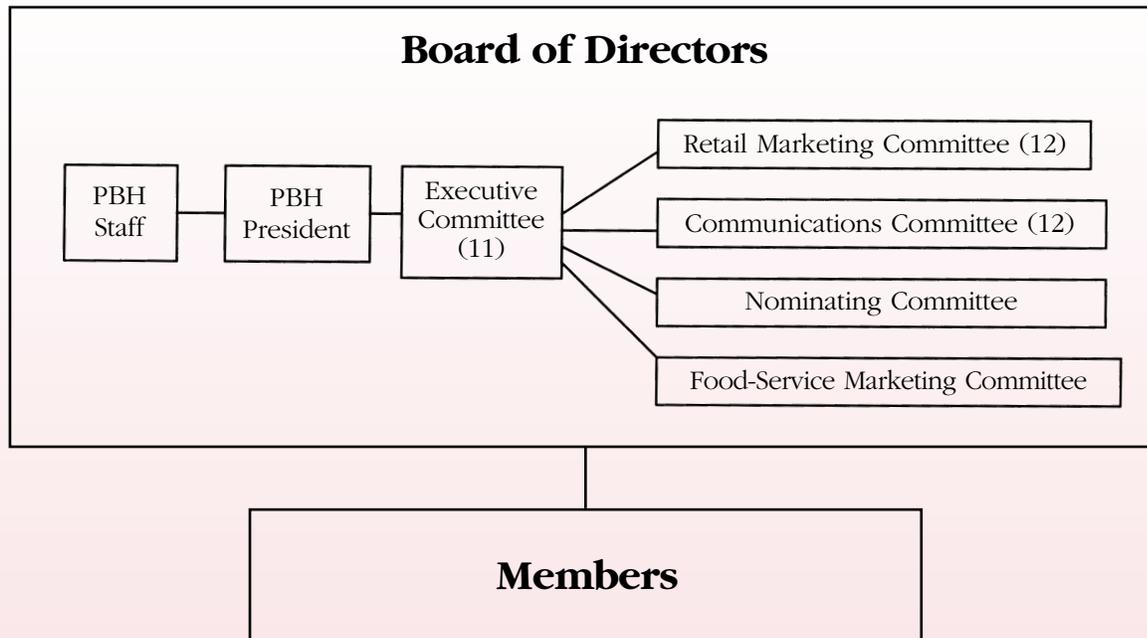
### Structure of the Produce for Better Health Foundation

A board of directors oversees PBH (see Figure 1). The board helps to set the policies, priorities, and direction of the Foundation, while the staff carries out these policies and programs. Initially, this board consisted of any organization that donated \$10,000 or more, as well as about 10 elected retailers and smaller industry firms. The executive committee consisted of those who gave \$20,000 or more. In 1994, a management committee of six grew out of this arrangement because the executive committee had become too large to function effectively. In 1995, the management committee became the 10-member executive committee, after the board voted to reduce the size of the previous executive committee.

Three other committees were formed to help establish Program priorities for the industry: retail marketing, food-service marketing, and communications. Committees offer the opportunity to discuss and set priorities for each program in more depth than would be possible with a large board. These committees kept growing as the board grew because each board member served on a working committee. In 1997, the committees were reduced to 12 members each (one committee had grown to 30 individuals), which created much better working committees. The chair of each committee also became part of the executive committee.

In 1997, there was discussion about reducing the size of the board. Because most of the board members were major donors and saw membership as a donor benefit, the size of the board was not reduced. Instead, the board of directors remains intact with more than 70 members (functioning much like a board of trustees), 11 executive committee members, and 12 members on each of the program committees. Board members either contribute a minimum of \$10,000 or are elected. Up to 20 board members can be elected, primarily food-service operators and retailers. The board meets annually, and each committee meets

Figure 1. PBH Board/Membership Structure



twice a year in person and at other times by telephone conference calls.

The PBH chairman, vice chairman, and staff president participate in a coordinating committee with three NCI members. This committee meets regularly to discuss Program progress and areas of collaboration between the Foundation and NCI and to resolve any conflicts.

### Licensing

One of the first and primary functions of the Foundation was to license the industry to use the 5 A Day Program logo. A license agreement is signed annually, and criteria for using the logo, promoting products, and developing recipes are provided in the Program guidelines, developed jointly by PBH and NCI (see Appendix A-3). Initially, industry was to receive the license without a fee because it would help spread the 5 A Day message. However, attorneys recommended a small fee be paid to make the signed license agreement more of a binding contract between the Foundation and industry members (see Appendix A-1 for a copy of the licensing agreement). Thus, an initial licensing fee was set at \$100 annually. By 1996, the annual fee was \$500.

Since 1997, PBH has been charging a fee commensurate with the use of the logo—greater use of the logo results in a higher fee.

In 1991, 84 members were licensed. This number grew to 488 in 1992. In 1999, 750 members were licensed.

Any misuse of the logo or Program materials as established in the guidelines can result in loss of the license. Few actions of this nature have been necessary, as the industry has done a good job of policing itself.

### Communications

Communications within the Foundation involve ongoing dialog with the board of directors; members, including the produce, supermarket, and food-service industries; and consumers.

Communication to the board of directors is generally through faxed or e-mailed updates every 6 weeks, in addition to the annual board meeting. Other face-to-face meetings are necessary to explain PBH programs and to garner support for these efforts.

The Foundation communicates with its members (i.e., licensees) in a variety of ways, from one-on-one meetings to meetings at trade shows;

regular mailings; and a site on the World Wide Web, *www.5aday.com*, which debuted in July 1998. The Web site offers information, text, and graphics for consumers, journalists, cooks, educators, and produce industry members. Members receive access to the “Members Only” section, which provides additional information plus downloadable text and graphics. Several times a year, members receive materials announcing each of the Foundation’s retail promotions. In addition, members receive renewal notices containing a summary of PBH’s achievements and future plans.

The Foundation receives both financial and in-kind support from the Produce Marketing Association and the United Fresh Fruit and Vegetable Association. These organizations provide in-kind exhibit space and participation in educational workshops at conventions, thereby enabling prominent exposure for the 5 A Day Program and the Foundation.

The trade press has been a vital channel of communication since the beginning of the Program. Significant efforts have been made in the past few years to work more effectively with the trade press in order to reach the industry. In addition to regular coverage of Program activities, the produce industry trade press (particularly Vance Publishing) donates more than \$150,000 of free advertising space annually in its publications. This additional coverage, both editorial and advertising, has helped ensure that Foundation activities are known to the industry.

Today, PBH has a set advertising schedule and regular discussions with the produce trade press, which is the best avenue to reach the industry and potential donors. In addition, strong efforts have been made in the food-service and supermarket trade press arena to contact editors and to discuss ads that could be used by those publications.

## GROCERY RETAIL POINT OF PURCHASE

The use of industry marketing dollars to extend the 5 A Day message is a win/win proposition. There is no expense for NCI, the industry utilizes a credible message to market its products, and no additional costs are incurred by industry when enfolded 5 A Day into existing programs or

advertising—funds are simply redirected. The PBH Foundation has estimated that for every \$1 million it spends, it can leverage at least \$40 million from industry partner activities. Thus, most of the organization’s time is spent convincing the produce industry to promote 5 A Day as part of its regular activities, and communication is maintained through meetings, presentations, and telephone calls.

A major component of California’s 5 a Day—For Better Health! Campaign (the predecessor to the national 5 A Day Program) was the promotion of vegetables and fruit in supermarkets. Use of supermarkets’ marketing power is a powerful way to reach consumers, as these stores can penetrate most homes in a given community through ads and circulars. This emphasis on the use of supermarkets as an important channel for reaching the public continued in the national program. Four sets of materials had been developed in California for use in supermarkets, and these were revised and used in the national program. Over time, both PBH and NCI developed and reviewed each other’s additional materials to ensure consistency and adherence to the guidelines. This section discusses the materials developed by the Foundation and provides examples of promotions by various grocery retail members of PBH.

Beginning in 1991, the Foundation developed and produced promotional materials for retailers, including signs, point-of-sale cards, and brochures, three or four times each year. Use of these materials ensured that the 5 A Day message was being promoted according to Program guidelines, which was important for the fledgling program. Retailers purchased materials from these promotions for use in their stores (see Table 1 for a list of promotions).

The materials produced by PBH included black-and-white template advertising slicks and slicks of the logo. Retailers used the 5 A Day logo and message in their radio and newspaper advertisements, including store circulars, and in-store intercom announcements. Depending on the market, some of these full-page newspaper ads are worth close to \$40,000 each in advertising placement purchases.

Initially, about 5,000 stores purchased these core Program materials in a given year. As members became more familiar with the Program guidelines, larger retailers began to customize

**Table 1. Nationwide Foundation Promotions**

*Foundation promotions since 1991 have included the following:*

**1991**

- Eat More Fruits and Vegetables

**1992**

- Eat More Salads
- Easy Entertaining

**1993**

- Fast and Easy
- Eat More Salads II
- 5 A Day Week
- Healthy Gift Baskets

**1994**

- Canned/Frozen Promotion
- Fruits and Vegetables—The Fitness Fuel
- 5 A Day Week
- Make the Play—Eat 5 A Day

**1995**

- Snack Your Way to 5 A Day
- 5 A Day Week—Take the 5 A Day Challenge
- Microwaving—The Easy Way To 5 A Day

**1996**

- Breakfast: Feel the Get Up and Glow
- Take the 5 A Day Challenge—It's the Winning Way
- Destination Stop

**1997**

- The Original Fast Food
- Produce Playground
- Take the 5 A Day Challenge—5 A Day on the Go
- Make It Fast, Make It Healthy, Make It 5 A Day

**1998**

- Simply Delicious
- Naturally Irresistible
- Take the 5 A Day Challenge—Taste a World of Variety
- Go Ahead, Have Another

**1999**

- Take a Fresh Look at Nutrition
- Get Fit With 5 A Day
- 5 A Day Meal Solutions
- Take the 5 A Day Challenge
- 5 A Day for the Holidays

**2000**

- Fruits and Vegetables First

their own 5 A Day promotions to distinguish themselves from their competitors' efforts. By 1998, only about 1,000 stores were purchasing core materials because more retailers were developing their own customized materials. The Foundation and NCI encouraged interactive events in supermarkets to draw attention to the 5 A Day message. Many retailers conduct school supermarket tours and in-store taste tests and work in other ways in their local communities. A few case studies of retail activities are noted in the following sections.

National 5 A Day Week is conducted each September by PBH and NCI to emphasize the importance of eating five servings of vegetables and fruit each day. Through supermarket promotions, nutrition workshops, media events, and other activities, consumers learn about the 5 A Day Program. This annual event has become a regular promotion on many retailers' marketing calendars. Most retailers extend the celebration

throughout the entire month of September to reap the benefits of heightened consumer interest in the 5 A Day Program. Some examples follow of how individual retailers have customized the 5 A Day message for consumers at the local level.

### **Vons Company, Santa Fe Springs, California**

Vons' methods of spreading the 5 A Day message vary, from community involvement to in-store radio advertisements to 5 A Day inserts in direct mail ads. Three full-page color ads each year are devoted to 5 A Day: the early winter ad focuses on citrus and apples; the summer ad emphasizes salads and salad ingredients; and a third ad runs in conjunction with National 5 A Day Week. Rather than promoting the 5 A Day message for only 1 week, Vons extends activities into 5 A Day Month. In September 1995, Vons conducted 625 demonstrations over 4 weekends in 330 stores, during which the chain distributed 92,000 5 A Day

brochures. Also during September, messages publicizing 5 A Day aired on the in-store radio station. Once every 5 or 6 weeks, Vons devoted a section of the produce page to 5 A Day in its weekly, six-page direct mailing, discussing various aspects of produce and health.

### **SUPERVALU, Inc., Eden Prairie, Minnesota**

Each year during National 5 A Day Week, SUPERVALU, the Nation's largest wholesale food distributor (more than 5,000 stores) and the owner of the Cub grocery chain (350 stores) as well as several small regional chains (more than 100 stores), conducts a 5 A Day merchandising contest among its SUPERVALU stores. The contest challenges stores to create an innovative 5 A Day display along with in-store demonstrations and promotions. The contest has proven to be so successful that several of the seven divisions conduct special contests within their regions. Stores participating in the contest increased their sales as a result of the displays and activities. SUPERVALU stores also bring the 5 A Day message to the community through local events.

### **Price Chopper Supermarkets, Schenectady, New York**

Price Chopper spotlights a category each week, such as convenience items, fresh vegetables, or fresh fruit. The ad copy encourages customers to eat five servings of foods in a particular category. The 91-store chain has its own Eat Wise, Health Wise Program in which low-fat or reduced-fat items throughout the store are tagged. The company ties in 5 A Day with this program, encouraging customers to notice both the low-fat content of many produce items and the health value of eating five or more servings of vegetables and fruit each day.

### **Dominick's Finer Foods, Northlake, Illinois**

Since the start of the national program in 1991, more than 50,000 schoolchildren have toured Dominick's Finer Foods stores (of which there are 100); these tours grow in popularity every year. As soon as the children enter Dominick's produce section, they are handed a tote bag with at least one fruit selection such as an apple or orange, an activity book featuring the Nutrisaurus Dominickus

character, and brochures from various commodity groups. Students who tour during National 5 A Day Week see sale signs promoting the purchase of produce in multiples of five.

### **Stop & Shop Company, Gaine, Massachusetts**

To address the ethnic diversity of its customers, Stop & Shop translated and printed 5 A Day recipe cards in Spanish, Chinese, and Vietnamese. This chain of 148 stores also frequently stocks new recipes to keep the 5 A Day message active. Stop & Shop has blanketed its stores with 5 A Day signs, and rolled plastic produce bags bear the 5 A Day logo. The nutritional value of each produce item sold in the department is also highlighted on a green and white 5- by 7-inch price sign with the 5 A Day logo. In addition to promoting 5 A Day with in-store and print advertising, Stop & Shop has its consumer relations staff speak at local events and distribute 5 A Day brochures.

### **Ukrop's, Richmond, Virginia**

Ukrop's (25 stores) 5 A Day for Better Health Kid's Program has been operating for 8 years, involving more than 45,500 children since its inception. The program is designed to help children lead healthy lives by eating five or more servings of vegetables and fruit daily. In 1998-1999, third-grade classes from the Richmond area were invited to participate in Ukrop's 5 A Day store tour. Conducted by Ukrop's nutritionists, store tours lasted approximately 1 hour and were held in different stores from October through April. There were 110 tours scheduled, involving approximately 2,700 students. Before the tour, Ukrop's distributed a packet of information to teachers, including lesson plans and promotional items. Participants received a bag filled with educational material and fun 5 A Day items after completion of the tour. As an alternative to the tour, Ukrop's offered an in-school 5 A Day nutrition lesson to third-grade students, a 45-minute session presented by visiting Ukrop's nutritionists.

As the national program has matured, PBH has developed new ways of assisting retailers to promote the 5 A Day message. For example, a supermarket's consumer affairs director might download the text of a consumer column from the Foundation's Web site and use that information in

the supermarket circular or newsletter. At the same time, a produce manager can benefit from a cross-promotion, a store tour, or a food-service training. Overall, efforts have varied from chain to chain and even from store to store. The structure of NCI's 5 A Day Program allowed for this customization so that messages could be better tailored to local levels.

## **GROWER/SHIPPER EFFORTS**

Supermarket efforts to reach consumers are critical, but grower/shipper efforts to complement these retail activities are also important. Growers use the 5 A Day logo on packaging for such products as Tanimura & Antle, Fresh Express, River Ranch, Readipac, and Dole packaged salads; Sun Maid raisins; Tropicana orange juice; Dole's juices and dried fruit; Mariani's dried fruit; Mann Packing's packaged vegetables; and Grimmway packaged carrots. Because most produce items do not have a package, it has been difficult to use the logo on produce items. However, some growers, such as Del Monte, have used 5 A Day stickers on some of their bananas in addition to their own brand sticker.

Commodity boards, trade associations, and cooperatives, representing growers of all sizes, have incorporated 5 A Day messages into ongoing efforts at no cost to NCI or PBH. A few examples are noted here.

### **U.S. Apple Association**

The U.S. Apple Association supports the 5 A Day Program in its consumer, media, health, and education outreach activities. In 1999, the association promoted 5 A Day and apples in its mailing to health professionals and newspaper health editors during the American Dietetic Association's National Nutrition Month observance. The association has two brochures for school teachers that use the 5 A Day theme: "Apples: Well on Your Way to '5 A Day' for Better Health" and "'Gimme 5' Kids' Tips." It also offers health professionals and consumers a recipe diskette with more than 100 recipes featuring apples and apple products, all approved by the 5 A Day Program, and promotes the 5 A Day message to the food and health media in its regular press mailings.

### **Sunkist Growers**

Sunkist Growers supports the 5 A Day Program through its educational brochures, booklets, posters, and other materials for children. As part of the National 5 A Day Week in 1998, Sunkist Growers launched a new program in cyberspace. Its Web site includes a 5 A Day section that features vegetable and fruit recipes and tips on ways to incorporate these foods into the daily diet. In 1996, Sunkist Growers promoted the 5 A Day Program through national television promotions, which began in mid-January and continued through mid-June. These advertisements reached 46 percent of U.S. households an average of 22 times during the advertising period. The 30-second spot, titled "Singular Sensation," combined the fresh orange Just One campaign with the 5 A Day Program. The spot ran on several cable channels to reach a wide variety of interest and age groups. Television networks broadcasting the spot included the USA Network, Discovery, Arts and Entertainment, the Weather Channel, Lifetime, CNN, and Nick at Nite.

### **California Table Grape Commission**

The California Table Grape Commission was one of the first supporting members and has provided leadership for the 5 A Day Program. It was the first commission to offer radio tags to retailers highlighting the 5 A Day message. The commission has published and distributed consumer brochures, recipes, public service announcements (PSAs), and Spanish-language materials and has also conducted special events highlighting the 5 A Day Program. For example, in San Jose, the commission sponsored a garnishing demonstration by author and chef Francis Lynch, who demonstrated creative ways for using grapes as garnishes and centerpieces. Workshops have offered industry members the opportunity to develop relationships with school food-service professionals to develop future promotional opportunities for products.

### **Chilean Fresh Fruit Association**

The Chilean Fresh Fruit Association supports the 5 A Day message through national media efforts, promotions, editorial meetings, brochures, and educational materials. In 1999, the association launched an aggressive campaign to

inform consumers about the importance of eating more fruit. A single television advertising spot was aired more than 1,500 times across 4 major markets. Each time the spot aired, the 5 A Day Program was mentioned. A single radio advertising spot was aired more than 1,400 times across 38 media markets, with a mention of the 5 A Day Program occurring about half the time. In addition, the association produced 7,500 in-store kits that use the 5 A Day logo in vineyard photos depicting Chilean life. Finally, the association has launched a research-based initiative aimed at informing consumers about the vital need to increase their fruit intake. The Chilean Fresh Fruit Association will disseminate the results to more than 200 major newspapers and television networks.

### California Tree Fruit Agreement

The California Tree Fruit Agreement (CTFA) has a significant annual budget for promoting increased consumption of fresh California peaches, plums, and nectarines. The 5 A Day message is incorporated into many of CTFA's promotional materials. CTFA's own consumer research revealed that a lack of information on how to ripen fresh peaches, plums, and nectarines is the leading barrier to their increased consumption. CTFA has launched a campaign to overcome this barrier by advertising on radio and television and in newspapers to educate people on how to ripen these three fruits in an ordinary paper bag. These bags are often imprinted with 5 A Day information. Other consumer education is conducted through mailing press releases and recipes to newspaper, television, and magazine food editors; children's educational programs; and food-service promotion efforts. A special recipe booklet, titled *Fresh, Fast and Fit*, was printed in 1995 to carry the 5 A Day message through PBH-approved tree fruit recipes. CTFA continues to publicize 5 A Day recipes in its own materials and regularly supplies this information to retailers for use in advertising, recipe flyers, and computer kiosks.

### Dole Food Company

The previous examples are only a sample of all grower/retail activities relative to the national program and are provided to illustrate how easily the

5 A Day message can be incorporated into discrete initiatives, without incurring the expense of additional marketing dollars. Unlike most of the previous examples, which showcased the inclusion of 5 A Day within regular communications and marketing efforts, the Dole Food Company spent funds developing new programs.

Dole had wanted to play a vital role in the national 5 A Day Program and made a strategic decision in 1991 to focus all of its nutrition education resources on children 5 to 10 years of age and their parents. Multiple factors influenced this decision, including these particulars:

- Childhood is when eating habits are developed.
- Children were not eating the recommended number of vegetable and fruit servings.
- The initial target audience for the national program was adults; therefore, a focus on children provided an opportunity to reach another important target audience.
- Children can dramatically influence food choices made by their families and are considered three powerful markets rolled into one—a primary market, an influence market, and a future market.
- Children like learning about issues, then sharing their new knowledge with their families and becoming advocates for change.
- Supermarket companies (both corporate- and store-level) were very interested in reaching children and partnering with schools.
- Children are newsworthy and could help generate media interest in 5 A Day.
- Eating more vegetables and fruit will improve children's health now and in the future.

To understand this target audience, Dole conducted extensive quantitative and qualitative research with children, parents, teachers, and schools across the country. Children provided valuable insight into how to reach them with the 5 A Day Program. They advised the following:

- Tell us clearly what you want us to know and do.
- Don't preach to us.
- Show us other children eating vegetables and fruit.
- Don't tell us vegetables and fruit are good for us.
- Get us involved.

- Make it fun and exciting.
- Make vegetables and fruit taste good.
- Put the message to music.

Using this information, Dole developed technology-based programs for elementary schools and interactive programs for supermarkets. The company's financial support, totaling more than \$14 million from 1991 through 1998, reflects the commitment of its chief executive officer, president, and nutrition director to the 5 A Day Program.

Dole developed the 5 A Day Supermarket Tours and Adopt-A-School programs to help retailers who want to promote the 5 A Day Program to elementary-school children. Launched in 1992, the 90-minute, in-store demonstration teaches students about 5 A Day; which vegetables and fruit are high in vitamin A, vitamin C, and fiber; how to read nutrition labels and charts; and how to explain the importance of 5 A Day to their families. It also provides an opportunity for children to taste a variety of vegetables and fruit.

Thousands of supermarkets nationwide conduct 5 A Day tours, reaching approximately 4.5 million elementary-school children each school year. To ensure educational value and effectiveness, Dole provides retailers with training, a comprehensive guide on how to implement 5 A Day Supermarket Tours, student take-home materials, and publicity strategies.

In 1993, Dole launched the "5 A Day Adventures" CD-ROM in collaboration with the Society for Nutrition Education. The annually revised CD-ROM, which is provided free to elementary schools in any quantity requested, is used in more than 35,000 schools nationwide and reaches millions of children. Using interactive multimedia, the CD contains six cross-curricular educational modules with 5 A Day activities for the entire school year. The CD features 42 animated vegetable and fruit characters who enthusiastically encourage children to eat 5 to 9 servings of vegetables and fruit a day. Ten original "5 A Day Top Tunes," lesson plans, a direct connection to Dole's 5 A Day page on its Web site, and an e-mail address for children to write to the vegetable and fruit characters make it easy for teachers to incorporate 5 A Day messages into their curriculum.

Dole has also developed "5 A Day Live," a musical performance kit; "5 A Day Virtual Classroom,"

hosted on the Internet twice a year; the *Fun With Fruits and Vegetables Kids Cookbook*; a "How'd You Do Your 5 Today?" chart with vegetable and fruit stickers; and the *5 A Day Adventures Newsletter* for teachers. Each year Dole sponsors the Creative 5 A Day Teacher of the Year award and the 5 A Day Student Ambassador awards.

Dole's 5 A Day program also has global implications. For several years, the U.S. versions of the "5 A Day Adventures" CD-ROM, 5 A Day Supermarket Tours, and kids cookbook have been used in Canada and New Zealand. These programs are now being revised for Europe, Asia, and Central America. A partnership between the German Cancer Society, the German Societies of Nutrition, and Dole has resulted in a German version of the "5 A Day Adventures" CD-ROM program for elementary schools. Several German supermarkets are conducting 5 A Day Supermarket Tours. By the end of 1999, both Japan and Costa Rica had created localized versions of the "5 A Day Adventures" CD-ROM as well as other 5 A Day children's educational materials.

## FOOD-SERVICE POINT OF PURCHASE

NCI and PBH spent about a year attempting to design and test an appropriate intervention for the food-service sector. First noncommercial and then commercial food-service operators were licensed to use the 5 A Day message and logo in their facilities, on their menus, and in their marketing. Several operators expanded on these activities by educating their customers and their employees about 5 A Day. Currently, 10 commercial operators are licensed. Examples of how the Subway, Inc., and Quincy's Food Restaurant chains incorporate the 5 A Day message follow.

### Subway, Inc.

Subway has integrated 5 A Day into its overall food-service marketing plan. In 1998, Subway's promotional material included a 30- by 24-inch poster, titled "5 A Day the Subway Way," endorsing the benefits of eating five or more daily servings of vegetables and fruit. Subway created a Salad in a Sandwich lunch that featured three of the five daily

requirements. This national chain also uses tray liners touting the 5 A Day theme and has developed nutritional guidelines to encourage children to exchange candy and other snacks for vegetable and fruit selections. Subway has incorporated the 5 A Day message into its corporate culture and has conducted a National 5 A Day Week outreach effort in its shops and in its corporate headquarters. Each store received National 5 A Day Week bag stuffers, and individual Subway franchises received a press release and sample radio advertising scripts. At Subway's corporate headquarters, cafeteria selections offered additional vegetables and fruit for its more than 550 employees.

### Quincy's Family Restaurant

Quincy's, based in Atlanta, Georgia, is a national family restaurant chain that joined the 5 A Day effort and expanded its 29-item food bar to 60 items by adding more vegetables and fruit. The chain has more than 200 franchises across the country and plans to adopt the 5 A Day message into their menus. Quincy's intends to educate its employees and customers about the benefits of eating vegetables and fruit by creating a salad bar that will meet the 5 A Day requirements.

## OTHER EDUCATIONAL EFFORTS

PBH publishes the *Foodservice Produce Guide*, which offers creative tips for proper vegetable and fruit handling, storage, preparation, and garnishing. This manual assists food-service professionals in providing consumers with the freshest, highest quality, best tasting, and most healthful vegetables and fruit. This publication is used as the basis for seminars that feature food preparation demonstrations, garnishing tips, and other activities to provide food-service personnel with creative ideas on how to select, prepare, store, and display vegetables and fruit.

Over the past several years, PBH has worked with several corporations, both to incorporate the 5 A Day message into worksite wellness programs and to obtain funding from these corporations. Wellness activities might include contests, messages on paystubs, lunchtime health seminars, articles in company publications, and efforts to make vegetables and fruit more available in

worksite cafeterias. A National Excellence Award series (10 corporate awards and 5 individual awards) for outstanding worksite programs also has been established to provide the incentive of recognition for efforts along these lines.

At the initiation of the national program, PBH contracted with a printer/distributor to provide 5 A Day materials to licensees. In the past several years, the Foundation has produced its own materials, which are available through a product catalog. The catalog contains posters and brochures developed throughout the 5 A Day Program, including State-developed materials, as well as promotional items (T-shirts, mugs, balloons, coloring books, etc.). Virtually no products are given away—all items are purchased by organizations that then disseminate the message, helping to further 5 A Day awareness and dietary behavior change. Future efforts will increase the number of educational materials available through this catalog.

## MASS MEDIA AND COMMUNICATIONS

The vegetable and fruit industry uses the media extensively in communicating to the public about its products. Therefore, use of the mass media has been an important part of the 5 A Day Program since its beginning. The PBH Foundation and NCI have collaborated in various configurations through the years. NCI has continually had the assistance of a public relations firm, and PBH also used such a firm for several years. This section highlights some of the media efforts by the Foundation. Chapter 6 addresses the mass media in more detail and provides examples of NCI's efforts performed in collaboration with PBH.

The National Partnership Program is an effort to intensify 5 A Day efforts in top media markets in the country. Since early 1997, the Foundation has worked closely with retailers, schools, and corporations in several of those markets. PBH leverages industry resources to distill the 5 A Day message among Americans. The Foundation has been able to raise awareness about the need to eat five servings of vegetables and fruit a day from 8 percent in 1991 to 39 percent as of 1998, while utilizing an average annual budget of less than \$1.5 million.

The Foundation utilizes diverse methods and media to communicate its message and regularly meets with leading magazine editors to discuss trends and story ideas for future publications. Results from various media efforts are summarized in Table 2.

## National 5 A Day Week

National 5 A Day Week, which is held each September, was created to help focus the attention of the licensees and the media on the 5 A Day message. Each year, the Foundation and NCI develop 5 A Day Week promotional materials and distribute them to more than 1,200 licensed 5 A Day members.

Over the years, PBH has conducted a variety of activities for 5 A Day Week. In 1993, for example, all 50 State governors were contacted to enlist their support in proclaiming 5 A Day Week. All 50 governors issued proclamations in support of 5 A

Day, most declaring 5 A Day Week in their States and many setting 5 A Day as a goal for their States. All members of Congress were given a 5 A Day vegetable and fruit basket. Each House and Senate dining room and cafeteria marked 5 A Day Week with special menu items, brochures, banners, posters, and produce tastings. In addition, many food-service staff wore 5 A Day aprons, hats, and buttons. Tipper Gore, wife of former Vice President Al Gore, received a 5 A Day basket, as did Willard Scott, weather reporter on NBC's "Today" show. Local weather reporters in 25 media markets received their own baskets. The same year, the Foundation also sponsored an hour-long radio documentary on diet, health, and the 5 A Day message on National Public Radio.

## Events

National 5 A Day Week is the most prominent media event for the program, but many other

**Table 2. Sample of National Media Efforts**

| <i>Project</i>                                 | <i>Number of Consumers Reached</i>  | <i>Dates</i>  |
|--|---|---|
| Produce Man<br>Television PSAs                 | Media Impressions:<br>363,702,000<br>471,918,000<br>577,224,000<br>264,052,000<br>Total in-kind value = \$10,420,996  | December 1995–December 1996<br>August 1996–February 1997<br>March 1997–July 1998<br>August 1998–February 1999 |
| Web site                                       | Average hits/month = 363,435<br>Average accesses/month = 51,267   | August 1998–May 2000  |
| Monthly consumer columns                       | Total media impressions for consumer columns = 898,738,800 (or an average of 17,761,000 impressions per column)   | July 1997–June 2000   |
| Vegetables and fruit<br>First press conference | <i>Radio:</i> 4,119 station hits reaching 7.9 million people and worth \$385,000 in in-kind value<br><i>Television:</i> CBS, NBC, ABC, and Fox, network viewers   | February 1999   |
| Visits with editors                            | Readers of the following magazines: <i>Good Housekeeping</i> , <i>Bon Appetit</i> , <i>Country Living</i> , <i>Redbook</i> , <i>Parents</i> , <i>Glamour</i> , <i>True Story</i> , <i>American Health for Women</i> , <i>Woman's Day</i> , <i>Self</i> , <i>Ladies' Home Journal</i> , <i>Seventeen</i> , <i>American Health</i> , <i>McCall's</i> , <i>First for Women</i> , <i>Better Homes &amp; Gardens</i> , <i>Weight Watchers</i> , and <i>Cooking Light</i> .<br>In addition, ABC television and several newspaper food writers were visited. | Annual visits since 1997  |

events have taken place, such as the creation of the World's Largest Cornucopia in Chicago's Daley Plaza in 1992. For this event, all 5 A Day retailers in the area provided 25,000 pounds of vegetables and fruit, which were later donated to the Greater Chicago Food Depository. More than 2,000 5 A Day brochures were distributed, and 5 newspaper articles with photos and 1 television segment covered the event. The cornucopia was listed in the 1994 edition of the *Guinness Book of World Records*. In 1993, the World's Largest Fruit and Vegetable Gift Basket in Minneapolis, Minnesota, also earned a listing in the Guinness Book, in addition to receiving substantial media attention.

### **National Football League Training Table**

In 1993, PBH created a partnership with the National Football League (NFL) trainers and conditioning coaches. Many NFL fans fall into high-risk groups—males, Hispanics, young adults, and low-income households—that tend to eat fewer vegetables and fruit than the average American. These groups are difficult to reach through the most common vehicle for the 5 A Day message: the retail supermarket. The Foundation tried to demonstrate to this audience that professional football players, role models to many, are leaders in eating more vegetables and fruit. NFL Training Table promotional activities included a poll of trainers' and players' eating habits, a video news release about the 5 A Day for Better Health's Training Table Program, media packets distributed to 1,300 lifestyle and sports newspaper editors, a matte release (camera-ready print article that included a photograph) distributed to 10,000 daily and weekly newspapers, and 5 A Day posters and materials provided to trainers for use in cafeterias where the press and team players often eat together. Some teams, notably the Houston Oilers, became involved with local 5 A Day programs as an outgrowth of this activity, creating materials such as posters, television PSAs, and outreach efforts.

### **Public Service Announcements**

With the assistance of its public relations firm and NCI, PBH produced a television PSA featuring Produce Man. The Produce Man 30-second spot featured an animated character dressed in vegetables and fruit that encouraged people to eat five

or more servings a day. The spot was aimed at women 18 to 54 years of age—one of the main target audiences for 5 A Day. The Foundation expanded the use of the character to reach new audiences through food-service providers, retail outlets, schools, health fairs, and media events. Significant for a PSA, the Produce Man promotion exceeded the original investment in time value and persists in adding value as it continues to be played. Since the debut of the PSA in November 1995, Produce Man has received more than \$12 million in estimated time value (versus \$200,000 in production and distribution costs) on television stations nationwide.

Produce Man has been so well received that PBH now uses the character in many ways. For example, residents of Boston, Massachusetts, received the Produce Man message during National Nutrition Month in 1998 when the PSA was broadcast regularly on several television stations. This regional broadcast was made possible by the Nunes Company, which leveraged its corporate advertising relationship in the Boston area to help gain airplay for the PSA. As a result, Produce Man aired frequently on each of Boston's television stations. This is another example of a partnership in which a company, the media, and the Foundation work together to educate consumers.

### **Current Directions in PBH Foundation Communications Efforts**

The Foundation launched the 5 A Day message into cyberspace in July 1998 with a new Web site at [www.5aday.com](http://www.5aday.com). The Web site offers printable text, downloadable graphics, and interactive messages and is designed with several audiences in mind: consumers, produce industry members, 5 A Day licensees, teachers, journalists, and professionals. Visitors to the site learn about PBH's communications, retail, food-service, and education programs, as well as how to improve their diet and participate in 5 A Day efforts. Consumers can print the full-page "Take the 5 A Day Challenge" chart to track their vegetable and fruit intake. Anyone can e-mail questions or suggestions to the Foundation's staff members.

At the Web site, Produce Man gives fun tips on how to eat more vegetables and fruit. Visitors can print a complete list of these tips for future

reference. The “Members Only” portion of the Web site offers information about PBH’s board of directors and licensed participating retailers. Food editors and reporters can read the latest news about 5 A Day at the “Press” portion of the Web site. The Foundation’s “5 A Day National Consumer Column” and “Do Yourself a Flavor” series of consumer columns can be downloaded. Both series feature tips and recipes for specific vegetables and fruit.

As part of the public/private partnership, PBH and NCI work together to coordinate media outreach efforts. In 1998, the Foundation developed three seasonal mailings for daily and weekly newspapers to complement NCI’s winter and summer mailings. The first seasonal mailing, about fruit salads, generated more than 2 million consumer impressions in medium-sized daily newspapers from coast to coast. Media kits containing press releases, recipes, photos, and consumer columns reached more than 1,000 editors nationwide.

A Fruit and Vegetable First Symposium and press conference was held in early 1999 at the National Press Club in Washington, DC. The program featured distinguished professionals who discussed the findings supporting the link between greater consumption of vegetables and fruit and reduced risk of heart disease, stroke, diabetes, and cancer. Among the organizations represented were the American Heart Association, American Cancer Society, American Diabetes Association, AARP, and the American Institute for Cancer Research. Designed primarily to increase awareness, the symposium educated policymakers on elevating the importance of vegetables and fruit in the 2000 edition of the *Dietary Guidelines for Americans*, which was under review at that time.

In short, PBH disseminated information in various ways, to diverse audiences, and through multiple channels, with a total average annual Foundation budget of less than \$1.5 million.

## EFFORTS TO MEASURE EFFECTIVENESS

One of the responsibilities of NCI is overall Program evaluation. Therefore, in the beginning

of the Program, NCI worked with the PBH Foundation to collect data from supermarkets describing their initiatives, numbers of brochures distributed, and related activities. Efforts were made to obtain sales data (a nice marker for increased consumption) in specific stores following 5 A Day promotions. Unfortunately, these efforts were not very successful. Not only was some of the information proprietary, it also was difficult to track produce sales in the early 1990s, because not many produce items had bar codes. Birdseed, firewood, candy, nuts, salad bar items, and sometimes even floral items were coded as produce. Data collection is much easier today than it was then.

Finally, in an effort to garner more support from growers and retailers, PBH funded two efforts to measure the impact of supermarket and media efforts: a test of the 5 A Day Destination Stop (marked by a large 5 A Day marquee) in supermarkets and a test of the Produce Man television spot. This section describes these evaluation efforts.

### Destination Stop

The first effort to measure the Program’s impact was a controlled in-store merchandising study that tested a fully integrated 5 A Day Destination Stop, a 3- by 6-foot marquee in the produce department. Merchandising at the 5 A Day Destination Stop stores included the following:

- A 6-foot marquee promoting the 5 A Day Program and highlighting vegetables and fruit high in vitamins A or C;
- A variety of brochures, danglers, and point-of-sale cards with tips for vegetable and fruit consumption;
- Periodic produce sampling and giveaways;
- Buttons and aprons for produce department clerks; and
- Recipe cards.

Produce department sales during the 12-week test period were compared with those for an 8-week base period. They were then compared with a control panel of stores not using 5 A Day activities or materials. The test was conducted in 1996 in a total of 32 stores: 16 Marsh Supermarkets, Inc., of Indianapolis, Indiana, and 16 Winn-Dixie Stores, Inc., of Orlando, Florida. In each of the 2 chains,

4 stores served as controls, and the remaining 12 were test stores. Within each chain, control and test stores were matched.

The results were that 5 A Day Destination Stop stores experienced an 8.8-percent increase in produce department sales over control stores for the entire test period. During the last 4 weeks of the 12-week test period, produce department sales rose 13.8 percent over the base period, showing the benefit of keeping the Program in place for a longer time.

### **Produce Man Media Test**

A second controlled test measured the effect of advertising on produce sales. The Produce Man PSA was tested by airing it as a paid advertising spot in a controlled media market. The media test took place from September 1996 to January 1997, and the goal was to measure the effects of the Produce Man spot on produce sales. Three retail chains participated: Kroger, Winn-Dixie, and SUPERVALU. Weekly produce sales data were collected from 17 stores in the television viewing area where the Produce Man spot aired and from 13 control stores outside the television viewing area.

During the media test, the Foundation purchased advertising time to broadcast the 30-second spot at a set schedule during daytime and prime-time hours. The spot aired at a frequency of 100 target rating points per week during 3 separate flights of 4 or 5 weeks each. This meant that 82 percent of the target viewers (women 18 to 54 years of age) saw the spot approximately 5 times a month.

To assess consumer awareness of Produce Man, a baseline mall-intercept survey was conducted in September 1996 before the spot aired. In February 1997, following the final broadcast period, a posttest mall-intercept survey was conducted. For each survey, 200 women 18 to 54 years of age participated. Before the spot aired, consumer awareness was at 13 percent, which suggests either social desirability bias or that some consumers recalled seeing the Produce Man PSA when it was broadcast in 1995.

Results from the posttest survey showed that consumer awareness of Produce Man increased to 46 percent. According to the study, 87 percent of the respondents said they liked the spot very

much or somewhat. Respondents said they liked the Produce Man character, the spot's "fun and upbeat approach," and its "informative and direct style."

Produce sales figures were evaluated from the participating stores for six consecutive 4-week periods. To establish baseline sales figures, the first period occurred 4 weeks before the first Produce Man broadcast. The spot aired during three distinct broadcast periods: September 16 to October 20, November 11 to December 8, and January 1 to January 28. During the second broadcast period, test store produce sales increased by 1 percent over the control stores. By the time Produce Man began airing in its third installment, produce sales increased by 4 percent. By the end of the test, store produce sales had increased by 5 percent over the control stores. The gradual increase in produce sales over the test periods indicates that it takes time for consumers to view the spot repeatedly and process its message.

It usually takes a lot of money and repetition for a message to yield profits. The results achieved by the Produce Man spot in Louisville, Kentucky, were remarkable. The ad, which promotes produce generically, resulted in incremental sales of 5 percent over control stores. This translated into a return of more than 117 times the cost to place the ad on television. The projected impact of the Produce Man spot on Louisville produce sales for an entire year indicated that sales would increase by \$8.8 million over the estimated annual produce sales of \$176 million.

The Produce Man media test and 5 A Day in-store promotion test validated what many supermarket produce managers have experienced—that 5 A Day promotions can increase awareness of the program's message and boost produce sales.

Produce Man continues to be an integral part of the 5 A Day message, airing on more than 249 stations in 48 States. The costumed character Produce Man has appeared on CNN and several television stations around the country. The character also appears at grand openings across the country to emphasize the healthy and fun benefits of eating more vegetables and fruit and continues to be in popular demand, entertaining thousands of children and adults at selected schools and retail stores.

## FINANCIAL DEVELOPMENT

Funding is critical in any long-term education campaign. In the beginning, the vegetable and fruit industry had 10 strong industry leaders who stepped forward with a cumulative \$200,000 to start the PBH Foundation. These funds helped leverage enough money to raise a total of \$400,000 in 1991. Incremental growth occurred after that as PBH grew. There was not another concerted fundraising effort until 1994 (year 3). Even then, a great deal of time was spent on special events, fun runs, and phone-a-thons by customers—in this case, grocery retailers (buyers) strongly encouraged that the growers (sellers) donate to the Foundation. Others participated in the phone-a-thons, but the retailers were by far the most effective, because the suppliers did not want to jeopardize their business relationship with the retailers.

Not only were special events difficult and relatively ineffective at raising large sums of money, they also took an inordinate amount of staff time and left some growers feeling as if they had been forced into making a contribution. It was not until 1997 that PBH had fund development professionals in place to raise money for the Foundation. Funds increased that year by 36 percent, from \$1.3 million to \$1.7 million, with 12 percent coming from nonproduce companies. For a breakdown of PBH revenues and expenditures for the years 1991-1999, see Table 2 in Chapter 2.

Balancing the short-term desires of an industry with a long-term behavior change program is difficult. PBH has had to learn how to develop programs that have both short-term and long-term impact.

Most of the Foundation funds have come from the produce industry—nearly 100 percent through 1996. In 1997, however, staff made a concerted effort to reach out to nonproduce companies to secure financial support. There are many other interested sources that benefit from keeping people healthy besides vegetable and fruit producers. Health and life insurance companies, corporations with a large employee population and large health care costs, and individuals interested in health issues are all potential donors. All these channels are being targeted for education about 5 A Day and for financial support. Caution is also required to choose appropriate partners and to make sure that the program retains its integrity.

## LESSONS LEARNED

An undertaking of the magnitude of this public/private partnership produces many lessons. Many good decisions were made; other decisions did not lead to expected outcomes. Below are some lessons learned that may be helpful to other programs.

One of the best program decisions was to license the use of the 5 A Day logo. Those who wish to use the logo must follow certain stipulations, sign a license agreement, and pay an annual licensing fee. This protects the integrity of the message, which adds to the credibility of the program. As the Program has grown in value, so has the annual licensing fee.

From the start of the Program, attempts were made to track industry activities for process evaluation purposes. The growers were good at this. The retailers, however, seldom took the time to complete activity report forms, were difficult to contact via phone, or were in a situation where tracking was difficult for them. It was also difficult to obtain sales information, which is usually proprietary. Initially, the industry was less interested in this information than was NCI. Finally, the Foundation funded several efforts to assess outcomes. Such efforts are more likely to be successful as a measure of effect than is attempting to collect data from retailers.

At the beginning of the Program, PBH hired a company to handle the distribution and sales of 5 A Day materials to supermarkets. This removed the 5 A Day Program staff from more direct contact with retailers and their needs. Beginning in 1998 (year 7), the Foundation began to handle its own distribution and sales and to reestablish its own contact with its members. Although having outside distribution and sales representatives may be necessary at first, it is important to retain personal contact with members.

PBH staff members have learned effective techniques for stretching dollars in communications. The most effective use of funds is to influence the influencers, that is, to work with magazine food editors, newspaper editors, supermarkets, physicians, chefs, dietetic associations, and human resources personnel.

Fundraising is a particularly difficult issue for the industry because profit margins for growers are

small relative to other consumer goods and services. In turn, growers expend their profits trying to sell more products over the following 6 months. Investment in anything 5, 10, or 20 years in advance is difficult if staying in business means making a profit during the current year. This same rationale holds true for supermarkets that need to provide positive annual returns to investors. A related trend is seen with health insurance companies that do not routinely invest in preventive approaches to health care because they will not see a positive effect on costs of care in the immediate future.

## **SUMMARY**

PBH sought to quantify the effectiveness of its programs by conducting market research, particularly the Produce Man media test and the 5 A Day in-store promotion test. These tests showed that 5 A Day promotions can increase produce sales and presumably consumption, which is harder to measure. The environment in which the national 5 A Day Program operates is changing. The produce industry is experiencing a consolidation trend, which presents opportunities and obstacles for the Foundation.

Another emerging trend is that a growing number of consumers are seeking healthier

meals, which enables PBH to capitalize on the 5 A Day message through communications efforts. The Foundation continues to develop programs to reach consumers with current health-related, research-based information. To this end, NCI's research has helped monitor 5 A Day awareness and produce consumption. Research by NCI and other institutions also provides the credible scientific link between increased vegetable and fruit consumption and better health.

To maintain financial stability and growth, PBH learned that it must apply the proper fundraising techniques. It also realized that the right programs must be established to attract participants and donors. Since the Foundation's inception, the organization has followed the advice of its board of directors to establish strong programs. As the programs became more effective, the financial membership became more diverse. Major donors perceive their participation in the 5 A Day Program as a true partnership. This fosters a long-term investment in PBH, which further strengthens the partnership. In collaboration with NCI, the Foundation has expanded to provide an integrated set of communications, retail, food-service, and education programs. Together, these programs give participants many of the tools they need to educate consumers about the 5 A Day Program.

# Mass Media and National Communications

*Stephenie Fu, Melinda Fancher, and Dan Snyder*

## INTRODUCTION

The National Cancer Institute (NCI) launched its 5 A Day media campaign in July 1992, less than a year after the beginning of the national 5 A Day Program. Since then, NCI and its private-sector partner, the Produce for Better Health Foundation (PBH), have coordinated the timing, content, and tone of their media efforts to ensure that they complement one another. By generating national media attention, NCI and PBH have successfully continued to drive consumer awareness of the 5 A Day message. In addition to spearheading national media promotions, NCI tailors its national media materials for its network of 5 A Day State coordinators, thereby ensuring that the public hears the 5 A Day message through several channels, from national newscasts to local newspapers. Likewise, PBH enlists its retail members nationwide to participate in or sponsor 5 A Day activities to reach consumers at points of purchase. Together, through coalitions at the grassroots level, the States and industry members work together to drive home the 5 A Day message. To support the 5 A Day partnership of NCI and PBH, NCI contracted the public relations firm Porter Novelli, which specializes in national public health campaigns and food and nutrition issues. NCI originally contracted for a 3-year term and twice extended the contract by 1

year, for a total of 5 years. Porter Novelli assigned a multidisciplinary team of strategic planners, communications researchers, writers and designers, broadcast producers, and media relations specialists, all with experience in nutrition communications. NCI program officers and communications officers met regularly with the contractors, particularly at the start of a new task, and held annual planning meetings to review overall efforts.

This chapter focuses on how NCI and PBH developed, executed, and refined the 5 A Day media strategies and tactics as the program evolved. It also gives examples of how behavior change models and audience segmentation data have helped program planners develop messages and target their media efforts. The chapter begins by focusing on initial factors that contributed to shaping the 5 A Day media campaign, the role of the national media in the program's success, and the initial research conducted to support the media campaign launch. Subsequent sections present strategies, specific tactics, and the research that formed the foundation for decisions made, as well as lessons learned from each approach. A chronology of the 5 A Day Program's communications research and media activities is in Appendix C.

## SHAPING THE 5 A DAY MEDIA CAMPAIGN

Mass media—newspapers, magazines, television, radio, and the Internet—reach large segments of the population and provide a wealth of opportunities to deliver messages that encourage changes in behavior and lifestyle. Research on media effects and agenda-setting has long supported the important role of mass media in determining what we think about and how we perceive issues and health-related behaviors (Siegel and Doner, 1998).

### Planning Principles: The Role of Mass Media

The decision to use mass media requires addressing several inherent challenges, including the potential role of paid media versus unpaid media, the need for repetition or frequency of message delivery, and the variations in control of message content from one form of mass media to another.

Paid media, or advertising, necessitates advanced payment to secure a specific place and time in a medium, and although it is costly compared with other types of exposure, it guarantees complete control of the message content to a predetermined audience at a carefully selected time. On the other hand, unpaid media placements, such as news coverage resulting from materials sent to journalists for consideration, are determined by editors, reporters, producers, and other media gatekeepers who determine when, where, and how the information will be conveyed.

Communications research has consistently shown that in addition to being substantially lower in cost than paid media, unpaid media is more credible to consumers, because it is viewed as a core message rather than a commercial (Wilcox et al., 1998). In addition, NCI—a science-based, Government health agency—is a trusted and authoritative source of information about the value of vegetables and fruit in health promotion.

Without a budget to sustain a presence in paid media, and with the advantage of the NCI imprimatur, NCI and PBH decided early on to emphasize delivering their messages through unpaid media placements and to devise strategies that would ensure sufficient frequency. To be effective, messages must be focused and repeated often and consistently over an extended period of time—but with new and updated approaches to keep the target audience interested and engaged (Flay and Burton, 1990; Backer et al., 1992; Hornik, 1997). Message repetition offers several benefits:

- It addresses the fact that all members of the target audience will not be able to see or hear the message at the same time.
- Repeat exposures serve as a reminder, thus reducing the chance that the audience will forget the message.
- It enhances learning, especially of complex or hard-to-assimilate messages.
- It increases the chance of penetrating indifference or resistance to the message.
- It reduces the possibility of message dilution as media channels and the public process the information and pass it on to others (Wilcox et al., 1998).

NCI and PBH have placed a high priority on employing a variety of media approaches to ensure reaching the broadest audience possible with limited resources. They have explored using multiple media vehicles, from news columns and magazine articles to television and radio programming and Web sites.

### Initial Program Planning and Research

The 5 A Day Program is an early example of the application of the Consumer-based Health Communications (CHC) and the Stages-of-Change behavior models to a national health education campaign. CHC, adapted from the commercial advertising sector, poses a series of key strategic questions that must be answered to ensure meaningful and relevant communications (Lefebvre et al., 1995). Program planners addressed the set of questions below in order to focus and refine their efforts.

### **Key Questions To Be Answered in the CHC Planning Process**

- What is the purpose of the communication?
- Who is the target?
- What does the communication promise?
- How will the promise be supported?
- What apertures and communications tools will be used?
- What is the nature of the desired behavior change?

In addition to the CHC Planning Model, program planners employed the Stages-of-Change, or Transtheoretical, Model (Prochaska and DiClemente, 1992) in which behavior change is viewed in five phases:

- Precontemplation (in which there is no awareness of the need to change);
- Contemplation (in which the target audience member seeks out information that may lead to behavior change);
- Preparation (in which the target develops strategies and plans to make the change);
- Action (in which the target attempts to change behavior); and
- Maintenance (in which the behavior change continues for an extended period of time).

Since the Program's inception, NCI has employed these models, along with state-of-the-art campaign planning and implementation strategies, when creating and disseminating information to the target audience. The CHC and Stages-of-Change behavior models provide a framework for the 5 A Day Program's strategy and approach, and original research was conducted to begin the planning process before the program launch.

During the initial planning phase, both quantitative and qualitative research was conducted so that program planners could establish baselines and develop strategies for audience segmentation and message development. To help answer the questions posed in the CHC process, program planners needed to quantify the extent of the challenges that the Program needed to address. In August 1991, NCI and PBH jointly fielded a

baseline national telephone survey of approximately 3,000 Americans. This survey revealed that most respondents were eating servings of vegetables and fruit a day, with one out of five eating fewer than two servings daily. The survey also found that only 8 percent of Americans knew that they needed to eat five or more servings a day; the remaining 92 percent were in the precontemplation phase, in which they had no awareness of the need to change their eating habits. This information served as a cornerstone of the Program's national media campaign launch.

In addition to the quantitative study, two qualitative research projects were also conducted before the program launch. The first, in December 1991, used one-on-one interviews to evaluate proposed theme lines and variations. The core message of "Did you know that eating five fruits and vegetables is one of the most important choices you can make to help maintain your health?" was tested, along with rotated variations that included: "to stay healthy," "to protect your health," "for your health," and "to improve your health." The purpose of this pretest was to determine how well the theme lines were understood, whether they were believable, and whether they had the power to motivate. Findings from the interviews indicated that the theme lines were believable and that adding the words "to help" strengthened the messages. Overall, the theme lines were found to communicate clearly the message that vegetables and fruit are important for good health. With refinements based on the findings, these theme lines were used in the program's first year.

In another formative research project, NCI conducted focus groups in April 1992 to help program planners select methods to assist consumers in moving from contemplation to preparation to action, using the Stages-of-Change Model. Communications strategists sought to find ways in which vegetables and fruit could easily fit into consumers' daily routines, identify benefits and barriers to increasing consumption, and explore reactions to 5 A Day Program concepts.

Behavioral theory indicates strongly that increased knowledge and understanding alone do not motivate a person to change. Other factors, such as self-efficacy, skills to implement the change (e.g., cooking a new kind of food), convenience, and social and cultural mores all influence the decision to change (Maibach and Cotton,

1995). Generally, participants found the idea of eating five servings of vegetables and fruit a day to be a reasonable goal, but they also cited lack of convenience, boring presentations of vegetables and fruit at meals, and the varying quality of produce as barriers.

The results of each of these research studies were used to plan and implement the 5 A Day Program launch and to create a foundation for future measurement and evaluation. The national survey provided an accurate picture of the breadth of the challenge regarding low vegetable and fruit consumption among Americans and revealed the levels of respondents' awareness within the Stages-of-Change behavior model continuum. It also became an important baseline measurement tool for longitudinal analysis of the program's success. As a qualitative tool, focus groups and indepth interviews provided useful, detailed insights into perceptions, motivations, and current orientation toward the issue and thus provided guidance in determining the best ways to communicate information.

The following sections provide information on how these research results were applied to Program implementation.

## LAUNCHING THE 5 A DAY MEDIA CAMPAIGN

With the launch of the 5 A Day national media campaign, NCI and PBH made an immediate, national impact and established relationships with key media outlets, both of which were critical objectives for the launch. This section highlights communications research and media tactics employed in the first few years of the campaign.

### The Launch News Conference

NCI worked with its communications firm, Porter Novelli, to launch its media campaign with a national news conference in Washington, D.C., on July 1, 1992. The existence of hard news in the form of results from the baseline survey helped attract the media. These results pointed to the need to increase awareness of the recommendation to eat five or more servings of vegetables and fruit a day. NCI secured high-level speakers to kick off the media cam-

paign, including then-Secretary of Health and Human Services, Louis Sullivan, M.D.; then-Director of the National Institutes of Health, Bernadine Healy, M.D.; then-Director of NCI's former Division of Cancer Prevention and Control, Peter Greenwald, M.D.; and Bruce Obbink, Director of the California Table Grape Commission and chair of the PBH board of directors. To provide an additional news angle and expand media coverage, Porter Novelli secured a sports star with appeal to a large segment of the consumer audience, Olympic swimming gold medalist Matt Biondi, then a highly visible celebrity. Biondi videotaped a 5 A Day message for broadcast at the news conference and a message for television stations nationwide.

Porter Novelli also created a comprehensive media kit for the launch to provide reporters with a comprehensive resource to develop news stories. The kit contained

- The announcement news release;
- A backgrounder on the program and partnering organizations;
- Two booklets that summarized the baseline survey and epidemiological studies supporting the benefits of eating more vegetables and fruit;
- A list of retail contact names so that reporters could speak with industry representatives about their roles in the program;
- "Infographics" illustrating the results of the baseline survey; and
- A computer disk with digitized versions of the infographic and print materials.

NCI developed demonstration booths with interactive displays to address concerns revealed in formative research, and following the news conference, reporters visited the booths to cull information for their stories. Core messages reflected at the booths were:

- **5 A Day—Isn't That a Lot of Food?** This booth provided demonstrations of serving sizes to illustrate that a 5 A Day serving recommendation is less than most people think.
- **Through the Day With 5 A Day.** This booth offered samples of serving options to demonstrate how easily five servings can be incorporated throughout the day.

- **5 A Day the Low-Fat Way.** To emphasize the role of vegetables and fruit in a healthful, low-fat diet and capitalize on the interest in low-fat cooking, this booth offered a photo opportunity with Dr. Louis Sullivan preparing a low-fat 5 A Day recipe.
- **5 A Day on the Go.** To illustrate that eating away from home does not preclude 5 A Day, this booth offered tips for dining out the 5 A Day way.
- **Who Has Time To Cook 5 A Day?** This booth offered tips on how to overcome concerns about preparation time, including use of microwave ovens.

The news conference and followup mailing of the complete media kit reached more than 3,000 media outlets and made an immediate, wide-spread impact. During the month of July 1992 alone, the 5 A Day Program generated more than 1,800 media placements, which accounted for securing approximately 122 million gross media impressions (the combined audience reached via print and broadcast placements). Key national placements included “Good Morning America,” “CBS This Morning,” “ABC World News Tonight,” “CNN Headline News,” the Associated Press, *USA Today*, *New York Times*, *Washington Post*, CNN Radio, and ABC Radio Network.

### Establishing Ongoing Media Contact

NCI, PBH, and Porter Novelli worked together and developed a strategy to ensure that the 5 A Day Program’s introduction to media nationwide was sustained well beyond its initial launch. In the fall of 1992, Porter Novelli arranged desk-side briefings during which an NCI content expert and an NCI communications representative made personal visits to discuss the Program one-on-one with food editors and writers of 15 national magazines at their own offices. Monthly magazines generally have a 6-month lead time between story development and publication; consequently, stories about the 5 A Day message began to appear the following year in magazines such as *Glamour*, *Working Mother*, *Essence*, and *Cooking Light*.

To further increase exposure, Porter Novelli created and distributed a quarterly, four-color media newsletter, ensuring that food reporters nationwide received new 5 A Day updates and story ideas on an ongoing basis. The first newsletter was timed to

coincide with the national news conference and featured results of the baseline survey, story ideas, and tools to shape stories, such as recipes, sidebar tips, infographics, photos, and illustrations. NCI also included a computer disk that contained all of the newsletter’s text and images. With the status of printing technology at that time, the disk was an innovative and helpful way to increase the ability of publications to meet production needs in a timely manner and as cost-effectively as possible.

Anticipating the importance of technology in expanding media exposure, the 5 A Day Program partners were among the first to push forward on the new media front. Porter Novelli created the Digital News Service (DNS) to facilitate greater media usage of program materials. Through DNS, NCI offered online 5 A Day graphics and story ideas as early as 1993. This innovative distribution system cut the media’s costs dramatically and reduced distribution time to seconds. Today, the Internet makes information and images instantly available, rendering DNS unnecessary. NCI continues to provide media with information, graphics, and photos on computer disks and offers downloadable material via its Web site.

### Securing Additional Support

In the process of clearly delineating roles to avoid duplication of effort, the 5 A Day Program partners decided that PBH was well suited to enlist support from opinion influencers and to engage partner organizations, which in turn would be likely and able to generate media interest. For example, as part of its holiday Gift of Health theme in 1992, PBH obtained 25,000 pounds of vegetables and fruit from retailers, with which it created the world’s largest cornucopia (later donated to food banks) and staged a Chicago event featuring local politicians and the leader of a national food bank organization. The cornucopia served as a grand-scale, visual-media draw, which garnered extensive coverage. In another example, PBH partnered with the National Football League (NFL) in 1993 to call attention to the 5 A Day Program by working with the trainers of the 28 NFL teams to include five servings of vegetables and fruit per player in their daily training tables. The novelty of the NFL connection yielded heavy media coverage, with the added benefit of demonstrating a new content element—that the toughest of professional athletes incorporate the 5 A Day recommendations into their daily discipline.

## Identifying the Target Audience— Research's Next Task

After the campaign media launch, the 5 A Day Program required development of more targeted messages and the identification of effective media interventions. The application of the CHC model relied heavily on continuous consumer research to provide the strategic and creative framework (Lefebvre et al., 1995). The CHC model questions aided in the development of activities and messages that foster the desired behavior change of eating more daily servings of vegetables and fruit. Some of the CHC questions were addressed by research conducted in the planning stages of the campaign, and other questions were pursued after the initial launch.

To address various aspects of audience segmentation and message design, NCI accessed a database from the Marketing Research Corporation of America (MRCA) Information Services, Inc., that linked information on demographics, food consumption, dietary habits, attitudes, interests, media habits, and other lifestyle factors. NCI defined the initial target group as Americans who reported having increased their consumption of vegetables and fruit but were currently eating fewer than five servings a day—in short, interested people not yet maintaining the desired behavior change. Members of the control group were already eating five or more servings a day.

To further define the target audience, NCI placed one question on the 1992 Lifestyle Survey, an annual mail-panel survey of more than 4,000 Americans conducted by DDB Needham, an international advertising agency. The NCI question asked respondents how many servings of vegetables and fruit they had consumed the previous day. The MRCA data and the Lifestyle Survey data reinforced each source's respective findings and showed that the 5 A Day target audience led busy, hectic lives with little spare time. Regarding food, these people were less likely than other segments of the population to have traditional eating patterns, and taste and convenience were important food characteristics to them. In addition, they cut corners when preparing meals, and they were ridden with anxiety concerning nutrition.

These findings formed the foundation of the core message strategy for the 5 A Day target audience. The message strategy is to increase self-

efficacy and skills by teaching the target audience how to “add two or more servings of fruits and vegetables a day ‘the easy way’ instead of making it hard.” When the desired change (adding servings) is seen as easy, the target audience finds making the behavior change less of an effort (Strecher et al., 1986).

To support this core message, the following easy sample actions—or recommended tips—have appeared in materials for various NCI and PBH promotions:

- **Breakfast:** Have fruit and/or 100-percent juice every day.
- **Snack:** Have a fruit and/or vegetable every day.
- **Stock Up:** Keep dried, frozen, and/or canned fruits and vegetables to prevent running out midweek.
- **Keep It Visible:** Keep fruits and vegetables within easy view on countertops and tables and in the refrigerator.
- **Preparation:** Use your microwave to have vegetables for dinner the 5-minute way.

## MAINTAINING MEDIA INTEREST AND MONITORING RESULTS

Since the media launch, NCI and PBH have monitored media coverage closely to ensure that their strategic approach to media outreach remains fresh. Given the Program's constant, unchanging, and simple message, it is important to find new angles to keep reporters interested and active in delivering key messages and information to consumers. This section focuses on two specific approaches—National 5 A Day Week and seasonal media outreach—and provides examples of methods employed to evaluate and track the success of program efforts.

### National 5 A Day Week: National and State Efforts

In September 1993, NCI and PBH launched National 5 A Day Week, an annual event to motivate consumers to try eating five daily servings of vegetables and fruit throughout the week so that they can see how easy it can be to incorporate these changes into their eating patterns. Since

then, National 5 A Day Week has continued to make an impact on consumers through NCI representatives communicating to print and broadcast media outlets, a national media mailing, and multimedia public service announcements (PSAs) (see Text Box), as well as through PBH's success in

### "Three's a Great Start, The Next Two Are Easy!" PSA Campaign

To assess the target audience's reactions to finished print PSA materials, the 5 A Day Program has conducted one-on-one interviews in which consumers are intercepted in shopping malls; screened for interest, willingness, and other criteria; and brought to a research facility within the mall. One-on-one interviews allow the program to show finished materials to members of the target audience in geographically diverse locations and provide an opportunity to collect reactions and thoughts about the materials before publication. Participants are queried on several key topics, including their first thoughts and feelings after seeing the materials, comprehension, believability, general appeal, and what actions they are likely to take as a result of seeing the materials. One-on-one interviews provide a more accurate sense of the communications effectiveness of specific materials than focus groups do, because they prevent respondents' reactions from being influenced by other individuals.

As an example, NCI conducted mall-intercept interviews in 1994 to test a new message concept conveyed via a print PSA, "Three's a Great Start, The Next Two Are Easy! The theme line addressed the fact that the target audience feels pressed for time while trying to incorporate more vegetables and fruit into the day. The four-color illustration supporting the theme demonstrated the upbeat, light-hearted approach the Program has tried to maintain. Findings from this research indicated that a strong majority of respondents quickly identified the theme and message of the PSA. In addition, the target audience liked the illustration and found it attention-getting or visually interesting, and a majority said it motivated them to increase their vegetable and fruit consumption.

Following the testing and final production of the PSA print campaign, NCI scheduled meetings with production managers at major magazines to establish relationships with them by listening to their opinions and needs and encouraging them to use the PSAs. Since then, NCI's print PSA campaigns have experienced considerable usage, with various PSAs appearing beyond the years in which they were distributed in a number of national magazines, including *McCall's*, *Ladies' Home Journal*, *Martha Stewart Living*, *Child*, and *Business Week*.

securing proclamations by governors from all 50 States and support through other nonmedia influencer channels. NCI and PBH have adopted the umbrella theme, Take the 5 A Day Challenge. Each September, both sponsors offer new story angles to encourage media coverage of National 5 A Day Week.

Themes and theme graphics used for National 5 A Day Week have reflected findings from consumer research, highlighting cue words that are included to resonate with the target audience. For example, *The Original Fast Food* theme and graphic were created to emphasize the ease and convenience that vegetables and fruit offer to the harried target audience, who want to eat nutritiously but have little time to plan. Additionally, the *3's a great start. The next 2 are easy!* theme and graphic spoke directly to the target audience's current average level of consumption. This approach praised them for their progress and encouraged them to add two more vegetable and fruit servings with ease.



Tactical assessments from year to year have proven helpful in honing the media approach. For example, after producing video news releases (VNRs) for 2 years in a row, NCI reviewed television use of them and found that most coverage did not include footage from the VNRs. Therefore, NCI discontinued their use. In the following years, television stations received B-roll packages (broadcast-quality tape containing generic video images and sound bites from NCI content experts). Television stations can use these to develop their own stories without hav-



ing to incur the time, effort, and expense of deploying a camera crew. The NCI B-roll included footage of supermarket produce sections and consumers shopping in store aisles containing frozen, canned, and dried vegetables and fruit, as well as footage of people eating the 5 A Day Way. The B-rolls are much less expensive to produce and distribute than are VNRs, yet their media use has been comparable or even greater. Consequently, NCI has determined that it will produce VNRs only when warranted by a special, hard news angle.

In order to maximize media approaches and ensure that they are as widespread and diverse as possible, NCI and PBH also have made concerted efforts to prepare State coordinators and industry for each National 5 A Day Week promotion. Although the State coordinators may have limited resources, they are committed to supporting national media efforts and spreading the 5 A Day message to media and consumers in their communities. The 5 A Day Challenge concept has been successfully adapted at the local level, offering ample opportunities for creative implementation with media and consumers alike.

Each year, NCI and PBH have provided advance copies of national media and retailer materials to State coordinators and 5 A Day licensees. These include fill-in-the-blank news releases that States can tailor for their communities' needs, detailed tips and ideas for localizing the 5 A Day challenge, and graphics that can be used to produce media and community intervention materials. The States create specific community activities based on the national theme, providing a hometown feel to the promotional week and to the media story. They often offer local experts for interviews and hold community events in schools and other venues. Although NCI has lacked the resources to measure the impact of these localized efforts, the anecdotal evidence suggests that they generate significant awareness.

### Seasonal Media Outreach

To extend the message beyond the launch period, National 5 A Day Week, and other special events, NCI has developed seasonal print media packages to generate coverage throughout the year. The proven strategy capitalizes on existing media windows—holidays or seasons—by providing creative information, tips, and graphics for newspaper reporters to use in related stories.

For example, the first seasonal media package was designed in 1995 to coincide with the winter holidays and the New Year, a time when reporters look for new and different ways to cover these annual events. NCI conducted a brief survey by adding a few questions to a shared-cost, omnibus telephone survey to determine consumers' New Year's resolutions regarding eating habits. NCI used the results to create a newsworthy package containing a press

release, tips for eating five servings of vegetables and fruit a day throughout the holidays, recipes, and infographs that concisely and creatively summarized the New Year's resolutions data. By the end of 1998, NCI (in partnership with the Centers for Disease Control and Prevention) was able to launch a new Web site in time for the fitness-minded public to welcome the New Year. The site featured a dynamic, interactive component that provided tailored tips according to the level of vegetable and fruit consumption and physical activity entered into a chart by the visitor.



Source: National Cancer Institute.



NCI uses blast fax contact—sending three- to four-page faxes containing a news release, tips, and recipes—to send its seasonal 5 A Day materials to a carefully selected and up-to-date list of the top 800 food and health newspaper editors who have expressed an interest in the topic. Reporters interested in the story idea and interested in receiving the infographs digitally request a computer disk or download them via the Web site. NCI ensures that the targeted media receive the materials well in advance, around the time that reporters are beginning to develop angles for their seasonal stories, so that they can incorporate 5 A Day messages into their stories for the holidays. Examples include healthful New Year's resolutions and quick and convenient summertime eating. The request system enables NCI to reduce costs by sending disks only on demand and opens the opportunity for dialog with reporters to further discuss the story ideas and gauge the type of coverage planned.

NCI's seasonal packages have accomplished the objective of garnering immediate placements at a relatively low cost. Newsclip tracking conducted by Porter Novelli showed that the total circulation from newspaper-alone coverage has ranged between 4 to 10 million readers per package promotion.

### Research Activities To Guide Program Planning

Additional research projects have been employed to evaluate and track the success of the 5 A Day Program's media campaign. These projects, described below, include media content analysis studies, participation in an omnibus survey, a research audit, and target audience analysis.

#### Media Content Evaluation

To assess the impact and usage of media tactics and materials, Porter Novelli's communications research staff conducted media content analyses called MASH, or Media Analysis System for Health. The MASH studies employ standard content analysis methodology using coding structures, trained readers, data collection, tabulation of the coding sheets, and an analysis of findings. Several MASH studies have been conducted, including one in 1993, two in 1994, one in 1995, and one in 1998. Findings not only have helped evaluate the effectiveness of media outreach but also have identified campaign elements that

needed retooling. For example, the media analysis conducted in October 1993 provided an assessment of topics and messages communicated in the campaign's initial activities. The analysis examined media placements between July 1992 and October 1993; 7,625 news article clips were received, resulting in a total yield of 396,136,875 consumer impressions.

The 1993 MASH study showed that the majority of coverage was linked to the July Program launch, to press kits provided to the media throughout the year, and to miscellaneous materials provided by NCI. However, the study also indicated that only 10 percent of the total print articles were generated from Porter Novelli's quarterly media newsletters. Anecdotal information from reporters indicated that they tended to file the newsletters, using them as reference materials for future stories. In this capacity, the newsletters did not appear to generate sufficient immediate coverage of the 5 A Day message, and they were eventually replaced with media materials supporting specific events and seasonal campaign activities.

### ***Omnibus Surveys To Track Change***

To measure and track awareness of the 5 A Day Program, NCI adds questions to an omnibus survey, a shared-cost study in which different organizations—including Government agencies, non-profit organizations, and private-sector companies—place questions on a variety of topics into a single telephone survey conducted among a nationally representative sample of 1,000 respondents. Omnibus surveys are conducted once or twice annually by independent research companies so that data quickly are available. Periodic participation in these cost-effective surveys has allowed the program to collect longitudinal data on awareness of the program and on knowledge of key program messages.

NCI first participated in an omnibus survey 2 weeks after the initial media event in 1992. NCI placed 15 questions on the survey, with many questions replicating those of the 1991 baseline survey. Since that first survey, NCI has asked questions that query respondents primarily about their awareness of 5 A Day and their knowledge of the Program's central message—that one should eat five or more servings of vegetables and fruit daily for good health. Since 1995, NCI has participated in such surveys three times a year

during March, July, or August (pre-5 A Day Week) and during the last week of September (post-5 A Day Week). The surveys have shown that general awareness has more than quadrupled since the baseline survey, increasing from 8 percent in 1991 to 35 percent in 1999. Awareness of the Program message among women has increased from 11 to 50 percent (see “5 A Day Message Awareness” in Chapter 7).

### ***Research Audit***

In the fall of 1995, NCI created a report that outlined all research conducted in support of the 5 A Day Program since the 1991 baseline survey. This document, titled *5 A Day Research Audit* (Porter Novelli, 1995), provided a single source of information for the key findings from the numerous studies conducted for the 5 A Day Program. The compilation of this information has served as a useful internal quick-reference tool for program planners, documenting changes in awareness and behavior and indicating areas that need additional emphasis.

### ***Target Audience Segmentation Analysis***

During 1995, NCI participated in a national audience segmentation survey called Healthstyles. This was a survey based on 2,967 responses to two separate questionnaires mailed to a nationally representative sample of approximately 4,000 American adults. Conducted by Porter Novelli, Healthstyles provided the first segmentation analysis of seven distinct population segments based on core health behaviors and attitudes. These profiles were created with a blend of demographic and behavioral measures and assessed media use, habits, and health status, providing a more detailed picture of the target audience. This additional information was used to guide message development and refine the program's media outreach strategy.

## **5 A DAY ON THE RADIO: INCREASING MESSAGE REPETITION**

Once the presence of the 5 A Day Program was firmly established in print media (national magazines, major daily newspapers, and local weekly newspapers), NCI sought to extend the reach of

the Program by capitalizing on opportunities offered by broadcast media. Although NCI had continued to garner continuous coverage in print media, the 5 A Day message had been largely unheard on the airwaves.

Television and radio programming offer several advantages:

- They reach much larger audiences than possible through print media.
- They create a year-round media presence.
- Production of finished programming materials precludes editors, reporters, and producers from altering the content so that the 5 A Day message is broadcast intact.
- They allow additional exposure, which contributes to repetition, or frequency, among the target audiences.
- Compared with print media, programming can reach the target audience at different times of the day.

NCI decided to develop radio programming because its production costs were significantly lower than those for television. NCI searched for a “food personality” to feature in the radio programming. The selection criteria for this personality included the following:

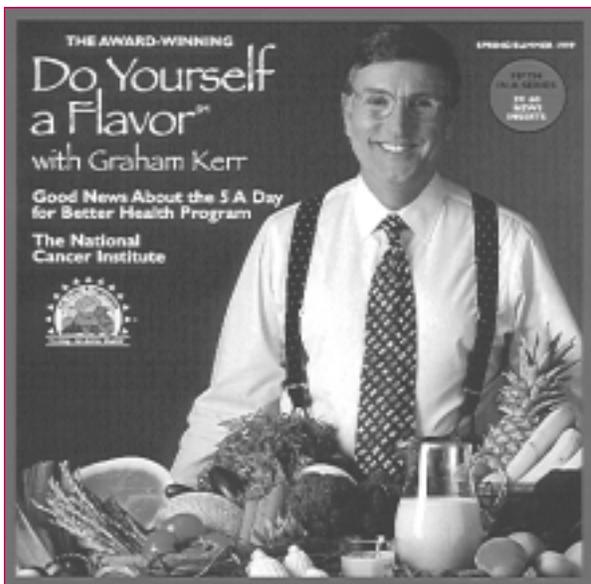
- The person must be widely respected for his or her application of sound nutrition principles.
- He or she must be highly visible among media and consumers.
- He or she must be committed to communicating the 5 A Day message.
- The person must be experienced in broadcast programming.

After an extensive review of potential candidates, Porter Novelli secured Graham Kerr, one of the most respected and well-known food and healthful cooking authorities in broadcasting. In addition to Kerr’s television cooking programs focusing on nutrition and healthful food preparation, he already was an advocate of building meals around vegetables and fruit. With Kerr, Porter Novelli created a pilot series of 60-second radio news inserts that radio station news directors could use as programming, sell to sponsors, or insert into news broadcasts. Employing the Stages-of-Change behavioral model theory concept that convenience and self-efficacy/skills are

critical to behavior change, the spots emphasized that increasing consumption is easy and within anyone’s cooking abilities. The 60-second segments contained quick preparation tips and, in some cases, abbreviated recipes (or “recitips”) to give consumers easy methods to increase their vegetable and fruit consumption.

Porter Novelli tested the pilot content delivery with consumers and the content and concept as a whole with radio station gatekeepers (news directors or programming directors). The one-on-one interviews were conducted among 140 adults in 5 markets to gauge consumer reactions to the radio spots. Study results showed that respondents clearly understood the call to action to eat more vegetables and fruit and that the spots motivated them to increase their vegetable and fruit consumption. The pilot spots then were tested with 60 radio stations in 6 media markets—small to large—nationwide. The stations included those with formats that had a 5 A Day target audience listenership (for example, all news and easy listening, based on data from the Healthstyles survey). Radio programmers were asked to react to the format and content of the news inserts and to determine whether they intended to air spots like NCI’s news inserts. Porter Novelli also called a small sample of program directors to conduct informal interviews and to gauge their reactions.

Following the positive responses of consumers and radio program directors, NCI and Porter Novelli worked with Graham Kerr to produce “Do Yourself a Flavor with Graham Kerr,” a full flight of 39 radio news inserts (3 per week for the 13-week media quarter) packaged on a compact disk. NCI launched the 3-month flight for use during the spring and summer months of 1997. Using data from the Healthstyles survey, combined with feedback from the pilot test, NCI sent the news inserts to certain radio stations. They were selected based on two criteria: 1) a predetermination that the target audience was receptive to the station’s on-air format and 2) that the stations were predisposed or likely to air the spots. The most viable formats included all news, adult contemporary, easy listening, all talk, full service, and classical. The launch flight and the following flights included a business reply card incorporated into the packaging of each compact disk so that radio station contacts could conveniently send feedback and describe how and when they were airing the news inserts.

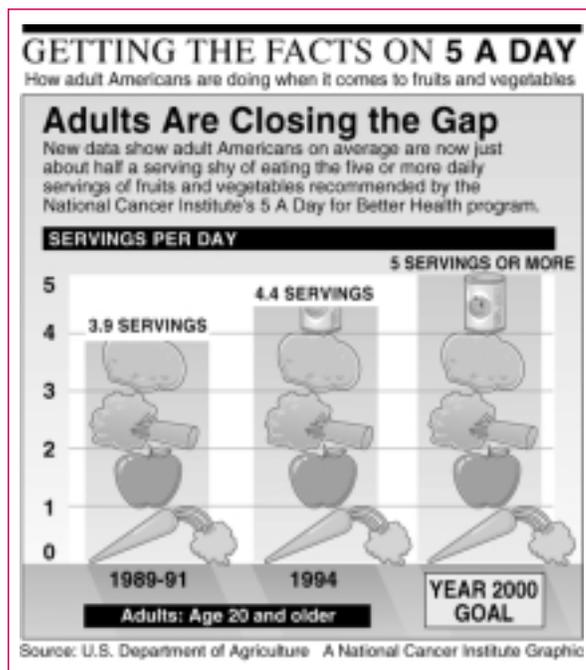


Although radio usage is difficult to track and quantify, the business reply cards and followup telephone calls showed that the series has enjoyed extensive exposure. As of February 2000, more than 450 radio stations in 40 States regularly use "Do Yourself a Flavor," with daily to weekly airings. The stations receive enough new news inserts every 3 months to air three different segments per week. The total usage across the country includes three nationally syndicated programs and stations in major media markets such as New York, Los Angeles, Washington, D.C., Dallas, Houston, Cleveland, Phoenix, and Pittsburgh. In addition, the series is airing on the CBS Radio Network and Associated Press Broadcast Services, which together offer an additional 870 stations that could air the series.

## THE IMPORTANCE OF "NEW" NEWS

Through the years, NCI has successfully generated media interest in the 5 A Day message by creating media hooks and creative angles. However, nothing surpasses hard news in generating the heightened media coverage that increases awareness. In 1997, NCI released new data showing that the average adult had increased consumption of vegetables and fruit to about four-and-a-half servings a day. Data from the U.S. Department of Agriculture's

Continuing Survey of Food Intakes by Individuals showed that by 1994, adults had increased their daily consumption to approximately 4.4 daily servings (excluding french fries), about half a serving lower than the recommended 5 A Day level. The data also showed that although adults were doing better, children's intake of vegetables and fruit (3.4 daily servings in 1994) was still well below the recommendations set at the start of the program (Porter Novelli news release, March 17, 1997).



Although this news was enough to generate media interest, NCI decided to release the information during National Nutrition Month in March, a time when reporters are particularly interested in nutrition news. National Nutrition Month is spearheaded annually by the American Dietetic Association (ADA), which launches a new consumer promotion each year to communicate the importance of sound nutrition. Porter Novelli arranged for the NCI 5 A Day Program director to brief ADA's national spokesperson prior to releasing the data because these spokespersons often are among the first resources that the media contact while developing nutrition-related stories. As part of the briefing with NCI, ADA spokespersons received NCI's embargoed news release and background media materials. NCI also briefed the 5 A Day State coordinators so that they had the

information in hand by the time the news embargo was lifted, positioning them to reach out to their local media for coverage. Porter Novelli also conducted a widespread outreach effort to broadcast and print media nationwide, heavily focusing on national media outlets for maximum reach.

The media responded to the new data in force. Porter Novelli secured national media interviews and placements that resulted in a total reach of nearly 50 million—the biggest audience reach from a single media effort in the life of the program, second only to the media campaign launch—through national television news, national news weeklies, women’s magazines, and national radio networks. The data showed that although Americans were well on their way to meeting the year 2000 goal, important work remained to be done.

## LESSONS LEARNED

NCI has been monitoring the results of the 5 A Day Program efforts since the inception of the media campaign, in addition to applying collective experience gained through years of Program management. Several observations and conclusions have been made that would benefit other program planners. The most notable conclusions are listed below.

- **Your own expert can be more valuable than a celebrity to the media.** High-ranking Government officials can be more valuable to the media than celebrities, particularly when there is a hard news angle. A review of national media launch coverage showed that officials such as Dr. Louis Sullivan were included in coverage far more often than sports celebrity Matt Biondi, who was the video focal point of the initial campaign. In the years since the program’s media launch, NCI has found that although celebrities help generate interest in softer news or promotions, journalists tend to request NCI officials for interviews.
- **Media events can play an important role in driving awareness.** The role of news conferences in reaching the target audience was very valuable. The first omnibus survey showed that the percentage of individuals who were aware of the recommended number of servings

increased from 8 percent during the baseline period to 22 percent immediately following the national media campaign launch. There was a corresponding decline from 34 to 15 percent in those who thought one or fewer servings was appropriate.

- **Although viewed by some as a time-worn tactic, annual motivational campaigns like National 5 A Day Week provide the media with a reason to write about key health promotion messages.** This approach uses behavioral theory for both journalists and the consumers that they reach. It appeals to the journalist’s desire for a convenient, fresh twist on an old story and addresses the consumer’s desire for convenience, reinforcing social norms (“Everyone is trying 5 A Day this week”) and increasing self-efficacy. Supplying fresh, creative media angles and new supporting themes each year keeps the media and consumers interested. For example, in 1998, the theme was Taste a World of Variety; NCI’s media materials featured tips and recipes from various cultures within the United States that influence American food trends. NCI secured nationally prominent chefs (including Madhur Jaffrey, Douglas Rodriguez, and Mai Pham, each famous for mastering a specific international cuisine) to offer demonstrations and skills-building tips at media events and to give interviews during National 5 A Day Week. These creative approaches keep the annual promotion interesting for both the media and consumers. On average, National 5 A Day Week yields about 25 million consumer impressions a year through media outreach efforts.
- **Ongoing media contact is critical for maintaining interest in the 5 A Day Program.** Journalists are supportive of the 5 A Day message because it is credible, authoritative, and positive in content and tone, yet they need new reasons to cover what many consider an old message. It is important to provide reporters with a steady stream of real news and fresh angles to the program. Additionally, the ability to offer useful information on a regular basis provides Program planners with the opportunity to recontact reporters, thereby building rapport and trust.

- **Ongoing evaluation of media tactics is critical to ensure effectiveness and cost-efficiency.** The media coverage analysis was revealing in determining which elements reporters found most useful among the media materials. Ongoing monitoring of usage indicated that although reporters valued the quarterly newsletters, they were not necessarily motivated to use them upon receipt—many saw the quarterly publications as resources to use in the future. This was an important issue because NCI needed a more effective vehicle to encourage ongoing, timely media coverage for message repetition, and the newsletters were fairly costly to produce. Given these considerations, NCI decided to discontinue production of the newsletter, while retaining elements from it that the analyses indicated were most useful to the media.
- **For long-range social marketing campaigns, compiling research findings provides a helpful reference tool for planners, researchers, and others.** By 1995, the 5 A Day Program had amassed a large body of research. The 1995 research audit resulted in a single publication in which key findings from focus groups, surveys, and mall-intercept interviews were presented. This audit document also published trend data on awareness of the Program and knowledge of the Program's key messages. The audit itself helped ensure that findings and statistics were reported accurately.
- **Programs need, and can greatly benefit from, long-range planning.** In the case of the 5 A Day Program, planning for radio programming began in 1995 then led to research in 1996, enabling NCI to refine the product and distribute the first set of final Program segments in 1997. For Program planners working with outside consultants, it is critical to consider the length of the consultant's contract and to ensure that the contract reflects a long-term commitment, such as the 5-year contract NCI established with its communications firm, Porter Novelli. NCI was able to take the time necessary to ensure that the final product would reflect careful planning, research, refinement, final execution, and continued refinement throughout subsequent distributions.
- **Dedicated programming is a method for ensuring that messages are conveyed accurately.** Most broadcast media relations tools (e.g., news releases or television B-rolls) enable reporters to shape Program materials into their own stories. The resulting story can be fractured or incomplete and sometimes can contain incorrect messages. Unlike news coverage, dedicated programming, such as NCI's radio news inserts, ensures content control. By sending out prerecorded radio segments that are timed to suit radio stations' needs, NCI has been able to ensure that consumers receive the official 5 A Day message.
- **In a media campaign, meeting the media's needs is just as important as meeting consumers' needs.** Developing messages and materials that meet both the public's needs and the needs of the media that reach them can be a challenge. However, keeping this challenge in mind is key to ensuring that the intended messages eventually reach the consumer. The messages must first appeal to the media if they are ever to reach the consumer. Information must be newsworthy, and delivery of the information must comport with the media's time constraints.
- **Hard news is critical to generating significant media coverage.** Although some reporters will respond to feature ideas, all reporters want news. Trend data are one type of news information that will garner significant interest. The media's continued interest in and support of the 5 A Day message results in solid coverage; however, NCI still needs compelling new information to meet the media's need for new consumption data and other hard news.
- **Briefing key media resources helps ensure the dissemination of the most current information.** The media turns to its regular resources for perspective and for guidance. To take advantage of this established practice, a program's media campaign should make every effort to keep media contacts updated on new developments and information so that journalists always receive the most current information. With 5 A Day, NCI and PBH have been forwarding information to ADA's national spokespeople, with whom reporters keep in contact and interview on a wide range of food

and nutrition issues. By keeping the spokespeople updated on news and promotions, NCI can ensure that a cadre of regular food and health media sources have all the facts necessary to provide the most current information as the need arises.

## LOOKING AHEAD

As the 5 A Day Program continues to mature, NCI and PBH increasingly will need to deal with the challenges of maintaining the media's interest and ensuring continuing coverage of the importance of vegetable and fruit consumption. NCI's radio efforts have proven to be extremely successful in sending controlled messages to consumers through the media and in achieving the goal of increasing repetition of the 5 A Day message. The next step was to explore opportunities to create a similar type of programming for television, the leading information source for most consumers.

NCI tested pilot samples of television news inserts designed to air in conjunction with local news coverage. The test inserts received positive feedback from news directors at television stations across the country. As a result, NCI produces a series of "Do Yourself a Flavor" news inserts that are distributed nationwide and aired on a weekly basis. With ongoing television programming, radio programming, newspaper and magazine outreach, and interactive Web-based efforts, the 5 A Day Program is well positioned to reach the public through multiple channels simultaneously through its strategic media campaign.

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# 5 A Day Program Evaluation Research

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## INTRODUCTION

It is a challenge to evaluate the 5 A Day Program of the National Cancer Institute (NCI). As previous chapters have indicated, the Program is a complex weave of multiple components with many stakeholders. It is a program designed at the national level, operationalized at the State level, and implemented at the community and local levels, making data collection difficult. Funding and staffing have been variable and largely insufficient. Initiatives have varied in geographic location, complexity, quality, sustainability, and measurability. For these reasons, the 5 A Day staff needed to find creative ways to monitor Program growth, capture initiatives of the many licensees, and ultimately produce credible measures of effectiveness.

A vision for a comprehensive Program evaluation was an integral part of the planning, but funds were not available to implement the plan until 3 years after Program initiation. Therefore, initial efforts were minimal, expanding as funds became available. This chapter provides an overview of the attempt to evaluate all Program components.

## EVALUATION OVERVIEW

The original 5 A Day evaluation plan consisted of two major components: process and outcome evaluations (see Table 1). The aims of the process

evaluation were to track Program growth and implementation, to identify factors associated with successful initiatives, and to develop small studies that would establish credible linkages between Program implementation and outcomes. The plan was to evaluate industry participation by tracking growth in the membership of NCI’s private-sector partner, the Produce for Better Health Foundation (PBH); collecting retail activity reports from supermarkets; and tracking sales of materials purchased by industry through the PBH publisher. Growth in numbers of States requesting licenses and the activities of State licensees would be tracked through

**Table 1. 5 A Day Program Evaluation**

|   |
|---|
| <p><b>Level I—Process Evaluation</b></p> <ul style="list-style-type: none"> <li>Program Infrastructure Growth: States</li> <li>Program Infrastructure Growth: Industry</li> <li>Study Correlating State Implementation Data and Vegetable and Fruit Intake</li> <li>State Case Studies</li> <li>Case Study Results</li> <li>Media Analysis</li> </ul> |
| <p><b>Level II—Outcome Evaluation</b></p> <ul style="list-style-type: none"> <li>5 A Day Message Awareness</li> <li>Evaluation of State-Level Interventions</li> <li>Results of State-Level Interventions</li> <li>Baseline and Followup Surveys</li> <li>Channel-Specific Community Research Grants</li> </ul>                                       |

State activity reports. Therefore, tracking growth was possible with no evaluation funds, because staff developed, collected, and analyzed the State reports. Funds dedicated to media were used by NCI and PBH to hire a clipping service to track 5 A Day articles and advertising. However, the sub-studies planned for this portion of the evaluation (such as the correlation of implementation with outcomes) had to be delayed until funds were available.

The aims of the outcome evaluation were to measure changes in population awareness, knowledge, stages of change, and mean consumption between baseline and followup national surveys; to determine the effect of the Program on target populations in certain channels through the implementation of nine grants with randomized designs (see Chapters 8 to 11); and to develop a series of common questions for use across grantees and by other licensees to measure Program impact. When funds became available for evaluation in 1994, another component was added: 1-year grants were provided to States to evaluate interventions in specific channels or settings.

## LEVEL I—PROCESS EVALUATION

The process evaluation activities included documenting growth of the 5 A Day Program and analyzing media data. Activities also included the sub-studies mentioned above, such as developing a program intensity index from the State activity reports and conducting qualitative studies of State programs. As in most process evaluations, the objectives were to measure progress in implementing the program over time, to describe the various ways in which States have implemented the Program, and to determine which approaches seem successful (Rossi and Freeman, 1993). The latter objectives are particularly important for the 5 A Day Program, which allows, and even encourages, creative and varied program versions that seem best suited to the individual States and local community structures.

### Program Infrastructure Growth: States

To operationalize the program at the community level, NCI licensed all State and territorial health agencies (SHAs) to conduct activities under the 5 A Day Program (see Chapters 3 and 4). SHAs in turn use State, county, or local coalitions to

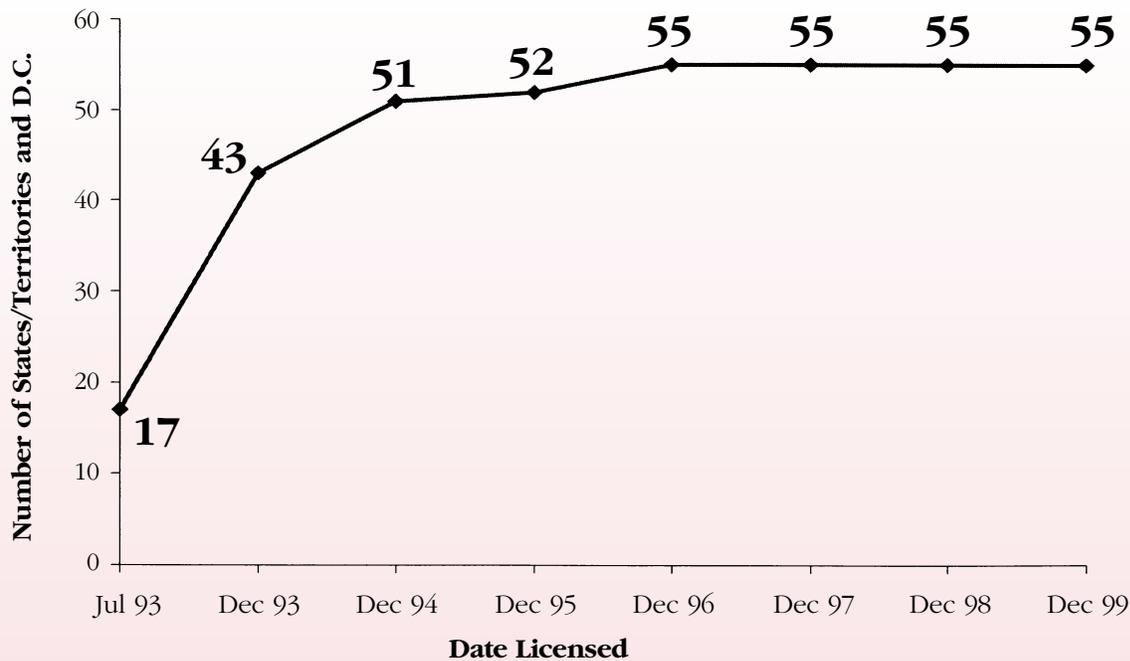
implement the 5 A Day Program. State coordinators (one per SHA) are required to report on their 5 A Day activities every 6 months. To facilitate the reporting process, NCI developed a State activity report form. The first reports were completed in December 1993 for a reporting period that covered the previous 6 months. The reporting form, completed by the State coordinator, provides information on 1) overall activities conducted by the SHA and its sublicensees, 2) the organizational structure, and 3) program resources and expenditures. In addition, a separate activity tracking form is completed for each 5 A Day activity conducted in a State during March (National Nutrition Month) and September (National 5 A Day Week).

NCI licensed the first group of 17 States in 1993. By January 1996, NCI had licensed all 50 states, 4 of the 6 U.S. territories, and the District of Columbia (See Figure 1). Within a little more than a year, almost all SHAs were licensed with a 5 A Day coordinator appointed by the State health officer. The uptake of the 5 A Day Program was rapid. According to the Diffusion of Innovations Theory, the nutritionists and health officers of the SHAs could be termed early adopters of the 5 A Day innovation (Rogers, 1983; Goodman et al., 1997).

In 1996, NCI licensed the health promotion programs of the military services and of the Indian Health Service. These programs serve two very large groups of Americans who were not being reached via the State 5 A Day programs; therefore, it was necessary to create a formal license agreement with the health professionals of these services. Although the potential for impact is great in these populations, evaluation data have not been collected from these services.

The State activity reports have yielded critical information about how the State programs function. Approximately 80 percent of States currently use statewide coalitions to implement their 5 A Day efforts. Most States are using either preexisting or specifically created statewide coalitions to implement the program. Only about one-third of the States currently use local or county coalitions. Data from 1998 showed that fewer than five States were implementing the program without the use of a State, county, or local coalition. Coalition participants include State and county health agencies, State departments of education and agriculture, U.S. Department of Agriculture (USDA) Cooper-

Figure 1. Growth of 5 A Day State/Territorial Health Agency Licensees



ative Extension Service providers, voluntary agencies, businesses, hospitals, and State dietetic associations. These coalitions conduct a variety of interventions designed to reach the American public, using advertising campaigns, implementing retail promotions and educational activities, distributing recipes, and sponsoring channel-specific educational efforts and community events.

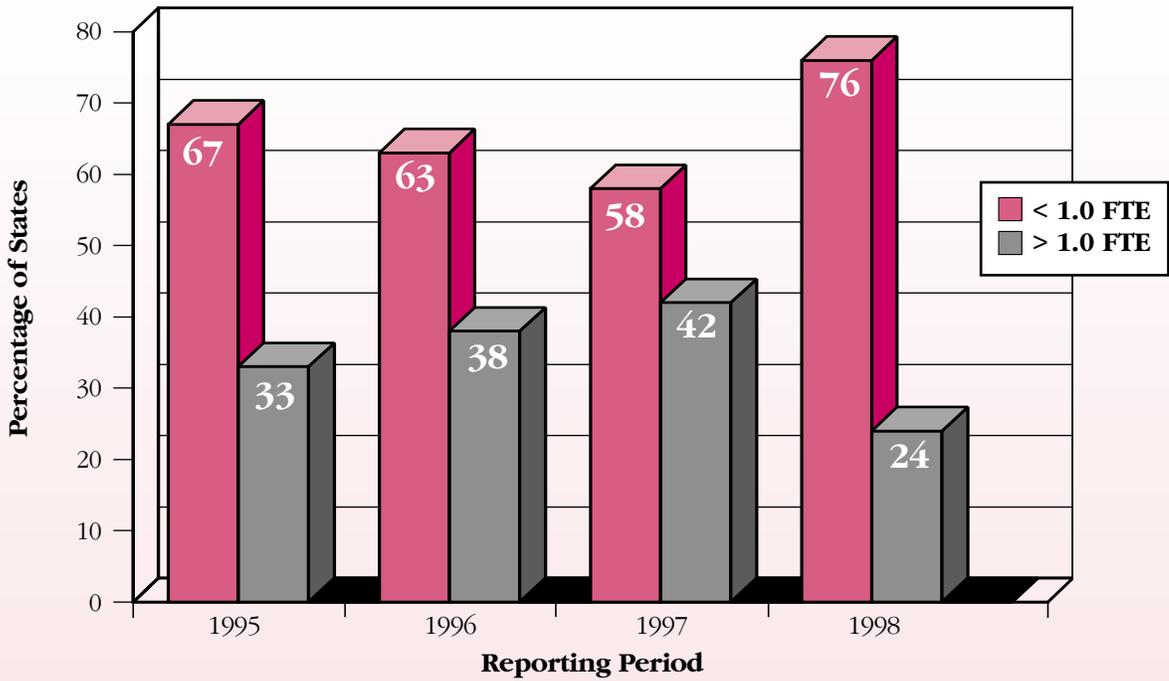
About one-third of the SHAs had more than one full-time equivalent (including professional, clerical, and State coordinator staff) working each year on 5 A Day, although this has decreased recently (as of 1998) to approximately one-fourth of the SHAs. About one-fifth of the States spend 10 percent or less of one full-time equivalent hours (40-hour work week) on 5 A Day. Less than one-third of State coordinators spend 50 percent or more of one full-time equivalent hours on 5 A Day. Usually, States that had more than one full-time equivalent were those that allocated larger budgets toward 5 A Day activities. Across all SHAs, State coordinator time accounts for about one-third of the total staff time spent on 5 A Day activities, clerical staff time a little less than one-fourth, and other professional staff time a little less than one-half. Figure 2 displays a nationwide average of SHA staff time spent on 5 A Day efforts, covering the years 1995 to 1998.

NCI did not provide funding for building state-wide 5 A Day infrastructures nor was funding provided for implementing any Program activities. State 5 A Day programs either garnered State or private funds for specific 5 A Day interventions or incorporated the 5 A Day message and social marketing strategies into existing nutrition programming efforts. As a result, some of the limited staff time was dedicated to fundraising rather than implementing behavioral change strategies that might increase vegetable and fruit consumption levels.

From 1995 to 1998, the majority of SHAs (more than 90 percent) reported spending less than \$250,000 in funds per year, including funding from NCI or Centers for Disease Control and Prevention (CDC) grants, for 5 A Day efforts (see Figure 3). Total funding (including funding from private,<sup>1</sup> State, and Federal sources) garnered at the State

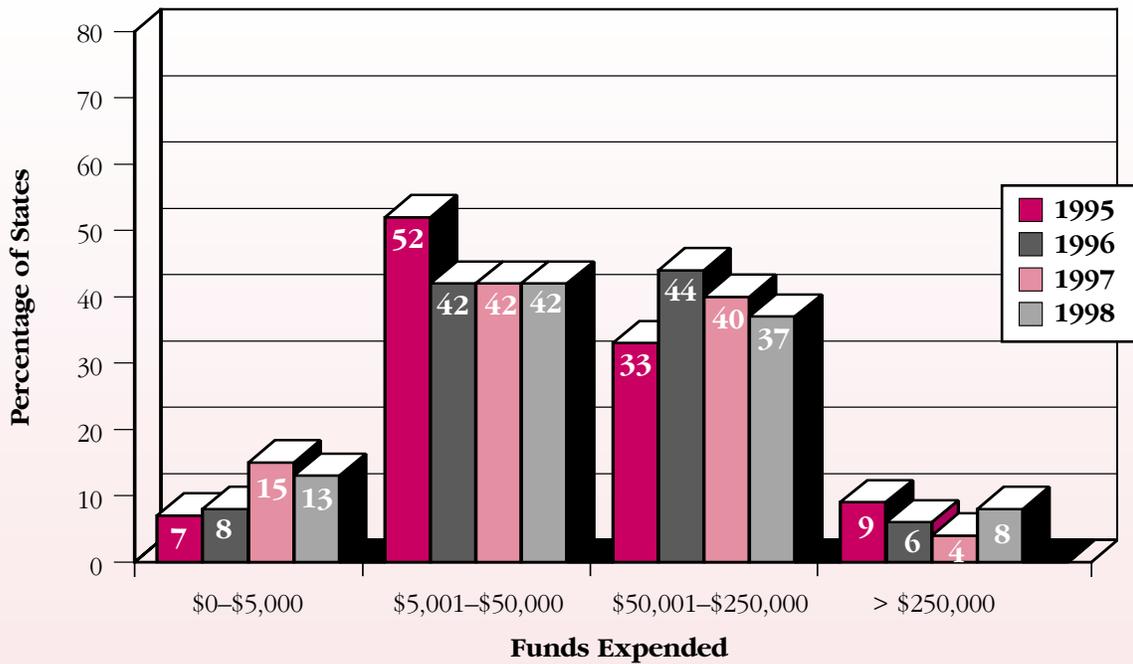
<sup>1</sup> Private funding includes funds from industry donations, "in-kind" contributions, and other private sources. State funding includes funds from preventive health block grants, USDA Nutrition Education and Training Program funds, and tobacco taxes. Federal funding includes money from CDC or NCI grant funds and other Federal funds.

Figure 2. SHA Staffing for 5 A Day



Note: Includes professional, clerical, and State coordinator staff time.

Figure 3. State 5 A Day Expenditures<sup>1,2</sup>



<sup>1</sup> Included total State health agency-funded and total CDC/NCI grant-funded expenditures.

<sup>2</sup> Totals exceeding 100 percent are due to rounding.

level for 5 A Day across all SHAs has been about \$4.5 million per year. The most frequently cited funding sources are NCI or CDC grant funds, preventive health block grants, and in-kind funding, with more than one-third of States reporting some funding from each of these sources during each reporting period. About one-fourth of the States reported receiving funds from industry donations (Machado and Dietz, 1996, 1997, 1998).

### Program Infrastructure Growth: Industry

Since 1991, PBH has been responsible for overseeing membership growth in the 5 A Day Program at the industry level. The 5 A Day industry licensees can be grouped into three types of members: retailers (includes supermarkets and grocery stores or chains), industry-related organizations (includes growers, shippers, suppliers, branded products, merchandisers, and commodity boards), and food-service companies. By 1994, PBH had licensed more than 1,000 organizations that represented more than 30,000 supermarkets (see Figure 4). From 1994 to 1998, the number of PBH licensees declined, primarily because of a decrease in both retailer and industry-related organization members. These declines are attributable in part to a considerable amount of

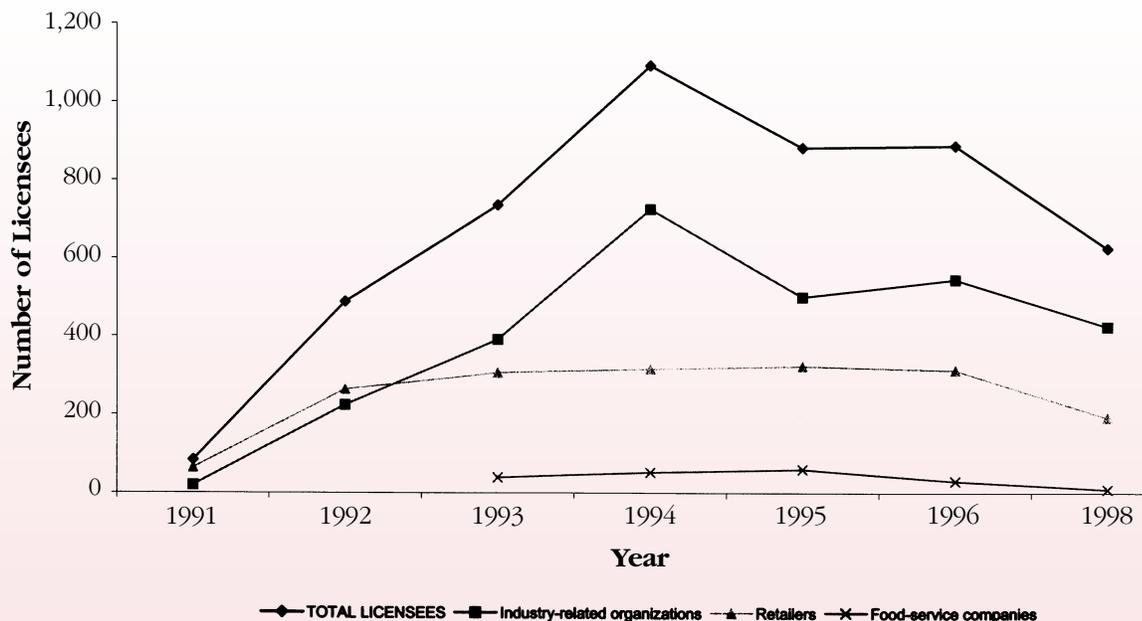
supermarket chain consolidation as well as less emphasis by PBH on actively recruiting licensees. In previous years, PBH had used retailer and merchandiser activity report forms to document industry promotions and obtain samples of advertisements and materials used. However, these data were hard to collect, and the use of these reports was discontinued in 1996. Although it was hoped that sales data could make a contribution to evaluation efforts, these data also were difficult to obtain. Finally, several specific industry initiatives indicated that 5 A Day promotions could increase sales. (see Chapter 5 for more information on evaluation of industry initiatives).

### Study Correlating State Implementation Data and Vegetable and Fruit Intake

Once funding for evaluation became available, a contractor was hired to make use of the data that had been accumulated since program inception. One question of interest was whether 5 A Day program activities were related to changes in diet. To answer this question, associations were examined between State levels of effort and State estimates of vegetable and fruit consumption.

Drawing upon data from the State activity reports cataloged through the years, an

Figure 4. 5 A Day Industry Licensees, 1991-1998



implementation index of State-level efforts was developed. The index is composed of four variables selected for representing variability in implementation among States. These variables are total SHA staff hours, SHA expenditures, print materials used, and ancillary materials used. Data from 47 States in 1995 and 1996, 48 States in 1997, and 38 States in 1998 are being utilized in this analysis. Results will be reported in peer-reviewed journals.

Many States participate in the Behavioral Risk Factor Surveillance Survey (BRFSS), which has the ability to measure various trends, including vegetable and fruit intake rates. Therefore, BRFSS data from 1994, 1996, and 1998 will be used to gauge vegetable and fruit consumption. BRFSS data should allow for analysis at the State level and, possibly, for an examination of change. These data are currently being analyzed, and once estimates of vegetable and fruit intake are available, correlations between State implementation and vegetable and fruit consumption will be examined as part of the evaluation plan.

### State Case Studies

Because State agencies had discretion in how 5 A Day was implemented in their States, there was tremendous variation in how the program functioned across the Nation. Therefore, the evaluation plan included some case-study qualitative research methods to reveal the stories behind the numbers reported in the State activity reports.

The case study component of the national 5 A Day Program evaluation process was designed with several major purposes in mind: to provide program descriptions, to assess organizational effectiveness and identify barriers and facilitators to implementation, and to assess changes in strategies over time and highlight potentially replicable best practices. To address these areas, multiple data collection strategies were used. These included 1) individual indepth interviews and focus groups with State coordinators, coalition members, representatives of different segments of the produce industry, and other key players at the State and local levels; 2) a review of documents describing the structure and organization of the program, implementation plans, and other related materials; and 3) semistructured observation of coalition meetings (announced in advance), food demonstrations in participating markets, and other pro-

gram-related activities or events. Case-study site visits, which typically lasted 3 to 5 days, were conducted in the spring, summer, and early fall of 1996 by teams of two or three researchers.

The onsite, indepth visits were conducted in five selected States: California, Massachusetts, Ohio, Texas, and Utah. To maximize the analytic reach in case-study research, the selection criteria were chosen for their potential to capture differences in critical aspects of the structure and organization of the Program and the context in which it operates (Berkowitz et al., 1996; Patton, 1990). The case-study States were chosen, first, from among those judged to have organizationally viable 5 A Day programs at the State or local level. Second, they were selected to represent a range of variation in demographic and organizational characteristics, such as census region, State population size, racial composition, poverty status, local versus State coalitions, percentage of time commitment by the State coordinator, and other relevant data. Table 2 summarizes 1996 organizational and demographic features for each of the five case-study States.

Case-study data were analyzed both on an in-case basis, to produce individual reports on each site, and on a cross-case basis, to yield a comparative cross-site synthesis of factors affecting program implementation and effectiveness. Both types of analyses were conducted using the Grounded Theory approach. This approach is a systematic and rigorous method (Glaser and Strauss, 1967; Strauss and Corbin, 1990) for identifying recurring patterns or themes in data that are primarily qualitative and for elucidating relationships between complex sets of variables that are relevant to the understanding of Program operations and effectiveness.

### Case Study Results

Cross-site analysis revealed a number of factors that facilitated or hampered the startup and ongoing implementation of the State 5 A Day programs. Highlights of the important findings from three factors that contribute to effective public/private partnerships are listed below.

#### State Agency Factors

- The more operationally successful State programs enjoy some support from persons at high levels of the lead agency.

**Table 2. 5 A Day In-Person Case Study States: Organizational and Demographic Features in 1996**

| <i>Organizational Features</i>              | <i>California</i>     | <i>Massachusetts</i> | <i>Ohio</i>                  | <i>Texas</i>  | <i>Utah</i>                    |
|---|-----------------------|----------------------|------------------------------|---------------|--------------------------------|
| Year State Program Initiated                | 1986 <sup>1</sup>     | 1993                 | 1993                         | 1994          | 1993                           |
| Coordinator<br>(% of full-time equivalent)  | 100% <sup>2</sup>     | 20%                  | 20%                          | 20%           | 25-30%                         |
| Structure of State Program                  | Centralized           | Centralized          | Decentralized                | Decentralized | Centralized                    |
| Status of State Coalition                   | Active                | Active               | None                         | Not active    | Active                         |
| State Health Agency<br>Partnerships         | Private<br>and public | Mainly<br>public     | None                         | None          | Mainly private,<br>some public |
| Number of Local Coalitions                  | None                  | None                 | 5 (not formal<br>coalitions) | 3             | 2                              |
| <b>Demographic Features</b>                 |                       |                      |                              |               |                                |
| Census Region                               | Western               | Eastern              | Midwestern                   | Southern      | Western                        |
| Agricultural Production <sup>3</sup>        | High                  | Low                  | Moderate                     | High          | Low                            |
| Relative Population Size, 1993 <sup>4</sup> | 1                     | 13                   | 7                            | 3             | 34                             |
| Racial/Ethnic Diversity                     | High                  | Moderate             | Moderate                     | High          | Low                            |
| Percentage Below Poverty, 1992 <sup>5</sup> | 15.0                  | 10.0                 | 12.4                         | 17.8          | 9.3                            |

<sup>1</sup> Year NCI grant awarded; program actually began in 1988-1989.

<sup>2</sup> State coordinator's role encompassed more than 5 A Day.

<sup>3</sup> State ranks are based on total value of agricultural production.

<sup>4</sup> State ranked based on size of population.

<sup>5</sup> Nationwide in 1992, 14.5 percent of the population lived below the poverty line.

- Most SHAs have not allocated enough staff time and other resources to meet the requirements of developing and sustaining effective State and local coalitions.
- Developing partnerships within and among public agencies can be just as challenging as building effective linkages to the private sector.

### **Leadership Factors**

- Effective leadership combines elements such as strategic planning, careful attention to nurturing personal ties, and adaptation to changing group needs without losing sight of the Program's larger goals. It is vitally important that leaders diagnose and understand the dynamics of their environment and adapt their leadership accordingly.
- Although State 5 A Day programs are constrained by environmental and organizational factors over which they have little control, leadership can and does make a difference.

### **Wider Public/Private Partnership Factors**

- Enlisting the support and participation of prestigious medical and research institutions can help build the Program's credibility, visibility, and attractiveness to partners in both the public and private sectors.
- The most effective public/private partnerships include key industry organizations that integrate different constituencies and that serve as a natural bridge between the public- and private-sector participants. State and local health departments that have built the most successful public/private partnerships have made special efforts to learn about, and adapt to, the culture of the local produce industry in their communities.

### **Media Analysis**

To assess the impact and use of media tactics and materials, the 5 A Day Program conducts media content analyses called the Media Analysis System

for Health (MASH). The MASH studies employ standard content analysis methodology that includes the use of coding structures, trained readers, data collection, tabulation of the coding sheets, and an analysis of the findings. In addition to providing insight into the effectiveness of media outreach, MASH findings also have helped identify campaign elements that need to be revised. Several MASH studies have been conducted, including one in 1993, two in 1994, and one each in 1995 and 1998. Chapter 6 includes examples of findings from some of these studies.

## LEVEL II—OUTCOME EVALUATION

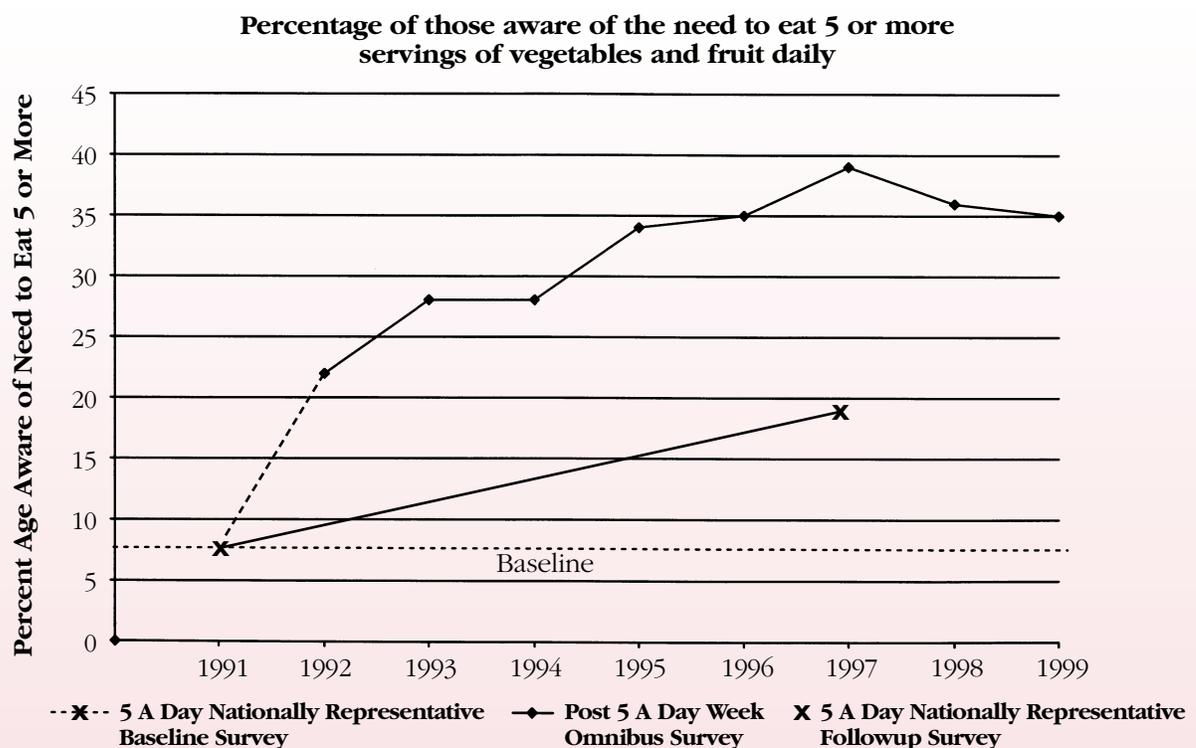
The outcome evaluation includes a number of components, including measures of awareness; a limited number of State-level, 1-year evaluation grants; the 5 A Day baseline and followup national surveys; and the nine funded randomized trials.

### 5 A Day Message Awareness

Several surveys were conducted to assess target audience awareness of the 5 A Day message. In

August 1991, NCI and PBH jointly fielded a baseline telephone survey of approximately 3,000 Americans. Results of this survey showed that only 8 percent of Americans knew that they need to eat five or more servings of vegetables and fruit daily. In July 1992, NCI launched the 5 A Day media campaign. An omnibus survey done 2 weeks after the media launch revealed that 22 percent of respondents were aware of the recommended number of daily servings for vegetables and fruit. A survey conducted in 1997 showed that general awareness of the 5 A Day message had increased to 39 percent (see Figure 5). Among women specifically, awareness of the Program message has increased from 11 percent at baseline (1991) to 50 percent (1998). Positive awareness change or consciousness-raising is the first step among the processes of change. All indications show that adult awareness of the 5 A Day message increased sharply in the early years of the campaign, with a slower increase then slight decline in recent years. The overall objectives of the 5 A Day Program were to increase awareness of the 5 A Day message and to provide consumers with specific information about how to include more servings of vegetables and fruit. Message

Figure 5. Evaluating Public Awareness Over Time



awareness has increased, which theoretically provides the basis for behavior change to occur.

### Evaluation of State-Level Interventions

To evaluate State-generated 5 A Day interventions, the national 5 A Day Program established an agreement with CDC to award and monitor grants to SHAs that evaluate 5 A Day interventions within specific community channels. The primary purpose of this interagency effort is to evaluate State-developed interventions designed to promote increased consumption of vegetables and fruit and to fulfill part of the evaluation component of the 5 A Day Program. This research demonstrates how interventions are implemented in real-life community settings by public health departments with moderate budgets. Although these program evaluation designs were as rigorous as possible, in practice they are less rigorous than controlled research designs. Randomization was not always possible in these program evaluation projects; therefore, quasi-experimental research methods were often employed. Research capabilities were limited, principally because of limited funding and timeframes (1 year). Therefore, less extensive data were

collected in these projects compared with the more generously funded randomized studies discussed below. The interagency agreement process was selected because CDC can support State-directed interventions of this nature and has the mechanism in place to carry out this effort efficiently.

An RFP (request for proposal) is developed each year to solicit proposed evaluation plans for a clearly defined study from an established, licensed 5 A Day participant, with long-range potential in one or more specific community channels. The evaluation plan must contain clear, measurable evaluation objectives, and expected outcomes should be defined with appropriate statistical power. Use of behavior change theoretical frameworks is desired to guide the evaluation study.

CDC, in collaboration with NCI, awarded 31 competitive 5 A Day grants to licensed State agencies between September 1995 and September 1999. The funds support annual projects to evaluate 5 A Day nutrition intervention programs in specific community channels (e.g., school, retail, media, and worksite). An overview of the type of channel targeted and the status of each evaluation grant is provided in Table 3.

**Table 3. Channel-Specific NCI/CDC Evaluation Grant Summary, 1994-1999**

| <i>Channel</i>                                  | <i>Number of Grants</i> | <i>\$ Average/Grant</i> | <i>Partnerships* (University/Not-for-Profit/For-Profit)</i> | <i>Nature of Evaluation** (Process/Outcome)</i> | <i>Results Available (Process/Outcome**)</i> | <i>Followup Dissemination Activities***</i> |
|---|-------------------------|-------------------------|---|---|--|---|
| Schools   | 15                      | 83,384                  | 10/4/1  | 15/13   | 6/5  | 6   |
| Food Assistance Programs (farmers markets; WIC) | 6                       | 71,418                  | 5/1/0   | 6/2   | 6/2  | 2   |
| Media   | 4                       | 81,678                  | 2/2/0   | 4/4   | 1/1  | 1   |
| Groceries                                       | 4                       | 80,920                  | 2/2/0   | 4/1   | 1/1  | 0   |
| Worksites                                       | 2                       | 70,598                  | 2/0/0   | 2/1   | 0/0  | 0   |

\* The State department of health (SDH) serves as the primary funded institute. The 5 A Day State coordinator serves as the primary investigator. Partnerships are usually established between the SDH and State/regional universities or not-for-profit or for-profit agencies.

Not-for-profit = Schools; other State health agencies; and private, not-for-profit agencies, such as the American Cancer Society. For-profit = Private institutions, such as the Cooper Institute in Texas.

\*\* Process = Evaluation of program implementation and participation of subjects within the study design.

Outcome = Evaluation of the programs' impact on subjects' knowledge, attitudes, and/or vegetable and fruit consumption.

\*\*\* Followup dissemination activities = Continuation of 5 A Day evaluation projects by States via expansion or dissemination and use of funding sources beyond NCI/CDC grants.

The nature and scope of these grantee programs are broad within their respective communities. The majority of the projects focus on low-income, ethnically diverse population groups within the community. Efforts aimed at Hispanics and African-Americans have been conducted to develop culturally appropriate strategies for encouraging the consumption of five or more servings of vegetables and fruit daily. The State-level grants are one mechanism that NCI and CDC have used to evaluate and strengthen States' efforts in conducting effective programs to reach specific high-need groups.

Most of the States were able to successfully conduct the research project as described within the grant application. The California and Kansas departments of health already had the expertise among their own staff members to appropriately design and conduct a study. Almost every other State used consultants or contracted part of the research components (e.g., materials development, data collection, and data assessment) to outside collaborators, such as local universities or other State agencies. States often made key staff available as in-kind support to the grant recipients, enabling the State agencies to utilize grant dollars to contract with additional collaborators and resources outside the State agency.

Of the 31 grants funded as of 1999, 12 grants have been completed, 9 grants received no-cost extensions through December 1999, 4 grants failed to complete the research proposal due to a variety of circumstances (loss of staff, subject recruitment issues, failure of compliance, or high subject dropout rates), and 6 grants awarded in the fiscal year 2000 funding cycle were completed.

### Results of State-Level Interventions

There have been several peer-reviewed articles, including those by Foerster and colleagues (1998), Anderson (2000), Auld and colleagues (1998, 1999), and Romaniello (2000), as well as presentations at professional meetings, that report the outcome results of the completed evaluation grants. In addition, States have used the evaluation grant data as a turnkey for developing and expanding a State-level program on a wider scale and for obtaining additional program support from sources beyond NCI (see Chapter 4 for examples). Several States, such as California,

Kansas, Colorado, and Utah, have used the data and results from their grants to obtain further grant funding from within and outside of NCI. Data generated from the NCI/CDC 5 A Day evaluation grants have served as pilot data for further research, and these data have been used to obtain additional funding. Alternative funding sources have enabled select States to continue community-based intervention, evaluation, and dissemination research or to build a wider scale intervention into school programs, as well as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)/farmers market-based programs within the State. See Table 2 for more details.

The lessons learned from this effort indicate that a vigorous evaluation design is essential for successful assessment and completion of the State evaluation grant. With the appropriate support mechanisms in place, a strong campaign is able to reach its targeted population regardless of channel base (e.g., media, school, food assistance program). Study data, along with State BRFSS data, have been used to monitor ethnic population subgroups and to assess continuing changes in vegetable and fruit consumption data over time.

In school-based programs, success is most often attributed to certain aspects of the program design, such as using educational theories that focus on children's learning styles, using special resource teachers or other trained providers to ensure fidelity to the Program objectives and provide quality educational opportunities, and using multiple activities in the lunchroom to augment classroom activities.

Use of food assistance coupons, such as farmers market coupons, combined with educational opportunities that are interesting and relevant to the targeted population group, help to increase the fruit and vegetable intake of WIC participants. Educators may improve participant response rates from low-income clients by using such techniques as reminder cards and followup phone calls and by coordinating research data collection with regularly scheduled clinic appointments.

Preliminary data on point-of-purchase (grocery store) and worksite interventions indicate that recruitment and followup with the targeted population group are most challenging within these sites, making evaluation of the intervention exposure very problematic. Participation in point-of-

purchase programs is often limited to the chance encounter off the street, with minimal ability for followup. Depending on the worksite or grocery store site, subject recruitment can be restricted, and evaluation of the extent of exposure and participation may be difficult to obtain. Furthermore, programs targeting these channels may be effective in improving the targeted population groups' awareness of the need for consuming five or more servings of vegetables and fruit daily but may lack definitive measures of actual impact on consumption.

### Baseline and Followup Surveys

The 5 A Day baseline survey was conducted in the fall of 1991 before the launch of the national program. It was a random-digit-dial telephone survey designed to be representative of the adult U.S. population. The intent was to collect information about the usual intake of vegetables and fruit as well as related data regarding knowledge, attitudes, demographics, and stages of change. Understanding the demographics and psychosocial, stages-of-change, and lifestyle characteristics of people, in turn, can aid in the development and evaluation of appropriately targeted messages.

The findings from the 5 A Day baseline survey represented the first national data on vegetable and fruit consumption to be reported since 1985. The survey showed that the median daily intake of total vegetables and fruit for the total population was 3.4 servings per day (Subar et al., 1995). Linear regressions showed that intake increased with education, income, and nonsmoking status. Women had higher intake rates than men at all ages; these differences between men and women increased with age. Vegetable and fruit consumption increased with age for Whites and Hispanics, but not for African-Americans. Psychosocial factors (Krebs-Smith et al., 1995) and stages of change (Van Duyn et al., 1998) associated with vegetable and fruit consumption were also characterized from the baseline survey. Krebs-Smith and colleagues estimated that only 8 percent of American adults thought that five or more servings of vegetables and fruit were needed for good health. Of all the factors studied, the most important in predicting vegetable and fruit intake were the number of servings that one thought should be consumed in a day, whether one liked the taste

of vegetables and fruit, and whether one had been in the habit of eating vegetables and fruit since childhood. These factors accounted for 15 percent more of the variation in vegetable and fruit consumption than did demographic variables alone. Building and expanding upon these results, Van Duyn and colleagues found that stages of change and knowing the number of servings one should eat for good health provided the most parsimonious model, explaining 25 percent of the variance in total vegetable and fruit intake compared with 29 percent for the full model. Persons in the higher stages of maintenance reported intakes that met national dietary recommendations of five or more servings of vegetables and fruit daily, and those in the action stages reported intakes that closely approached this level. This finding suggests that people in the highest stage, maintenance, can serve as a referent group, providing insights into how people can successfully make and maintain dietary changes.

A followup survey was conducted in the autumn of 1997 to measure 6-year trends in vegetable and fruit intake rates as well as in knowledge, attitudes, and beliefs about diet and nutrition with respect to vegetables and fruit. Weighted, unadjusted mean intake of total vegetables and fruit increased from 3.75 servings in 1991 to 3.98 servings in 1997. These preliminary data show a modest, positive increase in overall vegetable and fruit consumption in adults, not adjusting for demographics. Complete results of the followup survey were submitted to the *Journal of the American Dietetic Association* in 2001.

### Channel-Specific Community Research Grants

In addition to baseline and followup survey data on vegetable and fruit consumption, the outcome evaluation component of the 5 A Day Program includes nine research project grants that were funded by NCI in May 1993. These 4-year research project grants with randomized designs were funded to provide the most rigorous measures of the effectiveness of 5 A Day behavioral change interventions in increasing consumption of vegetables and fruit. The nine research projects were conducted in various community channels—four were based in schools, three at worksites, one in church, and one in food assistance programs. Eight of the nine research projects achieved

significant ( $p < 0.05$ ) positive results in increasing vegetable and fruit consumption in the intervention versus control participants. Increases in mean vegetable and fruit consumption ranged from 0.2 serving up to 1.7 servings daily (see Table 4). Results are reported in Chapters 9 through 11.

## SUMMARY

All evaluation components combined have shown positive trends in Program growth and effectiveness. Level I, process evaluation, indicated that the Program grew well and rapidly, incorporating both industry and State licensees. State participation has been maintained at a consistently high level. Industry participation has varied as the market structure has shifted. Renewed efforts need to be made at both the national and State levels to enhance public/private partnership initiatives. In a planned strategy, the Program grew over time to include new collaborators, such as the U.S. military, American Dietetic Association, American Cancer Society, and USDA, as well as CDC.

Process evaluation also indicated excellent and continuing broadcast and print media coverage of the Program. Coverage in the news and trade press increased whenever new data, such as

results of the baseline survey, were made available. Case studies of the State programs revealed that efforts were enhanced by support from professionals at high levels within the health departments as well as by good leadership, cultivation of good relationships with industry, and adequate human resources.

Level II, outcome evaluation, indicated that media efforts were effective in increasing awareness of the Program's message. Initiatives implemented by State coalitions, or a subset of their members organizations with minimal resources can be effective in increasing consumption of vegetables and fruit in a variety of settings or channels. The more successful programs have been conducted in schools, in the WIC Program, and through the media. It has been more difficult to show effect in point-of-purchase programs and at worksites.

Outcome evaluation also has shown that randomized, channel-specific 5 A Day interventions based on behavioral change theories result in positive changes in vegetable and fruit consumption and behavioral correlates. These studies provide the strongest evidence that the 5 A Day Program can increase vegetable and fruit consumption. In addition, the baseline and followup national surveys indicated that national consumption has increased during the life of the 5 A Day Program and that this

**Table 4. Nine Community-Based 5 A Day Research Projects—Main Effects**

| <i>Research Site</i>                   | <i>Channel</i>    | <i>Fruit and Vegetable Consumption – Positive Main Effects</i> |
|--|-------------------|--|
| University of Alabama                  | Elementary school | 1.68 servings ( $p < 0.0001$ )                                 |
| Emory University                       | Elementary school | 0.2 serving ( $p = 0.05$ )                                     |
| Tulane University                      | High school       | 0.37 serving ( $p < 0.001$ )                                   |
| Minnesota Department of Health         | Elementary school | 0.26 serving of vegetables for girls at lunch ( $p < 0.05$ )   |
| University of Arizona                  | Worksite          | 0.46 serving ( $p < 0.002$ )                                   |
| Dana-Farber Cancer Center              | Worksite          | Worksites and family, 0.55 serving ( $p = 0.05$ )              |
| Fred Hutchinson Cancer Research Center | Worksite          | 0.3 serving ( $p = 0.06$ )                                     |
| North Carolina Department of Health    | Church            | 0.85 serving ( $p < 0.0001$ )                                  |
| University of Maryland                 | WIC               | 0.43 serving ( $p = 0.002$ )                                   |

trend is associated with awareness of the Program and its message. All evaluation indicators support the conclusion that the Program has been successful in increasing public awareness of the 5 A Day message, and has contributed to the national increase in vegetable and fruit consumption.

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# 5 A Day Community-Based Research

*Jerianne Heimendinger and Gloria Stables*

## **INTRODUCTION**

The National Cancer Institute (NCI) is the largest research Institute at the National Institutes of Health (NIH). From the perspective of NCI, research was and remains an essential component of the 5 A Day for Better Health Program. Chapter 7 provided an overview of the evaluation of the entire Program, including process and outcome studies. Of the outcome studies, the nine randomized community-based research grants were expected to provide the strongest evidence for an effect of the Program on consumption. They did, in fact, provide a positive answer to the following question: Can community-based 5 A Day interventions increase consumption of vegetables and fruit in diverse populations?

The purpose of this chapter is to provide an introduction to these grants, which are discussed in more detail in Chapters 9 through 11. This chapter will provide an understanding of the research environment from which the randomized community trials emerged, some insights into the development of the request for applications (RFA) to do this type of research, an overview of the nine grants, a brief description of some of the theories used in the grants, and results of the collaborative efforts among grantees.

## **RESEARCH ENVIRONMENT AT NCI IN THE 1980s AND 1990s**

In the past few decades, the majority of research at NCI has been basic laboratory or clinical trial research. Historically, behavioral science was considered less robust and therefore has not been as well funded or respected. Community-based research is even further from NCI's "gold standard" of clinical trials than are clinically based behavioral studies. Therefore, it was important at the beginning of the 5 A Day Program to determine what kinds of studies would provide acceptable data in such an environment.

At the time that the 5 A Day Program was proposed, a number of behavioral science issues relevant to cancer prevention and control were under discussion at NCI. The Institute undertook the Women's Health Trial feasibility study in 1984 to decrease fat in the diets of high-risk women in an effort to reduce the incidence of breast cancer (Insull et al., 1990; Gorbach et al., 1990). Intense discussions about this research study at NCI meetings for external advisers revealed many issues of concern to scientists about prevention trials. Some researchers were skeptical that people would change their diets or that lower fat diets would be palatable. A lack of widely accepted biomarkers

of compliance was another concern. Finally, it was not yet clear that behavior change instead of disease outcome would be an acceptable research end point, despite the fact that the duration of research funding was usually not long enough to track disease outcomes in a prevention trial.

In addition, final data were not yet available from the first generation of community-based programs, such as the Minnesota Heart Health Program, funded by NIH's National Heart, Lung, and Blood Institute. Nevertheless, it appeared that another round of similar studies, with a small number of nonrandomized intervention and control communities, was unlikely to be funded. NIH staff scientists and scientific advisers perceived randomized trials and sample sizes larger than two to four communities to be the most robust research designs. Taking all these issues into account, NCI staff members developed a research plan for the 5 A Day Program that included behavioral end points, such as increased vegetable and fruit consumption, and larger numbers of randomized units (e.g., 12, 28) than those used in the heart disease trial (e.g., 2, 3). Such experimental designs would be the most acceptable way to prove the association between the program and its intended outcomes. In addition, well-controlled, community-based studies would build the strongest case for the program's continuation beyond its first 5 years.

## THE IMPORTANCE OF THIS RESEARCH

A description of the research desired was announced through an RFA. The intent of the RFA was twofold: 1) to encourage research in the development of effective community-level interventions for changing dietary patterns by using a simple, positive, and actionable message and 2) to develop the community-level component of the national 5 A Day Program by providing the complementary and necessary interactive and environmental elements of successful behavior-change interventions. Those intervention elements included skills development, local media placement, social support, and modifications of foods offered in local food systems.

The 5 A Day RFA was only the second at NCI to focus entirely on community-based research on *nutrition*-related behaviors. Nutrition was

sometimes a component of a multirisk-factor trial, such as the Working Well Research Trial (Heimendinger et al., 1995), or a part of a more general RFA, such as a previous one focused on capacity building (see Chapter 1), but nutrition as a focal point had received little emphasis. The 5 A Day RFA was the first to focus community-based nutrition intervention research on a common behavioral objective (i.e., to increase vegetable and fruit consumption consistent with the 5 A Day guidelines). One purpose for this focus was to produce a critical mass of nutrition research with comparable studies. This was also, in part, a strategy for strengthening NCI's portfolio of nutrition research grants.

Channel-specific grants for nutrition were new, although NCI's research program on smoking had for years successfully produced RFAs focused on specific channels, such as schools or physicians. A channel is a route for reaching consumers. It is usually an organization or entity, such as a school or worksite. Part of the vision for 5 A Day was that experienced, creative investigators would design interventions for a variety of channels and underserved populations, which could then be used by the 5 A Day Program and its national network of State health agencies and industry members. This diffusion of effective interventions could directly benefit U.S. taxpayers, whose taxes support NIH research.

## DEVELOPMENT OF THE REQUEST FOR APPLICATION

With this vision in mind, NCI staff members followed the Institute's procedures for developing an RFA. A working group of external experts in nutrition and behavioral science was convened to discuss gaps in research, potential research designs, behavioral theories, and NCI's expectations.

The guidance provided by the working group was then used by staff to develop an RFA, which was released on March 27, 1992. Applications were due by June 9, 1992, giving researchers 2.5 months to respond. The total budget was \$4 million per year for 4 years, or a total of \$16 million for all grantees.

NCI invited applicants to develop, implement, and evaluate interventions in specific community-

based channels and for targeted specific populations to increase their consumption of vegetables and fruit using the 5 A Day message. The RFA also emphasized that vegetables and fruit were to be promoted in a manner that retained their integrity as low-fat foods and as part of an overall healthy eating pattern, in which these foods are seen as both low in fat and high in fiber.

Although the mechanism of support was a grant, applicants were advised that they would be asked to participate in a network of grantees for the purposes of sharing design and evaluation strategies, comparing results where possible, and distilling lessons learned from all grants combined. In addition, investigators were expected to supply a final report to assist with the dissemination of successful community-based intervention research.

## UNIQUE ASPECTS OF THE REQUEST FOR APPLICATION

The most important provisions of the RFA were a focus on the simple 5 A Day message as well as use of specific channels, randomized designs in channels such as schools or worksites, larger sample sizes than some of those previously used in community research, behavioral theories, and collaboration between universities and health departments.

The 5 A Day message is, “Eat 5 or more servings of fruits and vegetables every day for good health.” Guidelines for promoting products, the use of the 5 A Day logo, and the recipe criteria were provided in the RFA, along with a list of industry partners. The focus on a simple nutrition message was an innovation that had many advantages. Because the message was quantified, people could assess their own progress toward meeting the goal and did not have to interact with the medical system for a status report. Since most people like vegetables (71 percent) and fruit (82 percent), taste was not a barrier to increased consumption (Krebs-Smith et al., 1995a). With a single food-group focus, interventions were much easier to implement and measure than those that focused on either nutrients or the total diet.

For the 5 A Day Program, a channel was defined as a specific means or route for reaching

consumers with messages, food, or both for the purpose of instilling the desired dietary behavior. Researchers then chose a target population within a particular channel. For example, within schools, either all students or students in specific grades might be targeted.

Researchers were encouraged to choose both a single channel and adequate numbers of randomized units to be able to test for statistical significance. The RFA indicated that randomization was clearly preferred to ensure that research designs would be as scientifically robust as possible. A detailed example of appropriate sample-size calculations was included.

In addition, the RFA stated that an issue of concern for all grants was the potential for contamination of the research from both the media and State-level activities of the national program. Therefore, it was important for each grantee to interact with its State-level coalition to collaborate where possible and to minimize possible contamination (i.e., overlapping of activities) of research sites by State-level efforts. The NCI National 5 A Day Program Office also requested that the State coalitions cooperate with the NCI-funded projects in their areas to help maintain the integrity of the proposed research designs. In general, this collaboration worked well—in some instances, State coalitions modified their planned activities to avoid promotions in areas with research subjects.

Seventy-three applications were received, indicating a high degree of interest in the topic. Such a high response exceeded the norm for cancer prevention grants at the time. Grants were reviewed using the NIH peer-review process. Funds were available to award only nine grants at an average of \$450,000 per year for 4 years. The nine grants were funded in May 1993 and were scheduled to end in May 1997. Results of the studies began to appear in peer-reviewed journals in 1998. The nine studies are discussed briefly below. More detailed information on each grant is presented in Chapters 9 through 11.

## OVERVIEW OF NINE GRANTS

Table 1 presents the characteristics of the nine grants, including the project location, lead agencies receiving the award, channels, and length of the intervention. (The California project included

**Table 1. Nine Community-Based 5 A Day Grants**

| <i>Project Location</i> | <i>Lead Agencies</i>  | <i>Channel</i>  | <i>Length of Intervention</i>   |
|-------------------------|---|---|---|
| <b>Schools</b>          |   |   |   |
| Alabama                 | <ul style="list-style-type: none"> <li>University of Alabama at Birmingham</li> </ul>                                       | <ul style="list-style-type: none"> <li>28 schools</li> <li>Grades 4-5</li> </ul>              | <ul style="list-style-type: none"> <li>2 years</li> <li>14 lessons, 3 times/week over 5 weeks + parents + school food service</li> </ul>                        |
| Georgia                 | <ul style="list-style-type: none"> <li>Emory University</li> </ul>  | <ul style="list-style-type: none"> <li>16 schools</li> <li>Grades 4-5</li> </ul>              | <ul style="list-style-type: none"> <li>2 years</li> <li>2 sessions/week for 6 weeks</li> </ul>  |
| Louisiana               | <ul style="list-style-type: none"> <li>Tulane University School of Public Health</li> </ul>                                 | <ul style="list-style-type: none"> <li>12 schools</li> <li>Grades 9-12</li> </ul>             | <ul style="list-style-type: none"> <li>3 years</li> <li>Monthly promotions, five 55-minute workshops + parents + school food service</li> </ul>                 |
| Minnesota               | <ul style="list-style-type: none"> <li>Minnesota Department of Health</li> <li>University of Minnesota</li> </ul>           | <ul style="list-style-type: none"> <li>20 schools</li> <li>Grades 4-5</li> </ul>              | <ul style="list-style-type: none"> <li>2 years</li> <li>16 lessons, 2 times/week over 8 weeks + parents + school food service + industry</li> </ul>             |
| <b>Worksites</b>        |   |   |   |
| Arizona                 | <ul style="list-style-type: none"> <li>University of Arizona (Arizona Cancer Center)</li> </ul>                             | <ul style="list-style-type: none"> <li>82 informal social networks at 10 worksites</li> </ul> | <ul style="list-style-type: none"> <li>18 months general program, 9 months peer program</li> </ul>  |
| Massachusetts           | <ul style="list-style-type: none"> <li>Harvard University (Dana-Farber Cancer Institute)</li> </ul>                         | <ul style="list-style-type: none"> <li>22 community health centers</li> </ul>                 | <ul style="list-style-type: none"> <li>2 years: kickoff; ten 30-minute skills-building sessions, 1 campaign/year (3-5 weeks) + environmental changes</li> </ul> |
| Washington              | <ul style="list-style-type: none"> <li>Fred Hutchinson Cancer Research Center</li> <li>University of Washington</li> </ul>  | <ul style="list-style-type: none"> <li>28 worksites with cafeterias</li> </ul>                | <ul style="list-style-type: none"> <li>1 year</li> <li>Kickoff, constant messages, self-help manual, contests + environmental changes</li> </ul>                |
| <b>Churches</b>         |   |   |   |
| North Carolina          | <ul style="list-style-type: none"> <li>North Carolina Department of Health</li> <li>University of North Carolina</li> </ul> | <ul style="list-style-type: none"> <li>50 churches in 10 randomized counties</li> </ul>       | <ul style="list-style-type: none"> <li>2 years—monthly packets, two educational sessions, tailored bulletins + environmental changes</li> </ul>                 |
| <b>WIC</b>              |   |   |   |
| Maryland                | <ul style="list-style-type: none"> <li>University of Maryland</li> </ul>  | <ul style="list-style-type: none"> <li>15 sites in 6 counties</li> </ul>                      | <ul style="list-style-type: none"> <li>6 months</li> <li>Three 45-minute sessions, four tailored letters</li> </ul>   |

in Chapter 10 is excluded from this summary because it was not funded through the RFA and did not have to respond to the same requirements.) The grants intervened in schools (four), worksites (three), churches (one), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (one). Three of the school grants were for the fourth grade, and the studies followed the children into the fifth grade. One of the grants addressed high school students and followed a freshman class from the end of the 9th grade through 12th grade. All worksite projects addressed public-sector worksites, although the Washington State project also included private-sector employees. The Massachusetts project

intervened in community health centers; Arizona's intervened in the trades and labor segments of public-sector employers, such as universities and State government; and Washington's intervened in larger public- and private-sector employers that had cafeterias. North Carolina's project intervened in African-American churches located in 10 counties around the State. The Maryland project intervened in the WIC program in six counties, reaching WIC recipients who were pregnant, postpartum, or breast-feeding, or who were mothers of WIC preschoolers.

The number of randomization units ranged from 10 counties (covering 50 churches) in North Carolina to 82 social networks (at 10 worksites) in

Arizona. Length of the interventions ranged from 6 months in the WIC sites in Maryland to 3 years in the high schools in Louisiana. The average intervention length was 2 years.

Eight grants were awarded to universities and one to State health departments. The goal of generating collaboration between health departments and universities was achieved; each grant except one had such a collaboration. All grants had appropriate collaborative partners, such as State affiliates of the American Cancer Society, school boards, the U.S. Department of Agriculture's (USDA) Cooperative Extension Service agencies, and/or 5 A Day industry members (Havas et al., 1994, 1995).

## Outcome Measures

The primary outcome for all studies was increased vegetable and fruit consumption. Measures of this outcome included food frequencies (which query how often a person eats foods listed), 24-hour recalls (respondents list all foods eaten) of a sample of the population, observations of children in the lunchroom, a single-item question ("How many servings of vegetables and fruit do you eat each day?"), and a seven-item questionnaire on food frequency. Both the single-item question and the seven-item questionnaire were common instruments used across all sites.

## Behavioral Theories and Conceptual Frameworks

The use of a strong theoretical design was considered an important aspect of the RFA so that these grants might contribute to a better understanding of how proposed interventions affect health behaviors. All interventions proposed by grantees were theory-based. Appendix D provides a brief primer for each of the theories used by one or more of the nine studies covered in this chapter, as well as the California school-based project (see Chapter 10). The applications of these theories to the intervention designs are discussed in Chapters 9 through 11.

In very brief summary, the model of individual behavior used by several studies was the Transtheoretical, or Stages-of-Change, Model. The models of interpersonal behavior were the Social Cognitive Theory (previously known as the Social Learning Theory) and conceptual frameworks from social networks, social comparisons, and social support. The community and group intervention meth-

ods for behavior change were the Diffusion of Innovations and the community organization/organizational change models. Finally, several studies used the PRECEDE-PROCEED planning process to structure the application of their theories.

## COLLABORATIVE EFFORTS OF GRANTEES

One of the RFA's specifications was the demonstration of willingness by awardees to collaborate on common analyses where possible. This was accomplished through face-to-face meetings and via conference calls. The result was a set of common questions that all grantees agreed to incorporate into their studies so that some baseline and followup data would be comparable among studies. The common questions consisted of a seven-item food frequency questionnaire (FFQ); stages-of-change questions for children and adults; and questions assessing awareness, knowledge, food preparation (used by some studies), self-efficacy, and demographics (see Appendix E for the common questions).

The seven-item FFQ was developed collaboratively, with input from nutrition assessment experts at NCI. The two questions that summarized total vegetable and fruit consumption were derived from the validated Block FFQ, which used these questions to correct for the overreporting that occurs with a frequency list of vegetables and fruit (Block et al., 1992; Krebs-Smith et al., 1995b). Other questions were added to specify fruit juices, potatoes in various forms, and salads. Asking about french-fried potatoes allowed researchers to remove them from the total count. A similar screener has been validated in adults (Serdula et al., 1993). Several of the nine studies used other nutrition assessment instruments and compared results using several assessments (Baranowski et al., 1997; Hunt et al., 1998).

Two sets of staging questions were developed, one for children and one for adults. Investigators debated whether children would be able to understand the concepts in the questions and whether to focus on eating *more*, as opposed to eating five, servings per day. The choice was to stage on eating more (See Appendix E). A paper on the reliability and validity of stage measures in children was published by researchers in the

Georgia study (Domel et al., 1996). A joint paper on adult stages that included eight of the nine grants indicated that the predominant stages for changing vegetable and fruit consumption were precontemplation, preparation, and maintenance (Campbell et al., 1999).

The awareness and knowledge questions used by all grantees had been previously used in the baseline and followup national surveys to determine whether people had heard of the Program, knew what it meant, and knew how many servings of vegetables and fruit they should eat for the sake of good health. In the national baseline survey, the latter question was a significant predictor of consumption (Krebs-Smith et al., 1995b) (see Appendix E).

The self-efficacy question was included as an important construct from Social Cognitive Theory, which appears to mediate intentions to change. Several grantees also used questions about the amount of responsibility a respondent has for shopping, meal planning, and preparation.

For some grantees, a consequence of incorporating common questions was that they had to omit questions from the surveys that they otherwise might have liked to ask. However, the discussions among grantees about the measurement issues enhanced the quality of all surveys.

One purpose of including common questions on surveys was to enable investigators to produce common papers. A publications policy described the types of publications expected from the grantees: papers with shared analyses, papers with a common theme but individual analyses, and independent papers. The joint papers agreed upon were on baseline consumption outcomes, self-efficacy, and stages of change (Thompson et al., 1999a; Campbell et al., 1999). To produce the common papers, it was necessary to use a data-coordinating center funded by NCI. All sites sent relevant data to the center for the common analyses.

## LESSONS LEARNED

There were both benefits to NCI from the entire collaborative research effort as well as lessons learned. Because the concept of the national 5 A Day Program was new and little was known about its potential effectiveness in a variety of

community settings, the strategy for the RFA was to obtain a variety of creative approaches that might then be compared. The strategy was successful. The projects had sound research designs, and adherence to the interventions was high. As the following chapters will reveal, the results indicate that the 5 A Day message can effectively change the behaviors of children and adults in a variety of settings, including schools, worksites, and churches, as well as through the WIC program (Buller et al., 1999; Campbell et al., 1999; Havas et al., 1998; Nicklas et al., 1998; Perry et al., 1998; Sorensen et al., 1999).

One value of simultaneously funding a number of projects that are focused on the same or similar outcomes is the ongoing collaboration of researchers over a number of years. Such opportunities to discuss ideas with colleagues who are focused on the same issues add to the quality of the research, which ultimately benefits NCI (or any funding source) and the general public.

The strategy also produced other benefits to nutrition research. These nine grants were the vanguard for a new generation of community-based research. They formed a model for other RFAs and program announcements that were channel-specific and required randomization of large numbers of units.

In addition, the funding of these nine grants sparked interest in the 5 A Day message by other researchers who have subsequently received funding from NIH or other sources for investigator-initiated research. For example, the 5 A Day message was incorporated into a large project grant that involved working with the Cancer Information Service (CIS). A minimal 5 A Day intervention (a brief phone message followed by mailed materials) was successful in several replications in increasing vegetable and fruit consumption levels of CIS callers (Marcus et al., 1998a,b). This project was re-funded to assess the impact of tailoring the 5 A Day message on consumption. Results should be available in 2001. Research also is under way with women at high risk of breast cancer to determine if a diet based on 5 A Day recipes, providing 10 to 14 servings of vegetables and fruit a day, will be successful in reducing levels of DNA damage (Thompson et al., 1999b).

These grants revealed that more research continues to be needed on improved methods of dietary assessment. Although the 5 A Day grantees

used a variety of self-assessment methods, there is no clear answer to the question concerning which hierarchy of methods should be applied in community-based research settings.

Perhaps the most important lesson learned from these grants is the need for NCI to develop a process for technology transfer of positive research effects to populations other than the research subjects. This might be done by adding a final optional year to successful projects. For the 5 A Day Program, NCI could convene workshops to be attended by grantees and possible users of the research, such as 5 A Day State coalitions, the Centers for Disease Control and Prevention, the American Cancer Society, the American Heart Association, USDA's Cooperative Extension Service, and industry. The purpose of such a workshop would be to discuss the needs of end users and how research can be translated for their implementation. Researchers would then develop implementation kits and training to facilitate transfer. These products and plans would then be reviewed and revised at a second workshop for the same end users. Finally, the end products would be produced and distributed, enhancing the possibility that more people in the United States would adopt dietary behaviors that might help prevent cancer and other chronic diseases.

## SUMMARY

The research initiative that resulted in the funding of the nine 5 A Day grants helped jump-start community-based nutrition research on a national basis, creating a critical mass of interventions with valid scientific designs. The initiative provided NCI with a set of interventions that can be field-tested and implemented throughout the Nation, with the possible long-term outcome of decreasing the incidence rates of a variety of cancers. Results have also indicated where further research is needed.

One of the tasks of NCI's National 5 A Day Program Office is to summarize these results and to perform appropriate transfer of the successful interventions to the State 5 A Day coordinators, other researchers, and voluntary organizations

that have national networks for implementing programs. Efforts are under way to transfer results of the North Carolina project through the American Cancer Society and those of the Arizona and Washington State projects through a small business grant. The intention of such technology transfer is to make sure that public funds spent for research ultimately benefit the American public. The dissemination of these results is an important step in reaching national consumption recommendations, which research shows can help reduce the incidence of a variety of cancers.

NCI needs to develop a 5 A Day research strategy for the new millennium. The next steps might include developing RFAs or program announcements that encourage 5 A Day research in new channels, such as restaurants and community organizations (e.g., Boys and Girls Clubs) or new populations (e.g., recent immigrants from Asia and Eastern Europe); combining physical activity and 5 A Day; exploring the effects of public/private partnerships; encouraging a focus on environmental and policy changes that support increased vegetable and fruit consumption; improving social marketing techniques involving new media, such as the Internet; comparing vegetable and fruit consumption and various phytochemicals; and assessing the effects of vegetable and fruit consumption at the cellular level and the effects of vegetable and fruit consumption on cancer survivors.

In summary, the research component of the Program has accomplished what it was designed to do. The next generation of research needs to build toward a variety of tested components in all community channels that ultimately can be implemented communitywide and combined with other lifestyle changes, such as physical activity. To accomplish this implementation, the vision for the future should include an array of set-aside research initiatives, ranging from basic to applied research, such as those initiatives described above. Technology transfer efforts should include field tests to make proven interventions practical for implementation by community organizations and evaluation designs that can be implemented at the local level. In this way, the 5 A Day message can be delivered and adapted as broadly as possible.

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# The 5 A Day Worksite Program

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## **INTRODUCTION**

At the beginning of the national 5 A Day Program, it was apparent that most adults were falling short of the 5 A Day goal and were eating fewer than five servings of vegetables and fruit daily (Subar et al., 1995). These adults included those in special segments of the population who do not typically receive nutrition education and who may not be reached frequently by the national media and point-of-purchase programs implemented by the National Cancer Institute (NCI) or the Produce for Better Health Foundation (PBH). Of the nine research projects funded by NCI to test methods for reaching specific and/or underserved populations, research groups from the Arizona Cancer Center, the Dana-Farber Cancer Institute (Massachusetts), and the Fred Hutchinson Cancer Research Center (Washington State) developed and evaluated three distinct interventions for adults in the worksite environment (see Table 1). This chapter briefly reviews the activities and outcomes of these three projects.

### **Advantages of Worksite Interventions**

The worksite offers many advantages for educating adults about the need for, and benefits of, eating five daily servings of vegetables and fruit, as well as for motivating them to do so. Many Americans work outside the home. Most of them spend up to half of their waking hours at work, where they eat at least one meal. Workplaces

usually have formal communication channels, and many have worksite wellness programs. Frequently, there are well-established methods for reaching employees with health information, programs, and cues to action. The worksite can also be structured to provide a health-promoting environment by offering such supports as healthy food selections, nonsmoking policies, and fitness facilities (Heimendinger et al., 1995). The stability of many workforces facilitates continuous education and longitudinal measurement of program outcomes. Employees often share information, attitudes, and skills with coworkers (Ibarra, 1992; Morrill, 1995), and they may discuss information received through worksite wellness programs with both coworkers and their families.

### **Underserved Adult Populations**

Three worksite interventions were designed to improve the intake of vegetables and fruit among employee populations that are traditionally underserved by nutrition education programs (i.e., minority, less-educated, and male employees) or that often do not receive health promotion programs in the workplace (employees of small companies or public employers).

The worksites that received the 5 A Day interventions were 22 community health centers in east-central Massachusetts (27 to 640 employees per center, with 20 centers having fewer than 120

**Table 1. Project Summaries**

| <i>Project Name</i>                                 | <i>Lead Agency</i>                     | <i>Target Group</i>  | <i>Intervention Elements</i>  | <i>Theories Used in Intervention</i>   | <i>Community Collaborators</i>  |
|---|--|--|---|--|---|
| TreatWell 5 A Day Program (Massachusetts)           | Dana-Farber Cancer Institute           | Employees in community health centers                        | <ul style="list-style-type: none"> <li>• 5 A Day media</li> <li>• Promotion of the Cancer Information Service</li> <li>• Employee advisory boards</li> <li>• Kickoff event (fair)</li> <li>• Small-group discussion series</li> <li>• Educational campaigns</li> <li>• Organizational change strategies</li> <li>• Family-focused materials and activities</li> </ul> | <i>Individual level</i><br>Social Cognitive Theory<br>Adult Learning Theories<br>Transtheoretical Model<br><br><i>Social group level</i><br>Community Development Model<br>Social Ecological Model | 22 community health centers in east-central Massachusetts             |
| 5 A Day Program (Seattle, Washington)               | Fred Hutchinson Cancer Research Center | Employees in small- to medium-sized businesses               | <ul style="list-style-type: none"> <li>• Employee advisory boards</li> <li>• Project intervention specialist</li> <li>• 5 A Day media</li> <li>• Preliminary campaign</li> <li>• Kickoff event</li> <li>• Self-help manual</li> <li>• Changes in food environment</li> </ul>  | <i>Individual level</i><br>Transtheoretical Model<br><br><i>Social group level</i><br>Community Organization Approach  | 28 small- to medium-sized businesses in the Seattle metropolitan area |
| 5 A Day for the Overlooked Worker Program (Arizona) | Arizona Cancer Center                  | Nonmanagerial labor and trades employees in public employers | <ul style="list-style-type: none"> <li>• Peer educators</li> <li>• Informal persuasion techniques</li> <li>• Resource guide</li> <li>• Newsletters</li> <li>• 5 A Day gifts</li> </ul>  | <i>Individual level</i><br>Social Comparison Theory<br><br><i>Social group level</i><br>Social Network Models<br>Diffusion of Innovations Theory   | 10 public employers in Tucson and Phoenix                             |

employees); 28 small- to medium-sized businesses in the Seattle, Washington, metropolitan area (250 to 2,000 employees per business); and 10 large public employers in the Tucson and Phoenix, Arizona, metropolitan areas (with a combined total of more than 50,000 employees) (Beresford et al., 2000; Morrill et al., 1999; Sorensen et al., 1999). Employers in small companies and public organizations usually do not provide extensive worksite wellness programs for their employees. The Massachusetts researchers found that even though health care employees had a heightened awareness of nutrition and health, they still needed information to assist them in translating nutrition science into practical skills that they could use to purchase and prepare vegetables and fruit.

The worksite populations in Massachusetts and Arizona included sizable proportions of minority

employees: 23 percent of the Massachusetts employees and 42 percent of the Arizona labor and trades employees self-identified as Hispanic; 18 percent of the community health center employees were African-American; and 11 percent of the Arizona labor and trades employees were African-American, Native American, or Asian-American. Also, many employees had low education levels: in Massachusetts, about 20 percent of employees had a 12th-grade education or less, and in Arizona, 51 percent of employees had a 12th-grade education or less. In national dietary surveys, minority status and lower education levels were associated with lower vegetable and fruit intake (Krebs-Smith et al., 1995). This diversity of ethnicity, race, and educational attainment provided researchers with the opportunity to reach persons who do not always respond well to national health campaigns (Ramirez and McAlister, 1988) and who have higher

incidences of and lower survival rates for chronic diseases (American Cancer Society, 1998; Peters et al., 1986). These projects used strategies that were adapted to respond to the diversity that existed in these employee populations.

Another important aspect of these employee populations was the gender distribution. Most of the employees in the Massachusetts (84 percent) and Seattle (58 percent) workplaces were female, but the majority of the Arizona target population was male (74 percent).

## DESCRIPTION OF 5 A DAY WORKSITE PROJECTS

### Intervention Methods

Key elements of the three projects are summarized in Table 1, and the theories used to guide the programs are explained in Appendix D.

#### *Massachusetts' TreatWell 5 A Day Program*

The TreatWell 5 A Day Program was tested for effectiveness with employees of community health centers. Two forms of the program were evaluated for their ability to increase employees' vegetable and fruit consumption—a worksite-only and a worksite-plus-family intervention. Worksites were randomly assigned to one of these two intervention conditions or to a minimal-intervention control condition. For all conditions, three core interventions targeting individual employees were implemented, i.e., promotion of the national 5 A Day campaign, promotion of NCI's Cancer Information Service hotline, and a 1-hour nutrition education program with a taste test. Core interventions refer to those activities that health centers agreed to deliver as a condition of participation.

Additional core intervention activities targeting individuals for the worksite-only and worksite-plus-family conditions included the following: a kickoff event that introduced the program to the worksite, a 10-session nutrition education discussion series titled Eat Well, and 2 campaigns lasting 3 to 5 weeks that featured multiple activities organized around a 5 A Day theme.

Core interventions targeting the organizational environment for the worksite-only and worksite-

plus-family conditions included point-of-purchase labeling and signage at vending machines and in break rooms, and encouragement for health center management to implement catering policies.

Core interventions targeting the family in the worksite-plus-family condition included: 1) Fit in Five, a five-session, learn-at-home nutrition education program; 2) four family newsletters and home mailings; 3) two family-oriented 5 A Day activities (family festivals) incorporated into annual health center-sponsored family events, such as picnics, holiday celebrations, and health fairs; and 4) two worksite-wide family 5 A Day campaigns. The interventions are described in detail elsewhere (Hunt et al., 2000).

Research staff members and investigators used principles of community building and worker participation to form employee advisory boards (EABs). Board members represented all segments of the health center population, including various departments and cultural groups (Sorensen et al., 1992). Project staff trained board members on the relationship between diet and cancer prevention and in skills needed to disseminate project messages throughout the health centers. Board members provided input to research staff that enabled staff and employees to plan and implement interventions in a way that suited the culture of the particular health center. The functioning of the TreatWell 5 A Day EABs as well as the process evaluation results related to the Program are described in detail elsewhere (Hunt et al., 2000).

#### *Seattle, Washington's 5 A Day Program*

The Seattle 5 A Day Program consisted of a series of 5 A Day messages and intervention activities designed to move employees in private companies along the continuum of change in vegetable and fruit intake from precontemplation (not thinking of changing) to maintenance (development of a 5 A Day habit). The program staff developed the initial version of these messages and activities. In the control condition, process and outcome measures were collected at baseline and followup, but worksites did not receive the program until after all posttesting was completed. Process evaluation of the intervention was reported by Beresford and colleagues (2000).

EABs were formed at worksites, and their members were responsible for tailoring intervention

materials to their worksites. However, the responsibilities of EAB members in the Seattle program exceeded those in Massachusetts and included implementing 5 A Day intervention activities and recruiting other worksite volunteers to participate in the intervention. The EABs were assisted by a project intervention specialist who visited the worksite approximately every 2 weeks and facilitated program implementation by providing nutrition education materials, assisting with activities, and participating in EAB meetings.

Messages about 5 A Day were regularly posted and updated to provide constant reminders about the importance of eating vegetables and fruit. Structural changes in food availability were achieved by working closely with cafeteria and food-service staff to provide more vegetables and fruit as part of the regular menus. Message content was altered over time, following a sequence suggested by the Stages-of-Change, or Transtheoretical, Model (see Appendix D). Messages targeted the transition points between stages sequentially, first changing from the precontemplation to contemplation stage, then from the contemplation to preparation stage, then from the preparation to action stage, and finally, from the action to maintenance stage. By taking this approach, the program staff aimed to change dietary behavior gradually.

In addition to this sequence based on the Transtheoretical Model, intervention activities implemented in the Seattle program's first phase were designed to increase awareness of the 5 A Day concept by transmitting messages to eat more vegetables and fruit and by introducing a preliminary campaign that foreshadowed the program's launch. In the second phase, a worksite-wide kickoff event provided opportunities for learning about the benefits of eating more vegetables and fruit and for assessing personal knowledge and diet. The program's third phase emphasized building employees' skills by providing them with a copy of a self-help manual, titled *Take 5: A Guide to Healthful Eating*, and by changing the food environments at the worksites. In the final phase, activities that emphasized maintenance were implemented.

### Arizona's 5 A Day for the Overlooked Worker Project

Two interventions were implemented in the public-sector worksites: a minimal intervention to

all employees at the 10 worksites and an intensive program to 41 social networks of blue collar, labor, and trades employees (Buller et al., 1999). The minimal intervention was a general 5 A Day wellness program in which printed nutrition education materials and messages from the national 5 A Day Program were distributed through formal worksite communication channels, such as cafeteria promotions, posters, paycheck stuffers, newsletter articles, and e-mail messages. A series of guest speakers from the local communities made presentations on 5 A Day and related topics. Guest speakers were selected and scheduled by project staff who worked with key contact persons at worksites. Printed materials, cafeteria promotions, guest speakers, and three different themes from the national program (*Eat More Salads*, *Fast and Easy*, and *Fit with Five*) were included and rotated over 18 months to maintain the novelty of the 5 A Day messages. When available, Spanish-language versions of the national materials were distributed. Project contact persons and managers (e.g., cafeteria managers) at each worksite were responsible for distributing and displaying 5 A Day messages and materials, which were purchased by the Arizona research group.

The intensive peer education intervention consisted of 5 A Day training conducted by employees who were centrally located in terms of communication flow within their informal social networks at work but who were not in supervisory roles (Buller et al., 1999). Program staff trained these peer educators in dietary and cancer prevention principles; in skills for selecting, preparing, and storing vegetables and fruit; and in strategies for educating and motivating dietary change. Training was conducted in eight 2-hour sessions with presentations, group discussions, and role-playing exercises.

During the last 9 months of the general 5 A Day wellness program, the peer educators worked to incorporate 5 A Day messages into informal communication among coworkers, without interfering with their job responsibilities. Peer educators employed a number of persuasive techniques for motivating behavior change (Larkey et al., 1999), provided advice on ways to overcome barriers to change, and addressed problems that their coworkers encountered when attempting to eat more vegetables and fruit. They also encouraged coworkers to make changes in the workplace

environment to enable greater vegetable and fruit consumption (e.g., requesting that vending machines contain 100 percent fruit juice and stocking community refrigerators with fruit). Peer educators received monthly telephone contacts from, and attended monthly in-service training sessions with, project research staff, who provided them with support, trained them in additional topics related to 5 A Day, collaborated on solutions to overcome obstacles encountered, and maintained their motivation to be peer educators.

To guide the peer educators, project staff developed a series of specially designed print educational materials—a nine-booklet 5 A Day resource guide and four 5 A Day newsletters. The major purpose of these materials was to assist peer educators in discussing the benefits of vegetables and fruit with coworkers and to provide appropriate 5 A Day education, tailored to this group of multicultural, largely male, less-educated employees in a southwestern State. These publications were designed to increase knowledge; alter beliefs and attitudes; address stages of change with, skills in, and barriers to eating vegetables and fruit; direct employees to events and activities in the general 5 A Day Program; and deliver timely 5 A Day information. The nine booklets in the resource guide each had a different theme, chosen for variety and interest to the target population: 1) vegetables and fruit, 2) Arizona Grown (5 A Day program sponsored by the Arizona Departments of Health Services and Agriculture), 3) fitness and 5 A Day, 4) family fun, 5) health benefits, 6) organic vegetable gardening, 7) festive foods, 8) quick and easy, and 9) 5 A Day for life.

These printed materials included the 5 A Day guidelines, theme articles, an ask-a-nutritionist column, a research report, a theme-oriented center spread of the booklet, an Arizona Grown calendar of seasonal vegetables and fruit and their nutritive properties, a Kids' Korner with fun activities for children, recipes and regional foods, an interactive record and calendar of progress, a top 10 list, and quick tips and fast 5 A Day facts. Booklets included interactive features, such as recordkeeping devices, menu planners, nutritionist columns, and goal-setting aids. Many features were included to draw the attention and interest of the employees' spouses and children so that the materials would become a family resource. The resource guide booklets were distributed

monthly and the newsletters bimonthly. Also, peer educators provided coworkers with gifts (e.g., an Arizona Grown brochure, a water bottle with the 5 A Day logo, vegetable seeds, and a Spanish-language recipe book) to help them practice the 5 A Day skills taught during each month. These gifts were not incentives or rewards for taking 5 A Day action, as they were given to all employees regardless of their dietary behavior.

For more information on program features, see Buller and colleagues (1999). Assessments of exposure to the programs and the association between exposure and dietary changes within this project were reported by Buller and colleagues (2000).

### Special Program Strategies Used With Culturally Diverse Employees

A unique feature of both the Massachusetts and Arizona programs was that they were designed to adapt 5 A Day messages and activities to reach and affect culturally diverse employee populations (Puerto Rican- and Mexican-Americans). At those Massachusetts community health centers with a large number of Hispanic employees, activities were modified to reflect Hispanic diet, language, and culture relevant to employees in the participating centers. For example, there were contests to guess the types of beans used in traditional recipes and to suggest alternative healthful bean recipes, because this is a staple food. In a family poetry contest with a vegetable and fruit theme, employees were encouraged to use their first language; poems written in Spanish were published in both Spanish and English (translated by the project staff). Latin themes and music were used in family festivals, and a bilingual intervention coordinator conducted meetings in Spanish when appropriate.

In Arizona, 39 percent of peer educators were Hispanic employees, and the resource guide contained both Spanish and English messages. However, Arizona researchers determined that a full, literal Spanish translation of the guide was not necessary. A high proportion of employees (> 85 percent) read English as well as (or better than) Spanish, and Mexican-American employees in focus groups said that they were not avid readers of Spanish but valued having at least some information available in Spanish. Thus, the highlights of many features were translated into Spanish, only very important messages were com-

pletely translated, and a Spanish summary was included for each booklet. Another popular feature with Hispanic employees was the photonovella (Kincaid, 1993; Piotrow et al., 1997), a continuing melodrama of characters, including a 5 A Day peer educator, coworkers, and family members, presented in photographs formatted like a comic strip. The photonovellas were presented in both Spanish and English because it was difficult to summarize them. Also, 5 A Day recipes were provided for common Mexican dishes.

## EVALUATION OF THE EFFECTS OF THE 5 A DAY WORKSITE PROJECTS

### Methods for Evaluating Program Success

All three 5 A Day worksite projects used randomized controlled evaluation designs, in which the alternative programs were compared to one another in order to assess the efficacy or effectiveness of the programs at improving daily vegetable and fruit intake. In Massachusetts, 22 community health centers were randomized to one of the three conditions. In Washington, 28 Seattle worksites—14 intervention (full program) and 14 control (minimal intervention)—were randomized into the project on completion of baseline surveys. Blocking variables included baseline survey response rates, type of worksite (e.g., educational, medical, or other), size of worksite, and the percentage of female employees. In Arizona, 82 informal social networks (or cliques) in 10 large worksites were matched on baseline vegetable and fruit intake, stage of change in dietary intake, self-efficacy expectations, coworker and management health supports, network characteristics, and proportion of female and Hispanic employees. One network in each pair was then randomized to the peer education program.

All evaluation designs included a baseline survey conducted prior to randomization and implementation and a followup survey conducted upon completion of the program. In both Massachusetts and Arizona, a census of eligible employees was attempted within each sampling unit (in Massachusetts, samples of 100 employees were surveyed in the two largest community health centers). Independent cross-sectional samples of

employees were surveyed in the Seattle worksites at baseline and followup. The Arizona researchers also conducted a 6-month followup survey to assess the persistence of program effects. The Massachusetts investigators conducted a worksite characteristics survey with executive directors of the community health centers to assess organizational changes produced by the program and to identify workplace characteristics that may have modified or mediated change.

Investigators in the three worksite projects agreed to include as one of their outcome measures a seven-item vegetable and fruit-intake food-frequency questionnaire (Subar et al., 1995; Serdula et al., 1995) based on Block's food-frequency survey (Block et al., 1986) (see also Chapter 8 and Appendix E). Other vegetable and fruit-intake assessments also were included in the surveys: in Massachusetts, Willett's food-frequency questionnaire (Willett et al., 1985) and a single question on daily servings of vegetables and fruit. In Seattle, a single question on daily servings of vegetables and fruit, a usual-day checklist, the vegetable and fruit subscale from the fat and fiber behavior questionnaire, and three unannounced 24-hour recalls were used. In Arizona, an abbreviated 24-hour intake record probing for vegetable and fruit consumption was used. The surveys also included measures of stages of change, self-efficacy, and beliefs and attitudes related to vegetable and fruit consumption. In addition to evaluating the overall efficacy or effectiveness of the 5 A Day worksite programs, researchers also evaluated the mediating and modifying mechanisms in program effectiveness (Arizona and Massachusetts), in program efficacy for decreasing fat consumption (Massachusetts), in program efficacy for altering the work environment to support vegetable and fruit consumption (Massachusetts), in the persistence of changes in consumption (Arizona), and in program cost-effectiveness (Massachusetts). All projects also assessed the process of program implementation. Data from these measures are reported elsewhere (Beresford et al., 2000; Buller et al., 2000; Hunt et al., 2000) and are summarized in the following section.

### Selected Outcomes of 5 A Day Worksite Projects

#### *Massachusetts' TreatWell 5 A Day Program*

The worksite-plus-family intervention condition group was more successful in increasing vegetable and fruit consumption than the worksite-only

condition group. Controlling for gender, education, occupation, living situation, and worksite, employees in the worksite-plus-family condition group increased vegetable and fruit consumption by 19 percent (approximately 0.5 serving per day) compared with no change in the control group ( $p = 0.018$ ). A 7-percent increase (approximately 0.2 serving per day) was observed in the worksite-only condition group (Sorensen et al., 1999).

### **Washington's 5 A Day Project**

The comparison of the worksites between the intervention and control conditions in Seattle using cross-sectional samples at baseline and followup showed that the 5 A Day worksite program improved vegetable and fruit consumption by 0.3 serving per day, as measured at 24 months post-baseline (3 to 10 months post-intervention) on the seven-item questionnaire. This increase was significant ( $p < 0.05$ ) in a mixed-model regression analysis, with treatment (fixed), pairing, and pairing by treatment (random) effects. Analyses of other intake measures also provided evidence of a small but true positive intervention effect by the Seattle 5 A Day Program.

### **Arizona's 5 A Day for the Overlooked Worker Project**

The 5 A Day peer education program produced greater immediate increases in vegetable and fruit consumption than did the general 5 A Day Program when averaged within informal social networks and compared within matched pairs using regression analysis. On the seven-item questionnaire, vegetable and fruit intake significantly increased by 0.46 serving per day in the peer education condition groups compared with that observed in the control cliques ( $p = 0.002$ ). When measured by the seven-item questionnaire at the 6-month followup survey, however, this effect of the 5 A Day peer education program did not persist ( $-0.04$  serving,  $p = 0.743$ ). The immediate positive effect of the 5 A Day peer education program also appeared in the 24-hour dietary recall measure ( $+0.77$  daily serving,  $p < 0.001$ ), but this assessment did show lasting change 6 months after the program was completed ( $+0.41$  serving,  $p = 0.034$ ) (Buller et al., 1999).

### **Comparison of the Effectiveness of 5 A Day Worksite Projects**

All three 5 A Day worksite projects improved employees' daily intake of vegetables and fruit

when the maximum set of intervention activities was delivered. The projects achieved smaller observed changes, which may have been due to methods used in conducting the followup surveys. The Arizona evaluation showed that the peer-led 5 A Day worksite project's positive impact on consumption declined once project activities ceased, but enough change persisted to be detected at the 6-month followup. Still, it appears that worksite dietary change programs need to be maintained, rather than being implemented one time, in order to achieve persisting changes in dietary patterns.

The similar positive outcomes of all three worksite projects conducted in very different environments and geographic areas with different populations imply that worksite nutrition education programs can motivate adults to take actions to increase vegetables and fruit in their diets. The successes in Massachusetts and Arizona also indicated that 5 A Day worksite programs can be effective when designed specifically for culturally diverse employee populations and for employee groups with lower educational status, both of which have been difficult to affect with previous worksite wellness programs and community nutrition education programs. These outcomes and experiences in the development and implementation of the 5 A Day worksite projects provided investigators with several important theoretical and practical lessons.

## **LESSONS LEARNED**

- A combination of individual- and environmental-level intervention strategies is effective in promoting dietary change in adult employees.
- Involving coworkers in peer education and incorporating families in behavior change efforts effectively influence workers to change their diets to include more vegetables and fruit.
- Multicultural adults, less-educated adults, and males show an interest in methods for improving their health.
- Incorporating the influences of families and coworkers supports dietary change.
- It is feasible to recruit private businesses, public health agencies, and public employers to participate in a community-based nutrition education program and in its evaluation.

- A 5 A Day worksite project is feasible and acceptable for use in the entire workplace, in cafeterias, and in the informal social environment at work.
- Peer education and communication network strategies can improve vegetable and fruit consumption among nonmanagerial and trades employees.
- Dietary changes can be achieved by treating worksites or work groups as a whole rather than by counseling employees individually.
- Worksite 5 A Day projects can produce changes in dietary patterns that persist for several months; however, these changes decay over time—worksite projects should be maintained rather than delivered only one time.

## **DIRECTIONS FOR FUTURE RESEARCH ON 5 A DAY WORKSITE PROJECTS**

The outcomes and lessons learned in these three projects raise many questions that deserve further consideration by investigators and program planners. Some of these include whether to focus on single behaviors regarding vegetables and fruit, how to address nutrition education for males, whether the projects are effective differentially in various ethnic groups, and which methods are most successful for achieving long-term dietary changes. What follows is a summary of a few of the larger issues that arose in the course of implementing these projects.

All three projects focused on a single health issue—eating more vegetables and fruit. However, Massachusetts embedded 5 A Day messages within the framework of total diet; that is, the Eat Well 5 A Day discussion group series addressed fat and fiber, in addition to vegetables and fruit. The projects definitely benefited from this focus on a single issue in the development of intervention activities and in the delivery of simple, clear recommendations. However, simple messages can quickly become stale with repetition, and all three projects used various themes and rotated the topics to maintain novelty. Consequently, there is a need for research to identify other strategies that can improve the effect of simple, focused messages. One strategy might be to incorporate 5 A

Day messages in a multirisk-factor worksite wellness project and test whether the messages are as effective at improving vegetable and fruit intake when they are accompanied by messages on other disease risk factors. The inclusion of messages on other disease risks would help maintain the novelty of the intervention messages, but the messages to increase vegetable and fruit intake may not be as potent when employees are asked to consider making several different changes in their lifestyles, not all of which are related to diet. At least one study has indicated no advantage to this multirisk-factor strategy (Sorensen et al., 1996). However, a progressive approach to building a multirisk-factor program—where worksite wellness professionals start with 5 A Day messages and then integrate messages with related disease-prevention behaviors (e.g., reducing dietary fat, increasing dietary fiber, or initiating a program of regular exercise) in which 5 A Day messages can be reinforced—might be an effective strategy. This suggests an avenue for future work to expand the approaches evaluated in these programs.

One important factor that was not tested directly was the role of gender and the differences between men and women in mediating mechanisms for dietary change. Traditionally, women have been the focus of many community nutrition programs, and they were the focus in the Massachusetts project. However, the Arizona project showed that a 5 A Day worksite project can promote substantial dietary changes in a majority male population. There needs to be further exploration of the unique experiences of men and women that may determine their responses to program activities, such as different experiences in food selection and preparation, balancing of home and work, and health maintenance behaviors.

These three projects worked with a variety of employers (private and public; large, medium, and small) and employees (upper to lower socioeconomic status). No single project, though, performed direct comparisons between employee populations. Such a study would be instructive, for each characteristic of the worksite can affect what Program activities are possible, the perceptions of the importance of workers' health to the organization, and the experiences with preventive behaviors and health promotion programs.

Finally, future studies should identify strategies to produce persisting change in dietary patterns. The simple 5 A Day message may be easy to learn, but methods will be needed to keep the idea novel when employees hear it many times. Including the message in a multiple-risk-factor wellness program may be one way to maintain employee interest in the 5 A Day concept.

## SUMMARY

The workplace provides health promotion program planners with many advantages, such as the ability to reach most adults, as well as many challenges, including outreach to employees who do not work in office settings. The three worksite projects demonstrated that 5 A Day interventions can be effective in increasing vegetable and fruit consumption. Thus, the worksite remains an important venue for 5 A Day activities. It is an effective community channel for national and local Program activities to affect underserved and hard-to-reach populations with the 5 A Day concept. The strategies used in the studies reported here also may strengthen social support for dietary change and improve employee morale in the workplace.

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# 5 A Day Behavior Change Research in Children and Adolescents

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## INTRODUCTION

Vegetable and fruit consumption has been linked to reduced risk for various forms of cancer (Steinmetz and Potter, 1996). However, vegetable and fruit consumption tends to be low in children and adolescents. Estimates indicate that only 6.8 to 27.7 percent of children eat five or more servings of vegetables and fruit per day as recommended by the National Cancer Institute (NCI) and other national health organizations (Kann et al., 1996; Basch et al., 1994; Krebs-Smith et al., 1996). High school students and other adolescents consume about 2.6 servings of vegetables and fruit per day (Nicklas et al., 1998; Beech et al., 1999).

Substantial evidence indicates that risk factors and risk behaviors present in youth track into later childhood and early adulthood (Nicklas et al., 1995; Perry et al., 1994; Webber et al., 1991; Berenson et al., 1991; Porkka et al., 1991; Clarke et al., 1978). Longitudinal data supporting the tracking of behaviors in youth are limited; however, several studies have identified the tracking of dietary behaviors in youth (Kelder et al., 1994; Stein et al., 1991; Nicklas et al., 1998). Because consumption of vegetables and fruit is low among youth and adolescents, and because dietary behavior developed in childhood may track into adulthood, interventions to increase vegetable

and fruit consumption in children and adolescents are important and might help reduce cancer risk. School-based dietary interventions help children and adolescents form positive health behaviors that may last into adulthood, reducing disease risk for many years.

Intervention research conducted in the schools has its difficulties (e.g., the lack of cooperation of teachers, limited availability of class time). However, a number of advantages can be seen for school-based intervention research on vegetable and fruit consumption. More than 95 percent of children 5 to 17 years of age are enrolled in school, making schools a good setting to reach children and adolescents with health promotion programs (Kann et al., 1995), including programs to increase vegetable and fruit consumption. Because a wide range of children and adolescents attend school, traditionally hard-to-reach groups also can benefit from health promotion and disease prevention programs through this setting (Kirby and DiClemente, 1994). In addition, regular visits to schools provide health promoters with repeated access to children and adolescents and enable repeated exposure to intervention activities. Complex interventions can be developed that repeat key messages, building from

activities that target knowledge and attitude change to more intensive activities that include behavioral skills-building, goal-setting, and self-monitoring. Repeated access to students also enhances research and evaluation, thereby allowing for completion of followup assessments (Reynolds et al., 1999).

The school setting provides opportunities for introducing environmental modifications that sustain long-term changes in vegetable and fruit consumption well after the delivery of a curriculum or other nonenvironmental intervention. To support dietary change, school policies can be modified, teachers and other personnel can be trained, and changes in the physical environment can be made. If sustained, the environmental changes support the positive health behavior of succeeding student generations. Schools also can provide access to families, with recruited children and adolescents serving as links to their parents and siblings. This can multiply the efforts of the health promotion team by changing the parents' and siblings' behaviors, reducing their disease risk as well as creating a home environment that is supportive of dietary change in the recruited student. These reasons all support the development, implementation, and evaluation of school-based interventions to increase the vegetable and fruit consumption of children and adolescents.

This chapter will provide a review of the school-based intervention research funded under NCI's 5 A Day for Better Health Program. This chapter does not constitute an exhaustive review of all school-based efforts to increase vegetable and fruit consumption. The five intervention projects are described, and brief descriptions of the evaluation design for each project are given. Reports summarizing each project's effect on vegetable and fruit consumption also are included. The experience of the 5 A Day investigators and the lessons learned from these prevention studies will be instructive to those interested in mounting effective school-based dietary intervention, cancer prevention programs.

## OVERVIEW OF SCHOOL-BASED INTERVENTION PROGRAMS

### Lead Agencies and Collaborative Relationships

The intervention approach used by each 5 A Day school-based research site is summarized in

Table 1. In three of the five sites (Alabama, Georgia, and Louisiana), a university-based research group provided the overall project leadership. In Minnesota, there was close collaboration between the Minnesota Department of Health and the University of Minnesota in designing and executing the project. Investigators were drawn from both agencies, with the principal investigator based at the Minnesota Department of Health. In California, the project effort was led by the California Department of Health Services. The California project received less money, and was funded for a shorter duration and through a different mechanism, than were the other projects discussed in this chapter. Therefore, it is the only project without a randomized design.

Each 5 A Day project maintained extensive relationships with community organizations (e.g., the Alabama Division of the American Cancer Society; Hoover, Alabama, city schools) that were stakeholders in the goal of increasing child and adolescent consumption of vegetables and fruit. These stakeholder organizations provided credibility and support for the projects in the larger health community and served on the advisory boards for several projects. The most important collaborative relationships were those between the 5 A Day Program and the participating school districts in their area. The participation of these districts was essential for the success of each project, including the recruitment of schools and participating families, delivery of intervention activities, completion of outcome measures, and development and pilot-testing of intervention strategies. School personnel often served on the steering or advisory committees for the projects and, in some cases, as project investigators. The identification and selection of key school personnel to serve as collaborators on the projects facilitated access to the schools and greatly enhanced the design process for the interventions, helping to ensure their utility in the school environment.

### Description of the Intervention Projects

Four projects targeted elementary school students in grades 4 and 5 (Alabama, California, Georgia, and Minnesota) while one site (Louisiana) targeted high school students. For detailed descriptions of each program, see Baranowski and colleagues, (2000); Foerster and colleagues (1998); Nicklas (1997); Perry and colleagues (1998); and Reynolds and colleagues (1998).

Table 1. Project Summaries

| <i>Project Name</i>   | <i>Lead Agencies</i>  | <i>Target Groups</i>      | <i>Intervention Elements</i>   | <i>Theories Used in Intervention</i>                         | <i>Community Collaborators</i>   |
|---|---|---------------------------|--|--|--|
| 5 A Day Power Plus (Minnesota)                              | <ul style="list-style-type: none"> <li>• Minnesota Department of Health</li> <li>• University of Minnesota</li> </ul> | Fourth- and fifth-graders | <ul style="list-style-type: none"> <li>• Classroom activities</li> <li>• Parent involvement</li> <li>• School food service</li> <li>• Industry involvement</li> </ul>  | Social Cognitive Theory                                      | <ul style="list-style-type: none"> <li>• St. Paul public schools</li> <li>• Minnesota 5 A Day Coalition</li> </ul>   |
| 5 A Day—Power Play! (California)                            | <ul style="list-style-type: none"> <li>• California Department of Health Services</li> </ul>                          | Fourth- and fifth-graders | Social marketing approach with <ul style="list-style-type: none"> <li>• Schools</li> <li>• Supermarkets</li> <li>• Farmers markets</li> <li>• Mass media</li> <li>• Community youth organizations</li> </ul> | Resiliency Theory<br><br>Reciprocal Determinism              | <ul style="list-style-type: none"> <li>• Alisal Union School District</li> <li>• Salinas City School District</li> <li>• San Diego Unified School District</li> <li>• Salinas Community Organizations</li> </ul> |
| Gimme 5: Fruits and Vegetables for Fun and Health (Georgia) | <ul style="list-style-type: none"> <li>• Emory University</li> </ul>  | Fourth- and fifth-graders | <ul style="list-style-type: none"> <li>• Classroom activities</li> <li>• Parent involvement</li> <li>• Point-of-purchase education</li> </ul>  | Social Cognitive Theory                                      | <ul style="list-style-type: none"> <li>• Gwinnett County, Georgia, Board of Education</li> <li>• Atlanta public schools</li> </ul>   |
| Gimme 5: A Fresh Nutrition Concept for Students (Louisiana) | <ul style="list-style-type: none"> <li>• Tulane University School of Public Health</li> </ul>                         | High school students      | <ul style="list-style-type: none"> <li>• School media marketing campaign</li> <li>• School meal modification</li> <li>• Classroom activities</li> <li>• Parent involvement</li> </ul>                        | PRECEDE-PROCEED Model  | <ul style="list-style-type: none"> <li>• Archdiocese of New Orleans</li> <li>• Fruit and vegetable commodity groups</li> </ul>   |
| High 5 (Alabama)  | <ul style="list-style-type: none"> <li>• University of Alabama at Birmingham</li> </ul>                               | Fourth-graders            | <ul style="list-style-type: none"> <li>• Classroom component</li> <li>• Cafeteria component</li> <li>• Parent component</li> </ul>   | Social Cognitive Theory<br><br>Social psychological theories | <ul style="list-style-type: none"> <li>• Bessemer Board of Education</li> <li>• Hoover City Schools</li> <li>• Jefferson County Board of Education</li> </ul>  |

The interventions at each site were developed using an organizing theoretical model or set of models (see Chapter 8 and Appendix D). Social Cognitive Theory (Bandura, 1986) had been used successfully in numerous school-based interventions and was used by four of the 5 A Day projects (Alabama, California, Georgia, and Minnesota). Louisiana's project used the PRECEDE-PROCEED Model to organize intervention activities, while also employing social marketing strategies and stages of change in some elements of its intervention. In the design of its intervention, the California project used social marketing approaches with the Resiliency Theory (Garmenzy, 1991; Thompson and Daugherty, 1984) and Reciprocal Determinism, a component of Social Cognitive Theory. The use of organizing theories allowed investigators to

focus intervention strategies on factors that would lead to the modification of eating behavior, making these theory-based interventions more powerful than interventions developed without the use of a guiding theory (Contento et al., 1995).

Although the specific intervention components varied among projects, most shared three elements in their interventions: 1) a classroom curriculum, 2) modification of school food-service activities, and 3) parent or family involvement. Most of the projects solicited the participation of vegetable and fruit commodity groups to assist with some aspect of the intervention. Together, these components attempted to change the motivation, skills, and behavior of the individuals and tried to transform the family and school environments that support behavior

modification in the individuals. A more extensive intervention description is supplied for each project below.

## 5 A Day Power Plus (Minnesota)

### *Design Overview*

The Minnesota 5 A Day Power Plus study (Perry et al., 1998) was a randomized trial with more than 1,700 students in 20 schools matched on size, percentage of students receiving free or reduced-price lunches (an indicator of socioeconomic status), and ethnic makeup of the student population. Schools were paired and randomly assigned to intervention or control conditions. Schools were the unit of analysis. Baseline data were collected from fourth-grade students during January and February 1995. The fourth-grade intervention took place during March through May 1995. Those same students received the second half of the intervention as fifth-graders during October 1995 through January 1996. Followup data were collected during late January through March 1996 following the conclusion of the intervention. The impact of the program was assessed using the following methods: 1) observations of student intake at lunch to assess vegetable and fruit consumption; 2) food-record-assisted 24-hour dietary recall; 3) a student health behavior questionnaire administered in the classroom to assess psychosocial factors related to consumption; and 4) a telephone survey of parents to assess home availability of vegetables and fruit, as well as parent consumption, parenting practices, and attitudes toward vegetable and fruit consumption. In addition, the project used extensive process evaluation to assess the degree to which the intervention was implemented as intended, the attitudes of teachers and food-service staff toward vegetables and fruit, and the level of student exposure to competing programs that might have affected the results. Table 2 provides a summary of the evaluation designs for all five State programs.

### *Use of Theory in Intervention Design*

The Power Plus project followed a model of youth health promotion derived from both Social Cognitive Theory (Parcel et al., 1999; Bandura, 1977; Bandura, 1986; Perry and Jessor, 1985) and prior research in changing children's dietary behavior (Lytle and Achterberg, 1993; Luepker et

al., 1996; Perry et al., 1997). The intervention targeted psychosocial factors hypothesized to be both predictive of children's eating habits and amenable to change (Perry et al., 1997). Table 3 illustrates the use of theory in intervention design for all five State programs. Major components of Social Cognitive Theory and examples of their application included the following:

- **Environment** (social support from peers, teachers, and food-service staff, as well as expanded opportunities to eat vegetables and fruit in the school cafeteria);
- **Self-efficacy/behavioral capability** (skills training in preparation of, and asking for, vegetables and fruit);
- **Outcome expectations/observational learning** (new role models using cartoon mascots and comic strips to increase vegetable and fruit consumption);
- **Self-control** (setting goals and self-monitoring of vegetable and fruit consumption); and
- **Reinforcement** (incentives and rewards for eating vegetables and fruit).

### *Intervention Description*

The intervention consisted of four components: 1) classroom curricula, 2) parental involvement and education, 3) school food-service changes, and 4) industry support. For the classroom, curricula were written for the fourth grade (High 5) and for the fifth grade (5 for 5). Sixteen 40- to 45-minute classroom sessions were included for each curriculum, and these were implemented twice a week for 8 weeks. The curricula included skills-building and problemsolving activities as well as snack preparation and taste-testing. These materials also introduced new role models: vegetable and fruit cartoon characters (High 5) and Olympic athletes (5 for 5). The fourth-grade curriculum featured the High 5 Flyers, a team of vegetable and fruit cartoon characters with names like the Juicester, Go Go Grape, and the Green Machine. The fifth-grade curriculum included a serial adventure in which students tried to solve the mystery of missing vegetables and fruit at the 1996 Olympic training camps. Students formed teams during both curricula, and team competition to eat more vegetables and fruit during lunch was a central activity in both grades. Students received points for vegetables and fruit eaten at lunch and small prizes on both an

Table 2. Evaluation Designs

| <i>Project Name</i>              | <i>Evaluation Design</i>  | <i>Measures</i>  | <i>Measurement Periods</i>   | <i>Number of Participants</i>                 | <i>Age, Gender, Ethnicity</i>   |
|----------------------------------|---|--|--|---|---|
| 5 A Day Power Plus (Minnesota)   | Schools randomly assigned to conditions: intervention vs. control                 | <ul style="list-style-type: none"> <li>• 24-hour diet recall</li> <li>• Cafeteria observation</li> <li>• Psychosocial questionnaire</li> <li>• Parent telephone survey</li> </ul>  | Baseline<br>1 year post-baseline   | 20 schools<br>1,750 students                  | Age = 10.0 years<br>Female = 50%<br>White = 48%<br>Hispanic = 6%<br>Asian = 25%<br>African-American = 19%<br>Other = 2% |
| 5 A Day Power Play! (California) | Schools assigned to conditions: school only vs. school plus community vs. control | <ul style="list-style-type: none"> <li>• 24-hour food diary</li> <li>• Psychosocial questionnaire</li> </ul>   | Pretests and posttests for an 8-week intervention in late winter/early spring 1995 | 49 schools<br>2,684 students                  | Age <sup>1</sup><br>Female = 50%<br>Fourth-grade = 44%<br>Fifth-grade = 51%<br>English spoken in home = 63%             |
| Gimme 5 (Georgia)                | Schools randomly assigned to conditions: intervention vs. control                 | <ul style="list-style-type: none"> <li>• 7-day food record</li> <li>• Psychosocial questionnaire</li> <li>• Telephone interviews with parents</li> </ul>   | Annual in late February to early March<br>Completed in grades 3 through 5          | 16 schools<br>1,946 students                  | Age = 8.7 years<br>Female = 50%<br>White = 79%<br>Hispanic = 1%<br>Asian = 2%<br>African-American = 16%<br>Other = 2%   |
| Gimme 5 (Louisiana)              | Schools randomly assigned to conditions: intervention vs. control                 | <ul style="list-style-type: none"> <li>• 24-hour diet recall</li> <li>• Psychosocial questionnaire</li> <li>• Self-report questionnaire</li> <li>• Outcome measures for school environment</li> </ul>                            | Baseline<br>1 year postbaseline<br>2 years postbaseline                            | 12 schools<br>2,213 students                  | Age = 14.8 years<br>Female = 56%<br>White = 84%<br>Hispanic = 9%<br>African-American = 4%<br>Other = 3%                 |
| High 5 (Alabama)                 | Schools randomly assigned to conditions: intervention vs. control                 | <ul style="list-style-type: none"> <li>• 24-hour diet recall</li> <li>• Block food frequency questionnaire (parents)</li> <li>• Cafeteria observation of consumption (students)</li> <li>• Psychosocial questionnaire</li> </ul> | Baseline<br>1 year postbaseline<br>2 years postbaseline                            | 28 schools<br>1,698 students<br>1,308 parents | Age = 8.7 years<br>Female = 50%<br>White = 83%<br>African-American = 16%<br>Other = 1%                                  |

<sup>1</sup> Grade rather than age was the target characteristic of interest.

individual and team basis. All fourth- and fifth-grade teachers completed a 1-day training session prior to implementing the curricula.

The parental involvement program for the fourth grade was a modification of the home team approach developed by Perry and colleagues at the University of Minnesota (Perry et al., 1988) and consisted of five informational and activity packets brought home by the students to share with their parents. The fifth-grade parent component consisted

of four snack packs brought home by the students. Snack packs were assembled by the school food service and included food industry donations. The snack items were those prepared in class by students on the same day so that students could acquire the skills to make these snacks for their families.

The food-service intervention was designed to encourage selection and consumption of vegetables and fruit at school lunch and to reinforce lessons in consumption learned at home and in the classroom.

**Table 3. Use of Theory for Intervention Design**

| <i>Project Name</i>   | <i>Elements of the Theory</i>   | <i>Examples of Use in the Classroom Component</i>  | <i>Examples of Use in the Family Component</i>  | <i>Examples of Use in the Environmental or Community Component</i>   |
|---|---|--|---|--|
| 5 A Day Power Plus (Minnesota)                              | <i>Social Cognitive Theory</i> : environment, behavioral capability, outcome expectations, goal-setting, self-monitoring, observational learning, reinforcement, self-efficacy              | <ul style="list-style-type: none"> <li>• Role models created to provide vegetable and fruit messages</li> <li>• Skills development through food preparation</li> </ul>   | <ul style="list-style-type: none"> <li>• Rewards for participation in the home team</li> <li>• Family goal-setting concerning vegetables and fruit</li> </ul>   | <ul style="list-style-type: none"> <li>• Food service: increased quantity and choice of vegetables and fruit</li> <li>• Industry spokesman presented in all classrooms</li> </ul>  |
| 5 A Day Power Play! (California)                            | Social marketing approaches using <i>Resiliency Theory</i> and <i>Reciprocal Determinism</i> : knowledge, affect, skills, norms, bonding and belonging, reward and recognition, environment | <ul style="list-style-type: none"> <li>• Knowledge: Message on all materials to “Eat 5 A Day!”</li> <li>• Norms: Power Passport (2-week diary) where child observes own vegetable and fruit consumption and that of peers</li> </ul>         | <ul style="list-style-type: none"> <li>• (Bonding/belonging, skills, norms) survey power: child surveys family about vegetable and fruit consumption, preferences</li> <li>• Environment: vegetables and fruit available for child</li> </ul> | <ul style="list-style-type: none"> <li>• Environment: “Health Bites” public service announcements</li> <li>• Environment, bonding, skills, norms: Supermarket Sleuth grocery store tours</li> </ul>  |
| Gimme 5: Fruits and Vegetables for Fun and Health (Georgia) | See list for <i>Social Cognitive Theory</i> , above   | <ul style="list-style-type: none"> <li>• Activities to increase self-efficacy in asking for vegetables and fruit</li> <li>• Goal-setting to increase vegetables and fruit at specific meals</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Parent helps child make vegetable and fruit recipes</li> <li>• Parent confirms goals reached at home</li> </ul>  | <ul style="list-style-type: none"> <li>• Demonstration by produce manager to enhance self-selection of vegetables and fruit</li> </ul>   |
| Gimme 5: A Fresh Nutrition Concept for Students (Louisiana) | <i>PRECEDE-PROCEED Model</i>  | <ul style="list-style-type: none"> <li>• Workshops and supplemental subject activities to build skills</li> </ul>  | <ul style="list-style-type: none"> <li>• Parent-Teacher Organization meetings with media and activities to build skills</li> <li>• Gimme 5 column in school newspaper to build skills</li> </ul>  | <ul style="list-style-type: none"> <li>• Taste-testing and marketing stations to build awareness</li> <li>• Incentives to operationalize reinforcement</li> </ul>  |
| High 5 (Alabama)  | See list for <i>Social Cognitive Theory</i> , above   | <ul style="list-style-type: none"> <li>• Behavioral capability built by modeling and teaching skills for preparing vegetables and fruit</li> <li>• Reinforcement achieved through individual and class rewards for reaching goals</li> </ul> | <ul style="list-style-type: none"> <li>• Families asked to set goals as a part of the homework exercises</li> <li>• Simple self-monitoring tools used to follow vegetable and fruit progress at home</li> </ul>                               | <ul style="list-style-type: none"> <li>• Food-service workers’ skills increased for purchasing, preparing, and promoting vegetables and fruit</li> <li>• Posters, 5 A Day logo aprons, and labeling of vegetables and fruit in cafeteria used to trigger consumption and modify norms</li> </ul> |

This component included point-of-purchase promotions using characters and messages from the classroom curricula, enhanced attractiveness of vegetables and fruit served at lunch, and an increased variety and choice of vegetables and fruit available to the

students. The food-service staff participated in a 2-hour training session before each curriculum.

The industry support component strengthened the community connection by providing linkage to the Minnesota 5 A Day Coalition, a licensed

participant in NCI's 5 A Day Program. One industry member gave classroom presentations and provided vegetables and fruit for classroom taste-testing, home snack packs, and school lunches. Other partners developed and printed posters for the lunchroom and provided educational and incentive materials for the home packets.

Students and teachers rated the taste-testing in the classroom and the cartoon role models as the most popular and effective part of the curricula. The parent component appeared to be the weakest part of the program. In part, this may have been due to a large migrant population in which more than 20 percent of the parents were unable to speak English. Changes in vegetable and fruit consumption occurred almost entirely at school lunch and not at home. Teachers and staff rated the program highly and indicated that they would continue to offer the program if given the opportunity to do so. In fact, the St. Paul School District has continued the program in the 2 years since the intervention's conclusion, though in a more abbreviated format without the fifth-grade curriculum.

## 5 a Day—Power Play! (California)

### *Design Overview*

The study used a nonrandomized design to determine the effectiveness of offering the Power Play intervention in schools only or through a communitywide public health approach, as compared with a control community in which no intervention was offered (school only versus school plus community versus control) (Foerster et al., 1998). The study sample involved more than 2,600 fourth- and fifth-graders attending 49 public schools in three geographically distinct communities. Fifteen schools and 1,077 children participated in the school-plus-community condition, 19 schools and 845 children in the school-only condition, and 15 schools and 762 children in the control condition. Schools in the same community tended to be in the same condition. The children participated in Power Play! activities during an 8-week intervention period in the late winter and early spring of 1995. They completed 24-hour food diaries and survey questions before and after the intervention. Food diaries were analyzed for vegetable and fruit consumption. Survey questions addressed attitudinal variables

based on the seven behavioral change constructs that the Power Play! program uses (see next section). Measures for skills included children's survey queries, such as, "I think I can ask school staff for fruits and vegetables (agree/disagree)." Measures for norms included such queries as, "My friends will make fun of me if I eat fruits and vegetables every day (agree/disagree)." Environment measures included children's survey queries, such as, "I think I can find fruits and vegetables at the school cafeteria (agree/disagree)." These measures also included school site observations for qualitative assessment. The evaluation framework included process measures for adult intermediaries that incorporated the seven behavioral change variables.

### *Use of Theory in Intervention Design*

Power Play! is a social marketing program that works through five communications channels: schools, supermarkets, farmers' markets, community youth organizations, and media. Power Play! was based on seven behavioral change constructs that interact and change one another over time. This principle is known as Reciprocal Determinism, which originated from Resiliency Theory and Social Cognitive Theory (Bandura, 1986) (see Appendix D). The seven behavioral change constructs nested in the design of the Power Play! intervention and evaluation design are knowledge, affect, skills, norms, bonding and belonging, reward and recognition, and environment. Each of the Power Play! activities is intended to promote vegetable and fruit consumption by framing it within one or more of these constructs. For example, one Power Play! activity is the mini-salad bar, and it incorporates the behavioral change constructs of skills (through students learning to identify new foods) and norms (through students observing their peers eating and enjoying vegetables and fruit). The activity occurs in the school or cafeteria environment, providing an opportunity to foster vegetable and fruit consumption.

### *Intervention Description*

Teachers conducted 10 of 14 selected activities over 8 weeks in the school-only and school-plus-community conditions. In the school-plus-community intervention, activities also occurred in five local supermarkets, at farmers markets, on local television, and with two community youth organ-

izations. In addition, a special community event, Power Play! Day, was held.

In schools, teachers and food-service directors conducted at least 10 activities covering a range of behavioral change constructs. The activities included developing secret snack pals, making fruit kabobs, doing word scrambles of vegetable and fruit names, keeping a 2-week diary of vegetable and fruit consumption, making advertisements for vegetables and fruit, taste-testing, designing a meal for the school cafeteria, and singing or dancing to a 5 A Day rap song.

In the school-plus-community interventions, community youth groups conducted similar kinds of activities. The supermarkets gave store tours to students, placed Power Play! posters and other point-of-sale promotional materials in the produce department, printed Power Play! activities on grocery bags, and sponsored Power Play! art contests. The local farmers market donated produce to the schools, put up Power Play! signs, and held special games and contests for children during market hours. Two local television stations aired Power Play! public service announcements, called "Health Bites," during children's viewing hours. A special event called Power Play! Day was held for students and their families at one of the school gymnasiums, with vegetable and fruit games and contests, as well as recipe-tastings. The recipes were developed by one fourth- or fifth-grade class from each participating school, with guidance from a produce industry sponsor.

At the completion of the study, a press conference was held by the California Department of Health Services in a school gymnasium within the school-plus-community region to announce the study results and to recognize the contributions of the many community partners. The study results also facilitated securing a \$5 million grant from The California Endowment in order to implement Power Play! statewide.

## **Gimme 5: Fruits and Vegetables for Fun and Health (Georgia)**

### ***Design Overview***

The Gimme 5 project in Georgia used a longitudinal design, with schools as the units of selection, assignment, and analysis. More than 1,900 students in 16 elementary schools were recruited (12 in a suburban county district and 4 in a central city dis-

trict). Within a district, schools were matched on size, on percentage of free and reduced-price lunches served (an indicator of socioeconomic status), and on percentage of annual student turnover. Schools were then randomly assigned within pairs to intervention and control conditions. A baseline assessment was conducted among participating third-grade children during late February and early March 1994. Mid-program assessment was conducted with all students following the completion of the 6-week fourth-grade program during late February and early March 1995. Post-program assessment was conducted by school staff with all the students at the same time in 1996. Outcome analyses were conducted both with all students available for each year and with the cohort of students who had data available for all 3 years. (The results were virtually identical between methods.) The primary outcome measure was obtained from a prompted 7-day food record (Domel et al., 1994) using behavioral coding (Cullen et al., 1999). Psychosocial variables included vegetable and fruit preferences, outcome expectancies, self-efficacy, and social norms. There were interviews with 13 randomly selected parents per school at each data collection time. Parent interviews assessed the availability and accessibility of vegetables and fruit and evaluated the program process.

### ***Use of Theory in Intervention Design***

Consistent with the concept of Reciprocal Determinism, formative evaluation revealed that the reasons children were not eating enough vegetables and fruit were environmental (low availability and accessibility at home, especially among children from low-income families), personal (low preference for vegetables), and behavioral (low skills in making vegetable and/or fruit recipes). Based on Social Cognitive Theory, the intervention attempted to train students in asking behaviors and food preparation (thereby enhancing both skills and self-efficacy) and to enhance the children's preferences both through association with fun activities and through exposure to the target foods and recipes. Also, the self-control procedures of goal setting, self-monitoring, decisionmaking, problemsolving, and rewards were applied to different dietary behaviors each week.

### ***Intervention Description***

The Gimme 5 curriculum encouraged and assisted fourth- and fifth-grade students to eat more

servings of vegetables and fruit by: 1) increasing their availability and accessibility at home and at fast-food restaurants through role-playing to develop student asking skills; 2) enhancing students' preferences for vegetables and fruit by strongly encouraging students to taste the fast, simple, safe, and tasty (FaSST) recipes prepared in class; 3) training students in FaSST vegetable and fruit preparation to increase their snack and meal preparation skills; 4) training in goal setting to mobilize skills to increase intake; and 5) enhancing problemsolving skills. Students earned points toward a small prize for attaining dietary goals. The fourth-grade curriculum targeted vegetable consumption alone, while the fifth-grade curriculum emphasized fruit but included vegetables in order to achieve the goal of five servings of vegetables and fruit a day.

Family involvement activities included distributing *Gimme 5 Daily* newsletters to take home to parents every week, providing suggestions and recipes for increasing vegetable and fruit intake, and involving the family in weekly home assignments. These home assignments were designed to train students to prepare FaSST vegetable and fruit recipes under parental supervision, to encourage students to make more vegetable and fruit selections at fast-food restaurants, and to increase the availability and accessibility of vegetables and fruit at home. For each grade level, three MTV-like videotapes, each 10 to 14 minutes long, were sent to parents at 2-week intervals. The videotape content paralleled the Gimme 5 curriculum, emphasizing modeling of desired behaviors.

Point-of-purchase education efforts were conducted each year at grocery stores that parents most frequented with two grocery stores near each intervention site conducting the education efforts. The produce managers presented a family night at which they provided suggestions for selecting, storing, and preparing inexpensive fresh vegetables and fruit; conducted taste-testings of fresh vegetables and fruit; and distributed vegetable and fruit recipes.

## **Gimme 5: A Fresh Nutrition Concept for Students (Louisiana)**

### **Design Overview**

Twelve high schools in the Archdiocese of New Orleans school system participated in this 4-year

study (Nicklas et al., 1998). A paired design, matched on gender, ethnicity, school enrollment, and general geographic location, was used to randomly assign the 12 schools (6 pairs) to intervention or control conditions. The six school pairs were three female, two male, and one coeducational. One school in each pair was randomly assigned to receive the Gimme 5 measurement and intervention, while the other schools—the control condition—received the Gimme 5 measurement only. The intervention was longitudinal, following a cohort of students from the 9th through 12th grades. The cohort was defined as students who were enrolled in participating schools at the time of the baseline measurement and who completed the knowledge, attitudes, and practices questionnaires (spring of 1994). A cohort of 2,213 students (56 percent female, 84 percent White, 9 percent Hispanic, 4 percent Black, and 3 percent other), representing 95 percent of the eligible students, was identified at the baseline. At followup, 81 percent of the cohort had participated in the Gimme 5 measurement and intervention, and an additional 15 percent had participated during 3 of the 4 years. No significant differences according to participation by group assignment, gender, or ethnicity occurred at followup.

### **Use of Theory in Intervention Design**

Consistent with Social Cognitive Theory, the specific components of the Gimme 5 project addressed the following levels of behavior change: 1) awareness development and interest stimulation, 2) information transfer and skills training, 3) reinforcement, and 4) application and maintenance. Awareness development and interest stimulation were primarily addressed through the schoolwide media-marketing materials that implemented cafeteria taste-testings and food giveaways. The components of information transfer, skills training, application, and maintenance were addressed both in the classroom workshops and by the supplemental subject activities delivered to the students. These components were supported further through the information received by parents in the school newspapers or the *Gimme 5 Alive* newsletter. Reinforcement activities included taste-testings, food giveaways, incentives, coupons, and student contests.

### **Intervention Description**

Intervention components included the following: 1) a schoolwide media-marketing campaign,

2) classroom activities, 3) school meal modification (Fresh Choices), and 4) parental involvement (Raisin Teens). The schoolwide media-marketing campaign was the major intervention strategy for delivering the 5 A Day message to students. The goal was to provide appealing messages and activities that would increase awareness, reinforce concepts, and promote positive attitudes toward consumption of vegetables and fruit. All media channels were coordinated to support monthly themes designed to stimulate and maintain student interest. Media materials and activities used in the monthly promotions included: 1) marketing stations consisting of large cafeteria displays that showed 5 A Day messages consistent with the monthly themes and that promoted Gimme 5 events and promotional material; 2) monthly taste-testings; 3) point-of-service signs with nutrient information on vegetables and fruit; 4) posters; 5) table tents with 5 A Day messages and events; 6) schoolwide public service announcements; 7) faculty vegetable and fruit baskets that were distributed each semester; 8) faculty tip sheets on 5 A Day; and 9) student contests in the cafeteria that promoted peer leadership and stimulated student interaction.

The classroom activities included five 55-minute workshops and a variety of learning strategies. These workshops gave students the opportunity to develop the knowledge, attitudes, and skills necessary to increase vegetable and fruit consumption. Each workshop was designed to meet specific learning objectives that related to a theme (e.g., Fast Food—Go for the Green). The workshops were implemented by a Gimme 5 health educator or by designated school personnel trained by the Gimme 5 health educator. In addition to the workshops, supplementary subject activities were included in required academic courses, using vegetables and fruit in the lesson design. Each ninth-grade teacher was requested to teach at least one supplementary subject activity every semester during the first year of the intervention.

The school meal modification component sought to improve in the cafeteria the availability, variety, and taste of vegetables and fruit meeting the 5 A Day criteria. The school food-service staff was trained, and supplementary materials were provided. Cyclical menus developed by the school system were modified during the first year and incorporated the monthly vegetables and fruit, or the ethnic menu, being promoted. A *Fresh Choices*

*School Meal Program Guide* was designed for use in the high school cafeterias by the food-service personnel, and they were trained in its use. The manual contained guidelines to assist cafeteria staff in menu and recipe modification, food purchasing, food preparation, and food promotion.

The parental involvement component sought to stimulate awareness, elicit parental support of the Gimme 5 project, and increase the availability and variety of vegetables and fruit in the home. Taste-testings, media displays, and other activities were provided at Parent-Teacher Organization meetings and at other family-related functions. Brochures with recipes, purchasing tips, and nutritional information were distributed to parents via school mailings. In addition, a *Gimme 5 Alive* newsletter was sent to parents each semester to provide information on Gimme 5 activities, recipes, discount coupons for produce, and the benefits and uses of vegetables and fruit. School newspapers also featured a Gimme 5 column to provide additional program information.

## High 5 (Alabama)

### *Design Overview*

To test the effectiveness of the High 5 intervention, a randomized experimental design was used in which 28 elementary schools were paired within each of three school districts (Harrington et al., 1997; Reynolds et al., 1998; Reynolds et al., 2000). Pairings were based on the school's racial/ethnic composition and on the proportion of students receiving free or reduced-price meals. One school from each pair was randomly assigned to an intervention condition and the other to a usual-care control condition. Schools randomized to control status were provided with the High 5 intervention after the final followup assessment. Sixty-nine percent of eligible families were recruited for the study. More than 1,300 parents and nearly 1,700 students participated. Each student and one of his or her parents completed assessments at baseline and at 1 and 2 years after baseline. The baseline assessment was completed at the end of the third grade, the intervention was delivered in the fourth grade, and booster sessions were delivered in the fifth grade. Vegetable and fruit consumption was assessed using a 24-hour recall method in children and the Health Habits and History Food Frequency Questionnaire in parents (Block et al.,

1990). Cafeteria observations were conducted on a subsample of the children. Psychosocial variables were selected using Social Cognitive Theory as a guide (e.g., perceived self-efficacy and outcome expectancies), and then were assessed in children and parents using self-administered questionnaires. Followup assessments were completed at the end of the fifth grade on 89 percent of participants who completed baseline assessments.

### ***Use of Theory in Intervention Design***

The intervention had three components—classroom, food service, and parents—that targeted theoretical constructs within Social Cognitive Theory (Bandura, 1986). This theory proposes that behavior, personal factors, and environmental influences all interact as determinants of one another. The specific constructs from Social Cognitive Theory that were used to design the intervention included observational learning, goal setting, self-monitoring, reinforcement, behavioral capability, outcome expectations, perceived self-efficacy, and environment. The components of the theory and examples of their relationship to the intervention are presented in Table 3 and in greater detail by Reynolds and colleagues (1998). Each construct within Social Cognitive Theory was used in the design of the High 5 intervention. The theory was mapped on the specific problem of increasing vegetable and fruit consumption in the target population. Intervention components were then developed to manipulate each of the constructs of the theory and, in turn, to produce changes in vegetable and fruit consumption. For example, goal setting and self-monitoring are indicated as ways in which individuals will identify behavioral targets and work toward completion of the target behavior. Individuals who set goals and monitor their progress are much more likely to make changes in their target behavior. In the High 5 intervention, these principles were used by having families set a goal of eating five servings of vegetables and fruit on a specific day in the coming week. Simple worksheets and other self-monitoring tools were then supplied to help families track their progress toward completion of the goals. This intervention process was repeated with activities developed to: 1) alter the environment to support vegetable and fruit consumption, 2) increase positive and reduce negative outcome expectations for eating vegetables and fruit,

3) improve the behavioral capability for eating vegetables and fruit, 4) use goal setting and self-monitoring for key skills and behaviors, 5) reinforce participants in reaching goals, 6) use observational learning principles to teach key skills and perceptions, and 7) increase perceived self-efficacy for vegetable and fruit consumption.

### ***Intervention Description***

The learning methods used in the 14-lesson classroom component included modeling, self-monitoring, problem-solving, reinforcement, and taste-testing. Consistent and memorable characters (e.g., Indiana Banana) were used, and the name Freggie (an amalgam of fruit and veggie) was attached to activities for easy recognition. For example, the *Freggie Book* contained homework. The program was taught by nine curriculum coordinators (employed by the High 5 project) who were trained both to deliver the semiweekly classroom lessons and to coordinate food-service and parent activities. Two lessons were taught every week for 7 weeks. The curriculum was delivered on 3 consecutive days each week, with a 30- to 45-minute lesson presented on the first day, a High 5 Day observed on the second day in which all children set the goal of eating five servings of vegetables and fruit, and a 30- to 45-minute lesson delivered on the third day. The lessons had common elements to provide consistency across all 14. For example, each lesson had a checkup section to review information from earlier lessons and a learning-activity section to build skills, self-efficacy, and outcome expectations, as well as to alter food preferences. Classroom activities included undertaking role-playing to improve both vegetable and fruit preparation and asking skills, awarding individual and class points for reaching goal behaviors, reading stories to increase beliefs about the positive outcomes of eating more vegetables and fruit, and conducting taste-testing events to increase preferences. On each High 5 Day, students were challenged to eat five servings of vegetables and fruit and then to record their consumption on a food record. Parents were alerted and asked to help their children have a High 5 Day, and they also were encouraged to eat five servings of vegetables and fruit.

For the parental involvement component, parents received an overview of High 5 during a kick-off night held at each school at the beginning of the intervention. Parents were asked to encourage and

support behavioral change in their child and to complete the *Freggie Book*, which contained seven homework assignments (Freggie Lessons) to be performed by the parents and their children. It also contained brochures, skills-building materials (e.g., recipes), and other items (e.g., refrigerator magnets) to trigger the desired behavior. Parents were asked to complete one interactive Freggie Lesson with their child each week for 7 weeks and to indicate completion using a signed voucher, which would be returned to the classroom for prize drawings. For example, parents and children worked together to identify preferred vegetables and fruit and to develop a shopping strategy to buy these food items.

For the cafeteria intervention component, food-service managers and workers received a half-day of training on purchasing, preparing, and promoting vegetables and fruit that met the High 5 guidelines. Food-service managers received a calendar outlining intervention tasks. Each cafeteria was rated monthly and given 2, 3, or 4 stars based on its completion of 10 intervention activities (e.g., offering at least 10 vegetable and fruit servings per week). The 10 activities were worked on over a period of 4 months, but some activities were designed to coincide with the 7-week classroom curricula and homework assignments (e.g., help with taste-testing in the classroom). Project nutritionists determined monthly “star status.” Food-service workers received guidance on purchasing, preparing, and promoting vegetables and fruit during regular visits by High 5 nutritionists, and each four-star cafeteria received a star-rating certificate to provide feedback and reinforcement.

## OVERVIEW OF RESULTS

The immediate posttest effects of all five State intervention projects on the main outcome of vegetable and fruit consumption are summarized in Table 4. Schools served as the units of analysis in all projects except California, where individual students were used as the units of analysis. In all five projects, significant effects were observed on the main outcome variables of combined vegetable and fruit consumption, or vegetable and fruit consumption examined separately. Effects favoring the intervention condition were found on

combined vegetable and fruit consumption rates in Georgia, Louisiana, Alabama, and California. Minnesota and Alabama found significant effects favoring the intervention condition on fruit consumption, while Georgia and Alabama found significant effects on vegetable consumption. These differential effects across projects may be due to the design of the interventions and the emphasis placed on vegetable versus fruit consumption. Differences also might be due to different delivery intervals of the vegetable versus fruit sessions designed for each project, with more faithful delivery of fruit activities in Minnesota and vegetable activities in Georgia; differences also might be due to regional variances in the availability and preferences for vegetables versus fruit.

## SUMMARY AND LESSONS LEARNED

### Program Effectiveness

A number of factors facilitated the successful completion and outcomes of these 5 A Day projects. First, cooperation with schools, school districts, and other community agencies was essential to the fulfillment of project activities, including recruitment and completion of interventions and measures. Those planning a school-based 5 A Day effort are strongly advised to build strong school and community collaborations early in the development of the project. Second, each of the interventions was designed using one or more models of behavior change. This theory-based approach is likely to produce more effective nutrition interventions (Contento et al., 1995) and may partially account for the effects observed in the 5 A Day school-based interventions. Third, each of the interventions used a multiple-channel intervention approach that included the classroom, food-service personnel, and families. The California project also utilized broader community-intervention activities in the school-plus-community condition. Multicomponent interventions are likely to be more effective than those targeting only one intervention component and may help account for the significant differential effects found in the 5 A Day school-based programs. However, the multicomponent approach is also more difficult to design and implement. Because

Table 4. Immediate Post-Test Program Effects on Daily Vegetable and Fruit Consumption

| Project                          | Experimental Condition | Total Vegetables and Fruit <sup>1</sup> |         | Fruit <sup>2</sup> |         | Vegetables |         |
|----------------------------------|------------------------|---|---------|--------------------|---------|------------|---------|
|                                  |                        | Mean                                    | p-value | Mean               | p-value | Mean       | p-value |
| 5 A Day Power Plus (Minnesota)   | Treatment              | 5.24                                    | NS      | 2.75               | 0.02    | 2.50       | NS      |
|                                  | Control                | 4.66                                    |         | 2.13               |         | 2.52       |         |
| 5 A Day Power Play! (California) | School plus community  | 3.3                                     | 0.05    | -                  | -       | -          | -       |
|                                  | School only            | 2.9                                     |         | -                  |         | -          |         |
|                                  | Control                | 2.3                                     |         | -                  |         | -          |         |
| Gimme 5 (Georgia)                | Treatment              | 2.3                                     | 0.05    | 1.1                | NS      | 1.2        | 0.01    |
|                                  | Control                | 2.1                                     |         | 1.1                |         | 1.0        |         |
| Gimme 5 (Louisiana)              | Treatment              | 3.0                                     | 0.05    | -                  | -       | -          | -       |
|                                  | Control                | 2.6                                     |         | -                  |         | -          |         |
| High 5 (Alabama)                 | Treatment              | 3.96                                    | 0.0001  | 1.71               | 0.0001  | 1.84       | 0.0001  |
|                                  | Control                | 2.28                                    |         | 0.83               |         | 1.15       |         |

**KEY:** NS = not significant.  
- = not available.

<sup>1</sup> Includes vegetables, fruit, and 100 percent juice  
<sup>2</sup> Includes fruit and 100 percent juice

of these difficulties, school health professionals may wish to use an established 5 A Day multi-component program with demonstrated behavior change properties and outcomes rather than develop a new program.

Each of the interventions described in this chapter was designed for a broad target audience, and each has broad applicability in diverse school-based settings. None of the interventions targeted specific ethnic or socioeconomic subgroups. Because a general approach was used, some effectiveness in producing dietary change in ethnic, socioeconomic, and other subgroups may have been lost. Future studies might target these subgroups in an effort to increase the effectiveness of the projects.

Among these studies, California, Georgia, and Minnesota utilized existing classroom teachers to deliver their interventions, Louisiana used a mix of classroom teachers and project staff, and Alabama used only project staff. Alabama produced large and significant effects and might be considered an efficacy trial where the intervention is delivered under optimal conditions and where program implementation, availability, and acceptance are

controlled as much as possible (Flay, 1986). Future testing will determine the effectiveness of the program when taught by existing classroom teachers. As noted, the other programs used school personnel to deliver the interventions, resulting in lower experimenter control over program availability and acceptance and somewhat weaker effects on the outcome. However, the significant outcomes of even these programs suggest that they were efficacious and that they produced these effects despite lower experimenter control over program availability and acceptance. Consideration now might be given to the best means of disseminating these programs and further strengthening the outcomes. Further consideration also should be given to the best means of training and delivering the interventions to school teachers and community personnel so that the programs will be maximally effective when delivered by these individuals. In many settings, innovative ways of integrating nutrition into reading, math, and social studies lessons may be required to enlist teacher cooperation.

Four of the five projects described in this chapter targeted elementary school children. Thus, the

strongest conclusions can be drawn about the effectiveness of 5 A Day school-based interventions for this age group, although important conclusions can be drawn about high school students as well. Future studies are needed to determine the best methods for reaching middle school students. Useful lessons can be learned from both the elementary and high school interventions, and these lessons can be used in the design of the middle school programs.

A cautionary note should be added about generalizing the results and experience of the 5 A Day interventions to other school-based nutrition programs. The 5 A Day interventions found positive effects for relatively intensive interventions that were mounted with substantial monetary, school, and community support. Not all school-based programs will be able to marshal these resources and, as a result, may have more limited success. Schools also have barriers that must be overcome to produce effective nutrition interventions. For example, schools have a limited amount of time to devote to nutrition programs, and many school districts are focusing on basic academic subjects, limiting access for nutrition intervention. The 5 A Day interventions were able to overcome these barriers by working closely with interested, participating districts. Finally, the long-term effectiveness of the 5 A Day school-based interventions has not been firmly established, and their effects may erode over time. Repeated interventions may be required to ensure dietary change over an extended period of time when using these or other school-based nutrition interventions.

### Evaluation Issues

Strong evaluation designs were used to assess the 5 A Day school-based interventions, leading to strong conclusions about the effectiveness of the programs. The designs used school as the unit of assignment, the matching of schools prior to randomization, appropriate comparison groups, and attention to hierarchical design issues in the analysis of the evaluation data. In addition, four of the State projects randomly assigned schools to conditions. The designs used in these projects allowed the projects to establish the causal effectiveness of the interventions at producing changes in vegetable and fruit consumption among youth. Investigators in future 5 A Day projects are encouraged to apply the highest level

of methodological rigor possible in their evaluation designs. This will help establish a clear understanding of which intervention approaches are most effective with children and adolescents.

None of these designs allowed the investigators to identify the specific intervention subcomponents (e.g., food-service changes) that produced the best overall intervention effects. Studies that systematically vary individual intervention components will be needed to identify the components that are most effective in producing increases in vegetable and fruit consumption. Although potentially important, such studies are rarely conducted due to costs and other practical considerations. As stated earlier, it is also likely that multicomponent interventions are more effective than single-component (e.g., classroom only) interventions. Alternatively, analyses can be conducted to identify the significant mediators for effective programs (MacKinnon, 1994), often referred to as mediational analysis. This approach tests the constructs of the theoretical model used to design the program in order to identify those constructs that account for the effectiveness of the program. If this mediational analysis approach were used consistently by intervention researchers in project design and data collection, interventions to modify vegetable and fruit consumption could be made more effective and less cumbersome by using only those constructs shown in prior studies to have produced positive intervention effects.

All five studies provided a strong assessment of diet, with the 24-hour dietary recall being the most frequently used assessment tool because of its accepted validity in children of this age range. The single-recall approach used in these studies yields a valid assessment for group comparisons to test the effectiveness of the interventions. One project (Georgia) used a 7-day food record, which yielded both a valid estimate of vegetable and fruit consumption for group comparison and also a more stable estimate of individual consumption of vegetables and fruit by the children.

### Lessons Learned

Many practical lessons were learned while conducting these studies. Interventions should focus on the interests and motivations of the targeted youth to ensure their active participation. Formative data collection (e.g., focus groups) may be required to determine the specific interests of

the target group. Taste-testing was a popular intervention activity for both elementary and high school students. However, taste-testing activities take substantial effort to mount, and school food-service participation will vary substantially among schools. School food-service personnel care about the nutritional lives of the students and can be enlisted as allies in the program, if given specific and valued responsibilities. Games and contests work well as intervention strategies with adolescents. Parents are reluctant to attend intervention activities at the schools, although participation can be increased if program activities are linked to existing school activities, such as Parent-Teacher Organization meetings. Social reinforcement (e.g., public recognition for reaching a goal) and group contests leading to reinforcement can be very effective strategies in these programs. It is possible to add community intervention components (e.g., media and farmers markets), and these may increase the effectiveness of a program. Classroom time is limited for intervention activities. Therefore, further design and testing of environmental interventions may be warranted. Recruitment of lower socioeconomic group participants is more difficult and may take innovative strategies, such as followup calls and direct personal contacts with parents. Self-report questionnaire assessments are best completed by children in the classroom and by use of two-person data collection teams.

## **FUTURE DIRECTIONS**

These trials demonstrate that school-based interventions can be used to produce increases in vegetable and fruit consumption among children and adolescents. There is a need for further work on programs for middle school children and for children in kindergarten through the third grade, as well as in the sixth grade, and on strengthening the effects produced by these interventions. In particular, improvements are needed in the parental and environmental components and in creation of interventions that are specifically tailored to various ethnic groups. It also would be beneficial to integrate nutritional and physical activity interventions in the school setting. The fidelity of interventions might be improved with increased self-efficacy of teachers to enlighten

children about nutrition and through the use of interactive teaching techniques, such as classroom food preparation. The continued use of the theory-based approach is encouraged to improve understanding of the factors that affect eating behaviors.

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# 5 A Day Research With African-American Churches and the Special Supplemental Nutrition Program for Women, Infants, and Children

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## **INTRODUCTION**

This chapter presents two of the nine randomized community-based research trials of the National Cancer Institute’s (NCI’s) 5 A Day for Better Health Program that specifically focused on reaching lower income and minority populations (see Table 1 for project summaries). These populations are of special concern because they have higher rates of cancer and other chronic diseases. In particular, incidence rates for certain cancers, such as prostate, lung, and colorectal, are higher for African-Americans than for Whites, and survival rates are lower for African-Americans (Landis et al., 1998). In addition, when compared to higher income groups, lower income populations have higher cancer mortality rates, which may be related to poorer health care and later stages of diagnosis (Kington and Smith, 1997; Mayberry et al., 1995; Winkleby et al., 1992). The racial and socioeconomic discrepancies in morbidity and

mortality have provided the impetus for identifying African-American and lower income groups as special target populations for health promotion efforts, such as the 5 A Day Program (Havas et al., 1994; U.S. Department of Health and Human Services, 1990).

Certain specific demographic subgroups have been shown to consume fewer vegetables and fruit than the population average. For example, younger individuals tend to consume fewer vegetables and fruit when compared to older persons, and men typically consume fewer vegetables and fruit when compared to women (Patterson et al., 1990; McClelland et al., 1998). Patterson and colleagues found that women in the lowest income bracket (below 131 percent of the poverty line) consumed fewer vegetables and fruit when compared to higher income women. There are recent indications that a secular trend of

**Table 1. Project Summaries**

| <i>Project Name</i>                                      | <i>Lead Agencies</i>  | <i>Target Groups</i>  | <i>Intervention Elements</i>   | <i>Theories Used in Intervention</i>  | <i>Community Collaborators</i>   |
|--|---|---|--|---|--|
| Maryland WIC 5 A Day Promotion Program                   | <ul style="list-style-type: none"> <li>• University of Maryland</li> <li>• Maryland Department of Health and Mental Hygiene</li> </ul>  | Women receiving WIC benefits for themselves or their children | <ul style="list-style-type: none"> <li>• Peer educators conducted education sessions</li> <li>• Printed materials and visual reminders</li> <li>• Tailored mail</li> </ul>   | <ul style="list-style-type: none"> <li>• Stages of Change</li> <li>• Social Cognitive Theory</li> </ul>   | <ul style="list-style-type: none"> <li>• Local health departments' WIC sites</li> </ul>  |
| Black Churches United for Better Health (North Carolina) | <ul style="list-style-type: none"> <li>• North Carolina Department of Health and Human Resources</li> <li>• University of North Carolina</li> <li>• Duke University</li> <li>• North Carolina State University</li> </ul> | African-American adult churchgoers                            | <ul style="list-style-type: none"> <li>• Tailored bulletins</li> <li>• Educational sessions</li> <li>• Lay health advisers</li> <li>• Community coalitions</li> <li>• Point-of-purchase promotions</li> <li>• Pastor and church support</li> </ul> | <ul style="list-style-type: none"> <li>• Stages of Change</li> <li>• PRECEDE-PROCEED</li> <li>• Social support</li> <li>• Health Belief Model</li> <li>• Social Cognitive Theory</li> </ul> | <ul style="list-style-type: none"> <li>• Local health departments and Cooperative Extension Service</li> <li>• 50 churches in 10 counties</li> <li>• Other community groups</li> </ul> |

increasing consumption rates overall in the United States, at least partly fostered by the national 5 A Day Program, is not mirrored in ethnic minority populations (Gregson et al., 1997).

## NEED FOR TARGETED AND CULTURALLY SENSITIVE INTERVENTIONS

Most traditional health promotion programs and campaigns have not focused on minority and underserved groups. These populations often have greater difficulty in obtaining preventive health education and services due to such barriers as financial constraints, lack of transportation, and especially in rural areas, less access to quality health care. Barriers more specifically related to eating five servings a day may include socioeconomic factors, such as the real and perceived costs of purchasing vegetables and fruit, the lack of transportation to supermarkets where fresh produce is available, and a lack of knowledge about nutritional recommendations. Cultural differences in food habits may make it difficult for certain people to change eating behaviors. For example, among African-Americans in the southeastern United States, cultural norms for good food

emphasize high-fat foods, such as fried chicken, biscuits and gravy, and greens seasoned with pork fat (Whitehead, 1992). Changing these habits, therefore, may conflict with social norms and expectations surrounding food events, such as Sunday dinners, church suppers, and other gatherings.

Cultural and social factors also may render health messages designed for the population at large less effective at motivating less-advantaged groups. For example, there is evidence that major media campaigns to promote awareness of AIDS, sudden infant death syndrome (Gibson et al., 1998; Willinger et al., 1998), and other health issues have influenced a smaller proportion of minority populations when compared with the White population. Research on diffusion of innovations has indicated that populations respond to innovations differentially (Rogers, 1983). Earlier adopters of innovations tend to be better educated, have a higher income, seek information more readily, and pay closer attention to the media. Later adopters tend to be minorities, have lower incomes, and get information through social exchange rather than through the media. The Diffusion of Innovations Model would suggest that methods designed for the early adopters, such as mass media campaigns and distribution of

printed materials, would be less effective with lower income and minority populations. Instead, settings that have social contexts and models that include peer education and social support would be more likely to promote adoption of new behaviors among members of these populations (Israel, 1985).

At the initiation of NCI's 5 A Day Program, there were relatively few studies targeting lower income younger people or African-American church members for chronic disease prevention or for dietary change in particular. Existing research, though generally lacking in randomized evaluation designs, indicated that churches and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) might be effective channels for improving behaviors related to other issues, such as cardiovascular disease risk reduction and breast-feeding promotion (Eng and Hatch, 1991; Hatch and Derthick, 1992; Schwartz et al., 1995; Voorhees et al., 1996; Rush et al., 1988a; New York State, 1991; Schramm, 1985; Kotelchuck et al., 1984; Kennedy and Gershoff, 1982). None of these studies focused specifically on increasing vegetable and fruit consumption, however. The following summarizes the reasons why the Maryland and North Carolina 5 A Day research teams chose the channels that they did to reach the target audiences.

## **WORKING WITH CHURCHES**

Nontraditional channels are often employed to deliver health-based interventions to populations that are sometimes considered hard to reach or that distrust traditional health care channels. These populations are not necessarily hard to reach, but researchers usually have not paid adequate attention or learned the best ways to reach them. In targeting rural African-Americans, who represent a high-risk population for cancer as well as other chronic diseases, African-American churches were selected as a channel for several reasons. First, churches have a history of providing help to their members. Historically, the church has been the most important institution in the African-American community and has provided tangible aid for those in need, as well as social and spiritual support. Second, because most adult African-Americans—as many as 80 percent or

more—attend church regularly, partnering with churches can mean reaching and recruiting a large percentage of the target population (Hatch and Derthick, 1992; Lincoln and Mamiya, 1990). Third, the church organization can provide the infrastructure and support to facilitate and maintain social and environmental change. Churches offer a wealth of resources, including members who can provide professional and lay health input and feedback, facilities for food preparation, and space for meetings. Finally, working with churches can help researchers understand and utilize the cultural, social, and spiritual aspects of health promotion that can lead to stronger interventions.

A number of researchers have developed methods and models of reaching African-Americans by working with churches through health programs, particularly for cardiovascular disease and cancer risk reduction (Kumanyika, 1992; Lasater et al., 1997; Voorhees et al., 1996; Schorling, 1995). Few studies, however, have worked with churches to incorporate health messages into the religious aspects of church life, and few have used strong research designs (such as randomized trials) to evaluate these programs.

## **WORKING WITH WIC**

The WIC program provides vouchers for supplemental foods to low-income women who are pregnant or postpartum, breast-feeding, or have children younger than 5 years of age and are deemed to have nutrition-related risks. This program provides a limited amount of nutrition education on a variety of subjects to these women. The program operates in all 50 States, the District of Columbia, and all U.S. territories; it provides services to about 7.1 million clients annually.

WIC program participants were selected as a target population because successful intervention strategies could be replicated nationwide, as well as other reasons. First, WIC participants represent a large low-income population, many of whom are racial minorities. Second, women enrolled in the WIC program may be particularly amenable to changing their food consumption patterns because of concern for their children. Third, directing behavior change interventions to this population may ultimately improve the eating

behaviors of other individuals in the household. Fourth, despite the program's services, the diets of WIC participants frequently remain inadequate. Fifth, WIC participants are certified every 6 months and pick up food vouchers bimonthly, theoretically providing an excellent opportunity for regular contact.

Although widespread, the WIC program has been used infrequently as a setting for research. No research prior to this 5 A Day effort focused on nutrition education aimed at reducing WIC participants' risk of developing chronic diseases. Previous studies have credited the WIC program with increasing birth weights, decreasing premature births, preventing anemia in children and pregnant women, and decreasing Medicaid costs among program participants. However, these results were not demonstrated through the use of randomized clinical trials but rather through a comparison of WIC participants with nonparticipants (Rush et al., 1988; New York State, 1991; Schramm, 1985; Kotelchuck et al., 1984; Kennedy and Gershoff, 1982; Kennedy et al., 1982). In such nonrandomized studies, it is difficult to establish that the findings were not largely attributable to selection bias, such as differences between WIC participants and nonparticipants (Abrams, 1992). The only previously published study that randomized WIC participants to assess the effectiveness of interventions, a study concerning the impact of food vouchers on infant birth weights, did not show a statistically significant effect (Metcoff et al., 1985).

## DESIGN AND EVALUATION OF THE INTERVENTIONS

In the next section, both the Maryland and North Carolina 5 A Day projects will be described in terms of the following elements: project overview and design, formative research, intervention strategy, barriers, results, and lessons learned. Table 2 provides a summary of the evaluation designs. Because of the limited amount of previous research that was directly applicable to these studies, both projects undertook extensive formative research to determine the concerns, priorities, and preferences of the target audiences. In addition, each project faced unique barriers to conducting

research in the chosen setting. Elucidating how the projects overcame those barriers, or failed to overcome them, can provide valuable insights into the nature of community-based research among minority and lower socioeconomic-status populations.

## Maryland WIC 5 A Day Promotion Program

### Overview and Design

The Maryland WIC 5 A Day Promotion Program was a cooperative effort by the University of Maryland at Baltimore, the University of Maryland at College Park, the Maryland Department of Health and Mental Hygiene, and local health departments along with their WIC programs. The program's primary goal was for intervention participants to increase their consumption of vegetables and fruit by at least 0.5 serving per day. Secondary goals included positive movement to higher stages of change, improved attitudes, increased self-efficacy, and decreased perceived barriers toward consuming more vegetables and fruit.

During an initial 9-month planning phase, study researchers conducted extensive formative research (described below). They also discovered that the WIC program has a very high 1-year participant turnover rate (Hammad et al., 1997) and decided that their originally planned yearlong intervention program was not feasible. A more intensive 6-month intervention approach was therefore developed and pilot-tested (Havas et al., 1997). Following the pilot test, the interventions were refined before the full-scale study was conducted, in order to boost recruitment, attendance, dietary change, and survey completion rates.

A multifaceted program was implemented using a randomized crossover design for a total of 16 WIC sites located in Baltimore City and in six Maryland counties. Eight sites were randomized to intervention status and eight to control status for Phase 1 of the study; recruitment then began at all sites. Written informed consent was obtained from participants under a protocol approved by both of the universities' and the State health department's institutional review boards. To be eligible, women had to be 1) enrolled in the WIC program or have children enrolled, 2) at least 18 years of age, and 3) planning to remain enrolled at that site for at least 6 months.

Table 2. Evaluation Designs

| <i>Project Name</i>                                      | <i>Evaluation Design</i>   | <i>Measures</i>   | <i>Measurement Period</i>  | <i>Number of Participants</i>   | <i>Age, Gender, Ethnicity</i>   |
|--|--|---|--|---|---|
| Maryland WIC 5 A Day Promotion Program                   | 16 WIC sites, randomized crossover design  | <ul style="list-style-type: none"> <li>• NCI seven-item vegetable and fruit food frequency questionnaire</li> <li>• Psychosocial questionnaire</li> </ul> | <ul style="list-style-type: none"> <li>• Baseline</li> <li>• 2 months post-intervention</li> <li>• 1 year after first post-survey</li> </ul> | • 3,122 women   | <ul style="list-style-type: none"> <li>• Mean age = 27</li> <li>• Female = 100%</li> <li>• White = 41%</li> <li>• African-American = 55%</li> <li>• Other = 4%</li> </ul> |
| Black Churches United for Better Health (North Carolina) | 10 counties pair-matched and randomly assigned; churches within counties randomly selected/stratified by church size | <ul style="list-style-type: none"> <li>• NCI seven-item vegetable and fruit food frequency questionnaire</li> <li>• Psychosocial questionnaire</li> </ul> | <ul style="list-style-type: none"> <li>• Baseline</li> <li>• 1-year subsample</li> <li>• 2-year followup of full sample</li> </ul>           | <ul style="list-style-type: none"> <li>• 50 churches</li> <li>• 3,737 baseline</li> <li>• 2,519 followup</li> </ul> | <ul style="list-style-type: none"> <li>• Mean age = 53.8</li> <li>• Female = 72%</li> <li>• African American = 98%</li> <li>• Other = 2%</li> </ul>                       |

Four months after the completion of Phase 1, intervention sites became control sites and vice versa. Phase 2 recruitment then began. Because persons enrolled in Phase 1 were ineligible to participate in Phase 2 and only the research staff conducted the interventions, no significant contamination effects occurred. Thus, the 16 sites were able to serve as controls for themselves.

### **Formative Research**

Relatively little was known about the target audience's knowledge, attitudes, and practices concerning vegetables and fruit prior to the pilot test, so the project first explored the target population's shopping, food preparation, and eating practices using focus group discussions of WIC participants (Treiman et al., 1996). Most participants indicated that they spent little time cooking, and few of them regularly used written recipes. In central location intercept interviews (brief, structured discussions with WIC clients waiting to receive vouchers), investigators assessed the frequency of WIC clients eating away from home; overall, 45 percent had eaten at least one meal or snack away from home the previous day. Most had positive perceptions of vegetables and fruit.

**Motivations and messages.** A theme that repeatedly emerged from the formative research was that women were more concerned about

feeding their children healthy foods than about what they themselves ate. Participants did, however, recognize that eating well would be good role modeling for their children. Another repeated theme was that women were concerned about nutrition during pregnancy but that this concern diminished after delivery.

**Barriers to increasing consumption.** Perceived barriers to increasing the vegetable and fruit consumption of WIC clients were initially explored in the focus-group discussions. Common barriers that emerged included a dislike of specific vegetables and fruit, a preference for other foods, the time and difficulty involved in preparation, cost, and perishability. In the central location intercept interviews, the most frequently cited barriers to buying new kinds of vegetables and fruit were a desire to stick to preferred foods and uncertainty about the taste of the vegetables and fruit. Some women said that it was difficult to get vegetables and fruit when away from home. A frequently cited barrier was the time and effort necessary to prepare vegetables and fruit. Another was not liking vegetables or fruit or preferring some other food. Of note, cost was cited infrequently as a barrier.

### **Intervention Strategy**

The intervention consisted of three components: nutrition sessions conducted by peer educators,

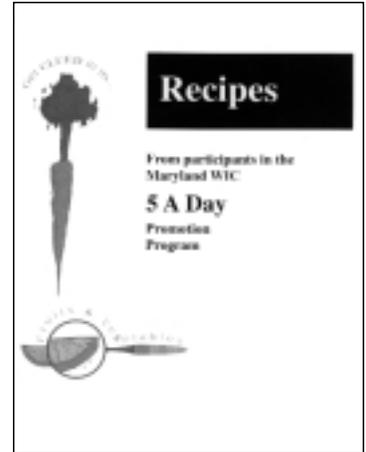
printed materials and visual reminders, and direct mail. The control site participants experienced the normal WIC program, which generally includes less than 10 minutes of nutrition education at the bimonthly voucher pickup. The program was designed to minimize disruption of WIC's procedures and to maximize the limited opportunities available for reaching WIC clientele. The interventions, based on the Transtheoretical Model of Change and Social Cognitive Theory, were designed to enhance self-efficacy and to facilitate movement to higher stages of change (Prochaska and DiClemente, 1982; Bandura, 1989) (see also Appendix D).

**Peer-led nutrition education.** Peer educators were hired and trained to implement the program. Preference was given to those either presently or formerly enrolled in the WIC program to ensure familiarity with WIC. Peer educators were recruited through recommendations of WIC staff, posters at the WIC sites, and newspaper advertisements. In general, one peer educator was hired for each WIC site.

Peer educators were responsible for all contacts with participants. At program enrollment, the peer educators delivered a brief message regarding increasing vegetable and fruit consumption, followed by a series of three group discussion sessions over 6 months (each lasting about 45 minutes), which all participants were encouraged to attend. During the first session, the women did a brief self-assessment of their vegetable and fruit intake and set a personal goal for eating more. In subsequent sessions, participants talked about their experiences working toward their goals, the barriers they faced, and ways to overcome those barriers. In the last session, participants discussed ways to avoid relapse and maintain their behaviors. Each session included a food demonstration (for example, a vegetable stir-fry) to build participants' skills and self-efficacy and to allow them to try new foods.

**Printed materials and visual reminders.** The focal piece for the peer-led group discussions was a colorful, illustrated guidebook, which helped participants to think about the importance of vegetables and fruit, to set goals, choose behavioral strategies to achieve those goals, and identify and overcome barriers (Anliker et al., 1999b). During the nutrition sessions, peer educators led participants through exercises in the guidebook, facilitated discussion, and provided social support.

The program used a series of five clue cards to stimulate interest and an exchange of ideas for eating more vegetables and fruit; most were mailed to participants prior to the nutrition sessions. Each clue card posed a question related to a specific behavior being promoted (e.g., "What is a quick, easy way to combine different vegetables for dinner?"). Participants were asked to write their ideas on the back of the clue card and bring it to the next session, where it was used as a focus for discussion and as an introduction to the food demonstration. Other materials included tip sheets, a booklet of recipes submitted by participants, a children's activity book focused on vegetables and fruit, a videotape showing children singing about vegetables and fruit, and a refrigerator magnet with the program's logo.



**Direct mail/tailored letters.** Because there were limited opportunities for personal contact with WIC clients, direct mail was also used as an intervention. Over 6 months, the peer educators sent participants four different tailored letters, each accompanied by a tip sheet and a clue card. The letters were tailored to participants' pregnancy status, baseline stage of change, attendance at nutrition sessions, and individual goals for eating more vegetables and fruit.

### **Barriers to Working With WIC**

The strong support received from the director of the Maryland WIC program minimized the number of barriers faced by the study. The greatest barrier stemmed from the varying ways that the WIC program is implemented, such as differing number of days the site was open and available days for picking up vouchers. Researchers evaluated each site to identify these differences and worked closely with WIC staff to implement the program. Physical limitations at some locations presented another barrier, and some sites had to be excluded due to insufficient space. A third barrier was concern by some WIC staff that the program would require additional work; this was overcome by assuring WIC administrators that

little or no additional work burden would fall on staff members as a result of the program.

### **Results From the Maryland WIC 5 A Day Promotion Program**

Recruitment took place at the WIC sites during voucher pickup and certification. Overall, the acceptance rate was 66 percent during intervention phases and 87 percent during control phases (Havas et al., 1998). A total of 3,122 participants enrolled at 15 of the 16 sites. The peer educator at one site did not follow the study's quality control guidelines during the control phase; therefore, data from that site for both the intervention and control phases were excluded from the analyses.

Overall, the majority of participants were African-American (55 percent), younger than 30 years of age, single, and unemployed (see Table 2). Slightly more intervention participants than controls were African-American, on food stamps, or both, while a lower percentage of intervention participants worked. Attendance varied by site (Damron et al., 1999). Overall, 19 percent of participants attended all three sessions, 14 percent attended two sessions, 20 percent attended one session, and 46 percent attended no sessions (range = 31 to 58 percent).

The post-survey was completed by 75 percent of intervention participants and 76 percent of control participants. Completion rates for the followup survey 1 year after the end of Phase 1 were 64 percent among intervention participants and 60 percent among control participants.

At both the site and individual levels, comparisons were made between the intervention and the control participants (within site) on individual consumption changes and on other outcomes as well. All data were analyzed using intention-to-treat analyses. Site-level analyses were based either on site means (for continuous variables) or site proportions (for dichotomous variables); both means and proportions were treated as continuous in the analysis of the 15 sites. Paired *t*-tests were used to compare intervention and control groups on the mean change within sites regarding scores on intake, attitude, self-efficacy, knowledge, and social support.

Vegetable and fruit baseline mean consumption levels for the intervention and control participants were 3.88 servings (+0.11) and 4.2 servings (+0.10), respectively (Havas et al., 1998). At the

end of each program phase, both intervention and control participants showed a mean increase in daily consumption of vegetables and fruit—an increase of 0.56 serving (+0.11) among intervention participants and an increase of 0.13 serving (+0.17) among control participants. The difference between the mean changes for the intervention and control participants was highly significant ( $p = 0.002$ ). Subgroup analyses showed that the largest increases occurred in women who were White, younger than age 30, high school graduates, married, unemployed, in school, or nonsmokers and who were in the precontemplation, contemplation, and preparation stages. Intervention participants also showed significant improvements in knowledge, attitudes, self-efficacy, and social support for consuming more vegetables and fruit compared to control participants.

There was a strong relationship between attendance at the nutrition sessions and changes in consumption of vegetables and fruit. Women who attended no sessions increased consumption by 0.15 serving (+0.15); those who attended one session increased by 0.68 serving (+0.21); those who attended two sessions increased by 0.91 serving (+0.25); and those who attended all three sessions increased by 1.25 servings (+0.22) ( $p$  for trend = 0.02).

A year after completion of the Phase 1 post-survey, mean consumption of vegetables and fruit had increased even further—an additional 0.27 serving (+0.09) among intervention participants and an additional 0.27 serving (+0.06) among control participants. The difference in mean change in vegetable and fruit consumption from baseline to the 1-year followup survey between the intervention and control participants remained highly significant ( $p = 0.004$ ).

### **Lessons Learned**

Numerous lessons were learned. First, having sites with a large number of WIC clients is a critical factor in recruiting. Second, no two WIC sites are the same in terms of procedures, space, and clientele, factors that can adversely affect responses to intervention programs. Third, getting WIC clients to attend nutrition education sessions is very difficult. Fourth, simpler educational approaches work best. Fifth, peers can give great guidance on educational interventions. Sixth, although peers can be highly effective, many have problems themselves,

and they may require considerable training (Anliker et al., 1999a). Seventh, getting clients to complete final surveys requires great effort and persistence. Eighth, the strong support of the State WIC director greatly facilitated the successful implementation of the project. Ninth, even though this was the first randomized WIC trial to demonstrate positive outcomes, translating this success into further dissemination by the national WIC program has proven elusive.

### **Implications for Further Research and Dissemination**

The positive changes generated by the Maryland WIC 5 A Day Promotion Program were not equally distributed among the various demographic groups, although one must be cautious about subgroup analyses. Results showing that there were statistically significant changes only among certain subgroups (e.g., Whites) and those with at least a high school education are of some concern. Most of the project's peer educators were African-American; all had a high school diploma or a general equivalency degree. It appears that they were less successful in motivating African-American and less-educated participants to change consumption rates. However, it should be noted that the initial consumption level of African-Americans was higher than for Whites and that African-Americans' consumption did increase and remained higher following the intervention (Havas et al., 1998). Further research is needed, particularly regarding the less educated.

Nonattendance at the WIC nutrition sessions is a major concern. Despite repeated letters, invitations, and telephone calls, the project staff were unable to overcome barriers, such as lack of transportation, work schedules, lack of interest, and negative attitudes toward WIC's nutrition education; these barriers repeatedly were cited, both in the postsurvey and in focus group discussions. This greatly impeded the ability to cause larger changes in behavior through the intervention sites. Most intervention site participants who did not return postsurveys were nonattendees; intention-to-treat analysis compelled the project researchers to assume no change for these individuals, thereby diluting the larger increases seen among attendees. How to increase attendance rates remains an unanswered question. It should be noted, however, that low attendance is a

common phenomenon in health promotion programs (Damron et al., 1999).

## **The North Carolina Black Churches United for Better Health Project**

### **Overview and Design**

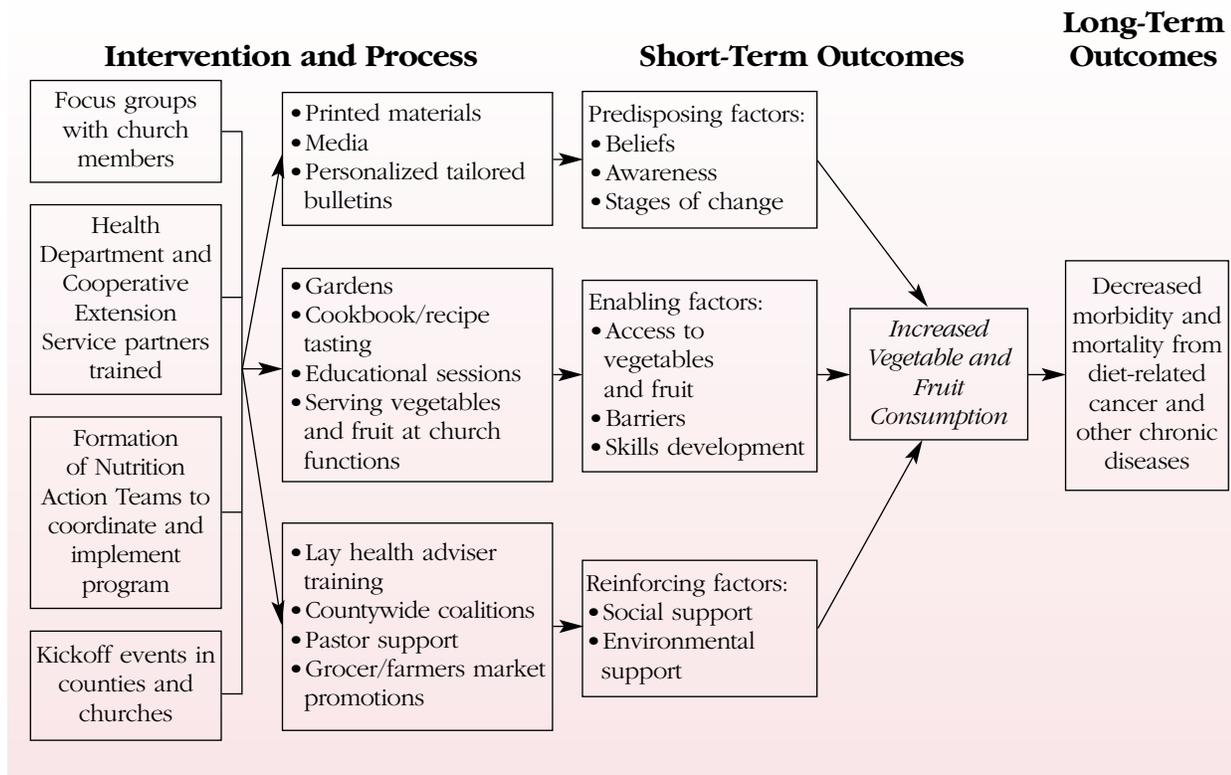
North Carolina lags behind most other States in meeting the 5 A Day target. It ranked 48th out of 50 States in mean vegetable and fruit consumption, according to 1996 Behavioral Risk Factor Surveillance System (BRFSS) data (BRFSS, 1996).

The North Carolina Black Churches United for Better Health (BCUBH) project was the only one of the nine community research studies that specifically targeted African-Americans, focused on rural populations, and used churches as a channel for intervention. The project also represented a large-scale partnership between multiple institutions, including the North Carolina Department of Health and Human Resources, University of North Carolina, the Duke University Medical Center, North Carolina State University, local health departments, the U.S. Department of Agriculture's Cooperative Extension Service, and 50 churches.

The study's main aim was to increase vegetable and fruit consumption by at least 0.5 daily serving. The primary methods were to heighten awareness and beliefs about the importance of eating vegetables and fruit for health and to enlist social and environmental support among church members for increasing consumption. This multicomponent intervention used an ecological framework, targeting activities at the individual, social network, and community levels of change. The intervention was theory-based, using concepts from the Stages-of-Change Model (also called the Transtheoretical Model) as well as from Social Cognitive Theory, social support, and the PRECEDE-PROCEED Model (Bandura, 1989; Campbell et al., 1998; Eng and Hatch, 1991; Green and Kreuter, 1991) (see also Appendix D). A conceptual model for the study is shown in Figure 1.

The study population comprised members of 50 predominantly African-American churches in 10 rural, eastern North Carolina counties. These counties have higher-than-average rates of cancer morbidity and mortality and have minority populations of at least 30 percent. The study employed the

Figure 1. Black Churches United for Better Health Program: Conceptual Model



randomization-to-intervention or delayed-intervention conditions, using a stratified one-stage cluster sample of churches within pair-matched counties. First, counties were pair-matched and randomized to intervention or delayed-intervention (no program until final survey completed) conditions. Within each county, churches were inventoried, and five churches were randomly selected to participate. African-American churches were identified based on information from key informants, denominational lists, and information from pastors. Stratification was conducted based on membership size, because larger churches tend to have more resources and a more socioeconomically advantaged population compared to smaller churches (J. Hatch, North Carolina Central University, personal communication).

In each county, two churches were selected from the small church stratum (those with fewer than 100 members), and three were selected from the large church stratum (those with 100 or more members), with random replacements for 12 initially chosen churches that declined to participate. One small intervention church dropped out midway through the project, leaving 49 churches in

the study for followup. Each church minister provided a list of active adult members, defined as those participating in worship services or other church activities at least once per month. The survey sampling frame included all active members whose names were provided on these lists. As partners in the BCUBH project, all intervention churches received funds from the project to implement the 5 A Day activities, plus a smaller discretionary amount for general church needs. Delayed-intervention churches received only the discretionary funds.

### **Formative Research**

Because of concerns about cultural sensitivity and the appropriateness of the interventions, the study conducted qualitative research with members of the target population. Six focus groups were conducted during the first year to identify and elicit attitudes, beliefs, and behaviors related to health, cancer, and vegetables and fruit, as well as barriers and motivators related to improving consumption. Focus groups were conducted separately by gender and were led by a trained moderator. The interviews were audiotaped and subsequently

transcribed, coded, and analyzed using a textual analysis software program, version 4.0 of the ETHNOGRAPH (Siedel et al., 1995).

Focus group discussions showed that the word “cancer” was associated with deterioration, pain, suffering, and death. Most people felt that medical treatment could help, but that ultimately, the outcome of living or dying from cancer was in God’s hands. As one man stated, “Cancer’s one thing; if it gets too far on you, no matter how strong your mind is, you’re going to leave here, unless the Lord works a miracle.” Many people expressed the belief that cancer cannot be prevented, but they believed that there are precautions that can be taken to decrease cancer risk. These precautions include eating healthy foods, exercising properly, and seeking medical care. They also felt that spiritual health, prayer, and being close to God can help people avoid illness. There was skepticism expressed regarding scientific research and expert health advice reported in the media. The Bible was cited as a source of health and nutrition information, and pastors were deemed the most effective persons to deliver health messages to their congregations.

Participants said that vegetables and fruit are healthy and are foods that they like. Most of them described people who eat five servings a day as being healthy (with good skin, teeth, and digestion) and committed to religious faith. Eating five servings a day also evoked some negative connotations; for example, those who do so must not have any children (because with children there would be no time to eat five a day) and must need more protein (because if one eats five per day, one might not be eating enough meat). Participants also said that there was a wealth of expertise among the church members to implement health programs and that they did not want people “from Raleigh” coming in to lecture or tell them what not to eat.

These insights were vital in shaping the BCUBH intervention project. First, there was a realization that focusing too heavily on cancer would likely provoke negative reactions or fears that might reduce participation in the project. Because people recognized the importance of healthy eating and had positive attitudes toward vegetables and fruit, the study stressed positive messages about eating these foods for health benefits. It not only acknowledged that meals should

not exclude meats and traditionally favored dishes but also focused on how to modify those recipes to meet the 5 A Day guidelines (see Chapter 2). Second, the findings suggested that people might be more responsive to nutrition messages that integrated spiritual and Biblical references rather than relying solely on biomedical and expert recommendations to persuade people to change. If possible, the pastor should deliver those messages, because it would be inappropriate for the research team to interfere with the religious life of the church. Finally, because church members made it clear that they wanted to use and enhance their existing resources rather than have outside experts deliver the interventions, the study used a train-the-trainer model, working with the nutrition action teams and lay health advisers to enable church members to teach each other.

### **Intervention Strategy**

**Pastor support.** The committed support of pastors was recognized as essential to the success of the project. Pastor involvement was solicited in selecting the nutrition action team; reviewing educational materials for appropriateness; writing and reviewing tailored messages; and promoting the project from the pulpit with sermons, announcements, and positive messages to the congregation about the importance of healthy eating. Pastors were kept informed of all project activities. A newsletter entitled *The Body Temple* was developed specifically for pastors, and a ministerial consultant to the project periodically contacted pastors by telephone.

**Nutrition action teams.** Each pastor was asked to select three to seven church members to form the nutrition action team, which was responsible for organizing and implementing the 5 A Day intervention activities within that church. The nutrition action team members were generally those people recognized by the pastor as being capable of taking on leadership roles for this type of project. They received training and support from the project staff as well as from the local health department and the North Carolina Cooperative Extension Service.

**Tailored bulletins.** Based on participants’ baseline survey information, each intervention group member received a personalized, tailored bulletin that was mailed to their home. The bulletins were formatted similarly to a church bulletin



and contained individualized feedback regarding current vegetable and fruit consumption compared with the 5 A Day target, along with messages regarding stages of change, barriers, beliefs, and the level of social support. The bulletins also contained culturally appropriate recipes, tips, and a bookmark (Campbell et al., 1999a).

#### **Lay health advisers.**

Church members were asked to identify people who were recognized by others as natural helpers in their church. Through this process, the research team identified those names most frequently mentioned by members within each church. In general, nutrition action team members were different from those identified as natural helpers. Potential lay health advisers were invited to attend a series of training sessions designed to build on their already-existing roles in the church. These sessions focused on refining the knowledge and skills necessary to increase social support for eating vegetables and fruit and on training lay health advisers to recognize and use the Stages-of-Change Model to help fellow members move forward. Lay health advisers learned the five major stages of change (pre-contemplation, contemplation, preparation, action, and maintenance). Through role-playing and discussions, these advisers practiced how to identify where fellow church members were in the change process and how to encourage them to move forward from earlier to more advanced stages (Campbell et al., 1998).

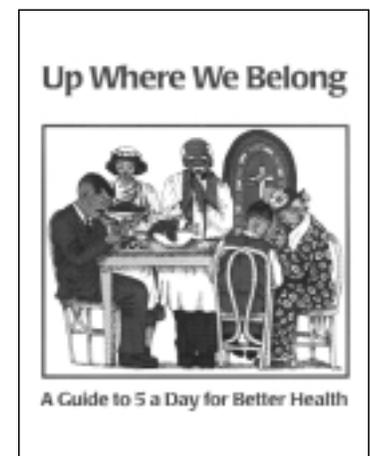
**Printed materials.** Church-bulletin inserts and monthly packets were developed by the project team and delivered to each intervention church to facilitate the dissemination of 5 A Day messages and activities. Brochures, posters, banners, and other written materials from NCI's Cancer Information Service (CIS) and the national 5 A Day media campaign were reviewed for appropriateness among this population, and selected materials were then distributed. In addition, the 1-800-4-CANCER phone number of CIS was promoted as both a general information

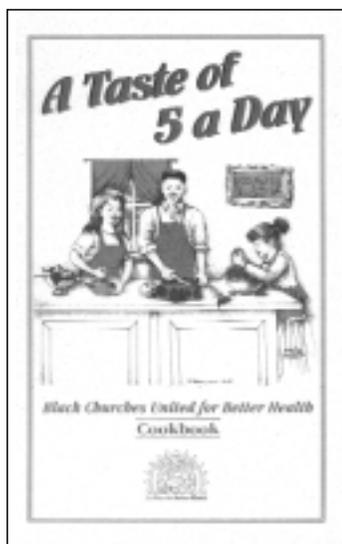
hotline and as a resource where additional materials could be obtained.

**Educational sessions.** The team developed and conducted two main educational programs. A general 5 A Day educational session, called *Up Where We Belong*, was taught using a train-the-trainer model. The nutrition action team members from all 24 intervention churches attended a training session in Raleigh and then conducted at least two *Up Where We Belong* sessions in their respective churches. An *Up Where We Belong* 5 A Day manual was also distributed to church members who attended the sessions. The second educational session, called *Cooking With Pizzazz*, was developed and implemented primarily by the North Carolina Cooperative Extension Service in conjunction with the project team. One or two sessions were conducted for the churches in each intervention county by the local Cooperative Extension Service agent. These classes focused on how to modify cooking methods and favorite recipes to increase vegetables and fruit and to lower fat content. Local Cooperative Extension Service agents also conducted at least one class on canning and freezing vegetables and fruit for church members in each intervention county.

**County coalitions.** In each intervention county, coalitions were formed that included church pastors, nutrition action team members, and representatives of various local agencies, including the health department, the State Cooperative Extension Service, community colleges, and other interested parties. The coalitions received training from an expert in community coalition development. Coalitions met every 1 to 2 months on average throughout the project period and planned community events and 5 A Day publicity efforts, such as festivals and billboards.

**Taste tests and cookbook.** In order to encourage church members to eat more vegetables and fruit and to create social support for dietary change, a cookbook titled *A Taste of 5 A Day* was developed. A cookbook chairperson from each church worked with project staff to





coordinate the collection of favorite vegetable and fruit recipes from members. The members then worked with project staff to modify their own recipes to meet the 5 A Day criteria (i.e., at least one vegetable or fruit per serving, less than 30 percent of total calories obtained from fat, less than 480 mg sodium per serving, and limited added sugars). (See Appendix A-3, section D.) Recipe-tasting events were held in the churches to test the acceptability of the modified recipes. Each household with

at least one study participant received a complimentary copy of the cookbook.

**Point-of-purchase promotions.** Point-of-purchase materials designed to promote locally grown produce (such as strawberries, leafy greens, cabbage, sweet and Irish potatoes, tomatoes, and blueberries) were developed in cooperation with the North Carolina Department of Agriculture and the Duke University Medical Center. Materials were distributed to church members and the grocery stores where they shopped. The types of materials distributed included seasonal recipe cards, cents-off coupons, bulletin insert advertisements, promotional posters, and farmers market and pick-your-own informational posters.

**Enhancing availability of vegetables and fruit at churches.** The North Carolina Cooperative Extension Service encouraged the development of church victory gardens to grow more vegetables and fruit and taught a master gardener program developed specifically with and for church members. Churches were also encouraged to include vegetables and fruit when food was served at church functions, such as at homecoming dinners, vacation Bible school, and after-worship services.

**Church-initiated activities.** In addition to the planned intervention program, individual churches found innovative ways to incorporate the 5 A Day message into church functions and activities. Some of these activities included convening gospel fests with a 5 A Day theme, participating in an agricultural gleaning program to salvage produce and dis-

tribute it to needy families, providing baskets of vegetables and fruit to the sick and homebound, and holding youth-oriented activities and games focused on the 5 A Day message.

### Overcoming Barriers to Participation

African-Americans traditionally have been reluctant to participate in research studies. Historical abuses, such as the Tuskegee study and other instances of the misuse of African-American populations in research (Harris et al., 1996), as well as a history of discriminatory admissions policies by universities, are well known in the community. Community members, therefore, may have a built-in distrust of university researchers. Additionally, because the grant was federally funded, some churches felt uncomfortable about becoming involved due to beliefs about separation of church and State and fear of governmental interference. These barriers presented challenges for the research team in gaining entry and acceptance from the churches. The research team overcame these problems by being aware of the issues, providing full information, visiting personally with the pastors, attending church services and functions, and building trust over time. Announcements about the project at services, coupled with pastoral support, led to excellent participant response to the telephone surveys. Also, providing monetary resources to the churches demonstrated that the undertaking was truly a partnership. At a celebration dinner toward the end of the project, several pastors commented that they were initially suspicious and skeptical of the project but that they no longer felt that way because the project had followed through with its commitments and had acted in good faith.

### Results of the North Carolina BCUBH Project

The final sample for the study (n = 2,519) consisted of those members who completed both the baseline and 2-year followup telephone interviews (see Table 2). A response rate of 77.3 percent was achieved. The sample was 72 percent female and 98 percent African-American and 2 percent other ethnicity. The average age of the respondents was 53.8 years, and the majority (57.6 percent) were married. Two-thirds of the sample had a high school education or higher, and the majority (58.7 percent) had household incomes

below \$20,000 per year. Demographic characteristics were similar between study groups except for income level, which was higher in the delayed-intervention group. Data analyses were performed using the Statistical Analysis System Proc Mixed Procedure (Version 6.1) to account for the clustering of responses by churches within pair-matched counties, adjusting for both demographic characteristics and baseline vegetable and fruit intake (Statistical Analysis System, 1997).

Detailed results of the study have been published elsewhere (Campbell et al., 1999b). At baseline, total vegetable and fruit consumption based on the seven-item food frequency questionnaire (see Appendix E) was not statistically different between study groups. The intervention group consumed 3.68 (SE 0.09) daily servings and the delayed-intervention group consumed 3.76 (SE 0.07) servings. At the 2-year followup, the intervention group's consumption had increased significantly, but there was virtually no change in the delayed group. The difference between the groups was 0.85 serving ( $p < 0.0001$ ). The majority of the increase was in fruit consumption (0.66 serving) rather than in vegetable consumption (0.19 serving), although both improvements were statistically significant. At baseline, approximately 23 percent of members in both study groups were already consuming five servings a day, based on the seven-item food frequency questionnaire. The proportion of participants meeting that goal at followup was 33 percent in the intervention group and 21 percent in the delayed group ( $p < 0.001$ ).

In addition, there were significant differences in consumption-related psychosocial factors, including stages of change, self-efficacy, knowledge of the recommendations, and perceived availability of vegetables and fruit at church functions. Whereas frequency of church attendance was not associated with baseline intake, more frequent church attendance during the study period resulted in greater vegetable and fruit consumption in the intervention group. This measure may have served as a proxy for exposure to the overall intervention program. Those who attended more than once per week increased consumption by 1.3 servings compared with lesser increases for those attending once a week (+ 0.6 serving), twice a month (+ 0.5 serving), or once a month or less (+ 0.1 serving). In the delayed-intervention group, church attendance did not predict differences in consumption at followup.

Participants cited certain parts of the intervention as most influential in causing them to increase vegetable and fruit intake. The activities cited as most effective by the largest percentage of participants were having more vegetables and fruit served at church functions (63 percent), having the pastor promote the 5 A Day message from the pulpit (55 percent), receiving a personalized (tailored) bulletin (53 percent), and receiving printed materials (50 percent).

### **Lessons Learned**

The BCUBH project was, most probably, the largest randomized trial of a church-based dietary intervention ever conducted. Few interventions with religious organizations have used rigorous research designs to test effectiveness (Lasater et al., 1997). In addition, a unique aspect of the BCUBH project was the focus on rural populations and cancer prevention. Previous studies with churches, such as the Heart, Body and Soul project, focused on urban populations and cardiovascular disease prevention (Kumanyika, 1992; Voorhees et al., 1996). The positive results from this trial have encouraged a next generation of NCI-funded dietary studies with religious organizations, including the Eat for Life study in urban African-American churches in Atlanta, Georgia (Resnicow et al., 2000) and the PRAISE project in North Carolina (Boyd Switzer, principal investigator, personal communication).

A major strength of the BCUBH project was the use of interventions that capitalized not only on the church as an access point to reach African-Americans but also on other important aspects of church life. The BCUBH project developed innovative methods to engage the church membership to deliver interventions and to incorporate spiritual elements into health messages. This approach has been classified as a Level IV intervention (the most evolved model) by Lasater and colleagues, because it is considered the type of intervention with the highest involvement by church members and the most likely to achieve success (Lasater et al., 1997).

In delivering health-based messages through such channels, it is important to remember the primacy of the mission, the goals of the church, and the pastor's role as the recognized head of this institution. Therefore, to integrate health-based programs effectively within the church environment, ample time and effort are necessary

to garner the support of the pastor and other church leaders. Potential barriers can be lessened by utilizing program staff members who are familiar with the tenets and practices of African-American churches.

In the BCUBH project, field coordinators and project directors were active church members and were of African-American heritage. Furthermore, a ministerial consultant who was hired provided effective liaison services between the churches and the research team.

One of the major lessons learned in implementing the 5 A Day Program within African-American churches was the great amount of time and effort needed to nurture and promote the project and to sustain a positive relationship between church members and the research team. Partnering with churches necessitates flexibility and responsiveness to variations among churches in factors such as mission, resources, and processes of decision-making. Such flexibility, although vital to working within this community channel, can also limit the researcher's ability to ensure standardization and strict fidelity to an intervention protocol and timeline.

More people provide feedback, more decision points are necessary, and projects are therefore slower, as they require more time and resources. Such projects truly represent a partnership between the community and the health care and research team and therefore are apt to make a greater impact.

Because such interventions are so time- and resource-intensive, issues of generalizability are important to consider. Where research and dissemination funds are limited, it may not be possible to deliver an intervention of the same intensity, time, and number of components. Future research should address issues of dissemination, such as the optimum methods, costs, and effectiveness of delivering this type of church-based intervention on a broader scale. Currently, the American Cancer Society is funding the adaptation and dissemination of a program based on a combination of intervention strategies from the BCUBH project and the Eat for Life project (Ken Resnicow, Principal Investigator, Emory University, personal communication). This program will launch a church-based nutrition initiative by the American Cancer Society that will be delivered via its national network of local affiliates and volunteers. As a critical part of

this effort, NCI's Health Promotion Branch is underwriting a rigorous scientific evaluation of this adapted program.

## SUMMARY AND IMPLICATIONS

Both the Maryland and North Carolina 5 A Day projects represent successful examples of innovative interventions for underserved populations. The projects recruited and retained large numbers of participants and were able to evaluate behavior change over relatively long time periods of 1 to 2 years. Despite differences in settings, target groups, and intervention attributes, certain similarities in the projects' approaches may explain their success, at least in part. These approaches are not new to health promotion research; however, these projects applied them to settings and populations that were not adequately studied in the past.

First, both projects conducted extensive formative research and listened to the target population. In each case, the formative research revealed themes and insights that enabled the researchers to tailor the interventions to fit the unique needs of the target audience. The key messages used in each project focused attention on the motivators and perceived barriers that were identified from the formative interviews.

A second common element of the projects was the use of lay individuals to deliver or teach the information, as opposed to having nutrition experts lead the education. The North Carolina BCUBH project trained nutrition action teams and lay health advisers, and the Maryland WIC project trained peer educators, most of whom were former WIC program recipients. These lay educators, because of their similarity to the target audience, were credible role models for behavior change.

Third, both projects used personalized, tailored print materials that were mailed to participants' homes. Participants in both projects considered the tailored materials to be one of the more successful intervention pieces. This suggests that, especially with lower income and minority audiences, tailored printed materials may be an effective intervention component to increase interest and awareness of a project and to promote participation in other project activities.

What are some of the implications? Clearly,

public health professionals may need to look outside of traditional health education channels, such as schools and worksites, and consider other community and public health settings to reach certain segments of the population. Even though WIC efforts are based in traditional public health settings, the findings of the Maryland study clearly show that the national WIC program would benefit from the dissemination of carefully designed and tested, theory-based programs that have been shown to be effective.

Partnering with nontraditional groups and organizations, such as churches, can be another means of reaching certain populations. The BCUBH project showed that although this can be an effective strategy, there are significant barriers and considerations involved in gaining trust and entry into such settings. In addition, programs that work with strong community institutions (such as churches) need to build upon the resources and structures already present and to strengthen and enhance those resources rather than superimpose programs and structures that will last only as long as the project funds are available.

The results of these two 5 A Day Program studies suggest that future intervention trials may be most effective when they are targeted to specific populations and when the researchers are encouraged to develop the interventions to meet the needs of the specific audience rather than using a one-size-fits-all approach. Lessons learned from these studies should be examined carefully to inform future studies that may seek to extrapolate these findings to other populations and settings.

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## Chapter 12

# International 5 A Day Programs: A Smorgasbord

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## **INTRODUCTION**

As evidence of the worldwide interest in the U.S. 5 A Day for Better Health Program, representatives from more than 25 countries gathered in Washington, DC, in October 1998 for the first 5 A Day International Symposium. A second symposium was held in January 2001. Convened jointly by the National Cancer Institute and its private-sector partner, the Produce for Better Health Foundation, both symposiums promoted networking and sharing of experiences among countries committed to implementing the 5 A Day model. A wide range of countries, some of which already had functioning 5 A Day-type programs, attended the symposiums to discuss their own efforts and to learn from the efforts and experiences of other nations.

This chapter provides a summary of nine country's efforts that are similar to the U.S. 5 A Day Program, presented in alphabetical order: Australia, Canada, Denmark, Germany,

Hungary, The Netherlands, New Zealand, Norway, and Sweden. These are programs for which data were available.

The experience of the U.S. 5 A Day Program and the international programs described in this chapter indicate that elements for the development of a successful program include the following:

- Governmental nutrition policy based on accepted scientific research;
- Strong public/private partnerships, including a respected and credible governmental or public entity and a committed network of food industry interests and resources;
- A simple, specific message;
- A clearly defined target audience; and
- A plan for program evaluation.

Table 1 presents the applications of the latter four elements in the nine programs discussed in the rest of this chapter.

**Table 1. Application of Key U.S. 5 A Day Elements in International Efforts**

| <i>Country</i>  | <i>Public/Private Partnerships</i>               | <i>Strong Program Message in Place</i>   | <i>Clearly Defined Target Audience</i>  | <i>Planning and Evaluation Components</i>         |
|-----------------|--|--|---|---|
| Australia       | Regional efforts: yes<br><br>National effort: no | Regional efforts: Fruit 'n' Veg With Every Meal; 2 Fruit 'n' 5 Veg Every Day<br><br>National effort: 7-a-day | Regional efforts: household shoppers and children<br><br>National effort: general population          | Regional efforts: yes<br><br>National effort: yes |
| Canada          | Yes  | Reach for It! then 5 to 10 a day . . . Are You Getting Enough?   | 24- to 45-year-old women, and children  | Yes   |
| Denmark         | Yes  | 6 A Day  | General population (those who eat fewer than six servings a day, or 94 % of the population)           | Yes   |
| Germany         | Yes  | 5 am Tag (5 a Day)   | General population, but particularly children, youth, and young mothers                               | Yes   |
| Hungary         | Yes  | 3x A Day   | Children, youth, and adults who make food purchasing decisions  | Yes   |
| The Netherlands | Yes  | Everyday 2 + 2   | General public and primary school children  | Yes   |
| New Zealand     | Yes  | 5+ A Day   | Primary and preschool children, and household shoppers with children                                  | Yes   |
| Norway          | Yes  | N/A (Fruits and Vegetables in the School; Green Canteen worksite program)                                    | Schoolchildren and worksite cafeteria staff   | Yes   |
| Sweden          | No   | Fruits and Vegetables Every Time You Eat   | Schoolchildren, hospital and other health institution workers, and those in the food-service industry | Yes, but informal                                 |

## AUSTRALIA

In Australia, significant efforts to increase the population's vegetable and fruit consumption began in the early 1990s. These efforts, similar to the U.S. 5 A Day campaign, started at the State<sup>1</sup> level with a collaboration between governmental health agencies and industry and were led by the Health Department of Western Australia (HDWA),

<sup>1</sup> Australia has six States (New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania) and two territories (the Northern Territory and the Australian Capital Territory). Responsibility and funding for various Government services, including health and education, are broadly defined by agreements between Commonwealth (national) and State/territory Governments, but States/territories have considerable autonomy in defining and implementing specific programs.

followed by the Victoria Food and Nutrition Program. Health authorities in New South Wales, Tasmania, Queensland, and South Australia also began to conduct brief smaller campaigns. The implementation of region-specific approaches was due to jurisdictional funding commitments in areas for which health authorities have responsibility rather than because of any real differences in culture or dietary habits.

In the mid-1990s, attempts were made by the public health and produce industry sectors to establish a national 5 A Day-type initiative. Unfortunately, these attempts were unsuccessful, largely due to the lack of infrastructure in both sectors to provide funding and management at a national level. In 1997, however, following broader initiatives to form the National Public Health Partnership,<sup>2</sup> the Strategic Inter-Governmental Nutrition Alliance (SIGNAL) was formed as the nutrition arm of the partnership in order to better coordinate nutrition initiatives between States and the Commonwealth and to provide a reference point for stakeholders to consult with the Government on nutrition issues. SIGNAL has representation from the Commonwealth, State, and territory governments and has a key responsibility to develop and implement the Eat Well Australia strategic framework for action in public health nutrition for the years 2000 to 2010.<sup>3</sup> Promoting vegetable and fruit consumption is a high priority of this strategic framework.

Promoting increased vegetable and fruit consumption is a high priority of the strategic framework. SIGNAL has initiated reviews and a planning exercise for identifying target groups and the best mix of intervention approaches at the national, State, and local levels, as well as for

<sup>2</sup> In October 1996, Australian health ministers from all jurisdictions signed a memorandum of understanding to form the National Public Health Partnership, comprising representatives of Commonwealth and State/territory Governments and key national information and research agencies. The broad objectives of this partnership are to improve collaboration between stakeholders, achieve better coordination and sustainability, and strengthen public health infrastructure and capacity.

<sup>3</sup> Endorsement by the Australian Health Ministers Advisory Council is expected in August 2001. [www.nphg.gov.au/signal/priority.htm#strategies](http://www.nphg.gov.au/signal/priority.htm#strategies)

appropriating funding and building the proper infrastructure to support implementation. This work has built on past and existing campaigns to promote vegetables and fruit. Formal links have been established with key industry partners, including SIGNAL's representation in a national media campaign of the Australian Horticultural Corporation (an organization representing the interests of many grower groups) and a national vegetable and fruit promotion by Franklin's supermarket chain. Franklin's has one of the highest national market shares in supermarket sales; therefore, its involvement will have a significant impact on the reach of vegetable and fruit promotions.

Implementation of the Eat Well Australia vegetable and fruit strategy will rely on participation of key stakeholders, including the State/territory health departments, the nongovernmental health sector, vegetable and fruit industry grower groups, marketing authorities, and retailers. Key past and current initiatives of various stakeholders are summarized in Table 2 and below.

### Western Australia Vegetable and Fruit Campaign

This multistrategy campaign, initiated by the Nutrition Program of HDWA and implemented in collaboration with Primary Product Promotions (a unit set up in Western Australia with Government and industry funds to promote fresh produce), began in 1990 and targeted adults ages 20 to 50 (Miller et al., 1996). The aims of the adult campaign were to increase awareness of the need to eat more vegetables<sup>4</sup> and fruit as well as to increase their consumption in Western Australia. "Fruit 'n' Veg With Every Meal" was the message used in the first phase of the campaign. A more definitive message, "2 Fruit 'n' 5 Veg Every Day," was used in subsequent phases of the campaign. A "Buy in Season" message was also used in point-of-sale promotions. These promotions were jointly funded by HDWA and grower groups and conformed to protocols set by HDWA. They

<sup>4</sup> At least five average-sized (60- to 90-gram) servings of vegetables and two average-sized (120- to 150-gram) pieces of fruit and are recommended for adults (Miller et al., 1997). Average intake in the 1983 National Dietary Survey was one serving of fruit and almost four servings of vegetables (Cashel et al., 1986).

**Table 2. Summary of Australian Campaigns**

| <i>Location</i>   | <i>Campaign Title/Message</i>   | <i>Target Audience</i>                       | <i>When Initiated</i> |
|-------------------|---|--|-----------------------|
| Western Australia | Fruit 'n' Veg with Every Meal, then renamed "2 Fruit 'n' 5 Veg Every Day" | Adults 20 to 50 years old                    | 1990                  |
|                   | Fruit 'n' Veg Eat It!   | Children 6 to 12 years old and their parents | 1995                  |
| Victoria          | 2 Fruit 'n' 5 Veg Every Day   | Adults ≥ 20 years old                        | 1992                  |
| Tasmania          | Eat Well Tasmania vegetable and fruit-specific promotion                  | General public                               | 1997                  |
| New South Wales   | Kit: "Charge through your day with 2 fruits and 5 vegetables"             | General public                               | 1999                  |
| National          | 7-a-day   | General public                               | 1999                  |

included in-store signage, food demonstrations and tastings, distribution of recipe cards, and radio advertising. Buying in season is tied to availability and was promoted to help consumers obtain the best quality, flavor, and value for their money. In addition, other approaches were used to promote vegetables and fruit to household shoppers, including television, press, and billboard advertising; public relations activities; cookbooks and other publications; community activities; worksite- and school-based activities; and sponsorships.

Baseline consumer research was conducted in 1989 and early 1990 through a mailed questionnaire to gauge attitudes toward eating vegetables and fruit, the quantity that should be eaten to gain a health benefit, and barriers to greater purchasing and consumption. The sample, consisting of 316 males and 490 females 20 to 50 years old, was selected randomly from the electoral roll of Perth's metropolitan and selected rural areas. Results showed that people's lack of knowledge of the recommended intakes, as well as attitudes that they were already eating enough, were the main barriers to increasing vegetable consumption. Perceived high prices, poor quality, long-term habits, and not enough variety were the main barriers to increasing fruit consumption.

Evaluation efforts using mail and telephone surveys showed significant improvements between 1990 and 1994 in the knowledge and attitudes of

those consumers who had indicated (by means of a self-reported food frequency questionnaire) in a campaign-specific, baseline survey (n = 809) that they had the lowest consumption of vegetables and fruit (Pollard et al., 2000). Results of another survey, which is conducted every 5 years and monitors the total diet of approximately 1,500 adults in Western Australia, has shown that the level of vegetable consumption (based on a 24-hour recall) of the Western Australian sample increased by half a serving between 1990 and 1994. For the same time period, a decrease in vegetable consumption was seen on the national level (ascertained using apparent consumption, also known as food disappearance, data) (Pollard et al., 2000).

In 1995, the main target group for the HDWA vegetable and fruit campaign was changed to 6- to 12-year-old children and their parents. The message aimed at this target group was "Fruit 'n' Veg. Eat It!" In the first phase of the campaign, which lasted 6 months, parents were targeted to increase their confidence in providing vegetables and fruit that children would eat. Children ages 9 to 12 were specifically targeted in the second phase of the campaign. Phase 2 objectives were to increase positive attitudes among children toward vegetables and fruit and to increase the number of children who ask parents for them. Key strategies included television commercials that featured animated vegetable and fruit characters; the *Kids in the Kitchen* children's cookbook; a 28-episode

television cooking program and teaching resources for schools; and school-based promotions during Fruit 'n' Veg Week, held in the first week of September (spring) each year. The effort, targeted at 9- to 12-year-old children, is being implemented on a continuous basis with various TV advertising bursts and other strategies. Phase 1, targeted at 6- to 12-year-old children and their parents, was repeated in 1997 to reach new parents entering the target group and to reinforce the message with other parents.

After the first two phases, a 1996 evaluation of the children's campaign showed that 98 percent of children surveyed had overall campaign awareness, and 48 percent said that they took some action to eat more vegetables and fruit as a result of the campaign (HDWA, 1996). The survey sample ( $n = 2,189$ ) was derived from randomly selected primary schools in the Perth metropolitan area and was representative of the types of schools found in the area (e.g., private, Government, Catholic), as well as of socioeconomic status. Aspects of the Western Australia campaigns for adults and children have been implemented in most Australian States.

### Victorian Vegetable and Fruit Campaign

In 1992, Western Australia's 2 Fruit 'n' 5 Veg Every Day Campaign was adapted for use in the Australian State of Victoria, with increased emphasis on the involvement of various sectors, particularly the food-service and vegetable and fruit industries. The campaign was implemented by the Food and Nutrition Program, with funding from the Victorian Health Promotion Foundation, a Government-sponsored body that redirects a proportion of tobacco taxes into health promotion initiatives. The Melbourne Fresh Center Market Trust, a promotional unit connected to the major fresh produce market in Melbourne, Victoria, was also a partner in the campaign.

Strategies including television advertising and supermarket and community promotions were implemented in phases over 3 years. Time-series evaluations using annual surveys ( $n = 510$  per series, consisting of adults randomly selected from telephone listings who were at least 20 years old) conducted from 1992 to 1995 showed that the level of public awareness and reported consumption, as well as beliefs about appropriate levels of

fruit and vegetable consumption, tended to parallel upsurges in mass media spending (Dixon et al., 1998).

In both the Western Australian and the Victorian 5 A Day-type efforts, recruitment of sectors outside the government health sector was slow. Even nongovernmental health sector organizations, such as the Cancer Foundation, were not convinced to join the effort in the early stages. Vegetable and fruit growers and marketing, processing, and retailer groups also were solicited as key partners. However, before they would commit, many groups needed additional information regarding the extent of the health sector's role in the campaign, as well as opportunities of which they could avail themselves as members of the produce industry in promoting their own products. Support by nongovernmental health agencies, such as the Cancer and Heart Foundations, grew as research evidence increased and awareness rose of the link between vegetable and fruit consumption and disease prevention. Other government entities, such as the Departments of Education and Agriculture, also became critical partners as momentum increased.

### Eat Well Tasmania

Tasmania is a small southern island State of Australia. Eat Well Tasmania started in 1995 and was funded by the government through the Tasmanian Health Promotion Council. This program is managed by the Tasmanian Nutrition Promotion Task Force, comprising representatives from various government departments, the primary food industry (including representatives from the vegetable, fruit, dairy, meat, bread, and fish industries), and retail food groups. The goal of the Eat Well Tasmania project is to reduce the incidence of diet-related health problems and to increase the nutritional well-being of all Tasmanians. The strategic aims are to promote increased demand for healthy foods (not just vegetables and fruit), especially of Tasmanian origin; increase the level of cooperation between such sectors as food producers, manufacturers, retailers, health professionals, schools, and community organizations in promoting good nutrition and influencing dietary intake in Tasmania; and coordinate and raise the profile of activities that support the State's nutrition health goals and targets.

Within Tasmania, projects are diverse and are initiated by several sectors working together in various combinations. Discrete promotions of specific healthy foods are run as a component of the overall Eat Well Tasmania campaign. The promotion of vegetables and fruit, a high priority within the State, was the focus of just such a discrete campaign between April and October 1997. The unifying aspect that links the varied efforts is the Eat Well Tasmania logo, which can be used by approved affiliated projects, activities, and campaigns throughout the State.

Development of the Eat Well Tasmania project utilized the results of both a baseline statewide telephone survey on knowledge, attitudes, and food habits conducted in 1995 (n = 800; subjects 15 to 64 years old and stratified to represent age, gender, and region) and forums that were held in 1996 involving the public and key stakeholder groups. Annual statewide surveys and forums are used to evaluate efforts throughout Tasmania, including strategy-specific components (Seal, 1997). The collaborative infrastructure of Eat Well Tasmania has been adopted in the Eat Well South Australia campaign, which also places emphasis on environment and sustainable food supply, access to food, and nutrition projects that benefit children as well as low-income and non-English-speaking families.

### New South Wales Health Fruit and Vegetable Promotion Project

New South Wales, the capital of which is Sydney, is the most heavily populated State of Australia. In 1999, New South Wales Health, the State health authority, promoted a new tool-kit resource for statewide use in local health areas<sup>5</sup> to promote the message, “Charge through your day with 2 fruits and 5 vegetables.” The kit provides a style guide that includes specifications for standard logos, presentation of printed promotional material, and use of the slogan. It also contains advice on contacting and working with the media; establishing partnerships with sectors such as agriculture, tourism, local councils, local growers, and

<sup>5</sup> State government management and delivery of health care is decentralized, based on geography and population, to local health areas.

produce markets; conducting events such as open-farm days, to which the public is invited to participate in the activities of privately owned farms, and food-tasting festivals; and initiating projects to increase community access to sustainable supplies of vegetables and fruit. The contents of the tool kit draw on the resources and experience of the Western Australian and Victorian vegetable and fruit campaigns, as well as the Penrith Food Project<sup>6</sup> and other efforts. (Penrith is a city that is an outer suburb of Sydney.) The Sydney Fresh Food Bowl Network, a coalition of stakeholders, including health, local government, consumers, growers, marketers, and retailers, oversees the Penrith project.

### Australia's 7-a-day Program

Australia's 7-a-day vegetable and fruit program was launched in June 1999 to encourage Australians to eat more vegetables and fruit. It is a joint initiative between the Dietitians Association of Australia and Coles Supermarkets, one of the two largest sales-volume supermarket chains in the country, with stores in all States and territories. The resulting Coles 7-a-day program promotes the key message that Australians need to eat at least seven daily servings of vegetables and fruit—five servings of vegetables and two of fruit—to promote better health and to reduce the risk of disease. The program's objective is to increase Australians' consumption of vegetables and fruit by 0.25 serving each year.



The program has two functional components: research to monitor vegetable and fruit consumption and beliefs about recommended intake and an education and promotion campaign to encourage consumption of vegetables and fruit.

The educational component uses point-of-sale promotions in more than 440 Coles supermarket

<sup>6</sup> A project funded by the local council government to increase supply and demand for affordable, nutritious, and safe food. The project is a partnership of food retailers, manufacturers, agricultural entities, community groups, and academic institutions that work on improving the local food system to better meet the needs of the local community.

stores nationally to encourage consumers to eat at least five servings of vegetables and two servings of fruit per day. Aspects of the point-of-sale campaign include brochures on seven featured vegetables and fruit each month, in-store demonstrations, competitions, and loyalty-card bonus promotions. There is a 7-a-day Web site ([www.7aday.coles.com.au](http://www.7aday.coles.com.au)), as well as ongoing advertisements and copromotions in key women's and lifestyle magazines (Commonwealth of Australia Department of Health and Aged Care press release, 1999).

Telephone surveys commissioned by Coles in November 1998, 1999, and 2000 and published as the *Coles Fruit and Vegetable Index* (1999, 2000, 2001), researched a representative sample of Australians age 14 years and older. Respondents were asked what they considered to be healthy levels of vegetable and fruit consumption, their actual consumption, and the perceived health benefits of consuming vegetables and fruit. Results of the 1998 survey (n = 2,506) showed that only 10 percent of adult respondents believed that they should eat 7 servings of vegetables and fruit per day and that, on average, Australians ate just 4.1 servings of fresh vegetables and fruit daily and believed that this was enough to stay healthy.

Research for the second Coles index (n = 2,601) was conducted in November 1999. At the time of this survey, respondents also provided information on vegetable and fruit consumption by children (n = 1,310) under 14 years old. Findings from this survey showed increases in reported consumption of fresh vegetables and fruit, knowledge of recommended servings, and awareness of the health benefits of vegetables and fruit. Complete results of the second *Coles Fruit and Vegetable Index* were released in July 2000.

In November 2000, research for the third Coles index (n = 2,602) was conducted. At the time of this survey, respondents also provided information on vegetable and fruit consumption by children (n = 1,110) under 14 years old. Survey results showed increases in reported consumption of fresh vegetables and fruit from 4.1 servings per person per day in 1998 to 4.5 in 2000, and 21 percent of respondents believed they should be eating 7 servings or more per day and were aware of the health benefits of vegetables and fruit. Information about the results of each of the surveys can be obtained by contacting the Dietitians Association of Australia

at [nationaloffice@daa.asn.au](mailto:nationaloffice@daa.asn.au) or by contacting the Coles National Office through its Web site ([www.coles.com.au](http://www.coles.com.au)).

The 7-a-day campaign is currently supermarket-focused, with some supporting print media promotions. Commonwealth, State, and territory government initiatives are continuing in various settings. A major objective of the Eat Well Australia vegetable and fruit strategy is to promote integration so that the various initiatives of the government and nongovernmental sectors are complementary and represent a comprehensive approach to national vegetable and fruit promotion.

## CANADA

The Canadian efforts to promote vegetable and fruit consumption predate and helped inspire the U.S. 5 A Day Program. In 1972, the Canadian Horticultural Council and the Canadian Fruit Wholesalers' Association formed the Fresh for Flavour Foundation (FFFF). The primary focus of FFFF was to give priority to the promotion of Canadian-grown products and to expand the produce market by increasing the per capita consumption of fresh vegetables and fruit from 350 pounds (159 kg) per capita in 1972 to 400 pounds (182 kg).<sup>7</sup>

Over a 5-year period, the Foundation implemented a number of successful promotional campaigns, including Citrus Month, Winter Stew, Apple Month, Tropical Fruit Month, and Summer Salads. In conjunction with these efforts, the following milestones occurred:

- Late 1970s—The 400 pounds (182 kg) per capita target was achieved; FFFF increased the per capita target to 500 pounds (227 kg).<sup>8</sup>



<sup>7</sup> Considering the wide weight variation for single servings of different vegetables and fruit (whether fresh, canned, frozen, or dried), it is estimated that each kilogram (2.2 pounds) of fresh produce consumed per capita is approximately equal to 10 servings of produce (1 serving of produce weighing, on average, 100 grams).

<sup>8</sup> Measurement of consumption is based on food disappearance data for the general population.

- 1985—FFFF focused more on emphasizing the health benefits of fresh vegetable and fruit consumption as industry groups ran their own promotional campaigns.
- 1989—FFFF reached the 500 pounds (227 kg) per capita consumption target. The Canadian Fruit Wholesalers' Association changed its name to the Canadian Produce Marketing Association (CPMA), creating an integrated entity that better represents the interests of those comprising the industry (retailers, independent wholesalers, and growers/shippers).
- 1994—Agreement was reached to amalgamate FFFF into CPMA. This allowed for decreased overhead, increased control, better efficiency, and more effective and far-reaching programs to increase vegetable and fruit consumption, and resulted in the creation of the Reach for It! promotional program, described below.

### Reach for It!

Reach for It! was a program designed to support the publication of Canada's Food Guide to Healthy Eating (Food Directorate, Health Protection Branch, Health Canada, 1992), which recommended that Canadians over the age of 4 eat 5 to 10 servings of vegetables and fruit each day. The food guide was based on Canada's *Guidelines for Healthy Eating*. These guidelines have been endorsed by such groups as the Canadian Cancer Society, the Canadian Dietetic Association, and the Heart and Stroke Foundation of Canada.

The goal of the Reach for It! program was to increase the per capita consumption of vegetables and fruit to 600 pounds per person by 2002. In 1991, Canadians were eating between three and five servings of vegetables and fruit daily. To reach this goal, servings would have to be increased by two each day. In order to attain this goal, the program focused on motivating consumers to increase their consumption of vegetables and fruit as part of a healthy and active lifestyle. Reach for It! provided retailers, food-service operators, and food and nutrition educators with tools for motivating their clients to increase their vegetable and fruit consumption. The number of promotions, new materials, and services provided to the target audiences depended on the vegetable and fruit industry's willingness to fund the program.

The program's strategy had a two-pronged approach:

- To distribute promotional materials and training information for use by the targeted audiences. Materials specific to seasonal promotions were available at minimal cost to cover printing and distribution.
- To license those who wanted to use the Reach for It! logo. The logo was trademarked to protect its use. Those who wished to use the logo on packaging or in advertising had to be licensed. Products and information connected with the Reach for It! logo reflected the low-fat message related to consuming vegetables and fruit. Technical assistance on this issue was offered to licensees.

With a projected lifespan of 5 years, the Reach for It! program grew and developed into 5 to 10 a day! Are you getting enough? This is a direct-to-consumer advertising campaign based on partnerships both inside and outside the produce industry. The campaign, scheduled to run over 3 to 5 years, was implemented in June of 1999.

### 5 to 10 a day! Are you getting enough? Campaign

In November 1998, a trilateral partnership (CPMA, Canadian Cancer Society, and the Heart and Stroke Foundation of Canada) conducted focus group testing at seven sites across Canada. The findings from these tests concluded that messages to the public should address the issues of cost, convenience, and ease related to the consumption of vegetables and fruit. Consumers asked for meal ideas and recipes and received tips and suggestions on how to fit vegetables and fruit into their hectic lifestyles.

Using data collected from those focus groups, CPMA developed a social marketing campaign in partnership with the Canadian Cancer Society and the Heart and Stroke Foundation of Canada. The effort is considered to be one of the most extensive healthy lifestyle campaigns ever launched in Canada, and it emphasizes the short- and long-term benefits of behavior change rather than the negative consequences of current behavior. The campaign clearly explains why consumers should be eating 5 to 10 servings a day and provides information on how to eat more vegetables and fruit.

The campaign targets adult females, because they represent 69 percent of those making grocery buying and daily cooking decisions for their families. A particular focus is placed on those women ages 25 to 45 who have less than a university education and are of average income status. An advisory committee guides the campaign. Committee members include executive representatives from the trilateral partners as well as from the National Institute of Nutrition, the Dieticians of Canada, and the City of Toronto Department of Public Health.

A variety of media are used to deliver messages, including television, radio, and public service announcements; a Web site (*www.5to10aday.com*); brochures; in-store displays; and retail grocery flyers. The Canadian Cancer Society provides a toll-free number so that consumers can speak with a trained operator and obtain additional information. Regional public health offices also disseminate information and provide literature to their constituents through school boards, public health units, and workplace cafeterias, among other venues. Tables 3 and 4 demonstrate a summary of the total number of impressions<sup>9</sup> and the dollar value of the combined elements of the campaign over its first 14 months.

If this campaign were to be evaluated against traditional marketing measurements, based on the timeframe of July 1999 through July 2001, it would be safe to estimate that more than 5 billion impressions have been created and that the advertising value of the campaign is more than \$14.3 million. Although impressions do not reflect the number of people reached, they do reflect the number of potential times that consumers may have been exposed to the campaign's messages. Through the use of various vehicles, the campaign is making huge strides in reaching consumers and is beginning to get its messages across in a repetitive and consistent manner.

Plans for the 5 to 10 a day! Are you getting enough? campaign for the year 2000 and beyond include the following:

- Utilizing an integrated mass media advertising campaign, which delivers a direct-to-consumer promotional program focused on user-friendly

<sup>9</sup> Impressions are the number of potential times consumers may be exposed to a message.

**Table 3. Impressions**

| <i>Medium</i>                       | <i>Number of Impressions</i> |
|-------------------------------------|------------------------------|
| Public service announcements .....  | 5,061,965,000                |
| Print editorial coverage .....      | 3,860,000                    |
| Electronic editorial coverage ..... | 34,500,000                   |
| Campaign materials .....            | 84,250                       |
| 1-888 Cancer Infoline .....         | 2,670                        |
| Web site .....                      | 800,000                      |
| <b>Total .....</b>                  | <b>5,101,211,920</b>         |

**Table 4. Dollar Value<sup>10</sup>**

| <i>Medium</i>                                      | <i>Value</i>        |
|--|---------------------|
| Public service announcements<br>(30 seconds) ..... | \$8,817,120         |
| Public service announcements<br>(90 seconds) ..... | \$2,665,000         |
| Print editorial coverage .....                     | \$98,576            |
| Electronic editorial coverage .....                | \$158,275           |
| Campaign materials .....                           | \$11,726            |
| 1-888 Cancer Infoline .....                        | N/A                 |
| Web site .....                                     | \$169,374           |
| <b>Total<sup>11</sup> .....</b>                    | <b>\$11,920,071</b> |

information about healthy eating related to vegetables and fruit;

- Producing and disseminating new public-service announcements, including 90-second educational television spots;
- Creating new specialized consumer materials (such as a brochure created in conjunction with the Canadian Medical Association for distribution through their membership to patients) and a series of five tear-out recipe cards

<sup>10</sup> Values provided are in U.S. dollars (1 U.S. \$ = 1.53 Canadian \$, July 2001).

<sup>11</sup> As of September 2000.

inserted into *Chatelaine* magazine (a women's publication with 1 million readers) that would contain campaign information and logos and feature a campaign sponsor's product;

- Continuing the development of the Web site to include an interactive vegetable and fruit recipe database; and
- Conducting meetings with leaders in the health field to educate them on the campaign and obtain their input regarding the content, format, and distribution of future campaign materials.

## DENMARK

In September 1998, the Danish Veterinary and Food Administration (DVFA), in cooperation with the Danish Heart Association, Danish Cancer Society, National Board of Health, and a major Danish food retail chain, published new recommended daily intakes for vegetables and fruit. It was recommended that all healthy persons older than 10 eat a total of 600 grams of vegetables and fruit daily (DVFA, 1998). The recommendation proposes "6 A Day—eat more fruits and vegetables" to be the core message.

This goal is twice the amount consumed in 1995, where a dietary survey found that the average intake was 277 grams per day and that only 4 percent of the population ate 600 or more grams of vegetables and fruit a day. A serving size

of 100 grams was chosen for those vegetables and fruit that do not grow in single-serving-size units; 100 percent juice can count as a maximum of one serving per day, and potatoes are not included.

### 6 A Day Research Project

In March 1999, the 5-year 6 A Day Research Project was launched as a cooperative effort between DVFA, the Danish Cancer Society, the Danish Produce Marketing Board, and the Research Association for Processed Fruits and Vegetables ([www.6aday.com](http://www.6aday.com)). The funding for this effort comes from a combination of Government aid and support from private companies and organizations.

The Danish Cancer Society and DVFA have worked actively to identify and analyze barriers to increasing the intake of vegetables and fruit. The three main barriers that have been identified are as follows:

1. The population's widespread misconception that they already consume an adequate amount of vegetables and fruit (Buus et al., 1995);
2. The lack of access to vegetables and fruit and the assumption that people will eat more of them if only they were more easily accessible; and
3. The lack of time available for meal preparation.

As a result, the 6 A Day Research Project focuses on vegetable and fruit availability and accessibility and on convenience products. The aim of the project is to develop and test concepts and methods that make it easier for individual consumers to acquire and eat more vegetables and fruit. Further goals are to develop methods that would encourage consumers' purchases of vegetables and fruit in retail settings.

Four projects will examine the effects of vegetable and fruit availability on consumption rates in different targeted audiences, including children at school, employees at work, and those in the food-service industry (such as worksite and hospital cafeteria workers). Researchers will also investigate the feasibility and impact of providing a weekly supply of vegetables and fruit to select families.

Two of the four projects will, in cooperation with the food retail-trade sector, investigate the potential for significantly increasing vegetable and fruit purchases through in-store activities, improved product quality, sales techniques, and improved marketing. Also, the benefit of better trained and better educated retail staff will be evaluated.

Retail projects are being conducted in the small town of Sønderborg. Results will be evaluated by measuring changes in the supply of vegetables and fruit in the individual shops. At the same time, 500 telephone interviews will be conducted 4 times a year in Sønderborg to evaluate any changes in self-reported intake of vegetables and fruit.



## 6 A Day Campaign

The 6 A Day recommendations from 1998 and results of the 6 A Day Research Project are expected to form a strong basis for a future national 6 A Day campaign. Up to now, DVFA, the Danish Cancer Society, the Produce Marketing Board, and a number of individual companies and organizations have integrated the 6 A Day message into their existing nutrition education programs and marketing activities. There are also a number of campaign activities that are ongoing and some that are under preparation. Examples of some of these activities include School Fruit Day as part of Europe Against Cancer Week, the use of posters and dissemination of brochures and recipe booklets in retail shops, and the development and distribution of cookbooks for use by restaurants and workplace cafeterias. In addition, a national-level monitoring effort has been set up to gauge changes in intake and awareness of the 6 A Day message.

So far, however, there is no coordinated, generic 6 A Day campaign in Denmark. A process has been initiated to ensure that relevant partners on both the health and the industry side get motivated, involved, and committed to an anticipated national 6 A Day campaign. Fundraising for such an effort has begun, and the formation of a campaign strategy and communications plan is under way.

## GERMANY

The primary goal of Germany's 5 am Tag (5 a Day) campaign is to improve the population's health by increasing the consumption of vegetables and fruit to at least five servings a day. The campaign, which was initiated by the German Cancer Society (Deutsche Krebsgesellschaft), was kicked off in June 2000 and is targeted to the general population, but particularly to young mothers between 25 and 45 years of age and to children. Several of the campaign's partners will also focus efforts to select target groups—for example, health departments will direct information to their employees, and food stores will direct information to their customers.

The 5 am Tag campaign has support from the scientific community, including leading

nutritionists from some of the participating health organizations, such as the University of Stuttgart-Hohenheim and the Institute for Nutrition Research, Karlsruhe. Members of this community have been responsible for developing key campaign guidelines and components, such as the key campaign message (Eat more fruits and vegetables—At least 5 a day to keep you fit and healthy) and specific nutrition recommendations. These include guidelines for the inclusion of different types of vegetables and fruit, what constitutes an appropriate serving size (e.g., one serving of fruit = 100 to 200 grams, one serving of dried fruit = 25 grams, one serving of raw vegetables = 100 to 200 grams), and the acceptable sugar and fat content of processed foods and recipes. The 5 am Tag organization (written as *5 am Tag e.V.*<sup>12</sup> in Germany), headquartered in Frankfurt, was created to:



- Oversee the licensing of the campaign's logo and slogan to organization members and partners for use in their own marketing activities;
- Implement centralized public relations and advertising activities;
- Develop and supply information and advertising materials, such as brochures, flyers, and posters, that can be used by all members and partners; and
- Coordinate the activities of 5 am Tag members and partners to create synergistic efforts.

As of September 2000, the 5 am Tag organization comprises more than 40 partners<sup>13</sup> from both private and government health institutions, including the German Cancer Society, and those representing commercial (e.g., trade, producers, food industry) sectors. Depending on the type, size, and annual revenue of the prospective institution or company, a fee is assessed to become a 5 am Tag partner either in the member or licensee category. Partners in the member category actually belong to the 5 am

<sup>12</sup> The abbreviation *e.V.* stands for "eingetragener Verein," which means "registered association."

<sup>13</sup> The term "partners" encompasses those entities that are either 5 am Tag *e.V.* members or licensees.

Tag organization (licensees do not belong to the organization) and can take part in certain 5 am Tag e.V. meetings. Members of the 5 am Tag e.V. include health organizations, public corporations, the produce sector, and commercial partners.

The fee paid by partners in either the member or licensee category legally allows them to use the 5 am Tag logo and message on their own products and for their own activities. In addition, members and licensees from the commercial sector (e.g., trade, hotel, restaurant, catering) have to pay a license fee for each unit location (e.g., retail shop, outlet, hotel, restaurant). For each unit location, the amount for members is 50 deutsche marks, and the amount for licensees is 100 deutsche marks (1 deutsche mark = 0.43 U.S. dollar, November 2000).

All 5 am Tag partners must agree to abide by the guidelines and scientific principles of the campaign. Funding for the 5 am Tag e.V. and for the campaign comes from fees that license the use of the slogan and logo.

Initial activities that have been or will be initiated by the 5 am Tag organization include the following

- An initial 5 am Tag press conference was held on May 24, 2000.
- The 5 am Tag campaign kickoff on June 1, 2000, utilized free air time on a television show called *Gesundheitsmagazin Praxis* (a program that focuses its content on health-related issues) to introduce the campaign to the public.
- The following activities were planned to occur sometime after the campaign's kickoff—distribution of brochures, flyers, and posters to 5 am Tag partners (nonpartners will be able to acquire these materials for a higher fee than partners); a 5 am Tag home page; additional press efforts; development and distribution of point-of-sale materials; and development of sales promotions.
- Subsequent activities planned in support of the campaign include—5 am Tag product merchandising, radio and television spots, events such as 5 am Tag promotion weeks, initiatives of individual partners; acquisition of additional partners (members and licensees), and evaluation of the campaign's success based on market research.

## HUNGARY

Hungary's 3x A Day program was launched in late December 1997 by the Hungarian Fruit and Vegetable Board (HFVB), a membership-based, nonprofit organization with more than 6,500 members. HFVB represents the Hungarian vegetable and fruit industry, including producers, traders, processors, and consumers, and its objectives are to

- Identify problems in the vegetable and fruit industry and forward correctional recommendations to the State (Government offices at the national level);
- Collect and analyze market and price information and predict trends;
- Enhance, organize, and manage the marketing of fresh and processed vegetables and fruit;
- Publish and distribute reports on lobbying, marketing efforts, surveys, and statistical information;
- Work out conditions for establishing produce organizations that support the needs of the European Union in acquiring both qualitative and quantitative information about produce production; and
- Maintain connections with domestic and foreign organizations and research institutes.

The goals and objectives of the 3x A Day program are to 1) increase public awareness about the role that vegetables and fruit play in health and 2) encourage people to eat more Hungarian-grown produce, thereby creating a growing market for these products. The campaign's slogan, "Have fruits and vegetables 3 times a day for your health," supports one of the recommendations in Hungary's food pyramid—each person should eat as many vegetables and fruit as possible during the three main meals, with the goal of consuming 400 to 800 grams of vegetables and fruit daily.

HFVB has several 3x A Day program partners. The Hungarian Collective Agricultural Marketing Center Public Benefit Company of the Ministry of Agriculture and Regional Development is a government partner that provides financial support to



the program. Nongovernmental health sector partners include the National Institute of Food Hygiene and Nutrition, which makes recommendations for a healthy diet and supplies the program with nutrition information, and the National Service for Public and Municipal Health. The latter has offices across Hungary that are used to reach consumers directly. HFVB members also support campaign programs and activities. About 50 percent of the funding for the program comes from the government, with the other 50 percent coming from the produce sector, mainly from supermarkets. The target audiences for the program are children 3 to 6 years old; children 7 to 13 years old; youth 14 to 18 years old; and adults, particularly those who make food purchasing decisions.

The 3x Day program is implemented using a variety of approaches:

- A show for kindergarten children informs them about terms, such as nutrients and vitamins, as well as about the importance of physical activity.
- Newsletters that are sent to elementary school students about three times a year draw their attention to healthy diets. These newsletters are prepared by the National Institute of Food Hygiene and Nutrition.
- Monthly taste tests are conducted for the general public in certain grocery stores. During a taste test, consumers can try a new product, such as a new salad mixture, and get recipe cards and other written information about the 3x A Day program.

Although a campaign targeted to high school students has not been implemented at this time, HFVB is planning to use magazines as a major communications vehicle for this audience. (In Hungary, there are free special magazines that are distributed in high schools, and they are typically very well received by teenagers.) HFVB also uses advertisements and other public relations activities to promote a healthy diet to the program's various target audiences.

## Evaluation Efforts

In the summer of 1999, a survey was conducted by the Universitas Corporation, a private-sector business, to collect information on vegetable and fruit consumption in Hungary. The survey was

conducted as a part of the 3x A Day program to investigate Hungarians' opinions and eating habits with regard to vegetables and fruit. This survey used individual interviews conducted in shopping malls and incorporated 24-hour recall-type questions, in addition to queries regarding personal and environmental factors that influence produce purchase decisions. The sample of 1,500 adults, ages 18 to 65, was drawn randomly and weighted to be representative of Hungary as a whole. Goals of the survey were to collect data that could be used as a benchmark in future evaluations, to provide an estimation of daily average per capita consumption (size and number of servings) of fresh produce, and to gain an understanding of the factors that influence decisions about purchasing fresh produce.

The survey found that Hungarians had a fair degree of awareness of the health benefits of fresh produce—79 percent of respondents considered vegetables to be healthy foods, and 69 percent thought the same about fruit. Survey participants revealed that 49.5 percent consumed produce at breakfast, 60.2 percent at lunch, 66.8 percent at dinner, and 47 percent when snacking. As a result of the survey, it was estimated that the average Hungarian consumes three servings of produce a day, based on the assumption that a serving of produce is between 100 to 150 grams. Using the same assumption about serving size, this finding is the same as that supported by food consumption data collected since 1934, and most recently in 1995, showing that produce consumption has remained virtually unchanged. Of note, researchers for the 1999 survey observed that most Hungarians are not clear about what constitutes a serving.

Survey participants cited good taste as the main reason that they consume fresh produce. Less important reasons given were for weight control or reduction and the fact that vegetables and fruit are consistently available (present) in most homes. People said that they did not think it was difficult to access vegetables and fruit in restaurants and felt that stores offered a good selection of produce. The main reason given as to why people do not eat more vegetables and fruit was the cost—55 percent think that produce is expensive. Those who did not like vegetables and fruit indicated that they always chose other foods if they had a chance to do so.

Based on the findings of the 1999 survey, HFVB believes that there is still a lot of work to be done to improve the overall vegetable and fruit intake in Hungary. As a result, HFVB has reviewed the 3x A Day program and has started to design a new campaign that will include more efficient ways of bringing health information into people's homes. Implementation of this promising new program is anticipated to occur in early 2001.

## THE NETHERLANDS

The Fruit and Vegetable Bureau (FVB) is a communications and public relations agency funded by the Product Board for Horticulture in Holland. The primary task of FVB is to help stop the consumer decline in vegetable and fruit consumption. To achieve this objective, a communications strategy was established in 1995 in consultation with communications experts from the vegetable and fruit sector and from The Netherlands Nutrition Centre (NNC). NNC was established and funded by the Dutch Government and is similar, in some ways, to the U.S. Food and Drug Administration. Responsibilities of the NNC include translating government nutrition advice into consumer guidelines, organizing campaigns to stimulate healthy eating habits in the population, and providing answers to questions from consumers about food and nutrition in general.

The vegetable and fruit communications strategy that was developed resulted in a generic campaign called Do Good, Feel Good with Fruits and Vegetables, which began in 1995. As part of this campaign, FVB works cooperatively with organizations such as NNC, the Dutch Cancer Society, The Netherlands Heart Foundation, and the Dutch Association of Dietetics.

The first 3 years of the campaign were primarily focused on portraying a positive image of vegetables and fruit and on the influence that they have on health and vitality. The objective of the campaign is to disseminate information and optimize the public's awareness of the guideline for vegetable and fruit consumption—consume 200 grams of vegetables and 200 grams of fruit daily—Everyday 2 + 2. To support this objective, FVB undertakes generic activities that promote the

consumption of vegetables and fruit in all forms—fresh, processed, imported, and domestic.

During National Fruit and Vegetable Week, which takes place annually each spring (another promotional period is held each fall), FVB plans many activities in cooperation with various entities, such as stores and health organizations. Radio and television promotions are also used during these periods to focus attention on vegetables and fruit. During the promotional periods, for example, FVB publishes a newsletter with information about its activities and distributes it among dietitians. For the retail trade, FVB publishes a separate newsletter each spring and fall that provides information about the campaign's activities as well as the promotional materials that can be ordered. Examples of activities conducted by those in the retail trade include in-store produce display contests, in-store stir-fry demonstrations, sales of booklets with information about vegetables and fruit, and coloring contests for children.

### Efforts Targeted to Primary Schools

The Fruit and Vegetable Break aims to provide all primary school students with daily vegetable and fruit snacks during a 1-week period. The objective of the break is to show children that vegetables and fruit can be a tasty and healthy snack.

In October 1996, the Fruit and Vegetable Break was organized as a pilot project at primary schools in the Rotterdam area. For the purpose of evaluation, questionnaires were provided to students and teachers in the highest primary-school classes, grades 7 and 8. The questionnaires contained queries not only about the break but also about knowledge and attitudes regarding vegetables and fruit.

According to the evaluation, which gathered information from several hundred students, 51 percent indicated that they enjoyed eating vegetables, and 85 percent said that they enjoyed eating fruit. The children stated that eating vegetables and fruit is important because "there are vitamins in fruits and vegetables," "you get energy from them," and "my mother says I should." When students were asked if they sometimes brought vegetables, fruit, or fruit juice to school, 42 percent answered affirmatively for vegetables, 79 percent for fruit, and 69 percent for fruit juice.



As a result of the break activities, 20 percent of the students participating in the evaluation said that they were planning to bring vegetables to school more often, 35 percent said they would possibly do this, and 14 percent said they would do this only if their parents gave vegetables to them. Regarding fruit, 46 percent said they were planning to bring fruit to school more often, 26 percent did not know for sure, and 10 percent said they would bring fruit more frequently only if their parents gave it to them. About 40 percent of the students said that they were planning to bring fruit juice to school more frequently.

The teachers rated the Fruit and Vegetable Break with a score of more than 8 on a scale of 1 to 10. Of 25 teachers participating in the evaluation, 63 percent stated that encouraging vegetable and fruit consumption at school was important and felt that the effort had been effective.

More than half of the teachers agreed with the statement that it is a task of the schools to encourage healthy eating habits. About 90 percent of the teachers said that they wanted to participate again in the break activities. The evaluation also showed that an attempt must be made to involve parents more closely with the project. At the beginning of both 1997 and 1998, all primary schools in The Netherlands were given the opportunity to sign up for the break if they joined in the National Fruit and Vegetable Week activities. Signing up for the break would entitle the school to receive vegetables and fruit for a week. Twenty-five schools were selected to join the break campaign for free.

The most recent survey (a representative sample of 2,000 households) of food consumption in The Netherlands, conducted in 1997 and 1998, revealed that young people (ages 4 to 21) have been eating between 10 to 30 percent fewer vegetables and fruit in recent years than did that age group in 1987 and 1988. This means that young people are consuming 30 to 50 percent fewer vegetables and about 50 percent less fruit than currently recommended. To correct this development, the Fruit and Vegetable Break was organized at 50 primary schools during the annual National Fruit and Vegetable Week in 1999. The intention of this activity was to initiate a daily break for the entire school year, during which primary-school children would receive a serving of a vegetable or fruit. The produce would be supplied by a wholesaler, shop owner, or farmer near

the respective school, and students' parents would pay a small amount of money to help cover the cost. Unfortunately, there have been some problems getting the break project up and running. As a result, FVB has efforts underway to convince the Dutch Government and the European Commission to provide financial support for the break project, because it provides a great opportunity to increase consumption of vegetables and fruit by children.

## Lesson Materials

A lesson package called *Do Good, Feel Good with Fruits and Vegetables*, intended for use by teachers in primary education, has also been put together in cooperation with NNC to combat the declining consumption of vegetables and fruit by young people in The Netherlands. The package consists of 12 lessons that provide materials to help teachers educate their students, in an enjoyable way, about eating vegetables and fruit. The lessons focus around a main theme of "fruits and vegetables keep you fit and healthy; they are tasty and easier to prepare than you think," and support the central message, "Everyday 2 + 2." In addition, they incorporate opportunities for involving parents. The *Do Good, Feel Good with Fruits and Vegetables* materials are part of the campaign of the same name and link up with lesson materials that were produced by the NNC in 1997. A new set of lesson materials will be released in 2001.

## Evaluation Efforts

Public awareness of the message Everyday 2 + 2 is being evaluated by a nongovernmental research bureau. Using a representative sample, this bureau regularly conducts phone interviews and questions approximately 1,000 people about the Do Good, Feel Good with Fruits and Vegetables campaign. The results of each study are compared with the previous results. Following the start of the campaign in 1995, an evaluation showed that 17 percent of the target group of shoppers between 25 and 50 years of age already were aware of the 2 + 2 guideline. Following the end of the first campaign period in 1996, nonassisted (spontaneous) awareness in the same target group rose to 33 percent. An additional 27 percent of this target group of shoppers, when given some assistance remembering, were aware of the 2 + 2

guideline. Taken together, spontaneous and assisted awareness totaled 60 percent. In 1998, the combined spontaneous and assisted levels of guideline awareness reached 71 percent.

It appears that increasing public awareness of the Everyday 2 + 2 message beyond the 71 percent mark will be difficult. More than 75 percent of consumers in The Netherlands still believe that they eat sufficient amounts of vegetables and fruit. The number of people who decided that they eat too few vegetables and fruit is growing, however. Also increasing is the number of consumers who understand the guideline and have begun to think about their own eating behavior regarding vegetables and fruit.

In addition to the overall message-awareness evaluation and the break effort, a number of activities have been evaluated following completion, typically by means of a questionnaire. For example, evaluation of the newsletters showed that they were highly appreciated by their respective target groups. In-store stir-fry demonstrations were effective but very expensive in terms of the materials and effort needed to implement them, particularly for the number of people reached, which is relatively small.

## NEW ZEALAND

In New Zealand, the 5+ A Day campaign is funded by United Fresh, Inc., a nonprofit organization made up of companies from the fresh produce industry. United Fresh deals with many issues within the industry, and the 5+ A Day efforts fall under the promotions umbrella. The campaign was launched in 1994 and is endorsed by national health agencies such as the National Heart Foundation, Nutrition Foundation, Cancer Society, and the New Zealand Ministry of Health, all of which help to disseminate the 5+ A Day message. The campaign's primary target group is schoolchildren, with a secondary target audience of household shoppers with children.

Nearly all of New Zealand's primary schools and preschools participate in the annual 5+ A Day Week, which typically is held in October. In

preparation for this week, United Fresh sends resources to the schools that enroll in the event. These resources support the school curriculum in New Zealand and provide teachers with lessons centered on fresh vegetables and fruit. United Fresh also provides teachers with other materials, such as posters, stickers, and recipes, that encourage them to teach children the benefits of including fresh vegetables and fruit in their daily diet.

A recent evaluation in schools by United Fresh revealed that 92.5 percent of teachers found the United Fresh resources either extremely or very useful. It also showed that 85 percent of teachers use these resources throughout the school year and do not confine their fresh vegetable and fruit lessons to 5+ A Day Week.

New Zealand's sports heroes—the national rugby team and the national netball (similar to American basketball) team—donate their time to the campaign. In 1999, a television commercial was produced using the rugby team, and point-of-sale information was developed using the netball team. The point-of-sale material was distributed in camera-ready (ready for printing) form to participating supermarkets. The stores then customize and print the materials for use in their produce departments and in print circulars. In addition, United Fresh produced small posters that fit into supermarket price ticketing systems (shelf-label holders) to ameliorate space problems and to ensure that supermarkets used the materials.

In February 1995, 5 months after the campaign's launch in September 1994, benchmarking (baseline) research showed that New Zealanders were eating 3.9 servings of vegetables and fruit per day. In February 1999, followup research showed that this total had increased to 4.4 servings per day, with 32 percent

of those questioned saying that this was a direct result of the 5+ A Day campaign. These surveys each had a total sample size of 500. Information was gathered from 15 locations across New Zealand by an international research company. Interviews were conducted over the phone, and 50 percent of the sample met the criteria of being the person in the household who has primary responsibility for food shopping; the other 50



percent of respondents met the criteria of having children that were 17 years old or younger. The reason for including respondents who met the latter criteria is that since 1994, the 5+ A Day campaign has targeted children in schools. The 1999 survey was also skewed toward Native (indigenous) New Zealanders to get a better idea of their dietary habits. In addition to these surveys, research conducted by United Fresh in February 1999 showed that 74 percent of New Zealanders were aware of the campaign and that 88 percent were familiar with the logo.

## NORWAY

In Norway, the National Council on Nutrition and Physical Activity (NCNPA), previously called the National Nutrition Council, is a specialized administrative agency that operates under the auspices of the Ministry of Health and Social Affairs. In 1996, NCNPA prepared new recommendations for the consumption of vegetables and fruit. The recommendations advocated eating at least three vegetables (potatoes are included as vegetables) and two fruits every day, a total of 750 grams. To promote this goal, NCNPA enlisted the support of industry and volunteer organizations—most notably the Norwegian Fruits and Vegetables Marketing Board (NFVMB) and the Norwegian Cancer Society—to design various 5 A Day-type programs in order to increase knowledge and enhance availability of vegetables and fruit at schools and company cafeterias.

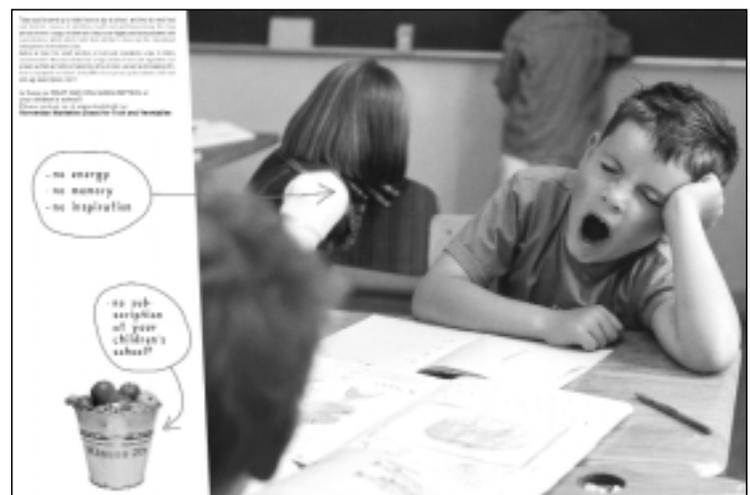
### Awareness Campaign

In 1996, NCNPA, NFVMB, and the Norwegian Cancer Society joined forces to develop a campaign that focused on making adults aware of the disease-preventive properties of vegetables and fruit. The Fruits and Vegetables Against Cancer Campaign, launched in 1997, first used print advertisements, and in 1998 both print and television advertisements, to dramatize the benefits of vegetables and fruit in reducing the risk of developing cancer and to promote recognition of vegetables and fruit as delicious components of the diet. The specific messages of the advertisements were based on information obtained in consumer focus groups that explored the acceptability of various health statements.

Evaluation results of the 1997 print advertisements showed that the campaign attracted considerable interest and was perceived positively by most people. The evaluation was conducted by interviewing 200 adults across the four largest towns in Norway. To be included, respondents had to have children, who could be as old as 15, and had to have read the newspapers or magazines that ran the advertisements 2 weeks prior to the interview. Approximately 42 percent of respondents said that they had adopted a more positive attitude toward eating vegetables and fruit, and 35 percent responded that the campaign had persuaded them to buy more vegetable and fruit products. The level of knowledge about the correlation between vegetables and fruit and cancer incidence has been monitored through semi-annual marketing surveys. From the spring of 1996 to the autumn of 1998, the share of people who were aware of the correlation increased from 14 percent to 39 percent of the population.

### School Efforts

In addition, a program that specifically targets the school system was initiated by NCNPA and NFVMB in the fall of 1997. The goal of the program is to ensure that Norwegian schoolchildren eat at least one vegetable or fruit during the school day. NCNPA drew up school-lunch guidelines, which emphasized that schools should offer vegetables and fruit on a subscription basis in the same way that they offered milk to students. As of the fall of 1999, the program had been implemented in nearly 35 percent of the schools that were approached (or 347 out of



1,000 schools). This constituted 11 percent of all primary schools in the country, of which there are about 3,150 (serving ages 6 through 15). As of the fall of 2000, 595 of the 3,150 primary schools (19 percent) are participating. In these schools, apples, bananas, and carrots, as well as oranges and clementines (when in season), can now be purchased by parents along with the usual cartons of milk. Surveys conducted in December 1999 with all participating schools and wholesalers indicated that as many as 50 percent of pupils are taking part in the program.

To support this effort, a marketing campaign called Fruits and Vegetables in the School has been undertaken in an effort to focus not only on schools but also on parents, health professionals, and industry representatives. To encourage participation in the program, each school receives a fruit basket at the beginning of the school year. Information is mailed to the students' parents, and advertisements for the program are used to increase consumer awareness. School-based curricula focusing on the benefits of vegetable and fruit consumption will be developed as well.

The partnership between NCNPA and NFVMB is collaborative at every level in this program, which is managed by a project manager at NFVMB and is supplemented by NCNPA efforts. Staff members from both organizations work together to prepare information materials, conduct information activities, and oversee media efforts. To ensure an effective distribution of responsibilities, NCNPA is in charge of lobbying politicians, schools, and the public health authorities, and NFVMB efforts are directed at schools and wholesalers. The project is funded by an annual allocation of approximately \$200,000 (U.S.) from the collective agricultural agreement between Norway's farmers and agricultural authorities. As of the year 2000, the project has been granted an additional \$750,000 in funding, which will serve to subsidize 20 percent of the price that pupils pay for subscription vegetables and fruit at school.

The success of the school program to date can be attributed to several key elements, including

- A strong partnership between NCNPA and NFVMB;
- An annual allocation from the collective agricultural agreement between Norwegian farmers and agricultural authorities that subsidizes the price of vegetable and fruit subscriptions;

- Extensive and strategic use of mass media combined with concurrent supportive community activities; and
- Practical measures to foster cooperation between the public health and school sectors.

### Worksite Cafeteria Efforts

NCNPA and NFVMB have designed the Green Canteen program to educate worksite cafeteria staff about the importance of vegetables and fruit in the diet through the use of training courses, educational excursions, recipe collections, and media activities. The objective is to make all Norwegian businesses "greener," with vegetables and fruit occupying an essential place on the cafeteria menu, in meeting rooms (where rich pastries are typically served), and through a vegetable and fruit subscription for employees. Either the employees pay for the subscription themselves, or the worksite subscribes and pays for a basket of fruit to be shared among employees. An important subobjective for this project is to increase awareness in the work setting of the health significance of eating the recommended daily servings of vegetables and fruit and the ways that businesses can support this initiative. The project is particularly concerned with educating cafeteria staff, and corporate management and corporate health services are involved in this effort as well.

### Evaluation

Data from two Norwegian dietary surveys led to national recommendations<sup>14</sup> (at least three vegetables and two fruits every day, a total of 750 grams). One of the surveys, later called Ungkost, was conducted in the spring of 1993, using a random sample of 18-year-old students (n = 1,564, response rate of 87 percent) (Andersen et al., 1995). The second survey, later called Norkost, was conducted during June, September, and November 1993 and March 1994, using a

<sup>14</sup> *The recommendations are in the Norwegian report, Recommendations for Increased Consumption of Fruits and Vegetables, published by the Norwegian Nutrition Council—August 1996. The recommendations are addressed in Johansson and Andersen (1998).*

random sample of 16- to 79-year-old Norwegians (n = 3,144, response rate of 63 percent) (Johansson and Andersen, 1998; Johansson et al., 1997). For both surveys, quantitative food-frequency questionnaires designed to measure the habitual intake of about 180 food items during the previous year were used to collect the dietary data. Depending on the food item, the frequency of consumption was given per day, per week, or per month and was converted to frequency of consumption per day. Units such as slices, glasses, deciliters, and spoons were used to describe portion sizes, which were then converted into weights on the basis of standard portions cited in *Measure and Weight for Foods* (Blaker and Aarland, 1989; Johansson and Andersen, 1998).

The Ungkost survey data showed that young people ate vegetables and fruit less than 2.5 times a day, and the Norkost data showed that adults ate vegetables and fruit 3.1 times a day. The latter survey was repeated in 1997, the same year that the programs to increase vegetable and fruit consumption were initiated. Results showed a small increase in frequency of consumption to 3.2 times a day, with a higher frequency occurring among those in the older age groups than among the younger adults. The Ungkost survey of young people will be repeated in 2001.

Data on the volume changes of fresh vegetables, fruit, and potatoes purchased for cafeterias and catering outlets showed a 10-percent increase from 1997 to 1998. These findings, together with wholesalers' data (which also showed a small increase in the purchase of vegetables and fruit from 1994 to 1999), indicated that vegetable and fruit consumption is increasing. In addition, the findings indicate that it is appropriate to target youth and young adults in further efforts to increase consumption of vegetables and fruit. Some key elements contributing to the successes thus far include the following:

- The use of simple, positive health messages;
- The support of the established scientific community to lend credibility to campaign messages and activities;
- Financial support from the government; and
- An environment that supports the availability of vegetables and fruit as well as ongoing campaign efforts to promote their consumption.

## SWEDEN

The Fruit and Vegetable Marketing Board (FVMB) is owned by Swedish produce importers and producers. FVMB has been developing and disseminating information about fresh produce for 30 years and works with teachers and other educators to instruct people on how to purchase, store, and prepare vegetables and fruit.

During 1999, inspired by the U.S. 5 A Day Program, FVMB started work toward launching a program in Sweden. On October 19, 1999, the Fruits and Vegetables Every Time You Eat program was initiated. Instead of citing a specific number of daily vegetable and fruit servings, FVMB recommends consuming at least 1/2 kilogram (500 grams or about 1 pound) of fresh produce (excluding potatoes) every day. Daily per capita consumption of fresh produce in Sweden is currently about 350 grams. It is anticipated that meeting the goal of 500 grams per day will take several years to achieve.

The program uses the compelling desire for good health as a strong motivator to encourage Swedes to eat more vegetables and fruit. In support of this approach, FVMB works with the National Food Administration, the National Institute of Public Health, the Swedish Cancer Society, the Heart and Lung Foundation, and national sports organizations.

The budget for the Fruits and Vegetables Every Time You Eat program is small, because FVMB must work with the same budget that existed before the program was initiated. As a result, FVMB works with key contacts throughout Sweden that are influential with several target groups, including schoolchildren, hospital and other health institution workers, and food-service industry workers (e.g., hospitals, restaurants, catering).

One of the most important program targets is the school cafeteria, where pupils (from ages 6 to 15) eat lunch each school day. It has been shown that if students first are offered vegetables in the cafeteria line, then potatoes/pasta, and thereafter meat or fish, they seem to eat more vegetables (Sundström, 1999). The vegetables tend to be less



expensive than many of the other available foods, besides offering important health benefits.

To foster program recognition, FVMB prints the program slogan and logo on all its materials. The vegetable and fruit retailers are encouraged to use and display the program logo and slogan in their operations, and the vegetable and fruit trade is encouraged to use the slogan and logo in ads, pamphlets, and other printed materials so that the message is exposed in different venues.

In March 2000, FVMB, along with other organizations collaborating on the Fruit and Vegetables Every Time You Eat program, initiated a series of successful conferences in eight locations throughout Sweden. The main goals of these conferences were to begin to cultivate local support and collaborations and to build a network of key contacts throughout the country to assist in gaining publicity for the program and in reaching target audiences. This type of cooperation will greatly facilitate FVMB's ability to reach more people with a limited budget. These efforts also will ensure that there are frequent program activities going on throughout Sweden and that the program's message is presented to the mass media from a variety of perspectives, as represented by those in the network. Numerous conferences that will incorporate presentations on the Fruits and Vegetables Every Time You Eat program are planned to take place in the fall of 2000 in various locations throughout the country.

## SUMMARY

As international 5 A Day-type programming continues to develop, and as the programs already in existence progress and expand to meet the needs of the world's citizens, measurements of success will become increasingly more refined. At this point, limited opportunities are available for measuring success (e.g., quality and quantity of partnerships, amount and degree of industry support, and population awareness of the message). But researchers eventually may be able to document a direct connection between the success of 5 A Day-type programming, increased consumption of vegetables and fruit, and decreased rates of cancer incidence throughout the world.

What is clear through the analysis of anecdotal reports is that programs are more likely to succeed if they have a broad range of partnerships that includes major players—government, health organizations, industry sources, and private enterprise. Each partner contributes a critical component, and together these partnerships take the lead in ensuring adequate, long-range funding for ongoing efforts.

Some important outcomes of international 5 A Day-type programs will be increased connections and coordination between countries, scientists, industry representatives, and education and nutrition specialists. Decades from now, the 5 A Day effort may well be global in scale; a century from now, it may no longer be needed. As a more global society evolves, international efforts—with their strong ties to the U.S. program—will likely increase in momentum. New initiatives are constantly in development, and judging from the number of inquiries and requests for support and guidance that the U.S. program has received, within a few years, the international picture is likely to have changed dramatically. Someday, it seems clear, 5 A Day-type programming will become a worldwide effort, and the time can be envisioned when the world's citizenry—especially future generations—will be healthier because of it.

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## Chapter 13

# Critical Analysis of and Future Directions for the 5 A Day Program

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## **INTRODUCTION**

The previous 12 chapters of this monograph have provided details about the national 5 A Day for Better Health Program from its inception in October 1991 to the winter of 2000. The information covered has included the Program's origins, the structure of the public/private partnership between the original and primary partners (the National Cancer Institute [NCI] and the Produce for Better Health Foundation [PBH]), descriptions and outcomes of the media efforts, examples of State and industry initiatives, evaluations of the national Program and research results from the funded 5 A Day randomized community-based trials, and a glimpse of international initiatives catalyzed by the U.S. Program. Because evaluation data of the national Program effort are still being analyzed, only preliminary results have been presented in this document. Final results will be published in peer-reviewed journals.

This chapter summarizes the major 5 A Day Program accomplishments and limitations as well as recommendations for the future. Because the previous chapters have provided extensive details on the Program's accomplishments, they are merely highlighted in this chapter. More attention

is focused on limitations in order to give readers insight into some of the financial and political dynamics of such an effort. This chapter also discusses the shifts in the knowledge base of diet and cancer, as well as behavioral science over the past decade, to establish a context for suggesting future directions for the 5 A Day Program. It is rare for a nutrition program to have established such an extensive infrastructure and to have sustained it for such a long time (9 years at this writing). The challenges ahead involve how to keep the program fresh, maintain momentum, and intensify efforts to reach the multiple segments of the population that have not yet increased their vegetable and fruit intakes to the recommended levels.

## **PROGRAM ACCOMPLISHMENTS**

A 5 A Day Program expert evaluation group recently completed a rigorous scientific review of the Program and recommended that it receive greater support and expand its level of integration with existing efforts across the country (Potter et

al., 2000). In its first 9 years, the Program has accomplished its two main objectives: 1) to increase public awareness of the importance of eating five or more servings of vegetables and fruit every day and 2) to provide consumers with specific information about how to incorporate more servings of vegetables and fruit into daily eating patterns. The program has also helped

improve national consumption rates, moving closer to its ambitious goal of increasing average vegetable and fruit consumption to five servings a day. Table 1 presents the accomplishments of the 5 A Day Program organized by selected categories. Following are a few highlights of the 5 A Day Program from the table, organized by outcomes and process.

**Table 1. Accomplishments of the 5 A Day Program, 1991-2000**

This table presents the program accomplishments by selected categories. The first five categories represent the structure and implementation of the program. Awareness, consumption, and research represent some of the program outcomes, and the remaining categories indicate how the program addressed the theoretical constructs upon which it was based.

| <i>Category</i>            | <i>Accomplishments</i>   |
|----------------------------|--|
| Public/Private Partnership | <ul style="list-style-type: none"> <li>• Established between NCI and PBH in October 1991 (Chapters 1, 5).</li> <li>• Maintained through consistent collaboration.</li> </ul>   |
| Program Infrastructure     | <ul style="list-style-type: none"> <li>• Created license agreements with and developed guidelines for growers, shippers, merchandisers, commodities, supermarkets, branded products, food services, health departments, uniformed services, and the Indian Health Service (Chapters 2, 5).</li> <li>• Developed State and local coalitions to implement 5 A Day at the local level; in all 50 States (and 5 territories), the State health officer appointed a State 5 A Day coordinator (Chapter 3).</li> <li>• Developed written agreements for collaboration developed with USDA, CDC, and ADA (Chapter 2).</li> </ul>  |
| Strategic Planning         | <ul style="list-style-type: none"> <li>• Conducted jointly by PBH and NCI (1992 and 1996).</li> <li>• Made joint mission and vision explicit, assisting industry and Government to understand each other's needs.</li> <li>• Many established objectives were accomplished, such as recruiting industry members, organizing promotional activities, organizing media efforts, etc.</li> </ul>  |
| Implementation             | <ul style="list-style-type: none"> <li>• State and local coalitions determined priorities for interventions that were appropriate for their populations (Chapters 3, 4).</li> <li>• Annual National 5 A Day Week in September established in 1993 to create a national focus of effort.</li> <li>• Agreement with ADA also created a focus on the message during National Nutrition Month in March.</li> <li>• Guidelines for implementation for all licensees were based on theories of behavior change and kept all licensees focused on the same strategies (Chapters 2, 5).</li> <li>• Research grants provided proven strategies for interventions in various channels (Chapters 8 to 11).</li> <li>• 1992-1995: three to four waves of materials developed by PBH for supermarkets in 3,000-5,000 stores.</li> <li>• 1996-1998: four waves in 1,500 stores.</li> <li>• 1999-2000: five waves in 2,000 stores.</li> </ul> |
| Media                      | <ul style="list-style-type: none"> <li>• Communications strategies, based on social marketing, have produced millions of gross media impressions over 9 years.</li> <li>• Newspaper coverage for each seasonal package from NCI reached 4 to 10 million people (Chapter 6).</li> <li>• Media Analysis System for Health (July 1992 to October 1993): 396 million impressions (Chapter 6).</li> <li>• 450 radio stations in 40 states and more than 50 TV stations nationwide carry daily or weekly Do Yourself a Flavor inserts, which uses 5 A Day messages (Chapter 6).</li> </ul>   |

Table 1. Accomplishments of the 5 A Day Program, 1991-2000 (continued)

| <i>Category</i>                  | <i>Accomplishments</i>  |
|----------------------------------|---|
| Awareness of the 5 A Day Message | <ul style="list-style-type: none"> <li>• Increased from 8 percent of population in 1991 (baseline survey) to 19 percent of the population in 1997 (followup survey) (Chapter 7).</li> <li>• Awareness in women increased from 11 percent in 1991 (baseline survey) to 27 percent in 1997 (followup survey) (Chapter 7).</li> <li>• Most health professionals and popular health magazines are aware of the 5 A Day message.</li> </ul>  |
| Skills Development               | <ul style="list-style-type: none"> <li>• Materials include information on how to purchase and prepare vegetables and fruit; to make them more accessible at home; to choose better when dining out; and to make them more convenient.</li> <li>• Interactive supermarket tours.</li> <li>• Taste-testing and other interactive strategies used in schools, supermarkets, worksites, churches, WIC, and other community settings.</li> <li>• More than 2 million “5 A Day Adventure” CD-ROMs for grades 3 through 5 have been distributed to schools across the country, teaching children skills in preparing meals (Chapter 5).</li> </ul>   |
| Motivation                       | <ul style="list-style-type: none"> <li>• Materials and media provide motivational messages about reducing the risk of cancer and other chronic diseases, as well as looking better, feeling better, being more active, and having more energy.</li> <li>• Role models (e.g., champions, physicians, and sports figures) demonstrate how to incorporate more vegetables and fruit into daily life (Chapter 6).</li> <li>• Contests and incentives have been used to great effect.</li> </ul>   |
| Environment                      | <ul style="list-style-type: none"> <li>• Many commodity groups and companies that make branded products have developed low-fat recipes that meet the 5 A Day criteria.</li> <li>• More than 500 5 A Day recipes have been developed.</li> <li>• Worksite cafeteria and school meals have been modified to include more vegetables and fruit and more low-fat vegetable dishes.</li> <li>• 5 A Day materials are periodically displayed at the point of purchase in supermarkets, school lunchrooms, worksites, and restaurants.</li> <li>• Catering policies have been implemented in some worksites.</li> </ul>  |
| Social Support                   | <ul style="list-style-type: none"> <li>• Peer education models have been successfully implemented (Chapters 9, 11).</li> <li>• Materials suggest ways to include family members and friends.</li> <li>• 5 A Day Week challenges individuals to assist each other to reach the 5 A Day goals.</li> </ul>   |
| Consumption                      | <ul style="list-style-type: none"> <li>• Helped increase average national consumption levels of vegetables and fruit from 3.75 servings a day in 1991 to 3.98 servings a day in 1997 (5 A Day baseline + followup surveys; respectively)</li> </ul>   |
| Research                         | <ul style="list-style-type: none"> <li>• Nine randomized community-based research grants demonstrated that the 5 A Day message could increase vegetable and fruit consumption by children and adults in schools, worksites, churches, and the WIC program (Chapters 7 to 11).</li> <li>• 31 evaluation grants to 5 A Day programs within the States in 1994-1999 demonstrated the ability of existing channels to effectively implement 5 A Day initiatives (Chapters 4, 7).</li> </ul>   |
| Award                            | <ul style="list-style-type: none"> <li>• The national 5 A Day Program received the President’s Circle Award for Nutrition Education in 1995 from the ADA and the American Dietetic Association Foundation.</li> </ul>   |
| Dissemination/<br>Norms          | <ul style="list-style-type: none"> <li>• The 5 A Day Program has been incorporated into many initiatives at the local, State, and national levels. (For example, it is used in WIC programs, child care food programs, food pantries, farmers markets, school lunch programs, school classrooms, worksites, the Boy Scouts, grocery stores, and restaurants, and many newspapers and magazines continue to cover the program.)</li> <li>• The program is being used as a model for similar efforts in at least 25 other countries (Chapters 5, 12).</li> <li>• The 5 A Day message is now used in most nutrition programs and in many research programs and is considered part of the cultural norm.</li> <li>• The American Cancer Society is working with NCI to disseminate the African-American churches research project; the AMC Cancer Research Center has a grant to disseminate the best practices of the worksite research grants.</li> </ul> |

## Outcomes

- Proved that randomized community-based 5 A Day behavioral interventions could increase consumption, with differences between intervention and control groups averaging 0.5 serving in adults and 0.7 in youth (Potter et al., 2000, pp. 37-39) a day (see Chapters 8 to 11);
- Contributed to the modest increase in national mean vegetable and fruit consumption levels (Potter et al., 2000, pp. 34-36);
- Between 1991 and 1997, increased awareness from 8 to 19 percent in the general population of the need to eat five or more daily servings of vegetables and fruit;
- Increased sales in vegetable and fruit products through supermarket and media efforts that were evaluated (see Chapter 5);
- Demonstrated that State health agency partners could effectively implement 5 A Day programs in the real world, with measurable quasi-experimental effects on knowledge and consumption (see Chapter 4);
- Affected national norms as evidenced by the spread of the message, materials, and strategies into the trade press, the national press, television and radio, popular magazines, offices of health professionals, worksites, schools, supermarkets, research proposals, and low-income food-assistance service programs;
- Stimulated community-based research in nutrition and behavior;
- Affected environments by the inclusion of more vegetables and fruit in schools and worksites;
- Led to more low-fat vegetable and fruit recipes being developed by vegetable and fruit industry members; and
- Became a template for similar programs in other countries and for other nutrition campaigns, such as the promotion of whole grains.

## Process

- Established and maintained a public/private partnership between the vegetable and fruit industry and a respected Federal Government research institute;

- Licensed all State health departments as partners in each State to create coalitions that in turn implement the 5 A Day Program at the State and local levels;
- Expanded these partnerships to include populations not covered by State jurisdiction (e.g., residents of American Indian reservations and staff of military bases);
- Expanded industry membership to include a broad spectrum of participants, including growers, marketers, suppliers, retailers, merchandisers, food-service operators and suppliers, and health insurance companies;
- Developed effective implementation strategies based on accepted theories of behavior change; and
- Sponsored effective media efforts in supermarkets and wholesale markets through CD-ROM and Internet communications, as well as through other venues.

Through accomplishing its objectives and moving progressively toward its goal, the 5 A Day Program has had powerful effects on the crafting of nutrition messages, nutrition research, nutrition education and service programs, and cultural norms. The Program provided leadership to all 50 State health agencies and 5 territories by focusing interventions on a single, simple, positive message that is easier to execute and measure than most nutrition messages (see Chapter 1 for more discussion on the strategy of the simple message). This innovation provided an example for the marketing of other nutrition messages, such as the need to eat more grains. By promoting the 5 A Day message in the context of a high-fiber, low-fat diet, the program demonstrated that it was possible to focus on a simple message and retain awareness of the total dietary pattern.

In addition, many researchers looking for a feasible nutrition intervention could easily incorporate the 5 A Day message, because the message was simple and a behavioral model for intervention was available. This fact helped to increase the number of nutrition research applications in cancer prevention and control. (Funded community-based nutrition research grants at NCI increased from 5 in 1990 to 47 in 1998; at least half of these include the 5 A Day message [Human Nutrition Research Information Management System, 2000a].)

The 5 A Day Program has enhanced nutrition education and service programs by inviting these programs to participate in State and local coalitions, thereby providing access to the public/private partnership, materials, media, and research efforts. As a result, the message has been highlighted in other programs, such as the U.S. Department of Agriculture's (USDA's) school lunch program and the Team Nutrition Campaign, the Food Stamp Program, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the Child Care Food Program. The 5 A Day Program worked with the American Dietetic Association (ADA) to incorporate the message into National Nutrition Month (March) and other ADA initiatives. The Program has been adopted by U.S. military bases worldwide through a license agreement with NCI. A similar partnership with the Indian Health Service has brought the message to American Indian reservations throughout the United States.

In addition, many industry members have modified products and materials to fit the 5 A Day criteria, contributing to increased environmental support for healthy behaviors. The message is now generally accepted in the United States, incorporated into most nutrition programs, and emulated in other countries. This is the type of norm modification most programs hope to create.

The Program was able to achieve its objectives in spite of its limitations, which are noted below. Its success is a tribute to a good intervention model (which emerged from a State health department), to dedicated industry and public health leaders throughout the country who have made the Program work, and to a public that has been willing and able to change dietary patterns.

## PROGRAM LIMITATIONS

### Resources

The 5 A Day Program's effect is even more impressive when funding limitations are considered. Because NCI is a research institute, most of its resources are dedicated to research rather than to public education or technology transfer. Therefore, NCI has provided no funding to the State coordinators and coalitions at the State level

for Program implementation, severely limiting the Program's reach and impact. State health departments initially undertook the responsibilities of partnership without any financial resources from NCI. Funds were, however, provided over 2 years by the Centers for Disease Control and Prevention (CDC) for some programs (see Chapter 4 for more information on State funding).

Until the past few years, staffing at NCI averaged two full-time equivalents. In the early years, inadequate numbers of staff made it difficult to meet the demands of coordinating partners and licensees, maintain current activities, and create new efforts for the future. In addition, there were no funds for evaluation of the national effort during the Program's first 3 years, and the plan outlined in Chapter 7 was not implemented until 1994. In the interim, staff at NCI and PBH tracked as many process variables as possible (e.g., media and membership).

PBH was launched with \$433,000 contributed by individual companies. These dollars were used to staff the PBH office and to implement communications programs. On average, the funding for the PBH office per year has been approximately \$1.3 million, with an average of eight full-time staff members. The range in funding has been from \$433,000 in 1991 to \$2.2 million in 1999. Of the total budget, money spent for PBH communications programs has averaged \$450,000 per year. Although the industry contributed the equivalent of about \$18 million a year in redirected advertising (mostly print ads in the weekly supermarket sections and signage), the money available for extensive national communications programming has been minimal. As a result, the PBH office spent most of its energies from 1997 to 2000 raising funds from other industry sources. The Program has been consistently supported by only a small core of industry members. However, over time, funds and staff at PBH and NCI have increased, providing an optimistic direction for the future.

### Partnership Issues

Challenges arose during the life of the Program as a result of the administrative structure at NCI, the operational differences between industry and Government, and issues of trust among partners. Although the 5 A Day Program director in the

Division of Cancer Prevention and Control (DCPC), now called the Division of Cancer Control and Population Sciences (DCCPS), was the titular head of the NCI segment of the partnership, funding for the Program's media component was provided directly to the Office of Cancer Communications. Therefore, what was initially envisioned as a two-way partnership between NCI and PBH became a three-way challenge, and the NCI media effort developed somewhat independently from the rest of the NCI Program. After the partnership's first year, the industry perceived a need to develop its own media effort to complement the Government's effort, which was moving more slowly and conservatively than the industry desired. The fact that the three partners were in different physical locations added to the challenges of coordination. The two governmental components were in two contiguous towns, and PBH was in a neighboring State. To help keep the Program coordinated, periodic conference calls and face-to-face staff meetings of all the partners were held in different locations. Each quarter, partners rotated responsibility for organizing the calls and preparing minutes.

A major issue for the industry partners was the slow speed of decisionmaking and action on the part of the Federal Government. Most actions required Federal approval from a number of layers of authority. For example, interagency review of 5 A Day print materials or legal review of initiatives was required to ensure that educational materials were consistent with national nutrition policy and that the Government would not be perceived as endorsing any single branded product or company. A major issue for the Government was ensuring that all partners abided by the Program criteria for logo use to prevent trademark infringements. For example, the logo could only be placed on vegetables and fruit without added fat or sugar (see Chapter 2 for the criteria). Some members felt constrained by these criteria, which also limited participation by some members of the frozen and canned industries, creating tension within the overall vegetable and fruit industry.

For both the industry and the Government, the first several years were challenging. To maintain funding, PBH needed to impress its industry supporters by being consistently visible in the national and trade media and by obtaining licensee

feedback indicating the Program's positive impact. Because this was the first long-term public/private partnership of this nature for the National Institutes of Health (NIH), there was great concern on the part of the Government about any potential conflicts of interest, especially at a time when the Food and Drug Administration (FDA) was developing new regulations for the food industry concerning health claims on food labels. Therefore, Program staff members worked with other governmental agencies to carefully consider the effect of regulations on 5 A Day Program policies for consumer communications and product labeling.

When issues could not be resolved among Program staff, they were referred to the coordinating committee (see Chapter 2), which was made up of industry and NCI representatives. When industry members of the coordinating committee were dissatisfied with results, they would consult with the director of the DCPC for further discussion.

Over time, and with the maturing of the Program, many early concerns, such as Program criteria and media coordination, have been resolved. The director of the 5 A Day Program currently oversees NCI's media effort. The two staff members who direct the Program, one from NCI and one from PBH, both have advanced degrees in nutrition, providing common ground for collaboration. Furthermore, PBH is now independent of its sponsoring parent organization, the Produce Marketing Association, thereby reducing some of the tension among the produce trade organizations.

### **Petition to Modify Program Criteria**

Occasionally, unexpected programmatic issues arose. For example, one of the State coalitions believed that the fat criteria (see above) were too strict for both its industry members and lower income populations, and in 1994, that coalition petitioned the national Program to modify those standards. To resolve the issue, a committee of external experts, including equal numbers of industry and State coalition representatives, was convened to review the criteria, the scientific evidence bearing on the issue, and the ramifications of changes in the criteria. An effort was made to make this review as objective as possible, inviting persons with diverse views on the subject.

Examples of some of the questions addressed were whether the 5 A Day Program should continue to maintain criteria that were more stringent than some of the recently implemented requirements of the National Labeling and Education Act and whether the criteria for promoting 5 A Day products should be modified to allow some added fat and sugar (see Chapter 2 for these criteria).

The decision of the majority of panel members was to allow some minor modifications but to maintain current criteria because the disadvantages of changing the criteria outweighed the advantages. The perceived advantages were 1) allowing more products to be promoted and 2) improving the ease with which frozen products could be included. Disadvantages included 1) the loss of the simplicity and clarity of the Program's message; 2) the lack of scientific criteria upon which to base cutoffs for ingredients such as sugar; 3) the introduction of a regulatory component to the Program without adequate staff to review new products to determine their eligibility; 4) the potential of promoting increased fat intakes, which were thought to increase cancer risk; and 5) the loss of a Program intention to modify the environment by encouraging industry to produce more products that met the Program's high standards.

The strictness of the criteria for a Program such as 5 A Day is an issue that has strong arguments on both sides. On the one hand, some would argue that convincing the population to eat more vegetables and fruit in any form would be an improvement over current consumption levels. If the criteria are too strict and fewer industry members participate, the funding and potential reach of the Program could be limited. As a result, fewer people would increase their consumption. On the other hand, if the criteria are not strict enough, the Program might lack credibility and be viewed by the public as just another marketing ploy by the industry. Or worse, the Program might contribute to increased fat, sugar, sodium, and calorie intakes, thereby potentially harming rather than helping the population. From the public health perspective, stricter criteria are better, but they create tensions and tradeoffs in the degree of industry participation.

Collaborating with other governmental and professional organizations also can present challenges of ownership. Over time, the Program has

developed written agreements with the USDA (which operates all Federal school nutrition programs, WIC, and other food assistance programs), CDC, ADA, and other organizations to pursue joint 5 A Day efforts. Although these agreements work well, for other programs to take ownership of the 5 A Day message, they must see a clear and perhaps unique role for themselves, making it their Program.

## Strategic Planning

Another important component of the Program is the strategic planning process. In 1992, the first such process was directed by the industry and resulted in a set of measurable objectives for growth, communications, supermarket promotions, research, and evaluation that provided guidance for the first few years of the Program. An important aspect of this process was the discussion of values and Program mission. This discussion made explicit the areas of convergence and divergence of the industry and governmental perspectives, allowing an understanding of each other's needs. Strategic planning with NCI was repeated in 1996. In 2000, PBH did its own strategic planning. As a result of the recent review of the national 5 A Day for Better Health Program (Potter et al., 2000), a series of recommendations has been made, the most significant of which is for national Program expansion. Strategic planning to support this outcome is underway in 2001.

## Initial Industry Concerns

Uniform support for the 5 A Day Program at its initiation did not exist among members of the vegetable and fruit industry. Many thought the Program could not work for a variety of reasons, including its generic nature (i.e., not brand-specific), limited funding, and lofty goals. In addition, there were turf issues among the various sectors and trade associations in the industry. A June 1993 article in the trade newspaper *The Packer* discussed the skepticism.

A senior food advertising executive in San Francisco was quoted as saying: "To change the American diet is a massive project...Imagine 5 A Day's \$800,000 budget stacked up against the \$40 million spent by the U.S. beef industry or the \$200 million spent by dairy farmers. Then there's the billions spent by brand marketers of chips,

cookies, frozen snacks, fast food burgers, and soda ... \$800,000 is what Coke spends in Los Angeles in 3 days.”

*The Packer* article continued: “Skeptics say the 1.5 year old program not only is painfully underfunded, but its message has been diluted with inclusion of frozen and canned produce. What’s more, they say the very nature of the fresh industry’s suppliers and receivers is too competitive to allow solid support of a generic promotion.” Other concerns mentioned were that some executives doubted that the generic campaign would benefit their companies and that only 150 organizations out of a possible 16,000 to 20,000 were contributing.

Years later, the same limited funding issues remain. However, the Program continues to be supported by a core of the fruit and vegetable industry members who can now see more clearly the value of, and how to participate in, a generic promotion. Policy issues, such as nutrition labeling, and advocacy to increase Program capacity seem to be topics that cut across traditional industry divisions, creating further reasons for collaboration.

Since the Program’s inception, the public health landscape relative to diet and cancer and community-based behavioral science has evolved, and the vision for the Program’s potential future needs to be placed within this current context.

### **The Current Public Health Landscape**

First, after two decades of increases, cancer rates in the United States declined between 1990 and 1995 (Bal et al., 1999). Cancer incidence rates for all sites (combined) decreased an average of 0.7 percent ( $p < 0.05$ ) per year and mortality rates decreased an average of 0.5 percent ( $p < 0.05$ ) per year over the 5-year period. Although improvement in diet is not included by Bal and colleagues (1999) as one of the potential reasons for such a decline, at least two investigators have presented data that support diet as a contributor to these improvements (Wynder and Cohen, 1997). Furthermore, if two-thirds of cancer deaths can be linked to tobacco use, poor diet, obesity, and lack of exercise, then diet and exercise together would appear to be the obvious areas for future research and Program development. The 5 A Day Program is in the right place at the right time if its leaders can strategically take advantage of its position.

Second, the science base indicating a protective effect of vegetables and fruit for the prevention of cancer has become stronger, the appropriateness of the 5 A Day recommendations has been upheld, and a number of analyses since Doll and Peto (1981) have confirmed that poor diet causes about one-third of all cancers in the United States (Ames et al., 1995; World Cancer Research Fund, 1997; Doll, 1992; Willett, 1999; Byers, 1999; Bal et al., 1999). Slowly, the biomedical community is acknowledging that diet may be as important as smoking in the cause and prevention of cancer (Willett, 1999; Bal et al., 1999). An inverse association between vegetable and fruit consumption and a variety of cancers has been observed in more than 200 case-control and cohort studies (Willett, 1999; World Cancer Research Fund, 1997). In spite of the fact that several controlled clinical trials have not confirmed that single or multiple micronutrients or phytochemicals are protective, Dr. Tim Byers (1999) stated that: “There remains compelling evidence that eating five or more servings of fruits and vegetables per day can substantially reduce the risk of some of the most commonly occurring cancers in the United States. The combined effects of nutrients as contained in the mixtures commonly known as whole foods seem to be more effective in reducing cancer risk than are nutrients contained in supplements.” Therefore, the science base for a program such as 5 A Day is more supportive than ever, and its potential for developing intervention designs that work in real life (in communities, using existing resources) is especially valuable, since expensive food-based clinical trials may not be funded.

Third, the science base for large-scale population-based interventions is stronger than it was a decade ago. In the late 1980s, when the national 5 A Day Program was being shaped, the American Stop Smoking Intervention Study Trial (ASSIST) was just being created and tested as a technology transfer mechanism for the previous phases of NCI-sponsored tobacco research. The well-funded ASSIST model called for a much more complete set of interventions than was possible for the 5 A Day Program, including coalition development, policy, advocacy, campaign initiatives, and media. These components operated simultaneously in a variety of intervention channels and were tailored to different population segments. A feature of ASSIST was a highly structured national and State

coalition infrastructure, as well as explicit operational phases for needs assessment and planning, execution, and evaluation. Each State coalition was funded at about \$1 million annually. Thus, by the late 1990s, the science and practice of tobacco control had come together sufficiently to result in national recommendations for components needed in comprehensive State programs (CDC, 1999).

Bal and colleagues (1999) have maintained that reducing the prevalence of the quantitatively equivalent cancer-risk factors of tobacco use and poor diet require a fundamental shift in social norms and, therefore, a similar paradigm for the nature and scope of interventions. However, the funding of tobacco-control efforts has far surpassed funding for dietary change, especially since the settlement between States and the tobacco industry. All nutrition research at NIH—much of it basic research—comprises 3.9 percent of the budget, or about \$495 million of NIH's \$12.8 billion 1998 fiscal-year budget (Human Nutrition Research Information Management System, 2000b). Thus, funding must be increased before comprehensive nutrition intervention programs, perhaps similar to ASSIST, can be established, with the hope of sizable increases in the national consumption of vegetables and fruit.

In addition, it should not be forgotten that the vegetable and fruit industry has limited resources compared to other sectors of the food industry (see the “Initial Industry Concerns” section above and Appendix B). As a result, the sizable resources available to advertise less healthy foods that often supplant vegetables and fruit in the diet make it difficult for the more healthy messages to effectively influence the public (see Chapter 6).

With this background in mind, the following section makes recommendations for the future vision of the national 5 A Day Program.

## LOOKING FORWARD: A VISION FOR THE FUTURE

### Recommendations From the NCI Scientific Review of the 5 A Day Program

During the year 2000, as mentioned at the beginning of this chapter, the 5 A Day Program underwent a detailed scientific review at NCI. The

charge to the scientific review committee was 1) to review and evaluate the science underlying the Program, implementation and accomplishments of the Program, and the degree to which the Program met its goals and objectives; 2) to make recommendations to NCI about the future conduct of the Program; and 3) to articulate NCI's role in large, coordinated efforts to promote healthy eating. The following section includes the recommendations made by the scientific reviewers to NCI for the future.

### Overall Recommendations

- That NCI continue the 5 A Day Program as a multifaceted program to support research and programs to promote increased vegetable and fruit consumption;
- That NCI continue to lead the Program and ensure that it has a director with high scientific credibility and appropriate expertise;
- That NCI partner more closely with USDA to better focus dietary guidelines and to promote research that will encourage vegetable and fruit consumption;
- That NCI partner with CDC to develop and manage State-level 5 A Day programs; and
- That NCI partner with other NIH Institutes to
  - Promote research on the role of specific vegetable and fruit components in lowering disease risk;
  - Promote methodologic and applied behavioral research;
  - Expand awareness of other benefits of vegetables and fruit; and
  - Develop a surveillance plan to monitor vegetable and fruit consumption (including CDC and FDA).

### Media and Message Delivery

- That 5 A Day remain a credible information source, allowing better navigation through the fragmented and unreliable message environment surrounding food, nutrition, and health;
- That direct expenditures and leveraged resources furthering delivery of the 5 A Day message be increased;
- That NCI reinvent the 5 A Day message on a regular basis, with attention to reaching minorities and low-income groups;

- That the Program devote additional resources to a variety of media strategies, including a media relations effort;
- That the Program reconsider its channel-use strategy, with a particular focus on new media and tailored communications and how media channels may be used to reach lower socioeconomic-status groups and disadvantaged populations; and
- That NCI and its partners develop a package of media evaluation approaches that are consistent, simple, complete, and affordable.

### **Industry and the States**

- That NCI's collaboration with PBH be continued and expanded;
- That NCI use its relationships with industry to ensure that vegetables and fruit become more available to high-risk and underserved communities; and
- That NCI increase resources, staffing, and expertise to the States for dissemination, monitoring, and evaluation of the Program.

### **Minorities and the Underserved**

- That NCI, in partnership with relevant organizations, develop operational strategies that are aimed at understanding and reducing disparities among ethnic groups and across educational and socioeconomic differences.

### **Evaluation**

- That NCI should continue to take the lead in evaluating the effectiveness of the Program and that this evaluation must include extensive involvement of the States and
- That NCI undertake a comprehensive evaluation of each of the 5 A Day components: media, research, and all partnerships.

### **Research**

NCI should maintain and support intramural and extramural research in the following areas:

- Dissemination methods;
- Behavior change, including
  - Research into the development of more effective dietary intervention programs;
  - Studies of when children and adolescents develop food preferences;

- Ways to develop supportive environments and to increase availability of vegetables and fruit;
- Randomized controlled trials;
- Interventions for middle and high school students; and
- Policy on ways to establish an optimal environment for making informed food choices in a free market economy;
- Environmental influences on dietary behavior and behavior change;
- Mechanisms by which vegetables and fruit reduce cancer risk;
- Influences on food choice; and
- Methods for measurement of dietary behavior.

### **Surveillance**

NCI, in partnership with other relevant Federal agencies, should coordinate, facilitate, and strengthen surveillance and monitoring of

- Vegetable and fruit consumption;
- Psychosocial mediators of dietary behavior change; and
- Possible environmental mediators of dietary behavior and behavior change.

### **Produce for Better Health Foundation**

The industry needs strategies for engaging and receiving resources from a higher percentage of the more than 16,000 members of the industry, as well as for continuing to gain support of complementary industries, while at the same time maintaining the Program's integrity. PBH also should partner with State 5 A Day coalitions, working collaboratively to incorporate both State and PBH objectives. PBH might expand its efforts to make available high-quality educational materials developed by the State coalitions.

It should be noted that PBH has provided powerful leadership in shaping national nutrition policy over the past few years, and these efforts should be continued. For example, PBH staff and industry members provided testimony for the U.S. Department of Health and Human Services (DHHS) on the development of the *2010 National Health Promotion and Disease Prevention Objectives for the Nation* (DHHS, 2000) and for the recent revisions in the National Dietary Guidelines (USDA/DHHS, 2000). PBH has also funded efforts

to provide the latest information on phytonutrient contents of vegetables and fruit to the Government. In addition, efforts have been made to increase funding for the 5 A Day Program through the Federal budget process. In the future, PBH members at the State level might also work proactively with State legislatures to develop funding streams for the program at that level.

### States

State health agencies have done an excellent job through the years of incorporating the 5 A Day message into existing programs, such as WIC, and of garnering funds to support targeted 5 A Day projects. Funds have come largely from the Preventive Health and Health Services Block Grants and, more recently, through the Food Stamp Program initiative for the development of nutrition networks. These funds for implementing nutrition education and services, along with those provided by NCI and CDC to evaluate projects, create effective programs that can be used nationwide to increase consumption within the 5 A Day network of State programs.

### Research and Diffusion

Institutes at NIH could encourage incorporation of the 5 A Day initiative into basic, clinical, and community-based research. This would greatly expand knowledge in the field. The gap between research that proves a program's efficacy or effectiveness and diffusion of that research needs to be filled by partnerships with CDC, the Cooperative Extension Service, and such voluntary organizations as the American Heart Association and American Cancer Society. Field testing of promising interventions and diffusion through national networks would contribute greatly to increased national consumption. NCI is working on several efforts to transfer knowledge gained in the randomized trials to State programs through Small Business Innovation Research grants and collaboration with the American Cancer Society.

The 5 A Day Program should now be integrated with other dietary and health messages, such as increasing grain consumption and engaging in more physical activity. All of these messages could be incorporated into a powerful national campaign. Use of home gardens, farmers markets, and locally grown produce should be encouraged in collaboration with State departments of agriculture

and education. An emphasis on preschoolers should be considered, building on such programs as the Head Start project in Connecticut.

The richness of materials developed should not be diminished. Existing clearinghouses, such as the one at NCI, should be better utilized. The Program staff should use information from the process evaluation of State programs to make recommendations to States on how to improve structures and operations. Obtaining more synergy from State efforts, including the possibility of regional collaborations, should be explored.

## CONCLUSION

The national 5 A Day Program has succeeded in meeting its objectives for the first 5 years: it has created a public/private partnership with a large national infrastructure; it has raised public awareness of the need to eat 5 or more servings of vegetables and fruit a day; it has contributed to increased national consumption levels; and 9 research projects and 25 State-level evaluations have contributed to a better understanding of how to change dietary intakes. The Program has been perceived as a resounding success—25 countries attended the first international meeting in Washington, DC, in 1998, and many of these countries are implementing their own versions of the Program. With such a past, the Program has a bright future—if the public/private partners make renewed commitments to the Program, if adequate resources are forthcoming, and if the joint vision for the future is creative enough.

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# Appendix A

*(The content of this appendix has been excerpted and adapted from the October 1999, 5 A Day For Better Health Program Guidebook<sup>1</sup>)*

|            |  |             |
|------------|--|-------------|
| <b>A-1</b> | <b>Industry License Agreement: 5 A Day For Better Health Program .....</b>                     | <b>A-3</b>  |
| <b>A-2</b> | <b>Health Authority License/Sublicense Agreements: 5 A Day For Better Health Program .....</b> | <b>A-5</b>  |
|            | <i>Health Authority License Agreement .....</i>  | <i>A-5</i>  |
|            | <i>Health Authority Sublicense Agreement for a Single Entity .....</i>                         | <i>A-7</i>  |
|            | <i>Health Authority Sublicense Agreement for Coalitions .....</i>                              | <i>A-9</i>  |
| <b>A-3</b> | <b>Guidelines for Participation in the 5 A Day For Better Health Program.....</b>              | <b>A-11</b> |
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<sup>1</sup> Hereby referenced as the 10/99 Program Guidebook



*Appendix A-1*

# INDUSTRY LICENSE AGREEMENT: 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A DAY FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute and the Produce for Better Health Foundation (PBH). PBH is herein referred to as LICENSOR. Its purpose is to increase the consumption of fruits and vegetables by Americans. Under the project, organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY FOR BETTER HEALTH logo and related materials.

---

(YOUR ORGANIZATION'S NAME)

herein referred to as LICENSEE, is desirous of participating in the 5 A DAY FOR BETTER HEALTH PROGRAM.

Effective on the subscribed date, in consideration of receipt of the program logo and related materials, LICENSEE agrees to the following terms and conditions:

## **1. Use of Program Logo and Related Materials**

LICENSOR grants LICENSEE, its agents, and employees a nonexclusive, nontransferable, royalty-free right to use the program logo and related materials in connection with the promotion of the Program and/or the packaging, advertising, and selling of its food industry products throughout the United States of America in accordance with, and in the form and manner prescribed in, the Guidelines for Participation in the 5 A DAY FOR BETTER HEALTH PROGRAM, a copy of which is attached and made a part hereof by reference, as such guidelines may be amended from time to time.

## **2. Quality Maintenance Standards**

LICENSEE shall cooperate with LICENSOR in assuring proper use of the Program logo and related materials, including providing LICENSOR with periodic evaluation reports, as specified in the Guidelines, and specimens of use of the Program logo and related materials upon request. LICENSEE shall comply with all applicable laws and regulations and obtain all appropriate Government approvals pertaining to the promotion, packaging, advertising, and sale of goods covered by this license.



Appendix A-2

# HEALTH AUTHORITY LICENSE AGREEMENT: 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A DAY FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute and the Produce for Better Health Foundation. The purpose of the program is to increase the consumption of fruits and vegetables by Americans. Health organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY FOR BETTER HEALTH PROGRAM logo and related materials. (The National Cancer Institute is herein referred to as LICENSOR.)

---

(YOUR ORGANIZATION'S NAME)

herein referred to as LICENSEE, is desirous of participating in the 5 A DAY FOR BETTER HEALTH PROGRAM.

Effective on the subscribed date, in consideration of receipt of the program logo and related materials, LICENSEE agrees to the following terms and conditions:

## 1. Use of Program Logo and Related Materials

LICENSOR grants LICENSEE, its agents, and employees, a non-exclusive, royalty-free right to use the program logo and related materials in connection with the promotion of the program throughout the State of \_\_\_\_\_ (your State) in accordance with, and in the form and manner prescribed in, the GUIDELINES FOR PARTICIPATION IN THE 5 A DAY FOR BETTER HEALTH PROGRAM, a copy of which is attached and made a part hereof by reference, as such guidelines may be amended from time to time.

## 2. Quality Maintenance Standards

LICENSEE shall cooperate with LICENSOR in assuring proper use of the program logo and related materials, including providing LICENSOR with periodic evaluation reports, as specified in the Guidelines, and specimens of use of the program logo and related materials upon request. LICENSEE shall comply with all applicable laws and regulations pertaining to food labeling and health claims.

## 3. Termination

A. LICENSOR may terminate this agreement with a thirty (30) day written notice to LICENSEE upon completion of the 5 A DAY FOR BETTER HEALTH PROGRAM. LICENSEE may terminate this agreement upon thirty (30) days written notice to LICENSOR. Upon such termination, LICENSEE shall in a timely manner discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

B. LICENSOR may terminate this agreement with a thirty (30) day written notice to LICENSEE for breach of any of the provisions of this agreement by LICENSEE. Upon such termination, LICENSEE shall immediately discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

\_\_\_\_\_  
LICENSEE

\_\_\_\_\_  
LICENSOR  
NATIONAL CANCER INSTITUTE

\_\_\_\_\_  
SIGNATURE: STATE HEALTH OFFICER

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
DATE

---

# HEALTH AUTHORITY SUBLICENSE AGREEMENT FOR A SINGLE ENTITY: 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A DAY FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute and the Produce for Better Health Foundation. The purpose of the program is to increase the consumption of fruits and vegetables by Americans. Health organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY FOR BETTER HEALTH logo and related materials.

---

(STATE HEALTH AUTHORITY LICENSED BY THE NATIONAL CANCER INSTITUTE)

is herein referred to as SUBLICENSOR.

---

(YOUR ORGANIZATION'S NAME)

herein referred to as SUBLICENSEE, is desirous of participating in the 5 A DAY FOR BETTER HEALTH PROGRAM.

Effective on the subscribed date, in consideration of receipt of the Program logo and related materials, SUBLICENSEE agrees to the following terms and conditions:

## 1. Use of Program Logo and Related Materials

SUBLICENSOR grants SUBLICENSEE, its agents, and employees, a non-exclusive, non-transferable, royalty-free right to use the program logo and related materials in connection with the promotion of the program throughout the county or locale of \_\_\_\_\_ in accordance with, and in the form and manner prescribed in, the GUIDELINES FOR PARTICIPATION IN THE 5 A DAY FOR BETTER HEALTH PROGRAM, a copy of which is attached and made a part hereof by reference, as such Guidelines may be amended from time to time.

## 2. Quality Maintenance Standards

SUBLICENSEE shall cooperate with SUBLICENSOR in assuring proper use of the program logo and related materials, including providing SUBLICENSOR with periodic evaluation reports, as specified by the SUBLICENSOR, and specimens of use of the program logo and related materials upon request. SUBLICENSEE shall comply with all applicable laws and regulations pertaining to food labeling and health claims.

**3. Termination**

- A. SUBLICENSOR may terminate this agreement with a thirty (30) day written notice to SUBLICENSEE upon completion of the 5 A DAY FOR BETTER HEALTH PROGRAM. SUBLICENSEE may terminate this agreement upon thirty (30) days written notice to SUBLICENSOR. Upon such termination, SUBLICENSEE shall in a timely manner discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.
- B. SUBLICENSOR may terminate this agreement with a thirty (30) day written notice to SUBLICENSEE for breach of any of the provisions of this agreement by SUBLICENSEE. Upon such termination, SUBLICENSEE shall immediately discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

\_\_\_\_\_  
SUBLICENSEE

\_\_\_\_\_  
SUBLICENSOR

\_\_\_\_\_  
AUTHORIZED SIGNATURE

\_\_\_\_\_  
AUTHORIZED SIGNATURE

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
DATE

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# HEALTH AUTHORITY SUBLICENSE AGREEMENT FOR COALITIONS: 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A DAY FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute and the Produce for Better Health Foundation. The purpose of the program is to increase the consumption of fruits and vegetables by Americans. Health organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY FOR BETTER HEALTH logo and related materials.

---

(STATE HEALTH AUTHORITY LICENSED BY THE NATIONAL CANCER INSTITUTE)

is herein referred to as SUBLICENSOR.

---

(YOUR ORGANIZATION'S NAME)

herein referred to as SUBLICENSEE, is desirous of participating in the 5 A DAY FOR BETTER HEALTH PROGRAM as coordinator of the coalition.

---

(NAME OF COALITION)

Effective on the subscribed date, in consideration of receipt of the program logo and related materials, SUBLICENSEE agrees to the following terms and conditions:

## 1. Use of Program Logo and Related Materials

SUBLICENSOR grants SUBLICENSEE, and its coalition members, a non-exclusive, non-transferable, royalty-free right to use the program logo and related materials in connection with the promotion of the Program in the counties of \_\_\_\_\_ within the State of \_\_\_\_\_ (your State) in accordance with, and in the form and manner prescribed in, the GUIDELINES FOR PARTICIPATION IN THE 5 A DAY FOR BETTER HEALTH PROGRAM, a copy of which is attached and made a part hereof by reference, as such Guidelines may be amended from time to time.

## 2. Quality Maintenance Standards

SUBLICENSEE and its coalition members shall cooperate with SUBLICENSOR in assuring proper use of the program logo and related materials, including providing SUBLICENSOR with periodic evaluation reports, as specified by the SUBLICENSOR, and specimens of use of the program logo and related materials upon request. SUBLICENSEE and its coalition members shall comply with all applicable laws and regulations pertaining to food labeling and health claims.

### 3. List of Coalition Members

SUBLICENSEE shall inform each coalition member of the need to comply with the GUIDELINES FOR PARTICIPATION IN THE 5 A DAY FOR BETTER HEALTH PROGRAM. SUBLICENSEE shall append to this sublicense agreement a list of coalition members, including: name, address, and phone number of organization; name and title of each organization's representative to the coalition; and date the organization joined the coalition. Membership updates shall be sent to the National Cancer Institute with each semi-annual report.

### 4. Termination

- A. SUBLICENSOR may terminate this agreement with a thirty (30) day written notice to SUBLICENSEE upon completion of the 5 A DAY FOR BETTER HEALTH PROGRAM. SUBLICENSEE may terminate this agreement upon a thirty (30) day written notice to SUBLICENSOR. Upon such termination, SUBLICENSEE shall in a timely manner discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.
- B. SUBLICENSOR may terminate this agreement with a thirty (30) day written notice to SUBLICENSEE for breach of any of the provisions of this agreement by SUBLICENSEE or any of its coalition members. Upon such termination, SUBLICENSEE and all its coalition members shall immediately discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

\_\_\_\_\_  
SUBLICENSEE

\_\_\_\_\_  
SUBLICENSOR

\_\_\_\_\_  
SIGNATURE: Coordinator of Coalition

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
DATE

## Appendix A-3

# GUIDELINES FOR PARTICIPATION IN THE 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A Day Program Guidelines are divided into distinct sections. Guideline section I of this appendix applies to *all* licensed participants. Guideline sections I through VI of Appendix A-5 outline the requirements that pertain specifically to the different types of participants in this program. In addition to adhering to all requirements in Guideline I, it is the responsibility of each participant to also adhere to the Guideline section(s) that pertain(s) to activities. These Guidelines are extracted from the *5 A Day For Better Health Program Guidebook*.

## **I. General Guidelines (for all participants)**

In exchange for the assistance of the National Cancer Institute (NCI) as the health authority for the 5 A Day Program, it is essential that the program's participants use the trademarked materials and logos in accordance with the Guidelines and criteria set forth in this document. This should be carried out in a spirit of cooperation that retains the integrity of fruits and vegetables as low-fat foods, increases consumer understanding of diet and health relationships, and helps consumers develop skills to choose a nutritious diet that is consistent with the *Dietary Guidelines for Americans*.

Program activities must be conducted and materials must be used in a fashion that maintains the integrity and status of the NCI as an entity of the U.S. Government. No promotional activity may be undertaken by a participant that could give the appearance of an endorsement by NCI of a specific product, service, or company.

Because the logo is the property of NCI, its use must be recorded and monitored to maintain the assurance of its proper and legal use. This is the primary reason for the annual license for industry licensees (non-industry licenses are valid indefinitely) and requirements (listed in the Guidelines) for a licensee to supply reports and samples of materials developed using the logo. Any misuse of the logo or the program may result in revocation of the license and the possibility of legal action by the appropriate Government authorities or the Produce for Better Health Foundation (PBH). Thus, it is important for all program participants to be familiar with the Guidelines and to contact NCI or PBH when applications of the logo or use of the program is desired but not specifically outlined in the Guidelines.

### **A. Criteria for Products Promotable Through the 5 A Day Program (Revised 1/6/95)**

1. All fruits and vegetables are applicable, with the exception of avocados, coconuts, olives, and nuts. The program logo may be used to promote recipes with avocados, coconut, olives, or nuts as ingredients if recipes meet the 5 A Day Recipe Criteria (see section D of this appendix).
2. All fruits and vegetables processed by drying, freezing, or canning (except avocados, coconut, olives, and nuts) are included, provided that no fat or sugar (sucrose, glucose, dextrose, fructose, maltose, lactose, sorbitol, mannitol, honey, corn syrup, corn syrup solids, or molasses) have been added. In addition, the sodium content cannot exceed the Food and Drug Administration's (FDA) disqualifying level for health claims which is 480 mg/FDA labeled serving size and FDA reference amount.

3. All juice products that are 100% juice or juice concentrate, without added fat or sugar, and meets the FDA disqualifying level for sodium, which is 480 mg/FDA labeled serving size (8 oz) and FDA reference amount (240 ml).
4. All promotions of fruits and vegetables done in association with the program must retain the nutrient integrity of fruits and vegetables as low-fat, lower calorie foods.

## B. Serving Sizes

For program recipes and consumer education activities, a serving is a medium piece of fruit; 1/2 cup of raw, cooked, canned, or frozen fruits or vegetables; 1 cup of leafy salad greens; 1/4 cup of dried fruit; 6 ounces (3/4 cup) of 100% fruit or vegetable juice; or 1/2 cup of cooked or canned beans or peas (legumes; e.g., lentils, pinto beans, or kidney beans). Serving sizes used in the program are consistent with the *Dietary Guidelines for Americans*. FDA food-labeling regulations stipulate serving sizes on labels that may not be consistent with these Guidelines (e.g., one serving of juice is 1 cup for a food label).

## C. Recipe Use

The 5 A Day recipe criteria (see below) shall be the standard used for all recipes used in program activities and materials. The program may occasionally revise the criteria to reflect changes in U.S. dietary recommendations.

## D. Recipe Criteria

NCI and PBH approve current recipes associated with the 5 A Day Program that promote fruits and vegetables and are low in fat and cholesterol. The use of whole grains and minimal use of salt and sugar are strongly encouraged.

All recipes associated with the 5 A Day Program must meet the following criteria:

1. 5 A Day recipes contribute at least one serving of a fruit and/or a vegetable per portion of the recipe. Baked goods are allowed providing one serving contains a full 5 A Day serving of a fruit or vegetable, and meets the fat, saturated fat, cholesterol, and sodium criteria, as specified below.
2. 5 A Day recipes do not contain more than 30% of calories from fat or 3 grams of total fat per 100-gram serving; not more than 10% of calories from saturated fat or 1 gram of saturated fat per 100 grams; not more than 100 milligrams of cholesterol; and not more than 480 milligrams of sodium per serving.
3. Official 5 A Day recipes will be supplied by the PBH or NCI. Recipes from other sources can be used but must be analyzed using the Mini-Minnesota Nutrition Data System or be approved by the PBH. NCI requires that the Mini-Minnesota Nutrition Data System be used to analyze recipes because of its extensive and scientifically sound database. Recipe analysis and approval can be obtained for a nominal fee by sending the recipes to the Produce for Better Health Foundation, 5301 Limestone Road, Suite 101; Wilmington, DE 19808-1249. Phone: 302/235-ADAY / FAX: 302/235-5555. Web site: [www.5aday.com](http://www.5aday.com).

The 5 A Day recipe criteria are based on the National Academy of Sciences' report, *Diet and Health: Implications for Reducing Chronic Disease Risk (1989)* and the *Dietary Guidelines for Americans*.

These criteria and serving sizes are subject to change, and should not be construed for use for manufactured products.

## E. Advertising or Promotional Context

Use of the program, its logo\*, and/or messages to promote an eligible product (as per section A above) must be in a manner that maintains the product's integrity as a low-fat food. Use of the program, its logo, and/or messages or the citation of NCI that includes brand names or specific product references must be done in a manner that avoids the appearance of NCI specifically endorsing that particular brand or product (see "Logo Use" section below). The logo and messages may be used in advertising, promotions, or point-of-sale materials. For recipes, the logo may be used only with official 5 A Day recipes supplied by the PBH or NCI, or recipes meeting the 5 A Day recipe criteria and approved by the program. A value-added or processed product such as pre-cut, shrink-wrapped, frozen, juice, or packaged-fresh fruits or vegetable may also use the logo as long as it meets the criteria listed in section A above, follows the restrictions in section F below, and is otherwise consistent with the General Guidelines.

\* When reference is made to the 'logo', it includes both large- and small-sized versions of the 5 A Day logo.

## F. Logo Use

Licensed participants must strictly adhere to the following procedures and restrictions for use of the program logo and the citation of NCI or PBH in order to maintain the program's scientific integrity and not compromise NCI's responsibilities as an agency of the U.S. Government or PBH's integrity. In general, the use of NCI's or the Foundation's name in any manner that might be interpreted as an endorsement of a particular product or company must include a disclaimer. Any violation by the licensee of the following procedures and restrictions will operate to place the license in jeopardy and may result in termination of their license. The logo must only be used in ways consistent with the General Guidelines and in the following manner:

1. **Just the logo.** The logo, without an NCI tagline (or any message citing NCI), may be used on promotable products (see section A, "Criteria for Products Promotable"), promotional materials, or packaging as long as the context of the use is in accordance with the General Guidelines.
2. **Generic use—with citation of NCI.** The logo, with an authorized NCI tagline (see "Authorized NCI taglines" below) or official 5 A Day advertising/promotion copy (supplied by PBH), may be used in brochures, banners, posters, retail advertisement, etc., that promote fruits and vegetables in a generic manner (i.e., no branded, specific product, or service names are used).
3. **Branded or product-specific use—with citation of NCI.** The logo, with an authorized tagline, may be used in advertising, promotions, point-of-sale, or consumer materials that make reference to branded or specific products or services, provided the "NCI disclaimer" (see below) is used.
4. **NCI disclaimer.** The disclaimer reads: "The mention of trade names, commercial products, or specific organizations does not constitute endorsement by NCI." The disclaimer must appear in the same size and typeface as the citation of NCI.
5. **Authorized NCI taglines.** The following taglines citing NCI may be used only as outlined (see above, "Generic use" or "Branded or product-specific use"):
  - (a) "A message from the National Cancer Institute."
  - (b) "A program in cooperation with the National Cancer Institute."

Participants need to follow the above information closely to avoid any appearance of making a health claim. The 5 A Day message is one of dietary guidance, not a health claim, and all participants need to work together to maintain this status. If you have any questions regarding the use of the logo, you are strongly encouraged to contact the PBH at 302-235-2329 or the NCI at 301-496-8520.

6. **Applications of the new logo.** The logo has been refined and expanded to include a special version for applications where the logo must be reproduced in a small size due to space limitations. This new program will improve the legibility of the logo and the ease of reproduction, especially when the logo is applied in a small size.

*Large Version (more than 3/4 of an inch)*

The large version of the logo can be used for any application that requires the logo to be reproduced in widths of more than 3/4 of an inch. In this large version, the phrase “for better health” is integrated with the logo and cannot be removed. If reproduction of the phrase “for better health” in orange is difficult to produce (due to the four-color printing process), print the phrase in black. You may reverse out the logotype “5 A Day for Better Health” to white only when the logo appears on dark backgrounds.

*Small Version (3/4 of an inch or less)*

The small version of the logo should be used for applications where the logo will be reproduced in widths of 3/4 of an inch or less. In this small version, the phrase “for better health” is not included on the logo. It is recommended, but not required, that one of the following phrases be placed in an area near but separate from the logo, if space permits:

- (a) “Eat five or more daily servings of fruits and vegetables for better health”;
- (b) “Eat 5 or more fruits and vegetables daily”; OR
- (c) “Eat 5 A Day for Better Health.”

This phrase must be a standalone element and may be in any legible typeface. In some applications where printing space is limited, there may not be sufficient room to place this phrase near the logo. However, this phrase should be used in conjunction with the small version of the logo wherever possible.

*One-Color Reproduction (including black/white versions)*

Select and use any legible color for reproduction. Print the logo as line art only; do not add screens of the one color to the logo lighter versions of the ink color achieved by ‘screening’ the ink).

*Four-Color Process Reproduction*

Do not alter the colors of the logo in any manner (see exceptions below). If it is not possible to reproduce the logo in four-color process in a legible manner, reproduce the logo in one color (this is an important consideration when reducing the size of the small logo). When using the large logo, it might be difficult to reproduce the phrase “for better health” if the orange is composed of process colors. In this case, the phrase “for better health” may be reproduced in black.

*Two- and Three-Color Reproduction*

Never reproduce the logo in an application that uses two or three colors of ink for the logo. The logo should appear as line art in one ink color only or in four-color process.

7. **Dos and don'ts for large and small logo applications.** (Any misuse of the logo may result in termination of license agreement or participation in the 5 A Day Program.)

#### *Dos*

Continue to use materials that have the original logo until supply of those items is exhausted. All uses of the original logo must cease by January 1, 2002.

Apply the new logo to items as soon as possible.

Use the logo as frequently as possible, but consistent with the 5 A Day Program Guidelines.

Use the logo in both one-color and four-color applications.

Where space permits, you may add one of the following phrases when using the smaller logo:

(a) *“Eat five or more daily servings of fruits and vegetables for better health”;*

(b) *“Eat 5 or more fruits and vegetables daily”;* OR

(c) *“Eat 5 A Day for Better Health.”*

Always use the large version of the logo for television applications.

Use the appropriately sized logo for all other specific applications: use the small logo for size limits of 3/4 inch or smaller widths and the large logo for greater than 3/4 inch widths.

When the logo appears on dark backgrounds, you may alter the logotype *“5 A Day for Better Health”* by reversing out the type to white only.

#### *Don'ts*

Don't mention trade names, commercial products, or specific organizations in a manner that would constitute endorsement by the 5 A Day Program or NCI.

Don't combine the original and the new logo on the same item, package or campaign.

Don't add copy or any other elements to the logo.

Don't convert or alter the large logo into the small version or vice versa.

Don't integrate the 5 A Day logo with any other brand or other type of logos, marks or symbols.

Don't recreate or alter the logo in any manner (except for when reversing out the logotype to white); always use the logos supplied on disk.

Don't place the logo in another shape (for example, printing the logo in a square or circle).

Don't overlap any graphic or text on top of any portion of the 5 A Day logo. In all applications, a clear space must surround the logo to isolate it as a separate entity.

## **G. Alteration of Logo, Messages, or Materials**

Changes in design of the program's logo or materials or written text or official advertising/promotion copy are not allowed without prior written approval by the PBH and the NCI. Any misuse of the program, its logo, or messages may result in termination of participation.

## **H. Photography**

Photography used in conjunction with the 5 A Day Program shall be consistent with the General Guidelines of the program and limit the display of alcoholic beverages and high-fat foods. Photography that includes brand names must be done in a manner that avoids the appearance of NCI's specifically endorsing that particular brand of product (see sections on “General Guidelines,” “Logo use,” and “Branded or product-specific use”).

## **I. Participation in Other Nutrition-Related Programs**

Participation in the 5 A Day Program does not preclude participation in (or cross-promoting) other health agency or organizations' programs which are consistent with the 5 A Day message, such as the American Cancer Society's "Smart Shopper," or the American Dietetic Association's "National Nutrition Month" or "Project LEAN."

## **J. Sublicensing Other Participants**

### *Industry*

Licensed participants in the 5 A Day Program are not allowed to sublicense other organizations. Only the PBH or NCI can grant a license to participate or use the program's logo or messages. The logo can be loaned by a licensed participant to a supplier to apply to materials produced for sole use by the licensee consistent with the General Guidelines. The supplier, however, cannot then make the same materials (or the logo or messages) available to others, unless the supplier obtains a license from the PBH.

### *Non-Industry*

Licensed non-industry participants (e.g., State health agencies and Federal Government health promotion programs) may sublicense other groups (see Appendix A-4, section B(1)(a), "Requirements for participation," General Guidelines exception for sublicensing).

## Appendix A-4

# GUIDELINES FOR HEALTH AUTHORITIES: 5 A DAY FOR BETTER HEALTH PROGRAM

## A. Introduction

Health organizations eligible to be licensed as 5 A Day Program participants will be referred to throughout this section as health authorities. The reasons for involving health authorities at the State and local levels in the national 5 A Day Program are:

- to develop a national network of State and local health organizations that are scientifically credible to consumers and who will assist the National Cancer Institute (NCI) in maintaining the scientific integrity of the national program, and
- to provide, at the community level, the necessary state of the art, interactive components of successful behavioral change interventions.

Examples of such interactive components are activities that motivate consumers, teach and model the skills necessary to increase fruit and vegetable consumption, and develop social support and local food systems' support of dietary changes.

Health authorities are licensed by NCI as 5 A Day Program health participants to serve four principal functions:

1. Serve as a credible health authority within their State or agency by promoting the 5 A Day message through media activities and cooperative projects. They also will uphold the scientific credibility of the program by careful attention to the manner in which messages about the program are stated and by adhering to program Guidelines.
2. Provide leadership for coordinating activities at the State and local levels by serving as the first point of contact for other eligible participants within the State, encouraging cooperative endeavors, and sublicensing appropriate participants as defined in section B.1.(a) of this appendix. (Food industry participants will be licensed only by the Produce for Better Health Foundation [PBH].)
3. Maintain high standards of intervention quality within the State by emphasizing activities that motivate and assist target populations to develop the skills necessary to make dietary changes and by periodically monitoring activities of sublicensees.
4. Report program activities to the NCI for the purposes of sharing successful strategies with other States and contributing to the national 5 A Day database.

The license requirements outlined below are aimed at attaining these four principal functions and assuring the proper and legal use of the 5 A Day trademarked materials and logo. Eligible licensees are State health agencies. In States where the State health agency is unwilling or unable to become a licensee, the State Cooperative Extension Service may be licensed instead.

In instances where both the State health agency and the State Cooperative Extension Service are unwilling or unable to become the State licensee, the NCI will act as the State's licensee. (That is, any State or local agency that wishes to be sublicensed in such a State should apply directly to NCI.) Once a State health agency or State Cooperative Extension Service is able and willing to act as the State licensee, the sublicensees in the State will be transferred from NCI to the new State licensee.

The State licensee can sublicense local agencies or entities in the same channel and community coalitions as defined and listed in the General Guidelines in section B.1. below.

Organizations wishing to become a licensed participating health authority must abide by the Guidelines listed in section B. The procedures for obtaining a license are outlined in section E.

## **B. Requirements for Participation Are as Outlined Below in Sections B.1. Through B.9.**

1. *General Guidelines:* All eligible organizations participating in the national program must abide by the “Guidelines for Participation in the 5 A Day For Better Health Program,” as stated in Guidelines E.1. and E.1.D. of the *10/99 Program Guidebook*. There are two exceptions to the Guidelines for State health authorities discussed in sections (a) and (b) below.

(a) With NCI’s approval, licensed health authorities may sublicense counterpart entities in the same channel or other entities participating in a coalition:

- (1) The definition of a counterpart entity in the same channel for a State health department would be a county or local health department; for a State Cooperative Extension agency, the counterpart would be a county extension agency. The appropriate agreement form, “Health Authority Sublicense Agreement for a Single Entity,” appears in Appendix A-2.
- (2) Health authorities may also sublicense community coalitions. The sublicense agreement should be executed with one organization in the coalition that agrees to serve as the coordinator or chair of the coalition. The appropriate agreement form, “Health Authority Sublicense Agreement for Coalitions,” appears in Appendix A-2.

Appropriate health-related members of State or local coalitions (sublicensees) are as follows:

- State/county/local health departments
- State/county/local cooperative extension offices
- State departments of education
- State departments of agriculture
- State/local chapters of the American Cancer Society
- State/local chapters of the American Heart Association
- State/local chapters of the American Dietetic Association
- State/local chapters of the American Home Economics Association
- Chapters of the Society for Nutrition Education
- State nutrition councils
- State/local chapters of the American School Food Service Association
- Universities/colleges
- Food banks
- Local hospitals
- Wellness councils

(NOTE: Industry-related members of coalitions who are part of the fruit and vegetable industry need to be licensed by PBH. *Sublicensing of any organization not listed above is subject to NCI’s approval* [see 5 A Day Program Office contact information in section G]. Each member of a coalition should be informed of the Guidelines and agree to abide by them.)

- (3) LICENSEES must use the sublicense agreement forms provided by NCI. Procedures for licensing, monitoring, and reporting of the sublicensees will be established by the State health authority to allow flexibility of administration.
- (4) LICENSEES will be held responsible for monitoring activities of sublicensees. The minimal monitoring activity would consist of periodic spot checks to assure appropriate use of the logo and materials.) SUBLICENSEES must abide by all the same Guidelines applicable to the State health authority (i.e., relevant guidelines in the *10/99 Program Guidebook* are: E.1., General Guidelines (for all participants); E.1.D., Recipe Criteria; and E.9., Guidelines for Health Authorities. In addition, special attention should be paid to the “Materials Development Guide” in section C of this appendix.)
- (b) Any new materials developed in a State, by a State health authority, its coalition members, or single entity sublicensees must follow the principles enumerated in section C below, “Materials Development Guide.” The following procedures must be followed:
- (1) The first set of materials developed in a State after the license agreement is signed must be reviewed by NCI. These materials may come from a variety of non-industry sources: the State health authority, coalition members, or sublicensees. Materials should be sent with a cover letter to the 5 A Day Program Office (see contact information in section G). NCI expects to be able to respond within 2 weeks; however, 1 month notice should be allowed.
  - (2) Subsequent to this first review, NCI does not plan to review each new set of materials developed under the auspices of the health authority within each State, unless the developer would like the material to be considered for national distribution or wishes to use the 1-800-4-CANCER number (see “Materials Development Guide,” section C.8. below).
  - (3) However, NCI must be notified in writing prior to development of all new materials (including those that will not be reviewed), and a copy of all materials must subsequently be sent to NCI. It is assumed that NCI’s review of the first set of materials will amplify the guidance provided in the “Materials Development Guide,” and the content of subsequent materials will ultimately be the responsibility of the State health authority.
  - (4) The use of NCI’s name in any materials should follow the guidance on logo use in Guidelines E.1.E.-I. of the *10/99 Program Guidebook*.
  - (5) This section on materials development does not apply to industry participants. Materials developed by industry participants must follow the industry specifications (Guidelines E.2.-E.7. of the *10/99 Program Guidebook*).

Only licensed participants may use the logo and NCI’s name in the development of materials, in the manner prescribed in Guidelines E.1.A-I of the *10/99 Program Guidebook*.

The development of new educational materials is encouraged only for populations and topics that have not yet been addressed by the national 5 A Day Program. All such materials must conform with the “Materials Development Guide.”

- (c) The Cancer Information Service (CIS) is the NCI’s primary outreach network covering the entire United States. Regional CIS outreach coordinators are available to help facilitate 5 A Day coordination by referring local industry and health organizations to the appropriate State health authority. The CIS can also give callers basic information about the program. CIS outreach staff are available to provide technical assistance in a number of program areas, including program planning, networking, developing media contacts, and review and distribution of materials. LICENSEES are encouraged to remain in routine contact with their regional CIS outreach coordinator to keep him/her informed of activities. This kind of consistent communication will enable CIS outreach staff to perform a valuable networking function based on the best available information. (A list of CIS contacts will be provided in the starter kit.)

2. *Policy:* Promote as organization policy the message that five or more servings of fruits and vegetables every day as part of a low-fat, high-fiber diet is the dietary guidance recommended to the public. The development of specific measures to implement this policy within the health authority organization is encouraged.

The adoption of such a message by other organizations in the State that provide nutrition education to the public is encouraged. These organizations may include units of State and local government, voluntary and professional organizations, agriculture, and the food industry.

3. *Communications:* Communicate State and national NCI/PBH activities, program changes, case studies, and suggested activities to sublicensees and other appropriate entities in the State through periodic newsletters, meetings, or other communication media. NCI and PBH should be on mailing lists to receive such written communications in order to enhance national communication efforts.

To assist you in this effort, NCI and PBH will provide periodic newsletters and materials updates (limited to one per State) to all licensed State health authorities for duplication and distribution. Additional copies of some materials are available for purchase. A price list can be obtained from PBH.

4. *Promotional activities:* Assist sublicensees in conducting promotional activities or conduct at least one major theme-related program event per year, preferably in coordination with national NCI or industry promotions. (We recognize the resource constraints at the State and local levels. Note that you may either serve largely as a facilitator of 5 A Day activities or you may actually conduct program events. Both are encouraged but only one role is necessary to meet your requirements for participation.)

Media or program events should be created with some model of behavior change in mind. In particular, events are encouraged that create awareness, motivate consumers to eat more fruits and vegetables, teach consumers skills needed to increase consumption, create social support, or create supportive changes in the foods systems which serve the target populations.

Media or program events may include, but are not limited to:

- Activities that *create awareness* might be media events or activities emphasizing the need to eat five or more servings of fruits and vegetables every day. Examples of such media or program events follow:

Placement of NCI media materials prepared for special events, such as 5 A Day Week, within State mass media outlets;

Media events sponsored by the licensed participating health authority, such as press conferences, media tours, contests, or competitions;

Media events conducted in collaboration with other credible groups in the State, such as units of State or local government, civic organizations, or consumer groups;

Media events conducted in cooperation with businesses, including those licensed to participate in the national program;

Community-level media events coordinated with local entities such as licensed supermarkets, professional societies, civic organizations, social or religious groups, agricultural organizations, medical centers, or major employers; or

Program activities, such as the development of a Request for Applications for local research or demonstration projects; contests; competitions; or joint efforts with other channels, such as schools, food assistance programs, worksites, food services, supermarkets, farmers markets, etc.

- Activities that *motivate* might include messages about the association between diet and cancer or between eating a healthy diet and looking and feeling better. Incentive-based activities might include contests involving fruits and vegetables, coupons for purchasing fruits and vegetables, etc.
- Activities that involve *skills development* might offer specific tips on how to pack fruits and vegetables in brown bag lunches, how to make choices in restaurants, how to cook certain vegetables, etc.
- Activities that *develop social support* might be suggestions on how to use peer influence by adopting “buddies” at work or at home to reinforce healthful eating habits, etc.
- Activities that *promote food-system and environmental support* might include labeling of fruit and vegetable dishes served in cafeterias that meet the 5 A Day criteria; modifications of food-service menus; and the development of catering policies which include fruit and vegetable options at all company-sponsored events, such as picnics and conferences.

NCI also encourages the licensee to establish an ongoing media relations program intended to sustain media coverage of fruit and vegetable consumption as a health issue.

5. *Quality Control*: Maintain quality standards within the State by:
  - Abiding by the national 5 A Day Guidelines and assisting industry partners in meeting regulations related to nutrition labeling and health claims; and
  - Monitoring sublicensees to assure that they are abiding by the Guidelines. (The minimal monitoring activity would consist of periodic spot checks to ensure appropriate use of the logo and materials.)
6. *Reporting*: Provide NCI with a progress report or summary of activities (provided under separate cover). Provide NCI and PBH with at least one copy of all consumer brochures, press releases or kits, public service announcements, videos, training aids, surveys, and evaluation reports. NCI and PBH would also welcome labeled and dated slides of displays, community events, or other activities.
7. *Cooperation*: In States that receive a 5 A Day grant from NCI, grantees and any health authority licensees will be asked to cooperate in such a manner that the integrity of the grantee’s research design is maintained. Activities that are likely to adversely affect the grantee’s intervention or control sites may need to be curtailed. For example, State licensees will be expected to refrain from addressing the same target audiences or using the same channels in the project geographical area.
8. *Access*: Provide NCI staff (or its designates, including PBH) with the opportunity, if requested, to interview key health authority personnel, coalition members, or program participants either in person, by written questionnaire, or telephone about their participation in the program.
9. *Development of Activities in New Channels*: When working with food-industry partners in channels for which portions of the 5 A Day Program Guidelines are not applicable, consult with NCI during the developmental stages in order to assure maximum impact and consistency with national efforts. Examples of these channels include: processed and packaged food products, such as frozen dinners and other types of mixed dishes that feature vegetables or fruit; and commercial food services, such as airline, hospitality, restaurant, fast food, and vending sources.

### C. Materials Development Guide for 5 A Day Health Authorities Only

This guide is intended for use in the development of 5 A Day materials by licensed health authorities only. Materials developed by industry participants licensed by PBH must follow the appropriate sections of the Guidebook.

The following principles must apply to materials developed for the 5 A Day Program:

1. An appropriate nutrition professional must have developed or reviewed the materials for scientific and technical accuracy. Appropriate nutrition professionals are: registered dietitians, licensed dietitians, nutritionists, or home economists with at least Masters level preparation in foods or nutrition.
2. Guidelines E.1.E.-I. of the *10/99 Program Guidebook* concerning logo use must strictly be followed to permit use of the 5 A Day logo and NCI taglines on any materials. Particular attention must be paid to the fact that NCI should not be perceived as “endorsing” a specific product or program.
3. The fruits and vegetables promoted must meet the program specifications in Guideline E.1.A of the *10/99 Program Guidebook*, and should be promoted as part of a low-fat, high-fiber eating pattern.
4. 5 A Day messages must be consistent with current national consensus dietary guidance, as provided in such documents as the *Dietary Guidelines for Americans*, *Diet and Health*, *Healthy People 2010*, and the *Food Guide Pyramid*.
5. All Federal, State, and local laws and regulations must be observed, with special attention paid to the nutrition health claims and food-labeling regulations.
6. Materials developed should fit into some theoretical model of behavior change, used as the basis for intervention or media activities. For example, in the stages-of-change model, persons in the precontemplation stage would be more interested in a pamphlet that describes the benefits of eating more fruits and vegetables than in a pamphlet that describes precisely how to eat more. Several shorter pamphlets may suit this model better than packing all the information into one publication. It is also advisable to use available consumer research when developing 5 A Day messages.
7. Materials should be culturally appropriate, taking into account the traditional eating patterns of the target population. Materials should be pretested with members of the intended target population. (See *Making Health Communication Programs Work: A Planner's Guide*; NIH Publication No. 89-1493, April 1989.) NCI may be able to offer some expertise in the development of materials for special populations, such as low-literacy audiences, older people, African Americans, and Hispanic Americans.
8. If you wish to distribute materials locally through the 1-800-4CANCER number, or if you wish to include the 800 number on your materials, the materials must be reviewed by the regional CIS outreach coordinator. Contact your regional CIS outreach coordinator to discuss the concept of materials before they are developed.
9. Materials that you wish to suggest for national distribution in the 5 A Day Program must be reviewed by NCI's national office. Before you develop these materials, contact the 5 A Day Program National Office at NCI (see section G of this appendix for contact information).
10. If there is a question over any issue, please contact the NCI for clarification.

## D. Suggested Additional Evaluation Activities for Agencies With the Desire and Capacity To Move Beyond the Required Level of Program Implementation

Through survey and market research activities, conduct periodic assessments of the program's impact and make the findings available to NCI and program partners.

*Information* collected might include: diet-related consumer characteristics, such as socio-demographics, awareness, knowledge, attitudes and beliefs, motivation, dietary skills and practices, and fruit and vegetable consumption, both in the general population and in population subgroups. Other community-level data might include tracking: the number and types of organizations participating in 5 A Day events; implementation of interventions in such settings as supermarkets or worksites; changes in the composition of school lunch and breakfast programs; policy changes in the WIC program; etc.

*Data collection methods* may include, but are not limited to:

- Inserting relevant questions in ongoing surveys or data collection activities such as the Behavioral Risk Factor Surveillance System or State health surveys;
- Conducting special surveys, market research, and/or focus groups to obtain a more complete profile of various consumer segments;
- Conducting formative evaluation on intervention approaches and participant satisfaction; or
- Establishing a framework for evaluation of the statewide effort, including the collection of process and outcome indicators.

Health authorities are encouraged to promote technical and scientific exchange through the publication of descriptive and evaluative papers in the professional, business, and peer-reviewed literature.

These Guidelines may be periodically revised. Your suggestions are welcome, especially those pertaining to ways in which your participation could be facilitated. Please send questions or comments to the 5 A Day Program National Office at NCI (see section G of this appendix for contact information).

## E. How To Obtain a License

1. State health agencies (or State cooperative extension agencies, in cases where the State health agency has declined licensure) may sign and return to NCI the license agreement. The agreement must be signed by the State health officer (or State leader for cooperative extension agencies). Mail the signed agreement to the 5 A Day Program National Office at NCI (see section G of this appendix for contact information).
2. Adhere to all applicable requirements in Guidelines E.1. and E.9. of the *10/99 Program Guidebook*.
3. Once a license is received and accepted, a 5 A Day Program starter kit will be mailed to the licensee. It will contain a variety of information, including program background, sample educational materials, newsletters, lists of 5 A Day participants, etc.

One copy of new program materials will be sent to all State licensees as they become available.

## **F. How To Obtain a Sublicense**

1. County or local counterpart agencies (e.g., county health agency if the licensee is the State health agency; county extension if the licensee is the State extension service) should send a letter to their licensed health authority requesting a sublicense.
2. Coalition members should select one member to act on behalf of the coalition as the coordinating agency or chair. A representative from that agency should send a letter to their licensed health authority requesting a sublicense (unless the State health agency serves as the coordinating agency).
3. Procedures for sublicense and reporting will be established by the licensed State health authority.

## **G. Contact Information for the Program**

5 A Day Program National Office, National Cancer Institute, National Institutes of Health, 6130 Executive Boulevard, EPN 4082, Bethesda, MD, 20892; phone, 301-496-8520; and fax, 301-480-6637.

## Appendix A-5

# INDUSTRY GUIDELINES: 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A Day Program Guidelines are divided into distinct sections. Guideline sections I through V of this appendix outline the requirements that pertain specifically to different types of participants in this program: retailers, produce marketers and suppliers, merchandising and services suppliers, noncommercial food-service operators, and food-service distributors and suppliers. Section VI of this appendix covers Guidelines for ancillary products. Guideline section I of Appendix A-3 applies to *all* licensed participants. In addition to adhering to all requirements, it is the responsibility of each participant to also adhere to the Guideline section(s) that pertain(s) to their activities. These Guidelines are extracted from the *5 A Day For Better Health Program Guidebook*.

## I. Retailer Guidelines

In exchange for the assistance of the National Cancer Institute (NCI) as the lead Government agency for the 5 A Day Program, it is essential that the program's participants adhere to the regulations established in the General Guidelines. Aggressive use of point-of-sale material, newspaper advertising, educational materials, broadcast media, food demonstrations, and other ways of personally interacting with customers are necessary for consumer understanding of the 5 A Day message. Retail grocery partners are expected to actively participate in the program and must agree to the program's Guidelines and to the following:

- A. Conduct at least two promotions of at least 1 month each per year that incorporate the themes of the program. These two promotions must each include (but are not limited to) the following:
  1. Both large and small in-store signage, that includes the 5 A Day logo and messages, prominently displayed in the produce department for at least 1 month;
  2. Distribution of consumer education materials in the produce department (materials must be easily accessible to consumers and in adequate supply to cover customer demand); and
  3. Weekly advertising (for at least 4 weeks), including broadcast whenever feasible, of the 5 A Day logo and messages.
- B. Provide program-training materials such as fact sheets, videos, and bulletins to all produce managers involved; relay specific information on your company's program activities to your produce and store managers; and encourage the active participation of managers and clerks.
- C. During a 5 A Day promotion period, use only the official program recipes or ones that meet the 5 A Day recipe criteria (Guideline E.1.D. in the *10/99 Program Guidebook*) and have been approved by the Produce for Better Health Foundation (PBH), NCI's national partner. Official recipes are provided in the starter kit and new ones are provided for each promotional wave. Recipes must be used as approved by PBH, and cannot be altered without PBH's approval.
- D. Obtain approval from PBH before making any alteration, modification, or other change to the program messages or artwork, consumer materials, official advertising/promotion copy, or other materials provided by the program. The logo may not be modified and should only be used in association with products, advertising copy, consumer messages, etc., that are consistent with the program's goals and General Guidelines (Guideline E.1. in the *10/99 Program Guidebook*).

- E. Supply PBH with at least one sample of all consumer materials or signs you produce promoting the program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, other 5 A Day participants, and potential outside funding sources.
- F. Provide a completed Retail Activity Report to PBH upon request.
- G. Provide PBH staff (or its designates, including NCI) with the opportunity, if requested, to interview key store personnel either in person, by written questionnaire, or telephone about their participation in the program and impressions of consumer responses to 5 A Day activities.
- H. Provide PBH (or its designates, including NCI) with the opportunity, if requested, to periodically conduct interviews of customers to determine their responses to the program.
- I. Coordinate all components of the program to maximize program effect. To successfully increase fruit and vegetable consumption, the 5 A Day Program will involve health and education participants as well as industry participants. Therefore, it is requested that retailers work in collaboration with other organizations that are promoting the program goals, such as local or State health departments, or other health or educational organizations.
- J. Conduct all 5 A Day-related activities in accordance with applicable Federal, State, and local laws and regulations. Retailers also are responsible for their costs associated with the program.

Retailers are encouraged to augment their promotions with other theme-related elements, such as merchandising and displays, cross-promotions, food demonstrations, shopper tours, and videos; and to participate with other organizations that are promoting the program goals, such as health departments and other health organizations. Retailers are also encouraged to participate in as many of the official promotion waves as possible.

## **II. Produce Marketers and Suppliers Guidelines**

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Produce suppliers, fruit and vegetable companies, and other related businesses interested in promoting the goals of the 5 A Day Program are encouraged to become licensed and actively participate in the program. In addition to adhering to the General Guidelines (see Guideline E.1.), such organizations must also agree to the following in order to obtain a license:

- A. When developing materials, use the official advertising/promotion copy\* whenever possible. Obtain approval from PBH in advance, before making any alteration, modification, or other change to the program messages or artwork, consumer materials, advertising/promotion copy, or other materials provided by the program. The logo may not be modified, and may only be used in association with products, advertising copy, consumer messages, etc., that are consistent with the program's goals and General Guidelines (Guideline E.1. in the *10/99 Program Guidebook*).
- B. Supply PBH with at least one sample of all materials produced promoting the program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, other 5 A Day participants, and potential outside funding sources.
- C. If using the program logo or messages in conjunction with a recipe, use only the official program recipes or ones that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and have been approved by PBH. A set of the official recipes is available free of charge to licensed participants. Recipes must be used as approved by PBH, and cannot be altered without PBH's approval. New recipes will be available for each promotional wave.
- D. Provide a completed 5 A Day Activity Report to PBH upon request.

- E. Provide PBH staff (or its designates, including NCI) with the opportunity, if requested, to interview key corporate personnel either in person, by written questionnaire, or telephone about their participation in the program and impressions of consumer or trade responses to their 5 A Day activities.
- F. Conduct all 5 A Day-related activities in accordance with applicable Federal, State, and local laws and regulations, paying particular attention to the new nutrition health claims and labeling regulations promulgated by the Food and Drug Administration (FDA).
- G. Recognize that each organization is responsible for all costs associated with their program activities and projects.

Produce suppliers and marketers are encouraged to tie-in their promotions with the program's promotional themes and the activities of other participants, including use of displays, cross-promotions, food demonstrations, and videos.

Activities and uses of the logo and messages that the program encourages include, but are not limited to:

- H. Developing and distributing materials that support retail promotions and/or program events sponsored by participating health organizations;
- I. Adding the logo and/or official advertising/promotion copy\* onto packaging or actual produce items (Guideline E.1.E in the *10/99 Program Guidebook*) (due to the need to comply with FDA labeling requirements, participants interested in doing this are strongly encouraged to contact PBH for further guidance). Samples must be provided to PBH as per Guideline E.3.B. in the *10/99 Program Guidebook*;
- J. Conducting public relations and media activities, such as press releases, news conferences, taglines on radio advertising, outdoor advertising, contests, and consumer education materials distribution;
- K. Participating with other program participants (i.e., retailers, health organizations, and NCI's grantees) in cooperative projects, such as recipe development, photography, food demonstrations, color editorials, videos, public service announcements, and market research;
- L. Providing materials that promote the program's message to consumers or food intermediaries;
- M. Developing and distributing recipes, with accompanying photography when appropriate, that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and are approved by PBH; and
- N. Adding the logo to produce trucks or promotional materials.

\* *NOTE: The official advertising/promotion copy citing NCI (for use with or without the logo) is provided to licensed participants by PBH. It may not be altered.*

### III. Merchandising and Services Suppliers Guidelines

Produce merchandising organizations, marketing boards or commissions, public relations agencies, packaging companies, bag manufacturers, and other service suppliers of the fruit and vegetable industry interested in promoting the goals of the program are encouraged to become licensed and actively participate in the program. In addition to adhering to the General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*), such organizations must also agree to the following in order to obtain a license:

- A. When developing materials, use the official advertising/promotion copy\* whenever possible. Obtain approval of PBH in advance, before making any alteration, modification, or other change to the program messages or artwork, consumer materials, advertising/promotion copy, or other materials provided by the program. The logo may not be altered, and may only be used in

- association with products, advertising copy, consumer messages, etc. that are consistent with the program's goals and General Guidelines (Guideline E.1. in the *10/99 Program Guidebook*).
- B. Supply PBH with at least one sample of all materials produced promoting the program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, other 5 A Day participants, and potential outside funding sources.
  - C. If using the program logo or messages in conjunction with a recipe, use only the official program recipes or ones that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and have been approved by PBH. A set of the official recipes is available free of charge to licensed participants. Recipes must be used as approved by PBH, and cannot be altered without PBH's approval. New recipes will be available for each promotional wave.
  - D. Provide a completed 5 A Day Activity Report to PBH upon request.
  - E. Provide PBH staff (or its designates, including NCI) with the opportunity, if requested, to interview key corporate personnel either in person, by written questionnaire, or telephone about their participation in the program and impressions of consumer or trade response to their 5 A Day activities.
  - F. Conduct all 5 A Day-related activities in accordance with applicable federal, state, and local laws and regulations, paying particular attention to the new nutrition health claims and labeling regulations promulgated by the FDA.
  - G. Recognize that each organization is responsible for all costs associated with their program activities and projects.

Produce suppliers and marketers are encouraged to tie-in their promotions with the program's promotional themes and the activities of other participants, including use of displays, cross-promotions, food demonstrations, and videos.

Activities and uses of the logo and messages that are encouraged by the program include, but are not limited to:

- H. Development and distribution of materials that support retail promotions and/or program events sponsored by participating health organizations;
- I. Adding the logo and/or official advertising/promotion copy\* onto packaging or actual produce items (Guideline E.1.E. of the *10/99 Program Guidebook*) (due to need to comply with FDA labeling requirements, participants interested in doing this are strongly encouraged to contact PBH for further guidance). Samples must be provided to PBH as per Guideline E.3.B. of the *10/99 Program Guidebook*;
- J. Public relations and media activities, such as press releases, news conferences, taglines on radio advertising, outdoor advertising, contests, and consumer education materials distribution;
- K. Participation with other program participants (i.e., retailers, health organizations, and NCI's grantees) in cooperative projects, such as recipe development, photography, food demonstrations, color editorials, videos, public service announcements, and market research;
- L. Providing materials promoting the program's message to consumers or food intermediaries;
- M. Development and distribution of recipes, with accompanying photography when appropriate, that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and are approved by PBH; and
- N. Adding the logo to produce trucks or promotional materials.

\* *NOTE: The official advertising/promotion copy citing NCI (for use with or without the logo) is provided to licensed participants by PBH. It may not be altered.*

## IV. Noncommercial Food-Service Operator Guidelines

Aggressive use of point-of-sale signs, coupons, or promotions, and other ways of personally interacting with customers, are necessary for customer understanding of the 5 A Day message. These Guidelines are for noncommercial food-service operators, which include food service at the following establishments: schools, day care, colleges, health care, business and industry, military, correctional facilities, transportation (airlines, trains, etc.), and contract management companies.

Noncommercial foodservice operators are expected to actively participate in the program and must agree to the program's General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*) and to the following:

- A. Operators must conduct at least two major theme-related program events per year that incorporate a program theme. Theme-related materials will be available to licensed participants. This promotion must include (but is not limited to) the following:
  1. Use of signage, table tents, menu boards, posters, or buttons for servers rotated on a daily/weekly basis, that include the 5 A Day logo and approved messages, prominently displayed in the operation for at least 2 weeks;
  2. Distribution of approved 5 A Day brochures at the operation (materials must be easily accessible to customers and in adequate supply to cover customer demand); and
  3. Use of regular bulletins and advertising, including broadcast whenever feasible, of the 5 A Day logo and approved 5 A Day messages.

- B. During a 5 A Day promotion period or ongoing 5 A Day activities, foods that are promoted as 5 A Day foods must either be foods allowed in the program (Guideline E.1.A. of the *10/99 Program Guidebook*), made from recipes that meet the 5 A Day recipe criteria (see section D of Appendix A-3), or made from recipes that have been approved by PBH. The 5 A Day recipe criteria are consistent with the Dietary Guidelines for Americans (2000). Some official food-service quantity recipes are provided in the starter kit. Quantity food-service recipes can be developed from other standard recipes that will also be included in the starter kit. It is imperative that recipes meet the recipe criteria.

(If noncommercial operators have recipes that might qualify for the 5 A Day recipe criteria, PBH will analyze the recipe for free if the recipe can be shared with other noncommercial food-service operators. Credit will be given to recipe suppliers in PBH recipe packets that are distributed to program participants.)

- C. When conducting 5 A Day promotions, use activities that encourage behavior change. Incorporate activities that create awareness, motivation, skills development, social support, and food system/environmental support appropriate to the target population.

Within each operation, develop and encourage *advisory committees* consisting of customers, food-service employees, and other licensed 5 A Day Program participants to obtain suggestions from customers and employees about ideas that would create awareness and motivate them.

Use the advisory committee or conduct surveys to determine where your customers need skills development and the best method of setting up a social support or environmental support system.

Activities and uses of the logo and messages that the program encourages to help change customer behavior include, but are not limited to, any variety of the following activities:

1. *Creating awareness* by conducting activities emphasizing the need to eat five servings of fruits and vegetables a day. These include distributing 5 A Day Program brochures and messages through:
  - (a) Internal/institution-wide/community events such as contests, health fairs, National Nutrition Month activities, workshops, open house, etc.;

- (b) Internal/institution-wide/community communications tools such as newsletters, e-mail, check stubs, answering machines, TV/radio channels, school or community newspapers, consulting services, coffee break rooms, etc.;
  - (c) Cafeteria programs that might include point-of-sale messages, buttons on servers, taste-testing, cafeteria employee costumes/aprons/T-shirts/sweatshirts promoting the message, register receipt messages, messages at tables, posters, brochures, etc. Add the logo and/or official advertising/promotion copy (for use with or without the logo and provided to licensed participants by PBH) onto menus, point-of-sale materials, and advertising that meets 5 A Day criteria (Guideline E.1.E. of the *10/99 Program Guidebook*). (Due to the need to comply with FDA labeling requirements, participants interested in doing this are strongly encouraged to contact PBH for further guidance.) Samples of packaging must be provided to PBH as noted below in section F.;
  - (d) Other internal/institutional programs, such as in classroom instruction, fitness centers, office posters, etc.; and
  - (e) Food-service employees should be informed of the importance and logistics of their role in implementing the program.
2. *Conducting motivational activities* for customers and food-service employees. These might include:
- (a) Messages for customers about the association between diet and cancer. Use advertising copy available from PBH with NCI-approved messages;
  - (b) Messages for customers about the association between eating a healthy diet and looking and feeling better. For example, emphasize the low caloric content of fruits and vegetables for weight loss. Use advertising copy available from PBH with NCI-approved messages;
  - (c) Contests around fruits and vegetables. For example, offer free fruits and vegetables for every five fruits and vegetables that are purchased. Keep track by punching the number of purchased items on a card. Offer free passes to a local gym with the purchase or consumption of a certain number of fruits and vegetables a week;
  - (d) Coupons for purchasing fruits and vegetables. Offer coupons with paychecks to purchase fruits and vegetables at the lunchroom, or work with local retailers to supply coupons for the local grocery;
  - (e) Offer recipes of 5 A Day-featured menu items to customers. Recipes would need to be altered for smaller quantities and all recipes would need to meet the 5 A Day recipe criteria (see section D of Appendix A-3);
  - (f) Motivate food-service employees by encouraging brainstorming sessions on ways to boost fruit and vegetable sales or how to improve other aspects of the program. Encouraging employee involvement will give them a sense of ownership in the program and will help lead to the success of the program; and
  - (g) Contests for food-service employees. For example, offer a prize for the development of a good 5 A Day recipe. Give employee recognition for those who most enthusiastically promote the program and give them the “Produce Pick of the Month” award.
3. *Conducting skills-development activities* for customers and employees. These might include:
- (a) Tips on how to select low-fat menu items containing fruits and vegetables;
  - (b) Tips on how to select fruits and vegetables for snacks after school or work;
  - (c) How to ask for chef preparation of low-fat fruit/vegetable dishes;

- (d) Workshops for food-service employees about produce varieties, storage, and handling. Offer taste testings of new menu items, or new and exotic fruits and vegetables. Offer courses for chefs to learn methods of low-fat cooking with fruits and vegetables; and
  - (e) Offer qualified nutrition staff time (when available) to work on skills development or creating awareness of the 5 A Day message in local supermarkets, schools, television, or radio stations. Offer nutrition and health screening at stores and schools.
4. *Setting up social support systems.* These might include:
    - (a) The development of a “buddy system” so that coworkers and students can reinforce healthful eating habits; and
    - (b) Tips on how relatives might assist each other in dietary change.
  5. *Providing food system/environmental support,* such as:
    - (a) Offering menu items that are low in fat and high in fiber and contain at least one serving of a fruit or vegetable. During a 5 A Day promotion period or ongoing 5 A Day activities, promoted as foods must either be allowed in the program (Guideline E.1.A. of the *10/99 Program Guidebook*) or made from recipes that meet the 5 A Day recipe criteria (see section D of Appendix A-3), and have been approved by PBH;
    - (b) Guiding customers toward menu items that meet 5 A Day criteria. Identify appropriate selections with a 5 A Day logo. Food that is promoted as 5 A Day foods must either be allowed in the program (Guideline E.1.A. of the *10/99 Program Guidebook*) or made from recipes that meet the 5 A Day recipe criteria (see section D of Appendix A-3), or have been approved by PBH; and
    - (c) Offering vegetable serving lines, packaged ready-to-go fruits and vegetables, salad bars, fruits on the dessert line, and fruits and vegetables in vending machines.
  6. *Health and education participants* as well as industry participants are involved in the 5 A Day Program in order to successfully increase fruit and vegetable consumption. It is important to try to coordinate components of the program to maximize program effect. Therefore, it is requested that food-service operators work in collaboration with other organizations that are promoting the program goals (e.g., local or State health departments, other health or educational organizations, commodity boards, food-service suppliers and distributors, other non-commercial food-service operators, grocery retailers, and NCI’s grantees) in cooperative projects. Such activities include community health fairs, contests, adopting schools, developing games, recipe development (that meet 5 A Day recipe criteria outlined in section D of Appendix A-3), food demonstrations, public service announcements, market research, food donations, produce shows, taste-testing classes, National Nutrition Month activities, or other 5 A Day activities. Keep in mind the behavioral change techniques when working on cooperative activities.
- D. Provide program training materials (such as fact sheets, videos, newsletters, or bulletins) to all managers/staff involved in program implementation, relay specific information on your company’s program activities to your managers, and encourage the active participation of managers.
  - E. Obtain approval from PBH before making any alteration, modification, or other change to the program messages or artwork, consumer materials, official advertising/promotion copy, or other materials provided by the program. The logo may not be modified and should only be used in association with products, advertising copy, consumer messages, etc., that are consistent with the program’s goals and General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*).
  - F. Supply PBH with at least one sample of all consumer materials or signs you produce promoting the program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, other 5 A Day participants, and potential outside funding sources.

- G. Provide a completed Food-Service Activity Report to PBH upon request.
- H. Provide PBH staff (or its designates, including NCI) with the opportunity, if requested, to interview key staff either in person, by written questionnaire, or telephone about their participation in the program and impressions of customer responses to 5 A Day activities.
- I. Provide PBH (or its designates, including NCI) with the opportunity, if requested, to periodically conduct interviews of customers to determine their responses to the program.
- J. Conduct all 5 A Day-related activities in accordance with applicable Federal, State, and local laws and regulations, paying particular attention to the new nutrition health claims and labeling regulations promulgated by the FDA.\*
- K. Food-service operators, either on their own or with help from their produce distributors or other licensed participants, are responsible for their costs associated with the program.
- L. Contract management companies may purchase a license for the operators that they service so that the operator can obtain materials directly from PBH. If contract management companies choose not to do this, they should realize that they are responsible for their operator's use of the 5 A Day logo, the use of NCI's name, and filing the Noncommercial Food-Service Activity Report Form consistent with these Guidelines.

\* *NOTE: Reprints of the Federal Register document containing the FDA's final food-labeling regulations, published January 6, 1993, are available for \$4.50 a set from the U.S. Government Printing Office (GPO). Orders can be made by writing to the Superintendent of Documents, Washington, DC, 20401, by calling 202-783-3238, or by faxing 202-512-2250. The GPO order number is 069-001-00045-9. Rush service is available. Check, money order, VISA, and MasterCard are accepted.*

If uncertain about labeling regulations, use the materials provided by PBH or call the Produce Marketing Association (302-738-7100) to obtain a copy of *Labeling Facts*, a guide for labeling fruit and vegetable items. The National Restaurant Association also has information available to its members regarding nutrition labeling at food-service establishments (202-331-5900).

## V. Guidelines for Food-Service Distributors and Suppliers

Food-service suppliers, distributors, commodity boards, and other related businesses interested in promoting the goals of the program, either independently or through noncommercial food-service settings, are encouraged to become licensed to join the 5 A Day Program and to actively participate in it. In addition to adhering to the General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*), such organizations must also agree to the following in order to obtain a license:

- A. When developing materials, use the official advertising/promotion copy whenever possible. Obtain approval from PBH in advance before making any alteration, modification, or other change to the program messages or artwork, consumer materials, advertising/promotion copy, or other materials provided by the program. The logo may not be modified and should only be used in association with products, advertising copy, consumer messages, etc., that are consistent with the program's goals and General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*). Work with participating health organizations and operators to determine their needs and desires.
- B. Supply PBH with at least one sample of all materials produced promoting the program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, other 5 A Day participants, and potential outside funding sources.

- C. If using the program logo or messages in conjunction with a recipe, use only the official program recipes or ones that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and have been approved by PBH. A set of official recipes is available free of charge to licensed participants. New recipes will be available for each promotional wave. Most recipes are not available from PBH in food-service quantities, but could be adapted if desired. Ingredient proportions should not change because this would alter the nutrient content supplied for each serving.\*
- D. Provide a completed 5 A Day activity report to PBH upon request.
- E. Provide PBH staff (or its designates, including NCI) with the opportunity, if requested, to interview key corporate personnel either in person, by written questionnaire, or telephone about their participation in the program and impressions of consumer or trade responses to their 5 A Day activities.
- F. Conduct all 5 A Day-related activities in accordance with applicable Federal, State, and local laws and regulations, paying particular attention to the new nutrition health claims and labeling regulations promulgated by the FDA.
- G. Recognize that each organization is responsible for all costs associated with their program activities and projects.

Food-service suppliers and distributors are encouraged to tie-in their promotions with the program's promotional themes, and also are encouraged to respond to the needs of noncommercial food-service operators.

Activities and uses of the logo and messages that the program encourages include, but are not limited to:

- H. Paying the annual PBH program license fee for noncommercial food-service operators;
- I. Purchasing and distributing already prepared 5 A Day materials to licensed noncommercial food-service operators (e.g., posters, brochures, point-of-sale cards, etc.);
- J. Adding the logo and/or official advertising/promotion copy\*\* onto signage, table tents, buttons, etc. (Guideline E.1.E. of the *10/99 Program Guidebook*) (due to the need to comply with FDA labeling requirements at food-service establishments, participants interested in doing this are strongly encouraged to contact PBH for further guidance). Samples must be provided to PBH as per Guideline E.3.B. of the *10/99 Program Guidebook*;
- K. Offering materials and assistance to noncommercial food-service operators in their public relations and media activities, contests, program brochure distribution, low-fat recipe development, etc.;
- L. Participating with other program participants (i.e., health organizations, NCI's grantees) in cooperative projects, such as recipe development, photography, food demonstrations, color editorials, videos, public service announcements, and market research;
- M. Developing and distributing quantity food-service recipes, with accompanying photography when appropriate, that meet the 5 A Day recipe criteria (see section D of Appendix A-3) and are approved by PBH;
- N. Adding the logo to calendars, produce trucks, or promotional materials; and
- O. Providing noncommercial food-service staff with training about fruit and vegetable storage, handling, and preparation.

\* *NOTE: If distributors, commodity boards, and others have recipes that might qualify for the 5 A Day recipe criteria, PBH will analyze the recipe for free if the recipe can be shared with other noncommercial food-service operators. Credit will be given to recipe suppliers in PBH recipe packets that are distributed to program participants.*

\*\* *NOTE: The official advertising/promotion copy (for use with or without the logo) is provided to licensed participants by PBH. It may not be altered.*

## VI. Ancillary Product Guidelines

### A. Ancillary Product Definition

Ancillary products are defined as those items that are not used to directly sell fruits and vegetables at the point of purchase (such as plastic bags, signs, etc.) but are integral to publicizing and furthering the goals of the 5 A Day Program.

Ancillary products can be divided into three categories: 1) industry-produced products used to store or prepare fruits and vegetables; 2) industry-produced education materials and curricula about fruits and vegetables; and 3) health professional-produced education materials and curricula about fruits and vegetables. Other categories of products not outlined below are not currently allowed Ancillary LICENSEE status.

Specific products/materials only, not companies, are licensed under this license category. The 5 A Day logo approval is specific to the materials submitted for review and does not extend to other products/materials that a company may develop or produce.

#### 1. **Industry Products:**

Items within this category are those products developed by either the fruit and vegetable industry or by allied industries that serve a major function in the storage or preparation of fruits and vegetables.

Examples of items that can be licensed (and can therefore be developed/sold with the 5 A Day logo and messages) within this category include: cutting boards, microwaves, cookbooks, vegetable steamers, vegetable peelers, juice machines, fruit and vegetable freezer bags, fruit corners, storage containers specific for fruits and vegetables, etc.

#### 2. **Industry Education Materials/Curricula:**

Items within this category are those products developed by the fruit and vegetable industry or by allied industries that serve a major function in the storage or preparation of fruits and vegetables for the purpose of educating consumers about their product.

Items that can be licensed and may carry the 5 A Day logo and messages within this category include: educational materials (such as brochures and curricula) that assist a consumer in the purchasing, storage, or low-fat preparation of fruits and vegetables or that primarily promote fruits and vegetables. In order to use the logo, curricula must be reviewed using standardized criteria for evaluation. Curricula should undergo appropriate pretesting, evaluation, and modification based on pilot-testing among target audiences using state-of-the-art techniques. Testing results should be shared along with the curricula. Industry-produced brochures, provided free to consumers, should also be reviewed by PBH. Any recipes in education materials/curricula must meet 5 A Day recipes criteria (see section D of Appendix A-3).

#### 3. **Health Professional Education Materials/Curricula:**

Items within this category include those commercial products that are developed by a trained health professional (e.g., dietitian, nutritionist with a degree from an accredited institution, health educator, etc.).

Items that can be licensed and can carry the 5 A Day logo and messages within this category include: materials/curricula (Web sites, cookbooks, curricula for schools, coloring books for children, stuffed fruit/vegetable characters, etc.), provided that they have been reviewed by PBH using a standardized evaluation criteria.

Items that cannot be licensed within this category include education materials/curricula that have not been reviewed by PBH.

## B. Licensing Process

Because companies with ancillary products do not package, advertise, or sell fruits and vegetables (as do members of the 5 A Day Program), a separate process for determining eligibility for participation must be undertaken. These steps are:

1. The company must complete the Application for Ancillary Product Approval (attached). Submit the application to PBH at 5301 Limestone Road, Suite 101, Wilmington DE, 19808-1249; Fax: 302-235-ADAY (302/235-2329); or phone 302-235-5555.
2. PBH will submit the company application to the Ancillary Product Review Committee. This committee will discuss the company's application and make a determination for approval or disapproval of the application.
3. The committee may approve/disapprove, or "approve with changes" the company's application, and will place these comments on the Ancillary Product Approval Form (attached). This form will be returned to the company by PBH.

The Ancillary Product Review Committee makes the final decision about whether or not to allow use of the 5 A Day logo on a company's product. While the decision by the committee is final, a company may resubmit its program/materials provided that they have changed significantly to warrant subsequent review by the committee. Every other product owned by a company or any additional use of a company product not outlined on the original Ancillary Product Approval Form warrants resubmission to the Ancillary Product Review Committee.

4. The company must sign the Ancillary Product License Agreement (attached) and a copy of the Ancillary Product Approval Form if their product has been approved by the Ancillary Product Review Committee.
5. The company must then pay either an annual license fee or an annual royalty payment based upon annual gross product sales of product containing the 5 A Day logo, or work with PBH in some mutually acceptable manner. PBH will be allowed to audit company financial reports for those companies opting to pay the royalty fee. This audit will be at PBH's expense unless the company is found at fault, at which time the company would be required to pay the audit fees.

## C. Guidelines for Participation

Companies that have received ancillary 5 A Day Product status via the Ancillary Product Approval Form must adhere to the program's General Guidelines (Guideline E.1. of the *10/99 Program Guidebook*). Such organizations must also agree to the following:

1. The logo may only be used in association with products (including web sites) or advertising that were outlined on the Ancillary Product Approval Form. All other products, any alteration to the product, or additional uses of the product, must be resubmitted to the Ancillary Product Review Committee.
2. The organization will supply PBH with two samples of all final materials produced promoting the 5 A Day Program and/or its messages. Samples of materials are necessary for working with NCI on program evaluation and for communicating activities to the press, PBH members, and other 5 A Day participants.
3. If using the program logo or messages in conjunction with a recipe, use only the official program recipes or ones that have met the 5 A Day recipe criteria (see section D of Appendix A-3) and have been approved by PBH. A set of the official recipes is available free of charge to ancillary product licensees.
4. The organization will provide a completed 5 A Day Activity Report to PBH on an annual basis to assist in the evaluation of program activities. Activity Report forms will be provided by PBH and are due annually.

5. The organization will conduct all 5 A Day-related activities in accordance with applicable Federal, State, and local laws and regulations, paying particular attention to nutrition health claims and labeling regulations promulgated by the FDA.

D. Benefits of Participation

As an ancillary product licensee, the company will receive the following from PBH:

1. A 5 A Day black and white logo slick and a four-color logo slide. The logo is also available on disk upon request;
2. Regularly developed advertising copy that is developed by NCI. Any advertising or promotional context, however, must be consistent with Guideline E.1.E. of the *10/99 Program Guidebook*, as noted previously. (In general, the use of NCI's name in any manner that might be interpreted as an endorsement of a particular product or company must include a disclaimer.);
3. Regularly developed program materials (i.e., recipes) as they are developed and as they are appropriate for your use; and
4. Recognition among the fruit and vegetable industry and other licensed 5 A Day participants of your activities, provided that you keep PBH informed of those activities.

# Application for Ancillary Product Approval

Thank you for expressing interest in joining us in promoting the 5 A Day Program. Since your company is not one that packages, advertises, or sells those products that are promoted as part of the 5 A Day Program (e.g., fruits and vegetables; Guideline E.1.A. of the *10/99 Program Guidebook*), we have special procedures to decide whether you may use the 5 A Day logo under a license agreement. In order for the Produce for Better Health Foundation to determine your product/program acceptability, we must have the following information:

---

ORGANIZATION NAME

DATE

---

ORGANIZATION CONTACT NAME

CONTACT SIGNATURE

---

STREET ADDRESS

---

CITY

STATE

ZIP

---

PHONE NUMBER

Type of product approval that you are seeking (please note the Ancillary Product Guidelines, attached, for a more detailed description of product categories):

- Industry-produced products used to store or prepare fruits and vegetables (e.g. cutting boards, vegetable steamers, vegetable peelers, freezer bags, storage containers, etc.);
- Industry-produced education materials and curricula about fruits and vegetables;
- Health professional-produced education materials and curricula about fruits and vegetables;
- Other; please describe:

For what use of the 5 A Day logo are you seeking approval? \_\_\_\_\_

Use on the product—please describe:

(Please attach two samples of the product for which you are seeking approval. Also, identify where the logo would be positioned on the product.)

Use in product advertising—please describe:

(Please attach two samples of the advertising for which you are seeking approval.)

This application will be submitted to the Ancillary Product Review Committee. This Committee makes the final decision about whether or not to allow use of the 5 A Day logo on your product. While the decision by the Committee is final, a company may resubmit its program/materials provided that the program/materials have changed significantly to warrant subsequent review by the Committee. Every other product owned by your company or any additional use of this product not outlined on this form will warrant resubmission to the Ancillary Product Review Committee. This Committee will respond, in writing, in 45 days or less.

**Ancillary Product Review Committee Criteria (Yes/No):**

Is the focus of this product one that will benefit the consumer or help communicate the 5 A Day message?

Is this product or the use of this product founded on a seemingly responsible and credible base?

Does this product promote the positive, enjoyable, and/or healthy attributes of fruits and vegetables?

Does this company share the 5 A Day Program's values and put fruits and vegetables in a positive light?

Does this company's product threaten the integrity, original intentions, goals, or objectives of the 5 A Day Program?

A review committee representing all involved parties in the 5 A Day Program will be responsible for reviewing and determining ancillary product approval. A positive response (e.g., a check in all of the boxes) will constitute approval by the Ancillary Product Review Committee.

# Ancillary Product Approval Form

Upon review by the Ancillary Product Review Committee, \_\_\_\_\_ has received the following recommendation for Ancillary Product status within the 5 A Day Program:

\_\_\_ Accept the ancillary product as submitted on the Application for Ancillary Product Approval, dated \_\_\_\_\_. Allow the signing of the Ancillary Product License Agreement for the use outlined on the application.

\_\_\_ Accept the ancillary product as submitted on the Application for Ancillary Product Approval form, dated \_\_\_\_\_, with revisions noted below. If revisions have been made, allow the signing of the Ancillary Product License Agreement.

\_\_\_ Reject the submitted ancillary product as outlined on the Application for Ancillary Product Approval form, dated \_\_\_\_\_, for the reasons noted below:

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## Ancillary Product Review Committee Chair

The Ancillary Product Review Committee makes the final decision about whether or not to allow use of the 5 A Day Program logo on your product. While the decision by the Committee is final, a company may resubmit its program/materials provided that the program/materials have changed significantly to warrant subsequent review by the Committee. Every other product owned by your company or any additional use of this product not outlined on the original Application for Ancillary Product Approval form will warrant resubmission to the Ancillary Product Review Committee using another Application for Ancillary Product Approval form.



# Ancillary Product License Agreement

The 5 A DAY—FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute and the Produce for Better Health Foundation (PBH). PBH is herein referred to as LICENSOR. Its purpose is to increase the consumption of fruits and vegetables by Americans. Under the project, organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY—FOR BETTER HEALTH logo and related materials.

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(YOUR ORGANIZATION'S NAME)

herein referred to as ANCILLARY LICENSEE, is desirous of participating in the 5 A DAY—FOR BETTER HEALTH PROGRAM.

Effective on the subscribed date, in consideration of receipt of the program logo and related materials, ANCILLARY LICENSEE agrees to the following terms and conditions:

## 1. Use of Program Logo and Related Materials

LICENSOR grants ANCILLARY LICENSEE, its agents, and employees a non-exclusive, non-transferable, royalty-free right to use the program logo and related materials in connection with a single APPLICATION FOR ANCILLARY PRODUCT APPROVAL as completed by the LICENSEE and amended and/or approved by the ANCILLARY PRODUCT REVIEW COMMITTEE. The approved APPLICATION, attached, allows the ANCILLARY LICENSEE to:

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(YOUR ORGANIZATION'S NAME)

All other possible uses of the logo by this ANCILLARY LICENSEE are a breach of this contract. Other uses of the logo must be resubmitted on the APPLICATION FOR ANCILLARY PRODUCT APPROVAL form. The ANCILLARY LICENSEE may use the program logo and related materials for the single Application throughout the United States of America in accordance with, and in the form and manner prescribed in, the Guidelines for Participation in the 5 A DAY—FOR BETTER HEALTH PROGRAM, a copy of which is attached and made a part hereof by reference, as such Guidelines may be amended from time to time.

## 2. Quality Maintenance Standards

ANCILLARY LICENSEE shall cooperate with LICENSOR in assuring proper use of the program logo and related materials, including providing LICENSOR with periodic evaluation reports, as specified in the Guidelines, and specimens of use of the program logo and related materials upon request. ANCILLARY LICENSEE shall comply with all applicable laws and regulations and obtain all appropriate Government approvals pertaining to the promotion, packaging, advertising, and sale of goods covered by this license.

**3. Termination**

- A. LICENSOR may terminate this agreement with thirty (30) days written notice to ANCILLARY LICENSEE upon completion of the 5 A DAY—FOR BETTER HEALTH PROGRAM. ANCILLARY LICENSEE may terminate this agreement upon thirty (30) days written notice to LICENSOR. Upon such termination, ANCILLARY LICENSEE shall in a timely manner discontinue all use of the program logo and related materials, and delete the same from its promotional, packaging, advertising, selling, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.
- B. LICENSOR may terminate this agreement with thirty (30) days written notice to ANCILLARY LICENSEE for breach of any of the provisions of this agreement by ANCILLARY LICENSEE. Upon such termination, ANCILLARY LICENSEE shall immediately discontinue all use of the program logo and related materials, and delete the same from its promotional, packaging, advertising, selling, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

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FOR LICENSEE (COMPANY)

---

BY (AUTHORIZED SIGNATURE)

DATE

---

NAME AND TITLE OF PERSON SIGNING (PLEASE PRINT)

---

STREET ADDRESS

---

CITY

STATE

ZIP

---

PHONE:

FAX:

**Type of company:**

- Industry. Industry-produced product used to store or prepare fruits and vegetables.
- Industry. Industry-produced education materials and curricula about fruits and vegetables.
- Health professional. Education materials/curricula about fruits and vegetables.
- Other (please indicate):

## Appendix A-6

# GUIDELINES FOR FEDERAL GOVERNMENT PROGRAMS: 5 A DAY FOR BETTER HEALTH PROGRAM

### A. Introduction

Federal Government organizations eligible to be licensed as 5 A Day participants will be referred to throughout this section as Federal Government programs. The reasons for involving Federal Government programs in the national 5 A Day Program are:

- to develop a network of programs that are scientifically credible to consumers and that will assist the National Cancer Institute (NCI) in maintaining the scientific integrity of the national program; and
- to provide, at the community program level, the necessary state-of-the art, interactive components of successful behavioral change interventions.

Examples of such interactive components are activities that motivate consumers, teach and model the skills necessary to increase fruit and vegetable consumption, and develop social support of dietary changes.

Federal Government programs are licensed by NCI as 5 A Day Program health participants to serve three principal functions:

1. They serve as credible health promotion programs by promoting the 5 A Day message through media activities and cooperative projects. They will also help to ensure the scientific credibility of the program by careful attention to the manner in which messages about the program are stated and by adhering to program guidelines.
2. They maintain high standards of intervention quality by emphasizing activities that motivate and assist target populations to develop the skills necessary to make dietary changes and by periodically monitoring activities of their programs.
3. They report program activities to the NCI for the purposes of sharing strategies and contributing to the national database on the 5 A Day Program.

The license requirements outlined below are aimed at attaining these three principal functions and assuring the proper use of the 5 A Day trademarked materials and logo. Eligible licensees are general Government programs.

Organizations wishing to become a licensed participant must abide by the Guidelines listed in section B below. The procedures for obtaining a license are outlined in section E below.

## **B. Requirements for Participating Are as Outlined Below in Sections B.1. Through B.8.**

1. *General Guidelines:* All eligible organizations participating in the national program must abide by the “Guidelines for Participation in the 5 A Day For Better Health Program,” as stated in Guidelines E.1., General Guidelines for All Participants, and E.1.D., Recipe Criteria of the *10/99 Program Guidebook*:
  - (a) Any new materials developed by a Federal Government program must follow the principles enumerated in section C below, “Materials Development Guide.” The following procedures must be followed:
    - (1) The first set of materials developed by the Federal Government program after the license agreement is signed must be reviewed by NCI. Materials should be sent with a cover letter to the 5 A Day Program National Office at NCI. The NCI expects to be able to respond within 2 weeks; however, 1 month’s notice should be allowed.
    - (2) Subsequent to this first review, NCI does not plan to review each new set of materials developed under the auspices of the Federal Government program, unless the developer would like the material to be considered for national distribution or wishes us to use the 1-800-4CANCER number.
    - (3) However, NCI must be notified in writing prior to development of all new materials (including those that will not be reviewed), and two (2) copies of all materials must subsequently be sent to NCI. It is assumed that NCI’s review of the first set of materials will amplify the guidance provided in the “Materials Development Guide,” and the content of subsequent materials will ultimately be the responsibility of the Federal Government program.
    - (4) The use of NCI’s name in any materials should follow the guidance on logo use in Guidelines E.1.E.-I. of the *10/99 Program Guidebook*.
  - (b) The Cancer Information Service (CIS) is NCI’s primary outreach network covering the entire United States. Regional CIS outreach coordinators are available to help facilitate 5 A Day coordination. The CIS can also give callers basic information about the program. CIS outreach staff are available to provide technical assistance in a number of program areas, including program planning, networking, developing media contacts, and review distribution of materials. LICENSEES are encouraged to remain in routine contact with their regional CIS outreach coordinator to keep him/her informed of activities. This kind of consistent communication will enable CIS outreach staff to perform a valuable networking function based on the best available information. (A list of CIS contacts will be provided in the starter kit).
2. *Policy:* Promote as organization policy the message that eating five or more servings of fruits and vegetables every day as part of a low-fat, high-fiber diet is the dietary guidance recommended to the public. The development of specific measures to implement this policy internally within the Federal Government program is encouraged.
3. *Communications:* Communicate state and national NCI and Produce for Better Health Foundation (PBH) activities, program changes, and suggested activities to appropriate entities in your program through periodic newsletters, meetings, or other communication media. As cooperative national partners, NCI and PBH should be on mailing lists to receive such written communications in order to enhance national communication efforts.

To assist you in this effort, NCI and PBH will provide one copy of periodic newsletters and updates to all licensed Federal Government programs for your duplication and distribution.

4. *Promotional Activities*: Conduct at least one major theme-related program event per year, preferably in coordination with national 5 A Day promotions, and in conjunction with 5 A Day-licensed State health agencies.

Media or program events should be created with some model of behavior change in mind. In particular, events are encouraged that create awareness, motivate consumers to eat more fruits and vegetables, teach consumers skills needed to increase consumption, create social support, or create supportive changes in the foods systems which serve the target populations.

Media or program events may include, but are not limited to:

- Activities that create *awareness* might be media events or activities emphasizing the need to eat five or more servings of fruits and vegetables every day. Examples of such media or program events follow:
  - Placement of NCI media materials prepared for special events, such as 5 A Day Week, within mass media outlets;
  - Media events sponsored by the licensed Federal Government program, such as press conferences, media tours, contests, or competitions;
  - Media events conducted in collaboration with other credible groups, such as units of State or local government, civic organizations, or consumer groups;
  - Media events conducted in cooperation with businesses, including those licensed to participate in the national program;
  - Community-level media events coordinated with local entities such as licensed commissaries or supermarkets, professional societies, civic organizations, social or religious groups, agricultural organizations, medical centers; or
  - Program activities, such as the development of a Request for Applications for local research or demonstration projects; contests; competitions; or joint efforts with other channels, such as schools, food assistance programs, worksites, food services, supermarkets, farmers markets, etc.
- Activities that *motivate* might include messages about the association between diet and cancer or between eating a healthy diet and looking and feeling better. Incentive-based activities might include contests involving fruits and vegetables, coupons for purchasing fruits and vegetables, etc.
- Activities that involve *skills development* might offer specific tips on how to pack fruits and vegetables in brown bag lunches, how to make choices in mess halls or restaurants, how to cook certain vegetables, etc.
- Activities that *develop social support* might be suggestions on how to use peer influence by adopting “buddies” at work or at home to reinforce healthful eating habits, etc.
- Activities that *promote food-system and environmental support* might include labeling of fruit and vegetable dishes served in cafeterias that meet the 5 A Day criteria; modifications of food-service menus; and the development of catering policies that include fruit and vegetable options at all military-sponsored or company-sponsored events, such as picnics and conferences.

NCI also encourages the licensee to establish an ongoing media relations program intended to sustain media coverage of fruit and vegetable consumption as a health issue.

5. *Quality Control*: Maintain quality standards within the program by:
  - Abiding by the national 5 A Day Guidelines, and assisting industry partners in meeting regulations related to nutrition labeling and health claims; and
  - Monitoring sublicensees to assure they are abiding by the Guidelines. (The minimal monitoring activity would consist of periodic spot checks to assure appropriate use of the logo and materials.)
6. *Reporting*: Provide NCI with a semi-annual progress report of activities (provided under separate cover). Provide NCI and PBH with at least one copy of all consumer brochures, press releases or kits, public service announcements, videos, training aids, surveys, and evaluation reports. Provide NCI with two copies of any educational material developed. NCI and PBH would also welcome labeled and dated slides of displays, community events, or other activities.
7. *Cooperation*: Federal Government programs are asked to cooperate whenever possible with the designated 5 A Day coordinator in each State.
8. *Access*: Provide NCI staff (or its designates, including PBH) with the opportunity, if requested, to interview key program participants, either in person, by written questionnaire, or telephone about their participation in the program.

### C. Materials Development Guide

This guide is intended for use in the development of 5 A Day materials. The following principles must apply to materials developed for the 5 A Day Program by Federal Government programs:

1. An appropriate nutrition professional must have developed or reviewed the materials for scientific and technical accuracy. Appropriate nutrition professionals are registered dietitians, licensed dietitians, nutritionists, or home economists with at least Masters level preparation in foods or nutrition.
2. Guidelines E.1.E.-I. of the *10/99 Program Guidebook* concerning logo use must strictly be followed to permit use of the 5 A Day logo and NCI taglines on any materials. Particular attention must be paid to the fact that NCI should not be perceived as “endorsing” a specific product or program.
3. The fruits and vegetables promoted must meet the program specifications, (Guideline E.1.A. of the *10/99 Program Guidebook*) and should be promoted as part of a low-fat, high-fiber eating pattern.
4. 5 A Day messages must be consistent with current national consensus dietary guidance, as provided in such documents as the *Dietary Guidelines for Americans, Diet and Health, Healthy People 2010*, and the *Food Guide Pyramid*.
5. All Federal, State, and local laws and regulations must be observed, with special attention paid to the nutrition health claims and food-labeling regulations.
6. Materials developed should fit into some theoretical model of behavior change, used as the basis for intervention or media activities. For example, in the stages-of-change model, persons in the precontemplation stage would be more interested in a pamphlet that describes the benefits of eating more fruits and vegetables than in a pamphlet that describes precisely how to eat more. Several shorter pamphlets may suit this model better than packing all the information into one publication. It is also advisable to use available consumer research when developing 5 A Day messages.

7. Materials should be culturally appropriate, taking into account the traditional eating patterns of the target population. Materials should be pretested with members of the intended target population. (See *Making Health Communication Programs Work: A Planner's Guide*; NIH Publication No. 89-1493, April 1989.) NCI may be able to offer some expertise in the development of materials for special populations, such as low-literacy audiences, older people, African Americans, and Hispanic Americans.
8. If there are questions about any issue, please contact the NCI for clarification (see section E of this appendix).

## D. Suggested Evaluation Guide

Through survey and market research activities, conduct periodic assessments of the program's impact and make the findings available to NCI and program partners.

*Information* collected might include: diet-related consumer characteristics, such as socio-demographics, awareness, knowledge, attitudes and beliefs, motivation, dietary skills and practices, and fruit and vegetable consumption, both in the general population and in population subgroups. Other community-level data might include tracking the number and types of organizations participating in 5 A Day events, implementation of interventions in such settings as supermarkets or worksites, changes in the composition of foods served in cafeterias or mess halls, etc.

*Data collection methods* may include, but are not limited to:

- Inserting relevant questions in ongoing surveys or data collection activities;
- Conducting special surveys, market research, and/or focus groups to obtain a more complete profile of various consumer segments;
- Conducting formative evaluation on intervention approaches and participant satisfaction; or
- Establishing a framework for evaluation of the Federal Government program, including the collection of process and outcome indicators.

Federal Government programs are encouraged to promote technical and scientific exchange through the publication of descriptive and evaluative papers in the professional, business, and peer-reviewed literature.

These Guidelines may be periodically revised. Your suggestions are welcome, especially those pertaining to ways in which your participation could be facilitated.

## E. How to Obtain a License

1. Federal Government programs may sign and return to NCI the license agreement (see attached). The agreement must be signed by the appropriate official and, if different, the Federal Government program director. Mail the signed agreements to: 5 A Day Program National Office, National Cancer Institute, National Institutes of Health, 6130 Executive Boulevard, EPN 4082, Bethesda, MD, 20892; phone, 301-496-8520; and fax, 301-480-6637.
2. Adhere to all applicable requirements in Guidelines E.1. and E.9. of the *10/99 Program Guidebook*.
3. Once a license is received and accepted, a 5 A Day Program Starter Kit will be mailed to the licensee. It will contain a variety of information, including program background information, semi-annual progress report form, activity tracking form, newsletters, lists of 5 A Day participants, etc.

Three copies of new program materials will be sent to the Federal Government program as they become available. The Federal Government program will then make arrangements for duplicating copies for distribution to their program participants.



# FEDERAL GOVERNMENT PROGRAM LICENSE AGREEMENT 5 A DAY FOR BETTER HEALTH PROGRAM

The 5 A DAY—FOR BETTER HEALTH PROGRAM is a cooperative project of the National Cancer Institute (NCI) and the Produce for Better Health Foundation (PBH). The purpose of the program is to increase the consumption of fruits and vegetables by Americans. Federal Government organizations agreeing to comply with the terms and conditions set forth herein may be certified to participate in the program, and to use the 5 A DAY—FOR BETTER HEALTH logo and related materials. (NCI is herein referred to as LICENSOR.)

---

(YOUR ORGANIZATION'S NAME)

herein referred to as LICENSEE, is desirous of participating in the 5 A DAY—FOR BETTER HEALTH PROGRAM.

Effective on the subscribed date, in consideration of receipt of the program logo and related materials, LICENSEE agrees to the following terms and conditions:

## 1. Use of Program Logo and Related Materials

LICENSOR grants LICENSEE, its agents, and employees a non-exclusive, royalty-free right to use the program logo and related materials in connection with the promotion of the program throughout the agency in accordance, and in the form and manner prescribed in, the *GUIDELINES FOR PARTICIPATION IN THE 5 A DAY—FOR BETTER HEALTH PROGRAM GUIDEBOOK*, a copy of which is attached and made a part hereof by reference, as such guidelines may be amended from time to time.

## 2. Quality Maintenance Standards

LICENSEE shall cooperate with LICENSOR in assuring proper use of the program logo and related materials, including providing LICENSOR with periodic evaluation reports, as specified in the Guidelines, and samples of use of the program logo and related materials as specified in the Guidelines and upon request. LICENSEE shall comply with all applicable laws and regulations pertaining to food labeling and health claims.

## 3. Termination

A. LICENSOR may terminate this agreement with a thirty (30) day written notice to LICENSEE upon completion of the 5 A DAY—FOR BETTER HEALTH PROGRAM. LICENSEE may terminate this agreement upon thirty (30) days written notice to LICENSOR.

Upon such termination, LICENSEE shall in a timely manner discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

B. LICENSOR may terminate this agreement with thirty (30) days written notice to LICENSEE for breach of any of the provisions of this agreement by LICENSEE. Upon such termination, LICENSEE shall immediately discontinue all use of the program logo and related materials, and delete the same from its promotional, educational, and other printed materials, and destroy all printed materials bearing the program logo and any related materials.

\_\_\_\_\_  
LICENSEE

\_\_\_\_\_  
NATIONAL CANCER INSTITUTE

\_\_\_\_\_  
SIGNATURE: Program Director

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
TYPED NAME

\_\_\_\_\_  
TYPED NAME

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## Appendix B

# Industry Overview

## **THE PRODUCE INDUSTRY**

The produce industry is made up of several small industries. Its products are commodities—similar to the beef, poultry, pork, and dairy industries. When price is the main difference between two similar products, competitors lower their prices in order to compete with each other. As the price falls, the profit margins fall as well. As profits decrease, the funds available for promotion, marketing, and advertising diminish. Unless one product is differentiated from another, price and perceived value determine what makes one product more appealing than another.

Higher profit margins can be achieved once “value” has been added. For example, wheat (a commodity) can be made into any one of 100 different types of value-added cereals that are puffed, flaked, rolled, or shredded and to which fruits, nuts, sugar, flavors, colors, marshmallows, toys, fiber, vitamins, minerals, and/or phytochemicals may be added. When a manufacturer develops a unique product that is desired by consumers, higher profit margins can be achieved.

Overall profit margins in the produce industry, which is still largely a commodity industry, are relatively small compared with those of the processed foods industry. And in contrast to other commodity businesses, the produce industry has not been subsidized by the Federal Government.

## **FOOD MARKETING ORDERS**

A food marketing order (sometimes known as a checkoff program) is one in which the growers of

a particular commodity assess themselves a specific fee, depending on the shipping unit or value of the product, and the revenues generated are pooled into a fund. For example, 25 cents per box of apples is collected from all apple growers in Washington State to go into a pool of funds at the Washington Apple Commission to promote Washington apples nationally and internationally. These marketing orders can be organized at the State or Federal level and may have different purposes. Most revenues are used for product grading and standardization, product research, the opening of new markets, and marketing and promotion of the agricultural product.

In the case of the dairy or beef industry, competitors have agreed to work together to pool their funds and mutually promote their generic commodities. This collaboration is fairly easy because dairy farmers produce milk by volume, and an assessment on one product by volume would therefore be equitable. A similar situation exists within the beef industry.

In the produce industry, there are marketing orders for some vegetables and most major fruits. In fact, there are nearly 300 different marketing organizations. For example, there exists a California Tomato Board, a Florida Tomato Committee, a California Strawberry Commission, a California Prune Board, and a California Table Grape Commission, each representing different commodities and, in some cases, different States. As another example, there is a National Potato Board, a Maine Potato Board, an Idaho Potato Board, and a Washington State Potato Board; Idaho, Maine, and Washington State are all competing for a share of the consumer potato market,

and the National Potato Board represents all potato growers and works to encourage Americans to eat more potatoes.

## **A NATIONAL PRODUCE MARKETING ORDER**

Until the 5 A Day Program, the produce industry had never successfully promoted the whole vegetable and fruit category of commodities with one message. Specific commodities—such as grapes, lettuce, tomatoes, or tree fruit—had been promoted on an individual basis. Discussions among industry leaders about the possibility of a national marketing order for vegetables and fruit as an entire category began to occur with the advent of the 5 A Day Program. A national marketing order, which would require an assessment on all vegetables and fruit either produced or sold in the marketplace, could help generate millions of dollars that could then be used to conduct advertising and nutrition education about 5 A Day.

Several produce industry leaders met in February 1996 to discuss the possibility of a national marketing order for vegetables and fruit. Participants were primarily commodity boards and association representatives. They agreed that although a checkoff program for all vegetables and fruit could prove beneficial, generating millions of dollars as a pooled fund, such a system would be difficult to implement.

Discussion centered primarily on how to make a national checkoff system equitable among the more than 350 different produce items in distribution. As an example, an assessment by weight (5 cents for every pound sold) would be difficult because some produce items weigh more than others (e.g., watermelon versus raspberries).

In addition, profit margins among different produce items may differ significantly, based on supply and demand. Depending on supply and demand, profit margins on even a single produce item can vary significantly over a given year (one might be 20 cents per box, whereas another might be 5 cents per box). In obtaining a fair agreement, it would be difficult to assess products equal in weight but possessing largely different profit margins. A 20-cents-per-box assessment might be

more than the profit margin for a particular product; consequently, the farmer would be selling that product at a loss.

Even if it were possible to find an equitable way of assessing all vegetables and fruit, the collection of funds would be difficult. If there were one port, as an example, through which all the produce consumed in this country entered, it might be possible to collect the 20-cents-per-box or 5-cents-per-pound assessment. But the distribution system for these highly perishable items is so vast and varied that it does not offer a consistent point at which these assessments could be collected. And if money were collected at some points and not others, the assessment would no longer be equitable.

If everybody is benefiting from national advertising and nutrition education, yet only some of the farmers are paying for it, then some farmers are paying to advertise their competition's product. The issue is not whether a national checkoff system would be useful but rather how to make it equitable enough so that everyone would participate and how to collect the funds to ensure that all were paying their fair share. And some growers are suing commodity boards because they would rather keep the money or use it for their own advertising.

Thus, it was concluded that implementation of fair and equitable checkoff systems to raise funds for the 5 A Day Program is not currently possible in this country. As a result, the Produce for Better Health Foundation (PBH), which manages the private sector of the public/private partnership, relies on voluntary donations from the vegetable and fruit industry and others to conduct its marketing and nutrition education programs.

## **FOOD PYRAMIDS**

Even though the Food Guide Pyramid is a guide for Americans (see Figure 1) regarding the amount of food to consume in their diets, it is useful to assess the food groups in the Food Guide Pyramid in terms of their disease-preventive capacity (See Figure 2). Vegetables and fruit are more important to disease prevention than any other food group by far.

The problem, however, is that marketing dollar

allocations for each of the food groups in the pyramid are not equal (See Figure 3). Marketing dollars are concentrated on those “added-value” foods that have been processed and packaged attractively. Compare McDonald’s total advertising/marketing expenditures (more than \$1 billion annually) or the Coca-Cola Company’s advertising/marketing expenditures for all products (\$770 million annually), to the \$1.75 million budget of PBH or the \$11 million for the California Table Grape Commission, one of the strongest commodity groups in the produce industry.

Unfortunately, the limited marketing dollars within the produce industry are often targeted at supermarket chains or food-service restaurant chains and not as much toward consumers, because these supermarkets and restaurants are the gatekeepers. If growers cannot get their products onto the supermarket shelf or into the restaurant, then they stand little chance of reaching the consumer.

## SUPERMARKET INDUSTRY

The U.S. supermarket industry is extremely competitive. Nearly 350 supermarket chains represent more than 35,000 stores. There are also independent grocers who are not part of a chain but own anywhere from 1 to 10 stores. These are generally serviced by wholesalers such as SUPERVALU and Fleming. A typical supermarket produce department may have anywhere from 15,000 to 20,000 customers in any given week. Supermarkets also serve as anchors in communities, the one location most people visit at least occasionally. Supermarkets are powerful partners for spreading the 5 A Day message to consumers.

Six important factors in the supermarket industry must be understood relative to the 5 A Day effort. Some of these factors are useful for 5 A Day; others present challenges.

### Consolidation Is Occurring

First, consolidation has occurred since the 5 A Day Program began in 1991. As an example, Safeway, based in Pleasanton, California, announced in April 1997 that it would acquire The Vons Company. That merger made Safeway the second-largest supermarket chain in North America with

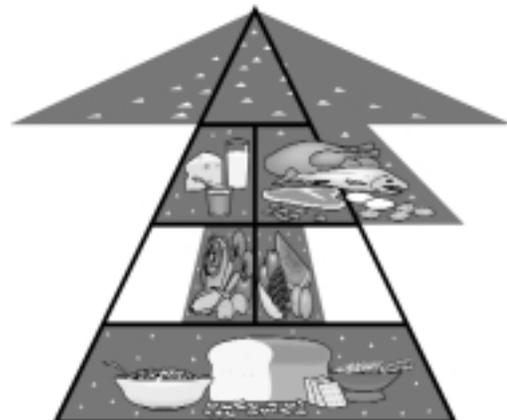
Figure 1. Food Guide Pyramid



Figure 2. Health Benefits



Figure 3. Marketing Dollars



1,378 stores. In August 1998, Albertson's, Inc. (based in Boise, Idaho), said it would pay \$8.3 billion for the Salt Lake City-based American Stores Company. That deal will create the largest supermarket company in North America—2,470 stores in 37 States with annual revenue in excess of \$36 billion. The top five chains today account for about 40 percent of total sales. When companies are more concerned about mergers and takeovers, they sometimes forget about important long-term programs like 5 A Day.

### **Produce Is Profitable**

A second important factor is that the produce department is the most profitable area for the supermarket. Profit margins on produce alone average 44.1 percent (Bill Communications, 1997). The only department with greater margins—52.3 percent—is the in-store bakery. The percentage of total supermarket sales through bakeries, however, is far less than that from produce (3.57 percent of supermarket sales for bakeries versus 10.89 percent for produce), making produce the most profitable area of the store. In addition, high-quality produce is one of the top reasons consumers choose a primary grocery store. Produce is cited as most important by 90 percent of customers. A clean, neat store (88 percent) ranks second, and high-quality meat (84 percent) ranks third (Food Marketing Institute, 1998a). This trend provides an incentive for the retailer to promote vegetables and fruit.

### **Cross-Promotions Are Attractive**

Produce takes up an average 12.7 percent of the supermarket floor space (Food Marketing Institute, 1998b). It is also the highest impulse-purchase area of the supermarket; that is, half of all produce purchase decisions are not made until the consumer is in the department. Brand manufacturers like to have their products featured next to produce because the chance of an impulse purchase is greater. For example, if the shortcake is sitting next to the strawberries, the shortcake is more likely to be purchased than if it were elsewhere in the supermarket. Retailers state that sales of an item can easily double when it is placed in the produce department. Therefore, PBH has recently begun to work with other manufacturers of complementary products, such as salad dress-

ings, yogurt, mustard, and peanut butter, to cross-promote with vegetables and fruit.

### **Slotting Allowances Are Required**

Because supermarkets are making small overall profit margins (0.5 to 2 percent) and are looking for ways to reduce costs or make money, they often will ask for slotting allowances (payment to supermarkets for shelf placement) from manufacturers for end-aisle displaying of their products or for other prime locations. In some cases, nearly 50 percent of supermarket income comes from slotting allowances and other manufacturer-supported funds. Even produce growers are asked for slotting allowances for product placement, making even fewer funds available to growers for marketing their products or for supporting the 5 A Day Program.

### **Supermarkets Are Financially Driven**

Because supermarkets are trying to make as much profit as possible, often they will not reduce the price of a particular produce item if production is up in order to encourage greater sales, which presumably means greater consumption. With a highly perishable item such as produce, the production volume of which varies with weather and seasonal factors, it is helpful when retailers can reduce the price when there is an abundance of low-cost, in-season produce to help increase their sales volume and the consumption by consumers.

For example, if there is a surplus of apples, the supermarket could lower the price to increase apple sales, and presumably consumption. Just a few years ago, retailers would do this for their apple suppliers. Now, when the price of apples falls because of greater supply, some retailers do not pass those savings along to the consumer. Before, retailers and growers alike probably were not making more money, but at least they were selling more apples. Now, unless the retailer is going to make more money, they are not as likely to lower the price to help sell more produce and increase consumption. In some cases, unfortunately, the retailer may lose money when the price is lowered, despite moving a higher volume of product through the store, because labor costs to restock the produce also are greater. This type

of philosophy has changed the produce business in the past 10 years, to the detriment of the producer and the consumer.

### Restaurant Industry Competition Is Increasing

Finally, another key trend is the increasing competition posed by restaurants and fast-food chains to the supermarkets. Nearly 50 percent of the consumer food dollar is spent eating away from home, partly out of a desire for convenience. When adjusted for inflation, consumers were spending about \$2 less per week in supermarkets in 1998 than they were in 1994 (Food Marketing Institute, 1998a). This indicates that the 5 A Day Program should be introduced in restaurants and other away-from-home dining facilities where consumers eat.

## FOOD-SERVICE INDUSTRY

The food-service industry is more diverse than the supermarket industry. Food-service operators are classified into two groups—commercial and noncommercial. Commercial operators include fine-dining establishments, family restaurants, and quick-service restaurants. Noncommercial operators include food service at schools; day-care centers; colleges; health care centers; businesses, industry, the military, and correctional facilities; transportation companies (e.g., airlines, trains); and contract management companies.

The sixth consecutive year of real growth in the restaurant industry was reached in 1997 (National Restaurant Association, 1998). The number of food-service locations in the United States is nearly 800,000, compared to 35,000 major supermarkets, making food service (in all of its varieties) a

much more complex effort to undertake (National Restaurant Association, 1998).

The typical person 8 years or older consumed an average of 4.1 meals per week away from home in 1996, up from 3.8 meals per week in 1991 (National Restaurant Association, 1996). Thus, approximately 49 billion commercially prepared meals were ordered in 1996, compared with 38.4 billion in 1981 (National Restaurant Association, 1996).

Of all the weekly meals consumed in 1996, nearly 69 percent were prepared at home, almost 20 percent were prepared at a restaurant or school or work cafeteria, and nearly 12 percent of all meals were skipped altogether (National Restaurant Association, 1996).

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- Food Marketing Institute. *Supermarket Business: Produce Operations Review*. Washington, DC: Food Marketing Institute, 1998b.
- Food Marketing Institute. *Trends in the United States: Consumer Attitudes and the Supermarket*. Washington, DC: Food Marketing Institute, 1998a.
- National Restaurant Association. *Meal Consumption Behavior: 1996*. Washington, DC: National Restaurant Association, 1996.
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# Appendix C

## Chronology of 5 A Day Programmatic and Media Milestones

1 9 8 8

**Summer** Implementation of the National Cancer Institute (NCI) Capacity Building Grant—California 5 a Day Campaign

1 9 9 1

**Summer** 5 A Day baseline survey of adult vegetable and fruit consumption, knowledge, and attitudes

**Fall/Winter** Produce for Better Health Foundation (PBH) incorporated  
5 A Day concept approved by NCI  
Memorandum of Understanding (MOU) between NCI and PBH signed  
First NCI/PBH Strategic Planning Meeting  
PBH initiates retail component

**Winter** Test of 5 A Day campaign message (mall intercept)

1 9 9 2

**Spring** Focus group research (six groups with target audiences)

**Summer** National 5 A Day campaign launched/Washington, DC, press conference  
Baseline survey results released

**Summer/Fall** Audience profiles created using the MRCA/DDB Needham Lifestyles Survey

**Fall** Briefings with major national consumer magazines  
NCI communications formative and tracking research begins  
5 A Day Community Research Initiative request for applications (RFA) released—\$16M  
Omnibus survey<sup>1</sup> tracking message awareness  
Content analysis of media coverage from July 1991 to June 1992



*Highlighted text indicates major programmatic milestones.*

<sup>1</sup> Omnibus surveys: The 5 A Day Program includes questions on an omnibus survey three times a year to monitor consumer awareness of the 5 A Day message. Prior to 1998, the surveys were conducted four times a year.

5 A Day for Better Health Program

1 9 9 3

**Winter (Jan-Mar)** Media advisory group convened. National media strategy developed  
Selecting and profiling the core target audience for the 5 A Day media campaign (data comparison)

**Spring** NCI Cancer Information Service outreach coordinators join effort to disseminate 5 A Day messages



**Summer** NCI initiates licensing of State health agencies  
Nine sites funded via 5 A Day RFA (73 applications)

**Fall** NCI and PBH launch first “National 5 A Day Week”  
First 5 A Day Week campaign  
50 Governors sign proclamations in support of 5 A Day  
NCI introduces its quarterly 5 A Day *Media News* magazine  
Omnibus survey tracking program awareness



**Winter (Nov-Dec)** First National Meeting for State Coordinators  
Content analysis of media coverage from July 1992 to October 1993

1 9 9 4

**Spring** Focus group research (eight African-American groups)

**Summer** Interagency agreement with the Centers for Disease Control and Prevention—State Evaluation Grants begin  
5 A Day pavilion at National Council of Negro Women’s Black Family Reunion events in three major cities (Los Angeles, California, Chicago, Illinois, and Washington, DC)

**Fall** National 5 A Day Week 1994 featured a public service announcement (PSA) campaign  
“Three’s a Great Start. The Next Two Are Easy!”  
Common research questions/collaborative data analysis begins  
Omnibus survey tracking program awareness



**Winter** Content analysis of media coverage from November 1993 to October 1994

1 9 9 5

**Winter** 5 A Day social marketing case study research (10 focus groups with target audiences)  
The 5 A Day Logo: How Well Does It Communicate to Consumers? (mall intercepts)

**Summer** NCI begins program process evaluation  
Omnibus survey tracking program awareness (pre-5 A Day Week)

**Fall** National 5 A Day Week: “Take the 5 A Day Challenge”  
Alliance with the American Dietetic Association  
Omnibus survey tracking program awareness (post-5 A Day Week)

**Winter** Health styles survey to further examine the target audience

1 9 9 6

- Winter** Initiate quarterly seasonal media packages
- Spring** Omnibus survey tracking program awareness
- Summer** Second NCI/PBH Strategic Planning Meeting  
NCI licenses U.S. Department of Defense
- Fall** National 5 A Day Week: “Take the 5 A Day Challenge”  
with Olympic couple Bart Connors and Nadia Comeneci  
“Winning Ways With the Media” turnkey guide  
Omnibus survey tracking program awareness



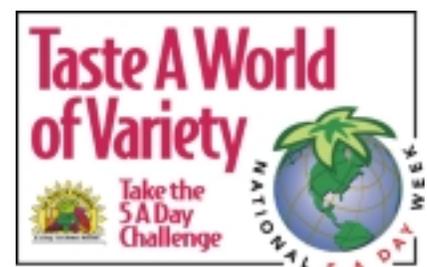
1 9 9 7

- Winter** Test Graham Kerr radio spots (mall intercepts with target audiences)
- Spring/  
Summer** NCI launches “Do Yourself a Flavor” with Graham Kerr,  
60-second radio news inserts
- Summer** Omnibus survey tracking program awareness (pre-5 A Day Week)  
NCI licenses Indian Health Service
- Fall** National 5 A Day Week media campaign: Tips for people “on the go”  
MOU with U.S. Department of Agriculture Food and Nutrition Service  
5 A Day followup survey  
Omnibus survey tracking program awareness (post-5 A Day Week)
- Fall/Winter** Radio inserts: Fall/winter flight (#1) of “Do Yourself a Flavor”  
with Graham Kerr



1 9 9 8

- Spring** Content analysis of media coverage from January 1997 to December 1997
- Spring/  
Summer** Radio flight (#2) news inserts of “Do Yourself a Flavor”  
with Graham Kerr
- Fall** National 5 A Day Week: “Taste a World of Variety”  
Omnibus survey tracking program awareness  
(post-5 A Day Week)
- Fall/Winter** Radio flight (#3) news inserts of “Do Yourself a Flavor”  
with Graham Kerr  
Testing of preview of “Do Yourself a Flavor” television news inserts at  
Radio-Television News Directors’ Association annual conference
- Winter** NCI launches new Web site, *www.5aday.gov*  
First International Symposium



5 A Day for Better Health Program

1 9 9 9

**Spring** NCI begins distribution of “Do Yourself a Flavor” with Graham Kerr to television stations  
Radio inserts: Spring flight (#4) of “Do Yourself a Flavor”



**Fall** 5 A Day Program Expert Evaluation Group established  
Radio flight (#5) and television flight (#1) news inserts of “Do Yourself a Flavor” with Graham Kerr  
National 5 A Day Week: “Get Fit With 5”

2 0 0 0

**Winter (Jan-Mar)** Consumer testing of Graham Kerr TV inserts

**Spring** Radio flight (#6) and television flight (#2) news inserts of “Do Yourself a Flavor” with Graham Kerr

**Summer** Television flight (#3) news inserts of “Do Yourself a Flavor” with Graham Kerr  
Focus group research (12 focus groups conducted in three cities with African-American, Hispanic, and White men and women)

**Fall** National 5 A Day Week: Fruit and Vegetables, By Popular Demand  
Radio flight (#7) and television flight (#4) news inserts of “Do Yourself a Flavor” with Graham Kerr

**Winter (Nov)** 5 A Day for Better Health Program Evaluation Report released

2 0 0 1

**Winter (Jan)** Second International Symposium

**Fall** National 5 A Day Week: “Yes You Can”  
National 5 A Day Meeting



# Behavioral Theories and Conceptual Frameworks Used in the 5 A Day for Better Health Program

This appendix is provided as a primer to briefly define the major concepts (constructs) of the theories used in the 5 A Day outcome evaluation projects. The theories are grouped into three model categories: individual behavior, interpersonal behavior, and community and group intervention.

## **MODEL OF INDIVIDUAL BEHAVIOR: TRANSTHEORETICAL MODEL**

The Transtheoretical/Stages-of-Change Model emerged from the field of psychology as an attempt to systematically integrate constructs (or concepts) across a large number of theories. An important part of the theory is the construct of stage. The model postulates that as people change a given behavior, they move through six stages, although not necessarily in a linear fashion:

- People in precontemplation, the earliest stage, are not yet aware that there may be a need to make a change, or they may have firmly decided that they do not want to make a change. People in this stage are unmotivated.
- Individuals in the contemplation stage are thinking about change and intend to make a change within the next 6 months. People in this stage may be ambivalent.
- People in the preparation stage intend to take action in the immediate future, usually within the next month.

- Individuals in the action stage have begun to make changes.
- Individuals in the maintenance stage have practiced the behavior for at least 6 months and are on their way to creating a new habit.
- People in relapse may have temporarily fallen back into old habits and can re-enter the cycle at any stage.

Other constructs from the model that are sometimes applied include decisional balance, self-efficacy (see below), and processes of change (Glanz et al., 1997). Across the 5 A Day studies that used this stage model, the stages were consistently applied through a common algorithm (Campbell et al., 1999).

## **MODELS OF INTERPERSONAL BEHAVIOR**

### **Social Cognitive Theory**

Bandura, in 1986, applied the name Social Cognitive Theory to what had originated in 1941 as social learning theory. A number of subsequent modifications have been made to this theory, including the addition of the self-efficacy construct (Glanz et al., 1997). This theory postulates that a person's behavior is determined by an interaction among behavioral, personal, and environmental factors. This interaction is called Reciprocal Determinism.

Examples of the personal factors are the individual's ability to learn by the observation of others' behaviors, to predict outcomes of behavior, and to be confident about performing a behavior. Behavioral factors include the knowledge and skills necessary to perform a behavior. For example, for the 5 A Day Program, individuals need to know the target behavior of eating five or more servings of vegetables and fruit a day and need to have the skills to choose food wisely throughout the day. Environmental factors may include the opportunities for practicing the new skills or learning through observing appropriate role models. The environment also can provide cues both to action (such as posters or labels on foods in the cafeteria) and to the reinforcement of new behaviors. Alternatively, the environment can be unsupportive of the change that the individual is attempting to make. For example, if the selection of vegetables and fruit is limited in a worksite cafeteria, it may be difficult for individuals to increase their daily consumption.

As discussed earlier, the construct of self-efficacy was recently added to the social cognitive theory. Self-efficacy is an individual's confidence in his or her ability to perform a behavior. A person's confidence increases when he or she is successful at performing components of a task or the entire task or when he or she can observe a relevant role model successfully perform the task. Successful task repetition, task modeling, and persuasion increase self-efficacy. Glanz and colleagues (1997) provided more details on other constructs of Social Cognitive Theory, such as self-control, reinforcement, observational learning, outcome expectations (anticipated results), and outcome expectancies (values placed on outcomes).

### **Resiliency Theory**

The premise of the Resiliency Theory is that negative health behaviors can be prevented by reducing the factors that place individuals at risk and by developing protective factors that buffer negative social and physical influences (California Department of Education, 1991). Some of the protective factors are belonging, reward, and recognition. This theory is used in the California Power Play! project. Even though this project was not one of the nine randomized community-based research grants funded by the National Cancer

Institute, it is included because it is a well-designed and ongoing effort of the original California 5 a Day—For Better Health! Campaign (see Chapter 10).

### **Social Networks, Social Support**

Studies have demonstrated that a person's social relationships can affect health (House et al., 1988). Social networks are linkages between people who may or may not provide social support (Israel, 1982; Israel and Rounds, 1987). The terms "social networks" and "social support" are not theories per se, but are concepts that describe the structure, processes, and functions of social relationships (Glanz et al., 1997).

Selected social network characteristics are reciprocity (the exchange in a dyadic relationship), intensity (emotional closeness), complexity (the extent to which relationships serve many functions), and density (the extent to which network members know and relate to each other). Types of social support are emotional, instrumental (tangible assistance), informational (advice), and appraisal (feedback). Social network interventions either enhance existing network linkages or create new ones. A common typology is the use of either a lay health adviser or friends to deliver interventions (see Chapters 9 and 11).

## **COMMUNITY AND GROUP INTERVENTION MODELS**

Community-level models are important for understanding how social systems function and change, as well as how they affect an individual's behavior. They also complement the individual-level theories, providing in essence the necessary supportive environment for change to be maintained. The behavior of organizations within the community can help create supportive norms through policies, advocacy, and legislation.

### **Community Organization, Organizational Change Theories**

Murray Ross developed the principles of community-organizing practice (Ross, 1955). Although no single unified model of community organization exists, a common element is empowerment of

community members to take control of their own lives and environment (Rappaport, 1984). Some of the other important concepts are participation and relevance, empowerment, critical consciousness, community competence, and issue selection. Individuals are empowered and issues become relevant when community members are engaged as equals and they are invited to identify and solve problems. Critical consciousness means developing an understanding of the root of the problem and giving it thoughtful consideration. Issue selection is a strategy that identifies solvable problems as a focus of community action.

### Diffusion of Innovations

Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 1983). This concept comes from rural sociology where the initial interest was in determining how new farming techniques spread among farmers. The diffusion process requires paying attention to the innovation itself, to the communications channels among members of the social system, and to the environment in which the process takes place. Some of the characteristics of innovations that affect their adoption are their relative advantage (i.e., whether eating more vegetables and fruit would be better than the previous dietary behavior), their compatibility with the intended audience, their complexity (i.e., how easy it is to add vegetables and fruit to the diet), their adaptability to trials (i.e., whether an innovation can be tried before being adopted), and the visibility of their results (i.e., whether the adopter who eats more vegetables and fruit feels better). (See Glanz and Rimer (1995) for more discussion on the Diffusion of Innovations Model.)

### PRECEDE-PROCEED Planning Process

PRECEDE-PROCEED is a planning model that begins with clear definitions of the issues to be addressed before moving to the implementation and evaluation of an intervention. The model has nine phases:

- Social diagnosis;
- Epidemiological diagnosis;
- Behavioral and environmental diagnosis;
- Educational and organizational diagnosis;
- Administration and policy diagnosis;
- Implementation;
- Process evaluation;
- Impact evaluation; and
- Outcome evaluation.

This planning process seeks to empower individuals with skills and active engagement in community affairs. In the process, the predisposing, enabling, and reinforcing factors that affect behavior are identified. Predisposing factors—such as knowledge, attitudes, and readiness to change—provide the motivation for a behavior. Enabling factors, such as resources and policies, make it possible for a person to act on those motivations. Reinforcing factors, such as praise and social support, provide incentives to repeat those behaviors (Glanz and Rimer, 1995).

All of the above-mentioned models and theories were used in one or more of the nine community-based research grants under the national 5 A Day Program. These theories contributed significantly to the strength and utility of the grantee's research. The applications of these constructs in each grant are discussed further in Chapters 9 through 11.

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## Appendix E

# 5 A Day Grantees' Common Research Questions

### Food Frequency Questionnaire

The next seven questions provide a simple way to determine how many servings of vegetables and fruit you normally eat. Please put an "X" in the box showing how often you ate or drank each of these items of food in the past month.

1. In the past month, about how often did you drink 100% orange juice or grapefruit juice?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
2. In the past month, about how often did you drink other 100% fruit juices, NOT counting fruit drinks?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
3. In the past month, about how often did you eat green salad (with or without other vegetables)?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
4. In the past month, about how often did you eat french fries or fried potatoes?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
5. In the past month, about how often did you eat baked, boiled, or mashed potatoes?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
6. In the past month, about how many servings of vegetables did you eat, NOT counting salad or potatoes?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day
7. In the past month, about how many servings of fruit did you eat, NOT counting juices?  
 never     1-3 times per month     1-2 times per week     3-4 times per week     5-6 times per week     1 time per day     2 times per day     3 times per day     4 times per day     5 or more times per day

## Stages-of-Change Questions (Adult)

1. How many servings of vegetables and fruit do you eat each day?  
 0       1-2       3-4       5-6       7-8       9-10       11 or more
2. About how long have you been eating this number of daily servings of vegetables and fruit?  
 less than 1 month       1-3 months       4-6 months       longer than 6 months
3. Are you seriously thinking about eating more servings of vegetables and fruit, starting sometime in the next 6 months?  
 yes (go to question 4)       no (skip question 4)
4. Are you planning to eat more servings of vegetables and fruit during the next month?  
 yes       no

### Algorithm

If answer to Q1 is 5 or greater\* and answer to Q2 is greater than 6 months, then stage = MAINTENANCE.

If answer to Q1 is 5 or greater\* and answer to Q2 is 6 months or less, then stage = ACTION.

If answer to Q1 is less than 5, answer to Q3 is "yes," and answer to Q4 is "yes," then stage = PREPARATION.

If answer to Q1 is less than 5, answer to Q3 is "yes," and answer to Q4 is "no," then stage = CONTEMPLATION.

If answer to Q1 is less than 5 and answer to Q3 is "no," then stage = PRECONTEMPLATION.

\* Individual sites may choose an alternative cutpoint for number of daily servings used to classify individuals in action or maintenance.

## Stages-of-Change Questions (Children)

1. What choice best describes you?
  - A. I **don't think** about eating 5 or more servings of vegetables and fruit each day.
  - B. I **think** about eating 5 or more servings of vegetables and fruit each day.
  - C. I **plan to start** eating 5 or more servings of vegetables and fruit each day.
  - D. I **try** to eat 5 or more servings of vegetables and fruit each day.
  - E. I **eat** 5 or more servings of vegetables and fruit each day.
  
2. What choice best describes you?
  - A. I **don't think** about consuming 2 or more servings of fruit or juice each day.
  - B. I **think** about consuming 2 or more servings of fruit or juice each day.
  - C. I **plan to start** consuming 2 or more servings of fruit or juice each day.
  - D. I **try** to consume 2 or more servings of fruit or juice each day.
  - E. I **consume** 2 or more servings of fruit or juice each day.
  
3. What choice best describes you?
  - A. I **don't think** about eating 3 or more servings of vegetables each day.
  - B. I **think** about eating 3 or more servings of vegetables each day.
  - C. I **plan to start** eating 3 or more servings of vegetables each day.
  - D. I **try** to eat 3 or more servings of vegetables each day.
  - E. I **eat** 3 or more servings of vegetables each day.

## Awareness Questions

1. Have you heard of the “Healthy People 2000” Program?  
 Yes  
 No  
 Don't know
  
2. Have you heard of the “5 A Day for Better Health Program?”  
 Yes (continue with Q2a)  
 No  
 Don't know
  
- 2a. What does “5 A Day for Better Health” mean?
  1. Five servings of vegetables and fruit per day
  2. Logo of a health education campaign to increase the eating of vegetables and fruit
  3. Eat vegetables and fruit to stay healthy
  4. Five food groups
  5. Five health habits
  6. Other (specify): \_\_\_\_\_
  7. Don't know

## Self-Efficacy Questions (Adult)

1. How sure are you that you can eat at least 3 servings of vegetables and fruit each day?  
 *Very Sure*       *Sure*       *Somewhat Sure*       *Unsure*       *Very Unsure*
  
2. How sure are you that you can eat at least 5 servings of vegetables and fruit each day?  
 *Very Sure*       *Sure*       *Somewhat Sure*       *Unsure*       *Very Unsure*

## Knowledge Question

1. How many servings of vegetables and fruit do you think a person should eat each day for good health?



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