

BACKGROUND PAPER ON THE
PREVENTION AND TREATMENT OF
OVERWEIGHT AND OBESITY

Prepared for the Roundtable:

*“Prevention and Treatment of
Overweight and Obesity:
Toward a Roadmap for Advocacy and Action”*

August 14 & 15, 2003

Sponsored by:

American Association of Health Plans
Centers for Disease Control and Prevention
HealthPartners
Kaiser Permanente Care Management Institute
Kaiser Permanente Institute for Health Policy
The Robert Wood Johnson Foundation
Washington Business Group on Health

By Jennifer Neisner, Trina Histon, Jackie Goeldner and Cindy Moon



KAISER PERMANENTE®

Kaiser Permanente supported the development of this background paper through its Care Management Institute and Institute for Health Policy

care management | institute

The Kaiser Permanente Care Management Institute (CMI) was created for the express purpose of helping improve the quality of care and health outcomes for members. Drawing on the extensive clinical experience, research, and data of a large integrated health care system - as well as from the medical literature and research - CMI synthesizes knowledge about the best clinical approaches in order to create, implement, and evaluate effective and efficient care management programs. CMI accomplishes this by:

- promoting and embedding evidence-based medicine within systems to support medical practice;
- identifying successful practices through measurement and computer modeling;
- implementing effective and innovative practices;
- leveraging technology to support population-based care; and
- supporting clinicians in delivering member-centered and culturally competent care.



The Kaiser Permanente Institute for Health Policy was established in 1999. Its purpose is to provide a focus and resources for Kaiser Permanente to better participate in shaping the nation's health policy agenda. It brings experts together to research and analyze health policy, with a goal of increasing understanding of policy issues and helping provide solutions. Working in collaboration with foundations, policy institutes, research programs, policymakers, and other organizations, the Institute seeks to develop unbiased information about health policy issues and alternatives. This is accomplished through:

- proactive identification and analysis of significant national health policy issues;
- organization of internal and external resources to analyze such issues;
- sponsorship of stakeholder roundtables on specific topics;
- development of policy reports for a variety of audiences; and
- building coalitions to shape and influence policy.

Emphasis is placed on developing policy alternatives and exploring their operational implications, building on the experience of Kaiser Permanente, the largest privately organized health care delivery system in the United States.

About the Authors:

Jennifer Neisner is a Policy Analyst with the Kaiser Permanente Institute for Health Policy

Trina Histon, PhD, is Project Director, Weight Management Initiative with the Kaiser Permanente Care Management Institute

Jackie Goeldner is a Project Manager with the Kaiser Permanente Care Management Institute

Cindy Moon is a graduate student intern with the Kaiser Permanente Institute for Health Policy

Background Paper on the Prevention and Treatment of Overweight and Obesity

| | |
|---|-----------|
| I. Executive Summary | 1 |
| II. Introduction | 3 |
| III. Social and Environmental Influences on Health Behaviors | 5 |
| IV. A Review of the Evidence: Effective Approaches to Preventing and Treating Overweight and Obesity | 8 |
| V. The Chronic Care Model | 13 |
| VI. Public Policy: Opportunities, Levers, and Challenges | 17 |
| VII. Conclusion | 25 |
| VIII. Appendix A. Other Social Movements as Models for Addressing Overweight and Obesity | 27 |
| IX. Appendix B. Evidence-Based Interventions | 29 |
| X. Appendix C. Policy Interventions and Potential Areas for Action | 32 |
| XI. Appendix D. Obesity, Nutrition, and Physical Activity Legislation by State | 44 |
| XII. Appendix E. Selected Obesity and Weight Management Initiatives | 45 |

I. Executive Summary

The prevalence of overweight and obesity has reached epidemic proportions in the United States. Nearly two-thirds of adult Americans are overweight or obese, and the prevalence of overweight among American children between the ages of 6 and 19 has tripled during the past 20 years, from 5 percent in 1980 to 15 percent in 2000.¹ United States Surgeon General Richard Carmona calls obesity America's single biggest health problem. The evidence for the relationship between obesity and several chronic illnesses is becoming increasingly clear. Although changing behavior is difficult, growing recognition of the health impact and costs associated with overweight and obesity, combined with increased knowledge regarding effective prevention and treatment interventions, provide momentum for addressing this epidemic. However, reversing current trends will require a multifaceted public health approach.

Myriad genetic, social, and environmental factors contribute to overweight and obesity. The rapid increase in their rates in the United States, however, suggest that social and environmental influences have played the major role in contributing to the nation's overweight and obesity problem. In particular, recent social and environmental trends that have likely affected weight levels include: decreased physical activity in daily lives, increased use of commercial food products, larger commercial food portions, and increasing prevalence of community design that does not support physical activity. Furthermore, a relationship between obesity and low socioeconomic status has long been documented.

These leading contributors to overweight and obesity suggest that strategies that modify individual attitudes and behaviors and alter environmental conditions can help create a healthier, more fit society. Previous social change successes, such as efforts to reduce smoking rates, increase breastfeeding, and encourage seat belt use, offer several lessons and strategies that can be applied to weight control.

Public health and medical research has provided a breadth of information on prevention and treatment interventions for overweight and obesity – both for children and adults – that can be utilized to manage weight levels. For all ages, the importance of proper nutrition and food intake, as well as the importance of regular physical activity, cannot be over-emphasized. In addition, medical advances have led to the development of pharmaceutical and surgical treatments that have demonstrated moderate to high levels of success in achieving weight loss. Used alone or in combination, these treatments offer avenues for individuals to reach healthy weights and improve their health status. However, research shows that short- and long-term effectiveness of these therapies varies considerably.

The Chronic Care Model, developed in the late 1990s to improve the quality of care for chronic conditions may provide a framework for coordinating communities, health systems, and public policies to reduce overweight and obesity. This model emphasizes the importance of communities and health care systems working together to address health conditions. In particular, it provides guidance to health care systems for utilizing community resources, internal policies, and organizational structure to create effective patient interactions and positive outcomes. As such, the model can contribute to the effective prevention and treatment of overweight and obesity by connecting individuals with the medical, support, and community resources necessary to sustain healthy choices.

Public Policy Opportunities

The increasing threat of overweight and obesity requires coordinated and broad-based action to achieve social change and mitigate the impact of these diseases. Relevant stakeholders must come together to address the social and environmental conditions contributing to overweight and obesity. There are several areas where focused public policy could help improve the environment to encourage healthy eating and physical activity:

- Schools and youth serving organizations;
- Work sites and employer programs;
- Community support programs, services, and policies;
- Community design for healthy eating and active living;
- Food industry and food marketing;
- Health care systems; and
- Communications and public advocacy.

Growing concern over the impact of overweight and obesity has already led to the introduction of numerous pieces of state and federal legislation over the past two years aiming to increase healthy food choices and physical activity levels, as well as to several Executive Branch initiatives. In addition, several public and private weight management initiatives have been established, and most recently, the food industry has taken measures to eliminate in-school marketing to children and to develop smaller portion sizes and healthier, more nutritious products.

These efforts reflect widespread interest in addressing overweight and obesity, and they give reason to expect more focused, broad-based efforts. While significant barriers to implementing effective interventions remain, pressure is mounting for a clear call to action and policy response. Stakeholders must build on this momentum and come together to share perspectives, set priorities, and develop a roadmap for advocacy and action.

II. Introduction

Nearly two out of three Americans are overweight or obese. Rarely a day goes by without a story in the popular press about America's expanding waistline. If raising awareness were all it took to combat the growing epidemic of overweight and obesity in this country, then we would be well on our way to reversing the obesity trend. As scientists, health experts and American dieters know, however, it is not. Changing behavior is difficult, and there is suboptimal support in the current environment for healthy choices in food selection and physical activity. While the statistics are clear – the prevalence of overweight and obesity among adults and children has increased significantly over the past 20 years – less clear are the causes behind the growing epidemic and the strategies that will enable us to implement effective solutions.

Though difficult, many experts believe that preventing and treating overweight and obesity is possible. Much already is known about effective prevention and treatment strategies. Scientists are learning more every day about how the brain and body work. Lessons from past successful social change efforts, such as those to reduce smoking rates, increase breastfeeding, and encourage seat belt use, can be applied to efforts to control our weight. Public policy interventions can be put in place to facilitate healthier food and activity choices. During the past months, efforts by several high-profile stakeholders have been announced. These include the United States Food and Drug Administration requirement that packaged foods include trans fat content on their labels; Kraft Foods' decision to eliminate in-school marketing to children, introduce smaller portion sizes, and improve the nutritional content of its products; and the Washington Business Group on Health's formation of The Institute on the Costs and Health Effects of Obesity. While momentum for action in this area is clearly building, a multifaceted approach is required, combining all of these strategies and bringing together individuals, communities, schools, health care delivery systems, employers, the food industry, and policy makers working toward the common goal of a healthier, more fit society.

This paper is intended to lay the groundwork for the development of such an approach and will do the following:

- Briefly describe what is known about overweight and obesity, including prevalence rates, health impacts, and associated health care costs;
- Summarize the underlying causes of the increase in overweight and obesity in the United States and review strategies from other social change/public health campaigns that may prove useful in changing America's food consumption and physical activity patterns;
- Summarize treatment and prevention strategies that have been proven effective or, in the case of many pharmaceutical interventions, are currently in development;
- Describe the Chronic Care Model (a model developed by Improving Chronic Illness Care to address the prevention and treatment of chronic diseases) and discuss how this model may be applicable to overweight and obesity; and finally
- Review public policy opportunities, levers, and challenges for improving the prevention and treatment of overweight and obesity.

A. Overweight and Obesity: A Growing Epidemic

Prevention of obesity among individuals and population groups has been an explicit goal of national public health policy since 1980. In developing the Healthy People 10-year plans (1990, 2000, and 2010) to reduce behavioral risk for disease through specific and measurable health objectives, the United States Public Health Service suggested that government agencies work with public and private agencies to distribute copies of the Dietary Guidelines for Americans and other educational materials; encourage development of nutrition education and fitness programs through grants to states; and support research on methods to prevent and control obesity among adults and children.² Despite these and other efforts, the prevalence of overweight and obesity in the United States has reached epidemic proportions. Nearly two-thirds of adult Americans are overweight or obese, and the prevalence of overweight among American children between the ages of 6 and 19 has tripled during the past 20 years, from 5 percent in 1980 to 15 percent in 2000.¹ Further, the prevalence of overweight and obese children and adolescents is disproportionately high among some racial and ethnic groups. One in five Hispanic and African-American children is overweight.

B. Health Effects

United States Surgeon General Richard Carmona calls obesity America's single biggest health problem. The evidence for the relationship between obesity and several chronic illnesses is becoming increasingly clear. Obesity is a risk factor for numerous diseases including type 2 diabetes, coronary artery disease, stroke, sleep apnea, degenerative joint disease, and certain forms of cancer.³ (Table 1.) Children who are overweight are more likely to become overweight adults, and the myriad health problems associated with overweight are likely to affect them at younger ages. The sharp increase in the number of children and adolescents diagnosed with type 2 diabetes, previously known as “adult onset diabetes” and rarely, if ever, seen in children 20 years ago, is just one example of this trend. However, research shows that for the overweight and obese, even a small reduction in weight can positively affect health status.

| TABLE 1. HEALTH RISKS ASSOCIATED WITH OBESITY ⁴ | |
|---|---|
| <ul style="list-style-type: none"> • Premature death • Type 2 diabetes • Heart disease • Stroke • Hypertension • Gallbladder disease • Osteoarthritis • Sleep apnea • Asthma • Breathing problems | <ul style="list-style-type: none"> • Cancer (endometrial, colon, kidney, gallbladder, and postmenopausal breast cancer) • High blood cholesterol • Complications of pregnancy • Birth defects⁵ • Menstrual irregularities • Stress incontinence • Increased surgical risk • Depression |

C. Costs

Overweight and obesity have substantial economic consequences for the United States health care system. According to recent studies, estimates of annual medical spending attributable to overweight and obesity range from \$92.6 billion^a to \$117 billion^b or approximately 9 percent of all medical spending.^{6, 4} Most costs associated with obesity are due to type 2 diabetes, coronary heart disease, and hypertension.⁷ Finkelstein *et al.* found that average annual costs for obese people are \$732 higher per year, or 37.4 percent more than medical costs for people with normal weights. Further, they found that Medicare and Medicaid pay for nearly half of health care costs associated with obesity.⁶ Unless programs aimed at reducing rates of overweight and obesity are successfully implemented, health care costs attributable to these conditions will continue to rise. With health care premiums increasing at double digit rates, state budget crises threatening Medicaid funding, and Medicare spending spiraling out of control, state and federal governments – as well as employers, who finance nearly half of health care costs – have a clear incentive to act now to reduce rates of overweight and obesity.

III. Social and Environmental Influences on Health Behaviors

With the rising prevalence, health effects, and costs of overweight and obesity described above, the United States is undoubtedly facing an epidemic. Clear evidence for the underlying cause of the staggering increase in overweight and obesity remains elusive. Instead, myriad factors have been identified. While some have argued that the increase is due to biological predisposition, the increase in the percentage of overweight and obese people has occurred too quickly to be explained merely by the human propensity to store fat when caloric intake exceeds expenditure.⁸ Rather, an examination of the social and environmental domains in the United States reveals more plausible explanations for this trend.

A. Health and Environment Models

Public health theory and practice have long identified connections between an individual's health or disease state and his or her environment. One model for mapping environmental influences is Swinburn's Epidemiological Triad, which demonstrates that health outcomes are determined by the interaction between hosts, vectors and environment. When considering overweight and obesity, the host includes the person, his or her genetic makeup, and preferences; vectors include food and physical activity; and the environment includes a person's access to healthy and unhealthy food, as well as his or her access or lack of access to physical activity options. A more recent model designed by The Partnership to Promote Healthy Eating and Active Living focuses specifically on the environmental influences that contribute to physical activity and dietary choices.⁹ This model posits that behaviors with many spheres of environmental influence are difficult to change, but that changes in these areas have the potential to significantly impact health.¹⁰ Together, these and other models highlight the significance of environmental factors in the development of overweight and obesity. After identifying social, cultural, and environmental factors underlying the increase in these diseases, we can begin to formulate strategies to address them – drawing on other movements for

^a In 2002 dollars.

^b In 2000 dollars.

health and social change as models – to begin to mitigate the growing public health threat of overweight and obesity.

B. Environmental Correlates to Overweight and Obesity

Changes in social, cultural, and environmental conditions have emerged over the past several decades that correlate with higher rates of overweight and obesity. These include:

Decreased physical activity. With the rise of technology, physical activity during work and leisure time has decreased significantly.¹¹

- The shifting from heavy manual labor to service and technology jobs suggests a decline in physical activity at the workplace;¹² and
- Children now spend an average of 25% of their waking hours in front of the television or computer.¹³

Further, fiscal crises in schools have led to funding cuts for physical education programs.

- In 2001, 48% of adolescents were not enrolled in a physical education class, and 68% did not attend a physical education class daily.¹⁴

Increased use of commercial food products. As dual-income and single-parent households have increased, less time is devoted to preparing food in the home. Efficiencies in farming techniques have decreased the relative cost of food – food now comprises a much smaller proportion of average per capita income than was formerly the case. Perhaps as a result of these developments, convenience foods and eating out have become more popular.¹² Consumers have little control over portion size or ingredients in commercial foods, which may contribute to less healthy food choices.

- The average number of commercially prepared meals eaten per week increased from 3.7 in 1981 to 4.2 per week in 2000;¹⁵ and
- Food preparation in the home has decreased from less than 20 hours per week in the 1950s to less than 10 hours per week in 1998 – 1999.¹²

Larger commercial food portions. Another, perhaps more visible trend is the “supersizing” of portions of commercial food and beverages in the United States. People simply no longer have the choice of smaller serving sizes that were once available. For example, in the 1950s McDonald’s offered a 7-ounce soda. Now, patrons’ options range from a 12-ounce “child size” cup to a 42-ounce “supersize” soda.

Community design does not support physical activity. Physical activity is becoming progressively more difficult to incorporate into our daily lives; one explanation is that community design has changed.

- New schools are often built outside the center of communities, and the number of children walking and biking to school has declined since the 1970s;¹⁶

- Many communities, especially in suburban and rural areas, do not have sidewalks, sometimes making it difficult and even dangerous to walk; and
- The proximity of exercise and recreational facilities and the number of times per week an individual exercises are correlated.¹⁷

Socioeconomic status. In developed countries, there is an inverse relationship between income and overweight;¹⁸ those with lower incomes are more likely to be overweight. Low-income communities often have less access to healthy foods than more affluent communities and are less safe for physical activity.

- A study examining the number of food stores based on neighborhood wealth found that supermarkets are more likely to be located in wealthier neighborhoods;¹⁹
- Low-income communities may have an abundance of convenience or liquor stores, which are more likely to sell less healthy snack foods than fresh fruits and vegetables. Further, healthy food is often more expensive than less healthy convenience foods; and
- Some low-income neighborhoods may not be safe, making it difficult for residents to exercise outdoors.

To date, programs addressing overweight and obesity have primarily focused on individuals through nutrition education, physical activity promotion, medical management, pharmaceuticals and surgery for the severely obese. The trends noted above suggest that more significant changes in weight maintenance and prevention of overweight may be achieved by a comprehensive approach to health that addresses underlying environmental factors.

C. Lessons Learned From Successful Public Health Campaigns

Finally, several lessons can be learned from other health and social movements that have been successful in promoting alternative behaviors by addressing their underlying causes. Appendix A: Other Social Movements as Models for Addressing Overweight and Obesity summarizes the Partnership to Promote Healthy Eating and Active Living's analysis of successful strategies utilized in three public health interests: seatbelt promotion, breastfeeding promotion, and tobacco cessation.²⁰ This analysis found that:

- Seatbelt promotion took a multifaceted approach using education and media campaigns in combination with policy change and law enforcement;
- Breastfeeding promotion was successful in applying social marketing and Surgeon General and WHO support, as well as in addressing environmental and cultural barriers; and
- Tobacco cessation has been accomplished primarily through education, media campaigns, broad-based coalitions, lawsuits, changing social norms, and changing public policy.

While the health behaviors addressed by these movements are different, lessons can be learned from their success:

- Meaningful change takes time; the three movements analyzed occurred over decades;

- All three movements took advantage of significant events to catalyze action;
- Combining education along with policy changes at the national, state, and local levels was effective in all three campaigns; and
- Broad-based public and private sector collaboration was utilized to support these initiatives.

Effective strategies to address overweight and obesity may not be as straightforward as those used in the three movements described above. Unlike smoking-related illness, overweight and obesity have neither a single cause nor a single solution.²¹ Any weight management initiative must take into account that Americans place very high value on individual rights over the common good¹⁰ and that policy that appears to regulate food choices is likely to be controversial.

D. Summary

Knowledge about current trends in lifestyles, such as increased use and larger sizes of commercial foods and the relation of community design and socioeconomic status to physical activity and food availability, can enhance our ability to address the underlying causes of overweight and obesity. There is growing awareness of overweight and obesity, making this an opportune time to take action to reverse the current trends. With heightened awareness and readiness to change, we can craft and implement a strategy that builds both on the evidence about preventing and treating overweight and obesity, as well as lessons learned from past public health successes.

IV. A Review of the Evidence: Effective Approaches to Preventing and Treating Overweight and Obesity

Many medical professionals become pessimistic about the effectiveness of treatment interventions for overweight and obesity when their patients fail to lose weight or maintain weight loss. However, there is evidence to support interventions that can sustain long-term weight loss,²² and the clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults released by the National Institutes of Health provide the most comprehensive review of research findings.²³

Numerous interventions for overweight and obesity exist, ranging from simple lifestyle changes like dieting and physical activity to more medically-oriented interventions such as prescription drugs and bariatric surgery. Used alone or in combination, these interventions offer avenues for individuals to reach healthy weights and improve their health status. However, research shows that short- and long-term effectiveness of these therapies varies considerably. The following provides a brief overview of these treatments and their relative effectiveness, and Appendix B: Evidence-Based Interventions provides specific findings from research studies.

A. Overweight in Children and Adolescents: Prevention

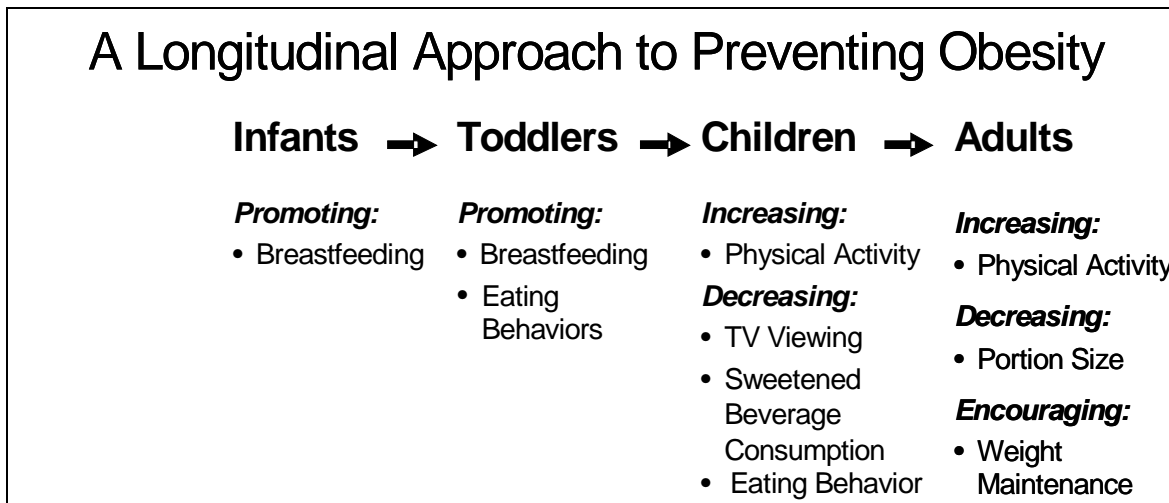


Figure 1: Weight Management Strategies over the Lifespan.²⁴

Prevention of overweight in children is critical, as research shows that about one-third of overweight preschool children and one-half of overweight school-age children remain overweight as adults.²⁵ The risk for becoming an overweight child or adult may begin during pregnancy, with additional risk factors added throughout the lifespan. Some evidence suggests that being small or large for gestational age contributes to being overweight in adulthood. Additionally, infants with high birth-weight (greater than 9 pounds) may be more likely to develop obesity in adulthood.²⁶ Evidence also supports breastfeeding as having a protective effect on the development of overweight as a child or adolescent.^{27, c}

A recent review indicated that the most effective strategies to reduce the risk of overweight in children²⁸ include:

- Increasing physical education and recreational physical activity;
- Decreasing television viewing; and
- Decreasing sweetened beverage consumption.

As children are often influenced by their parents’ eating habits, any intervention aimed at children must also educate parents on healthier nutritional options and enlist the support of the entire family. If children have one obese parent, their risk of being obese increases three-fold; if both parents are obese this risk increases to thirteen-fold.²⁹

B. Overweight in Children and Adolescents: Treatment

Some promising interventions are available for children and adolescents that can focus on the child or family. The following section will discuss some of these.

Parent – Child Interventions. A popular model developed by Epstein addresses nutrition, physical activity and health choices using a color-coded food chart. Children and their families learn

^c Odds ratio for being overweight of 0.80 (95% CI, 0.67-0.96).

which foods should be eaten sparingly and which can be eaten liberally. Results of 10-year outcomes for obese children treated in four randomized controlled trials comparing different combinations of intervention (child, child-family, no intervention) show that:

- 34% of participants lost 20% or more of their body weight;
- long-term success was achieved when parents and children were targeted and supported as compared to non-targeted controls; and
- 34% of the variance in response was predicted by sex, baseline overweight, self-monitoring weight, meals eaten at home, and family and friends' support for healthy eating and exercise.³⁰

School-Based Programs. School-based interventions that typically improve weight include:

- Promoting physical activity and health promotion;
- Linking with families and communities to encourage completion of take-home activities;
- Providing healthier food in cafeterias;
- Providing counseling and psychological support for eating disorders and self-esteem issues; and
- Creating a health curriculum where children learn the benefits of healthy eating and physical activity.

To date, school-based programs have not demonstrated a long-lasting impact on measures such as Body Mass Index (BMI) or body fat.^d However, there are still a number of reasons why these interventions should continue in the short-term, including²⁸:

- Beginning interventions with children may allow them to receive immediate benefits from greater activity levels and better nutrition;
- Continuing research into these interventions may identify optimal ages for intervention;
- Modifying chronic disease risk factors in childhood may help lower risk factors in adulthood; and
- Modifying behavioral patterns in children may lead to improved habit development as adults.

C. Overweight and Obesity in Adults: Prevention

During early adulthood, the mean weight gain in 20 to 40-year-olds is 1.8 to 2.0 pounds each year.³⁷ Preventing such weight gain in adults requires either increasing physical activity, eating less, or a combination of the two. Recent research indicates that weight maintenance in young adults requires additional energy expenditure or a reduction of 100 kcal per day. When compared against a deficit of 500-1,000 kcal per day needed to produce one to two pounds of weight loss a week, these values show the relative benefits and ease of preventing weight gain over the more difficult task of weight reduction.³¹

^d Body mass index (BMI) is a measure of body fat based on a relationship between weight and height. Body mass index is related to risk of disease and mortality.

D. Overweight and Obesity in Adults: Treatment Interventions

About 29% of men in the United States and 44% of women are attempting to lose weight,³² but only 20% report that they are reducing calories or engaging in physical activity to achieve weight loss.²³ Recent findings from the Diabetes Prevention Study³³ and the Diabetes Prevention Program³⁴ highlight the importance of lifestyle interventions in achieving and sustaining weight loss.

Dietary Weight Loss Programs. Perhaps the best-known of weight loss interventions, diets contribute to weight loss by modifying food consumption patterns and reducing caloric intake. Diets fall into several categories, including low calorie diets^e, very low calorie or very low energy diets^f, and more. Research on these diets shows differential outcomes on dimensions such as magnitude of weight loss and duration of weight loss maintenance (see Appendix B). Overall, recidivism rates are high, even for the most effective weight reduction regimens, and dieters often see weight-loss benefits taper off by 12 months.²³ However, additional findings suggest that diets may be more successful when used in combination with physical activity and/or social support programs.²³

Physical Activity. Physical activity is a key component to helping people lose weight and maintain the weight loss. Physical activity includes aerobic activity like walking, biking, and swimming, as well as anaerobic activity such as weight training. Data from the National Weight Control Registry, whose members have lost an average of 66 pounds and maintained a minimum weight loss of 30 pounds for an average of five years, show that people successful at long-term weight loss and maintenance share a number of characteristics, including engaging in 60 minutes of daily exercise (equivalent to an energy expenditure of 400 kcal/day).³⁵ The National Institutes of Health found strong evidence for the benefits of engaging in physical activity since it results in modest weight loss in overweight and obese individuals independent of calorie reduction through diet.²³ The Guide to Community Preventive Services physical activity report recommends the following strategies for promoting physical activity:

- Informational approaches to increasing physical activity, including developing community-wide campaigns; affixing point-of-decision prompts; implementing school-based physical education programs; and providing non-family social support;
- Behavioral and social approaches to increasing physical activity, including individually adapted behavior change; and
- Environmental and policy approaches to increasing physical activity including creating and/or enhancing access to places for physical activity combined with informational outreach.³⁶

Behavioral Interventions. Behavioral interventions are part of most structured weight loss programs and include teaching people new ways to deal with the following: (1) recognizing triggers; (2) managing out-of-home eating; (3) combating negative thought patterns; (4) developing non-food rewards; and (5) improving compliance with dietary regimens and physical activity. Behavioral therapy may be delivered in group or individual sessions. A systematic review of the literature found that behavioral therapy is an effective adjunct to weight loss programs, but that effects are negligible

^e Low calorie diets (LCD) require between 1000 to 1200 kcal/day.

^f Very low calorie diets (VLCD) require less than 800 kcal/day.

three to five years post training if not reinforced regularly. Studies have found all behavioral therapy approaches to be equally effective.²³

Medication. The only long-term medications recommended by the Food and Drug Administration (FDA) for weight loss are Orlistat and Sibutramine; the former acts as a lipase inhibitor, and the latter acts as an appetite suppressant. The use of these medications has been shown to produce modest weight loss (5% -7% weight loss).^{37, 38, 39, 40} These medications are recommended for use only within a structured weight management program and should only be started if patients have failed to lose one pound a week with a six-month conventional diet and lifestyle modification.

Surgery. If the weight loss strategies mentioned above do not work, bariatric surgery becomes an option for the severely obese. Bariatric surgery is currently the most effective intervention available to treat severe obesity. Eligibility criteria includes BMI greater than or equal to 40 or BMI greater than 35 with comorbidities.

Approximately 64,000 bariatric surgeries were performed in the United States in 2002. Because of its effectiveness, the surgery (usually Roux- en Y, open or laparoscopic) will likely increase in popularity; however, patients need to be aware of the criteria for selection, risks, and potential complications. Patients undergoing surgery should ideally be involved in robust pre/peri/post/follow-up programs to ensure success. Clinicians, including pharmacists, need to be aware of special needs for these patients post surgery, especially when they return to primary care for management.

E. Summary of Findings

Based on the above evidence, a summary of knowledge to date includes:

- Addressing prevention in children is most effective when parents and families are part of the intervention;
- Low calorie diets and very low calorie diets are effective methods of weight loss. The former produces less weight loss than the latter. Both diets result in similar weight losses at 12 months;
- Physical activity plays an important role in weight loss and weight maintenance;
- The combination of diet, physical activity, and behavioral interventions is more effective than any component alone; and
- Bariatric surgery is the most effective method of weight loss for severe obesity (BMI greater than 40 or greater than 35 with comorbidities).

While research on effective prevention and treatment interventions is limited, there is enough evidence to begin shaping public policy. Although more robust policy directives can be developed as research improves, we should not wait before moving forward. There is a critical opportunity today to catalyze the social change needed to stem the tide of overweight and obesity.

V. The Chronic Care Model

The Chronic Care Model was developed by Edward Wagner, MD, Director of the MacColl Institute for Health Care Innovation at the Group Health Cooperative of Puget Sound, and colleagues in 1998 through a systematic review of successful strategies in managing chronic disease.⁴¹ It provides a framework for utilizing community resources, policies, and the organization of health care systems to create effective patient interactions and positive outcomes. The Chronic Care Model has been examined for its potential use as a social change model for weight management. However, because the Chronic Care Model was originally designed to enhance clinical care of chronic diseases, the components of the model outside the health care system must be expanded in order to address adequately the biological, environmental and social issues underlying overweight and obesity. The following sections provide a brief overview of the six components in the Chronic Care Model and offer examples for their possible application to the management and prevention of overweight and obesity, including key players in communities, the public policy arena, and the health care system.

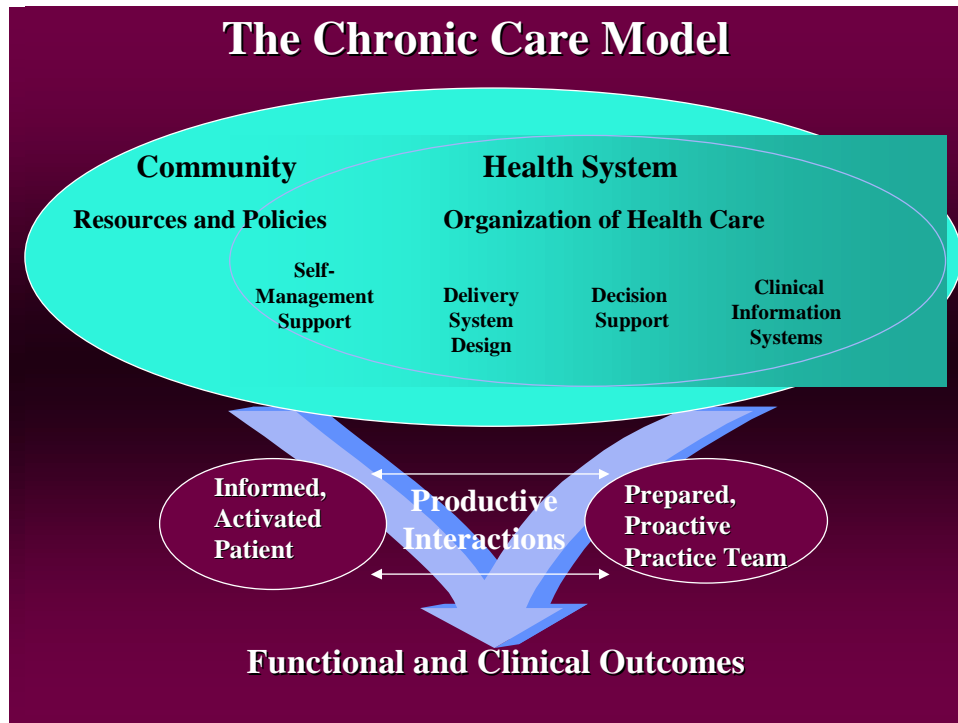


Figure 1. Overview of Chronic Care Model⁴²

A. Community

Community resources and policies can support or expand a health care system's chronic disease management programs. Historically, health care systems have not maximized their use of community resources, in part because clinicians may not have been aware of existing local services and programs. The Chronic Care Model integrates community resources as an essential component of health care and includes advocacy for policies to improve patient care. Health care systems can improve care for individuals by:

- Partnering with community organizations to link individuals to local resources;⁴¹ and

- Utilizing resources at state and county departments of health, community health centers, and ethnic health organizations.

Application to weight management: Connecting an individual with community resources is helpful for gaining more personal support for his or her weight management efforts. Because dietary and physical activity choices are affected by the social and environmental factors described previously, community resources are particularly important in weight management. Community groups can provide essential links to programs to enhance an individual's motivation and adherence to weight management, such as exercise groups, chronic disease support groups, or senior citizen groups. Community, government, and school-based organizations can partner to address policies affecting barriers to healthy eating and physical activity. For example, community and school groups and policy makers may work together to ensure safe sidewalks for children to walk to school.

B. Health Care System Organization

As shown in Figure 1, a health care system encompasses four elements of the Chronic Care Model: self-management support, delivery system design, decision support, and clinical information systems. Using the Chronic Care Model, health care systems can better align their structure with care management goals, moving away from a focus on acute illness and towards preventive care.⁴¹ Restructuring involves organizational prioritization and commitment, including the following:

- Revised goals, organizational policies and procedures, including the facilitation of care within and outside the organization;
- Aligning resources and staffing with the organization's mission;
- Priorities reflected and supported by clinician incentives; and
- Commitment to continual quality improvement and systematic management of errors.

Application to weight management: As health care systems restructure to make weight management a priority, measuring BMI and discussing weight management become an essential component of health care encounters. Clinician incentives would be created for measuring BMI, providing weight management counseling, and referring overweight and obese patient to community and health system resources. Employer groups, schools, and municipalities should look for opportunities to establish common goals with healthcare systems related to overweight and obesity.

C. Self-Management Support

Individuals spend only a small amount of time with their health care clinician and manage many aspects of their health care themselves. Components of successful self-management support include:

- Teaching effective self-management techniques and skills training;
- Utilizing tailored educational materials;
- Providing psycho-social support;
- Providing culturally competent care, resources and support services; and

- Using a shared-decision making approach.

Application to weight management: A collaborative approach to weight management ensures that goals are relevant to the individual and can reasonably be accomplished through everyday food and activity choices. Providing culturally competent care may be especially important because culture influences food consumption and physical activity choices. Similarly, the food industry may contribute to individuals' education by printing more detailed information on food labels, thereby reinforcing patient education and understanding of risks and personal responsibilities.

D. Delivery System Design

In the Chronic Care Model, the delivery system is designed to provide a broad spectrum of care services for individuals. The following elements are present in a delivery system that supports acute care, maintenance and prevention:

- A team approach to culturally competent health care with clearly defined roles and protocols for care and case management;
- A disease registry system that stratifies individuals into high-risk or low-risk;
- Built-in point-of care reminders and steps for follow-up care; and
- Evaluation tools to ensure that treatment conforms to recommended guidelines.

Application to weight management: Overweight and obese individuals could be stratified into high- or low-risk as determined by BMI and other health indicators, directing the clinician to a treatment algorithm that meets each individual's weight management needs. For example, individuals with severe obesity would be referred to programs that address their concerns, and those who simply want to increase their physical activity could be directed to an exercise group. The health care team approach could enhance individuals' weight management efforts, ensuring continuity of care, increased efficiency, and information flow between primary care providers and specialists. The role of the physician and other clinicians, such as nurses and registered dietitians, should be clearly delineated in order to provide high quality comprehensive care for all individuals' care, maintenance and prevention needs. For example, follow-up care for prevention and maintenance in weight management need not be exclusively provided by a physician, and could be also completed by telephone or email. For employers, schools, and community groups, opportunities include media campaigns to educate individuals about the degree of risk with increasing ranges of BMI, the provision of healthy alternatives in vending machines and cafeterias, and the promotion of active lifestyles.

E. Decision Support

Clinicians should ideally make their treatment decisions by utilizing evidence-based guidelines and discussing treatment options with their patients to engage them as active partners in managing their health. Decision support can:

- Endorse a comprehensive treatment algorithm with built-in appropriate education materials and resources;

- Give incentives to deliver care within established guidelines by linking guidelines to physician performance targets; and
- Provide data to determine the cost-effectiveness of treatment options.

Application to weight management: Weight management guidelines could include, for example, a treatment algorithm that involves calculating BMI for all individuals and providing recommendations for certain BMI ranges. The health care organization can support their clinicians in the endeavor by providing the tools to facilitate action, such as BMI wheels and tip sheets to support physician and health care consumer decision making. Further, the food industry and other key players can utilize information about consumer preferences and purchasing practices to begin to support healthy consumer choices. One example includes adding additional information and disclosure to food labels, such as energy density information.

F. Information Systems

Information systems support an optimally functioning health care system by monitoring and coordinating care. Effective chronic illness care is enabled and supported by information systems that:

- Track individuals as well as populations;
- Enable clinicians to create a registry of individuals with certain medical conditions, including the identification of high-risk individuals;
- Provide information to clinicians and health care consumers to enhance coordination of care;
- Act as a resource for clinicians searching for more information on an individual's condition, his or her care guidelines, and education materials.

Application to weight management: Information systems support stratification of overweight and obese individuals by health risk so that effective interventions can be delivered proactively. This system would distinguish severely obese individuals from those who are moderately overweight and may provide separate treatment algorithms. Similarly, food industry, legislators, and community groups have the ability to leverage their existing informational resources, marketing activities, and research and development efforts to provide education, interactive web tools such as BMI and calorie calculators, and consumer feedback to help address and inform issues related to overweight and obesity.

G. Summary

When expanded to create a robust model including key players in the social, environmental, and policy arenas, the Chronic Care Model is a viable structure to address the management and prevention of overweight and obesity. The multifaceted public health approach described above needs to include effective public policy initiatives that extend and supplement the clinical dimensions of the Chronic Care Model. These public health approaches are prerequisites to addressing the pervasive environmental factors driving the increasing prevalence of overweight and obesity.

VI. Public Policy: Opportunities, Levers, and Challenges

As described above, one solution to the obesity problem lies in identifying feasible ways to cope with and change the current environment.³¹ This solution will involve implementing both shorter- and longer-term interventions. Public policy is usually thought of as legislation, regulation, or other legal actions to affect change. However, less coercive interventions, such as social and economic incentives, can also be as effective as policy levers. Strategies to help overweight and obese individuals better manage within the current environment must be developed in the short term. In the longer term, a combination of legislation, regulation, and social and economic incentives can be used to make the environment more supportive of healthier lifestyle choices. These environmental changes are a focus of a number of the policy opportunities described below.

A. Policy Opportunities

There are several areas where focused public policy could help improve the environment to encourage healthy eating and physical activity. A successful approach needs to bring relevant stakeholders together and must include the following components:

- Schools and youth-serving organizations;
- Work sites and employer programs;
- Community support programs, services, and policies;
- Community design for healthy eating and active living;
- Food industry and food marketing;
- Health care systems; and
- Communications and public advocacy

The section that follows highlights specific federal and state public policies that could facilitate the development of an environment more conducive for healthy choices around food and physical activity. Appendix C identifies additional policy interventions and potential strategies for each of the above components, involving a broad range of stakeholders. These interventions have been drawn from a number of sources.^{43,12,44,45,46,6,56,47,21,48,49,50,51,4} They are not meant to be exhaustive nor are they recommendations, *per se*. Rather, they are examples of policies that could facilitate the development of an effective roadmap for advocacy and action.

For each of these potential interventions, several questions must be addressed:

- Who are the major stakeholders (federal government, state government, school board, health care industry, food industry, etc.)? What is the likelihood of opposition?
- Who benefits and who loses from implementing the intervention? How do we make it a win-win situation?
- Is there evidence that the intervention is effective and will successfully address the problem? If not, is further research needed?
- What is the likelihood of success? What are the barriers to implementation and how can they be overcome? Which interventions are the most feasible in both the short and long-term?

- Is the intervention cost effective? Who is expected to shoulder the costs?
- What may be unintended consequences of the intervention and how might they be mitigated?

Schools and youth-serving organizations. Children spend up to half their waking day at school – they may consume two-thirds of their meals on campus, and the school day may represent their only opportunity for regular physical activity. As such, schools and other youth services represent an integral component in any effort to prevent and treat overweight amongst our nation’s youth. Incorporating nutrition education, physical activity, and policy responses into these settings can help students develop healthy attitudes and behaviors.

The upcoming reauthorization of federal child nutrition programs, including the National School Lunch and Breakfast Programs, the Child and Adult Care Food Program, the Summer Food Service Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), provides Congress with an opportunity to improve these programs to help children and families make better food choices.

Specific policies to improve the school environment could:

- Increase monitoring and enforcement of nutritional requirements for schools participating in federally-assisted meal programs, and extend requirements to non-participating schools as well;
- Provide subsidies to schools to allow them to offer healthy food options at lower prices to students;
- Enact legislation limiting the sale of unhealthy or nutritionally-dense snacks and beverages on school campuses;
- Set state or federal requirements for teachers and food service staff to complete yearly nutrition and nutrition education training;
- Mandate daily physical education for students in all grade levels K – 12; and/or
- Increase federal, state, or local funding for school nutrition and physical activity programs.

Work sites and employer programs. Many adults spend more than half of their waking hours at work. Like school-based efforts to improve nutrition and increase physical activity, workplace interventions hold great potential as routes for addressing overweight and obesity. This is particularly true as evidence suggests that working environments are becoming increasingly sedentary and that United States employees are working longer hours – leaving employees little opportunity to be physically active. Worksite policies, incentives, and facilities design can change the work environment to not only provide opportunities, but also actively encourage employees to adopt healthy behaviors and dietary practices to manage their weight. These changes may not only contribute to healthier and more productive employees, but may also benefit employers through reductions in health care costs associated with overweight and obesity. Possible public policies could:

- Provide employers a tax deduction for the value of fitness and health promotion benefits provided to employees;

- Enact a tax exclusion for employer-sponsored fitness and health promotion benefits so that they are not included as taxable income for workers; and/or
- Change policies in the Social Security program to allow higher earnings without a reduction in benefits in order to encourage seniors to continue working and maintaining active lifestyles.

Community support programs, services, and policies. Outside of work or school, children, adults, and families spend their time in a variety of home and community settings that provide additional avenues for promoting proper nutrition and physical activity. As a result, incorporating overweight and obesity interventions into these settings through community support programs and services can further contribute to the prevention and treatment of these conditions. Religious centers, shopping malls, community service centers, and more can all serve as platforms for providing a broad array of programs and services that can improve community nutrition and physical activity levels. In addition, they can facilitate individual efforts to manage weight and improve health through the social, environmental, and policy support mechanisms they provide. Possible policy interventions could:

- Modify government-sponsored food assistance programs to encourage better nutrition by:
 - Developing incentive systems to encourage food stamp recipients to purchase healthy foods;
 - Allowing food stamps to be used at farmers' markets;
 - Improving the Department of Agriculture's (USDA) commodity food program on American Indian reservations by increasing availability of low-fat foods and fresh fruits and vegetables; and/or
 - Expanding food options under the Women, Infants, and Children (WIC) program to include a greater variety of fresh fruits and vegetables and other healthy foods.
- Provide tax incentives to encourage physical activity or other weight management efforts:
 - Eliminate or reduce sales taxes for purchase of exercise equipment or bicycles;
 - Increase taxes for electronic or sedentary entertainment equipment (e.g., home entertainment technology); and/or
 - Provide tax credits or direct subsidies for individuals and families to help them purchase fitness center memberships.
- Increase federal, state, or local funding for community-based education, outreach, and support programs around physical activity and nutrition.

Community design for healthy eating and active living. In addition to the social aspects of community described above, the physical design, layout, and structure of community settings can also facilitate – or impede – individuals in their efforts to engage in regular physical activity. For example, research shows that suburban communities segregated by residential, commercial, or industrial use discourage walking and bicycling as regular forms of transportation compared to non-segregated urban areas.⁵² Alternately, community design that includes parks and trailways near homes or work promotes physical activity.⁵³ Communities can take these considerations into account and develop safe and accessible environments that encourage walking, running, biking, or other forms of physical activity. This can increase community members' overall levels of health and well-being and reduce their risk for becoming overweight or obese. Specific public policies to improve community design could:

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

- Increase funding to municipal governments to implement innovative community design and development projects that promote walking and other forms of physical activity;
- Institute city or regional ordinances that support development of mixed-use lands or other design features such as parks or trails that encourage walking and other forms of physical activity;
- Increase tax on gasoline to fund community design projects; and/or
- Establish liability protections for users and producers of physical activity facilities and spaces.

Food industry and food marketing. The way in which food is prepared and delivered to individuals and families can dramatically impact consumption patterns and weight gain. As the health effects of overweight and obesity have become better understood, the food industry and its preparation, packaging, and marketing practices have come under scrutiny as major contributors to the obesity epidemic. Food-related law suits and increasing regulatory oversight – including the recently announced regulation requiring food producers to include trans fatty acid content on food labels – reflect the new level of accountability to which the public and the government are holding the food industry. With increasing outside pressure – as well as new internal commitments to promoting healthier alternatives – food industry practices could be modified to communicate appropriate nutrition information, increase access to healthful foods, and encourage healthy eating practices. Possible public policy interventions could:

- Levy state and local government taxes on soft drinks, candy, and high-fat, high-sugar snacks;
- Require manufacturers to include complete nutrition and energy density information on food labels.
- Enact regulations that require restaurants to provide calorie and nutrition information of foods to consumers;
- Restructure farm subsidies to promote consumption of healthier foods; and/or

Health care systems. The health care system can offer many services and resources for the appropriate prevention and/or treatment of overweight or obesity. Individuals turn to these systems for health care services and advice, and in fact, 74% of recent survey respondents indicated that health care providers should play a major role in fighting obesity.⁵⁴ Accordingly, health care systems can be important contributors to helping individuals achieve or maintain healthy weight levels. By aligning the organization and delivery of health care with disease management and preventive health priorities, and by coordinating the multiple facets of the health system to incorporate appropriate weight management strategies, health care systems can greatly facilitate individuals' weight control efforts. Possible public policy interventions could:

- Reimburse health care providers under state and federal employee health benefit plans, Medicaid, SCHIP and Medicare for nutrition and obesity counseling and other cost-effective prevention and treatment interventions;
- Include performance on overweight and obesity control measures as a basis for tiered reimbursement in pay-for-performance Medicare and Medicaid plans; and/or

- Provide federal or state grants to health care institutions to conduct overweight and obesity prevention and treatment programs in partnership with community based organizations.

Communications and public advocacy. Adopting appropriate communications and public advocacy strategies can be critical for effecting the social change needed to reverse the current trends in overweight and obesity. As past experience with social change movements demonstrates, strategies such as social marketing, media campaigns, and public policy changes can be highly successful in leading to target outcomes. Particularly because media has such a widespread influence on social and cultural norms – and an unparalleled ability to communicate health information to the public – its role should not be underestimated. Without a fundamental shift in public attitudes and behaviors regarding nutrition, food intake, and physical activity, overweight and obesity will continue to pose a serious population-wide threat. Communications and public advocacy efforts are crucial for driving that shift, contributing to increased awareness and prioritization of appropriate diet, exercise, and weight management practices. Potential public policy interventions in this area could:

- Strengthen and reinforce federally-funded public awareness campaigns on physical education and nutrition (e.g., HealthierUS Initiative or VERB Youth Media Campaign); and/or
- Increase funding for community-based efforts to encourage physical activity and proper nutrition.

Action has already begun in a number of these areas. For example, several states and localities have introduced legislation that would ban or restrict the sale of soft drinks in schools. In addition, several large employers, recognizing the impact of overweight and obesity-related health care costs on their bottom line, are beginning to take steps to encourage their workforce to become more active. However, the majority of these interventions face a number of barriers, and effective implementation would require a concerted effort involving numerous stakeholders.

B. Challenges

Successful implementation of strategies and interventions to address overweight and obesity require that we address a number of barriers. These barriers include:

- Lack of understanding amongst the general public of the significance of obesity;
- The notion that food and activity choices are a matter of personal choice and should be free from government or other interference;
- Lack of access by many schools and communities to healthy food options and safe, convenient options for physical activity;
- Lack of consensus about standards of practice for preventing, diagnosing, and treating overweight and obesity;
- Lack of funding;
- Lack of a policy and/or legislative framework to support multidisciplinary approaches to the prevention and treatment of obesity;⁵⁵ and
- Lack of incentives for the food industry.

As we consider policy options to improve the prevention and treatment of overweight and obesity, we must be cognizant of these challenges and develop strategies for how they may be overcome. Prioritizing initiatives and realistically assessing the stakeholders needed and actions required for implementation are the first steps in this process.

Securing adequate funding for many of these interventions poses perhaps the biggest challenge to effective implementation. According to a recent United States General Accounting Office report, many school officials “cited a barrier that was financial rather than dietary” when it came to improving the nutritional quality of lunches. When school food authorities introduce healthier foods, they risk that students will buy fewer school lunches, resulting in loss of needed revenue. Officials acknowledged that although vending machines sell foods of minimal nutritional value to students, they provide a valuable and often necessary revenue stream for cash-strapped districts. In addition, officials stated that the increased focus on meeting state academic standards limits the amount of time teachers can devote to nutrition education.⁵⁶ Likewise, when faced with a choice between buying text books or providing physical education classes, many school districts opt for the former.

Merely passing legislation to improve the school environment is not sufficient. Legislation that requires schools to limit or prohibit sales of soft drinks or candy, or that mandates physical education classes and recess for children, must also address how school districts are to make up for lost revenue or fund these new initiatives. Requiring employers and health plans to provide coverage for obesity treatment, particularly coverage for bariatric surgery, as part of their health benefit without addressing the issue of unfunded mandates is similarly problematic. As employers seek to pass increases in health care costs along to their employees through higher co-insurance, deductibles, and copayments, such mandates may become empty promises. While some may view taxes on soft drinks, candy, and/or high-fat, high-sugar foods as a potential solution to the funding issue, such taxation is likely to face stiff opposition. Further, as evidenced by states’ recent experiences with tobacco settlement funds, during times of fiscal crisis, there is no guarantee that tax-generated funds earmarked for education, prevention, or treatment programs will not be diverted for other pressing state needs.

C. Government, Community and Industry Actions

Rogan Kersh and James Morone, in their recent *Health Affairs* article, “The Politics of Obesity: Seven Steps to Government Action,” identify seven triggers that prompt government to intervene in citizens’ private habits. These triggers include rising social disapproval, scientific findings and medical science, self-help movements, demonizing the user, demonizing the industry, public mobilization, and interest-group action.⁵⁷ In the area of overweight and obesity, the authors suggest that the first three of these triggers for action have already been satisfied while the remaining four are “in play.”⁵⁷ Evidence of these triggers being activated includes:

- A media search by the International Food Information Council found less than 50 obesity-related media articles in the last three months of 1999 and 1,200 articles covering this topic from October to December of 2002;⁵⁸
- Books such as Eric Schlosser’s *Fast Food Nation* and Marion Nestle’s *Food Politics* have raised consumer awareness regarding the economics and politics of the food industry;

- Leaders in government agencies and many health organizations have identified obesity as a public health epidemic;
- Evidence of the increasing numbers of obese children and the sobering increase in type 2 diabetes in children has captured the attention of parents, schools, and community members nationwide;
- Lawsuits filed on behalf of overweight and obese individuals have received extensive media attention and have drawn popular comparisons to the tobacco cessation movement; and
- New scientific evidence that overweight and obesity can lead to serious health problems and that lifestyle changes can delay the onset of chronic diseases such as diabetes have created incentives for weight management.

Kersh and Morone argue that when the food industry begins to become demonized, the issue of obesity will shift from being a private health matter to being a political issue.⁵⁷ One could argue this shift is now taking place and that momentum is building for significant action. How will government, communities, and the food industry respond?

D. Government Response

During the first half of 2003, some 100 pieces of legislation were introduced in 31 states, and several bills were introduced in the 108th Congress aiming to increase healthy food choices and physical activity levels.⁵⁹ The majority of these bills concern strategies to reduce childhood obesity. They range from creating health advisory committees to prohibiting sales of soft drinks in public schools (for more information on state legislation see Appendix D: Obesity, Nutrition, and Physical Activity Legislation by State).

At the federal level, recent bills include the Improved Nutrition and Physical Activity Act (IMPACT), S. 1172/H.R. 716, the Obesity Prevention Act, H.R. 2227, and the Child Nutrition Initiatives Act of 2003, S.995. Championed by Senate Majority Leader Bill Frist, M.D. (R-TN), IMPACT would fund state and local government efforts designed to prevent, diagnose, and treat overweight and obesity, with an emphasis on education for students and health professionals about the importance of physical fitness and balanced nutrition in maintaining a healthy lifestyle. The Obesity Prevention Act would establish a Commission on Obesity Treatment and Prevention to oversee the research, policy formation, and other activities of the federal government regarding the prevention and treatment of obesity. It also would encourage innovative, school-based activities to help reduce and prevent overweight among children.

The Child Nutrition Initiatives Act of 2003 would encourage healthier nutritional environments in schools and institutions receiving School Lunch Act funds. The “Better Nutrition for School Children Act” (S. 1007), co-sponsored by Sens. Leahy and Lugar, would give the government increased authority to regulate the sale of sodas and snack foods on school grounds. Currently, federal school lunch rules prohibit the sale of “foods of minimal nutritional value” (including soft drinks) in school lunchrooms during the lunch hour. S. 1700 would extend the scope of that prohibition, allowing USDA to regulate sales throughout school grounds from the beginning of the school day until the end of the lunch period. Of note is the Personal Responsibility in Food Consumption Act, H.R. 339, which would bar consumers from bringing obesity-related lawsuits against restaurants and food manufacturers. Such lawsuits have received a great deal of attention in

recent months and are viewed by consumer advocates as a potential vehicle for holding the food industry accountable for encouraging unhealthy food choices.

In addition to federal legislation, there is significant activity in the Executive Branch aimed at reducing the rates of overweight and obesity in the United States. The following section highlights some key activities:

- The FDA released regulations requiring manufacturers of packaged foods to list the amount of trans fatty acids on nutrition labels, effective January 2006.
- The White House Office of Management and Budget urged the Departments of Health and Human Services (HHS) and Agriculture (USDA) to revise the nation's Dietary Guidelines and Food Guide Pyramid to include information that omega-3 fatty acids may reduce the risk of coronary heart disease (CHD), and trans fatty acids may increase the risk of CHD. The Dietary Guidelines affect the content of more than 25 million school lunches; the Food Guide Pyramid appears on many food products, providing guidance on what to eat each day.
- The USDA proposed financial incentives to schools that create healthier environments through better nutrition and physical fitness programs. The proposal, introduced in March, would⁶⁰:
 - Expand funding for nutrition education messages and materials in schools;
 - Support requiring schools to offer low-fat milk as a beverage option for school meals;
 - Expand the pilot program that is providing funds to 100 schools to serve free fruits and vegetables to students; and
 - Provide financial incentives to schools that promote healthy environments.
- The USDA is examining ways to increase the use of food stamps for fruits and vegetables by increasing the number of farmers' markets in low-income communities.
- The FDA completed an organizational reshuffling at its Center for Food Safety and Applied Nutrition in order for the agency to more quickly respond to several new areas of focus, including obesity.
- In May, HHS announced it would award approximately \$13.7 million in grants to states, cities, and other local government agencies for innovative, community-based programs to prevent diabetes, asthma, and obesity as part its "Steps to a HealthierUS" initiative.

In addition to federal and state efforts, school districts and localities are also taking action. Following in the footsteps of the Los Angeles Unified School District, in June a new regulation in New York City was unveiled restricting the sale of snack foods during the school day in public schools. Beginning in the fall of 2003, schools will no longer allow candy, soda, and other snacks to be sold in vending machines. Only foods from an "approved" list may be sold. Such foods cannot contain artificial colors or flavors, coconut or palm oil, or bleached or non-enriched flour, and juices must contain 100% fruit juice.

E. Community Response

Appendix E is a review of selected national obesity and weight management initiatives. These initiatives aim to increase healthy food choices and activity levels.

F. Food Industry Response

Facing a barrage of criticism, blame, and – in some cases – law-suits for what many view as their role in the growing obesity epidemic, the food industry has begun to take steps to reposition themselves as purveyors of healthier food options:

- In January, Pepsico launched new versions of Doritos, Cheetos and Tostitos without trans fatty acids in the United States. Pepsico is also emphasizing their bottled water, Gatorade, and Tropicana juice products as alternatives to their traditional sodas;
- Kraft Foods recently announced it would eliminate in-school marketing to children, introduce smaller portion sizes, and develop healthier, more nutritious products; and
- Some fast-food restaurants are offering healthier fare such as salads, yogurt, and fruit.

While these options may make it easier for consumers to make better food choices, the extent to which the public will take-up these new products is still unknown.

VII. Conclusion

Although changing behavior is difficult, growing recognition of the health impact and costs associated with overweight and obesity, combined with increased knowledge regarding effective prevention and treatment interventions, provide momentum for addressing the epidemic of overweight and obesity in the United States. Reversing current trends will require a multifaceted public health approach and substantial levels of funding.² This paper has sought to provide an overview of the social and environmental causes of overweight and obesity in the United States and to describe a comprehensive approach for addressing these conditions. The Chronic Care Model, if fully implemented across health care systems and communities, can provide the building blocks for effective prevention and treatment of overweight and obesity by connecting individuals with the medical, support, and community resources necessary to sustain healthy choices. Public policies are needed to facilitate the implementation of a comprehensive strategy. These policies must bring together a diverse group of stakeholders – schools, employers, health care systems, researchers, communities, consumers, the food and fitness industries, and policy makers – working together toward the common goal of a healthier, more fit society.

Conditions are converging to create a clear call to action and policy response. A first step in this process is to convene stakeholders to share perspectives, discuss options, and develop priorities toward a roadmap for advocacy and action. National leadership is necessary to ensure the participation of all relevant stakeholders and to catalyze action across groups. However, while federal, state, and local government policies and programs impact a number of the environmental factors that influence dietary and physical activity patterns and can be used to encourage healthier lifestyle choices, a top-down, government-focused approach is not sufficient. Many important changes will be driven by community initiatives, including those involving schools, community design, advocacy groups, health care systems, and employers, as well as partnerships amongst these groups.

- Schools can provide healthy food choices, regular access to physical activity, and nutrition and fitness education;

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

- Employers can design facilities and enact policies to change the work environment to encourage employees to adopt healthy behaviors and dietary practices to manage their weight;
- Communities can serve as platforms for providing a broad array of programs and services that can improve nutrition and physical activity levels and facilitate individual efforts to manage weight and improve health through social, environmental, community design, and policy support mechanisms;
- Health care systems can align the organization and delivery of health care with disease management and preventive health priorities to provide appropriate overweight and obesity prevention tools and treatment to individuals at risk;
- The food industry can communicate appropriate nutrition information, increase access to healthful foods, and encourage healthy eating practices; and
- Policy makers can enact policies that facilitate the development of an environment more conducive for healthy choices around food and physical activity.

VIII. Appendix A. Other Social Movements as Models for Addressing Overweight and Obesity

In their 2001 meeting, the Partnership to Promote Healthy Eating and Active Living analyzed successful strategies utilized in seatbelt promotion, breastfeeding promotion, tobacco cessation, and recycling.²⁰ Categories of important elements in each movements' success are: a crisis, science base, economics, active champions or organizations, coalition development, advocacy, government involvement, mass communication, and planning. The categories were examined and summarized for possible application to addressing overweight and obesity. For the purposes of this paper, three of the categories – seatbelts, breastfeeding, and tobacco – summarized below.

Seatbelt Promotion. The seatbelt promotion campaign, a multifaceted approach with champions in the community, government, and industry, has spanned approximately 40 years.

Catalyzing Events: Events that strengthened the seatbelt promotion movement included the finding that improper restraints were the number one cause of infant deaths, a devastating school bus accident in 1971, increased auto insurance rates, and the National Highway Safety Act of 1991.

Strategies: Policy changes and law enforcement have played significant roles in the campaign's success.

- One case study from New York State showed that prior to implementing a seatbelt law in 1984, the usage rate was 11%, but 15 years later 76% of people used their seatbelts.⁶¹
- The federal government uses incentives to encourage states to pass and enforce laws, such as withholding federal money for highway repair from those states that refuse to pass laws.

Barriers Addressed: The main barrier faced by the seatbelt promotion campaign was the view that individuals should be able to choose whether or not to wear a seat belt, rather than be forced by law. Traffic safety advocates were able to overcome this barrier primarily by utilizing accident, injury, and economic statistics to secure the support of health care organizations and policy makers.

Breastfeeding Promotion. Breastfeeding rates in the United States have been climbing steadily since the 1990s.⁶²

Catalyzing Events: Occurrences that helped the breastfeeding movement included the formation of La Leche League in 1956 in Chicago, Surgeon General's inclusion of breastfeeding in the Healthy People goals since the 1980s, and the USDA push for breastfeeding promotion through the WIC program.

Strategies: Social marketing targeting pregnant women and their families was successful in increasing breastfeeding rates. The movement also addressed the accessibility of breastfeeding through the creation of the World Health Organization (WHO) and UNICEF's Baby-Friendly Hospital Initiative in 1991.

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

- The Women, Infants and Children (WIC) program became an important vehicle for providing breastfeeding information. WIC nutritionists are required to discuss the benefits of breastfeeding during nutrition counseling with all expectant mothers.
- Peer support groups such as the La Leche League helped to stimulate breastfeeding promotion.

Barriers Addressed: Barriers to breastfeeding include social and cultural norms and lack of time.

- While there are still significant disparities in breastfeeding rates – white women initiated breastfeeding at a rate of 68% and black women at 45% in 1998⁶³ – the gap has been closing slowly. One study of the Baby-Friendly Initiative found that since the implementation of the Initiative at a Boston hospital, breastfeeding initiation rates increased in African American mothers from 34% in 1995 to 74% in 1999.⁶⁴
- Grassroots movements established nursing rooms in public areas such as shopping malls, childcare facilities and businesses to make breastfeeding more comfortable and accessible.

Tobacco Cessation. Smoking is at the lowest level in the United States in the past 30 years.⁶⁵ The tobacco control movement began in the 1960s, with the passage of legislation requiring warning labels on cigarette packages in 1965. Now, in the 21st century, work places are smoke-free, and California has passed the strictest tobacco control laws in the nation, with smoking being banned from all indoor public areas.

Catalyzing Events: A key occurrence in the smoking cessation movement was the discovery of the harmfulness of secondhand smoke. With this realization, the movement gained increased support by nonsmokers concerned about the health detriments of being in the same airplane, office building, or restaurant with smokers.

Strategies: Strategies utilized in the tobacco cessation movement include education, media campaigns, broad-based coalitions, lawsuits, changing social norms and changing public policy.

Barriers Addressed: Barriers to smoking cessation include the financial strength and promotional tactics of the tobacco industry and its influence on children. The movement has addressed these barriers by making a strong case for establishing the tobacco industry as an opponent and utilizing credible spokespeople to promote their cause.

IX. Appendix B. Evidence-Based Interventions

| Type of intervention | Expected weight loss | Concerns with approach |
|--|---|---|
| Low Calorie Diet (LCD) | <p>0.5 kg/ weight loss per week by reducing daily intake by 500 to 1000 calories a day⁶⁶</p> <p>Duration of treatment: 8 weeks to one year</p> | <p>Low-calorie diets improve rapidity of weight loss but not long-term maintenance²³</p> |
| <p>Very Low Calorie Diet (VLCD)</p> <p>Very Low Energy Diets (VLEDs)</p> | <p>VLCDs produce greater weight loss than LCDs (400 to 500 Kcal/day vs. 1,000 to 1,200 Kcal/day)²³</p> <p>Duration of VLCD: 12 to 46 weeks</p> <p>Duration of LCD: 24 weeks to five years</p> <p>Patients who exercised more as part of their intervention had significantly greater weight loss maintenance than those who exercised less.</p> <p>Five-year outcomes from Very Low Energy (VLEDs <800 Kcal/day) and Hypo-Energetic Diets (HEDs) demonstrate that VLEDs are superior for weight maintenance (7.1kg vs. 2.0kg).</p> <p>The percentage weight loss maintained was 29% (VLED) vs. 17% (HEDs) respectively.</p> | <p>Difficult to maintain an 800 Kcal/day diet</p> |
| Low Carbohydrate High-Protein Diet | <p>One year randomized control trial (RCT) showed a 4% absolute difference in weight loss in this group as compared to conventional diet⁶⁷</p> <p>Duration of treatment: one year</p> <p>Six-month RCT found similar findings to one-year trial mentioned above⁶⁸</p> <p>Duration of treatment: six months</p> | <p>No long-term data available. Still unclear of long-term risk for CVD.</p> |
| Physical Activity | <p>Weight Control Registry shows that people who have lost 30lbs or more and kept it off for a year exercised for at least 60 minutes each day³⁵</p> <p>Duration of treatment: ongoing</p> <p>Physical activity may create the calorie deficit needed to prevent weight gain by increasing energy expenditure by 100 Kcal/day.³¹</p> <p>Physical activity is most likely to promote long-term maintenance of a reduced weight in combination with diet vs. no additional physical activity⁶⁹</p> | <p>Sustainability</p> |

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

| Type of intervention | Expected weight loss | Concerns with approach |
|---|--|---|
| Behavioral Treatment | <p>Behavioral treatment in conjunction with VLCD and exercise can help patients lose 5% to 10% of pre-intervention weight. Also works with LCD.</p> <p>Duration of treatment: Over a four to six month period</p> | Needs to be reinforced regularly |
| Medication in combination with structured weight loss program | <p>Sibutramine with low-fat diet: Patients lose 6% to 8% of pre-intervention weight^{37 38 39 40}</p> <p>Duration of treatment: six months</p> <p>Long-term data shows that Sibutramine may help with weight loss as well as helping to maintain weight⁷⁰</p> <p>Patients taking Orlistat for one year lost 9% of their pre-intervention weight as compared with 5.8% with placebo⁷¹</p> <p>Duration of treatment: two years</p> <p>Orlistat has also been shown effective in the prevention of weight gain during a second year of treatment; patients regained less weight than placebo (35.2% vs. 62.4%)^{72 73 74}</p> <p>Duration of treatment: second year of treatment</p> <p>Some medications in trials</p> <ul style="list-style-type: none"> • Bupropion (an atypical antidepressant) • Topiramate (an anti-seizure medication) • Metformin (inhibits hepatic glucose production) • Zonisamide (anti-epileptic; increases serotonin and dopamine levels in the CNS) • Axokine (rhvCNTF) (recombinant human variant ciliary neurotrophic factor binds to receptors in CNS inhibits NPY) • Rimonabant (SR141716) (blocks Cannabinoid receptor in the CNS that stimulates hunger) <p>Some medications under investigation⁷⁵</p> <ul style="list-style-type: none"> • Leptin is currently being tested as a weight loss treatment. Initial findings suggest that patients who have low leptin levels benefit the most, no significant effects have been found for normal-leptin levels.⁷⁵ | <p>Drug side effects, increased blood pressure, and pulse.</p> <p>Adherence due to side effects of medication.</p> <p>Prohibits absorption of fat-soluble vitamins.</p> |
| Surgery for severe obesity | <p>Surgical approaches can lead to substantial weight losses of 50 to 100 kg²³</p> <p>Main weight loss timeframe: six months to one year</p> | Complications, adherence to new lifestyle, weight regain |

Very Low Energy Diets (VLEDs). Long-term outcomes for weight loss programs are limited by the fact that health outcomes are not recorded for primary prevention. We do not know which diet is best for preventing cancer, bypass surgery, or diabetes. A recent meta-analysis of 39 studies comparing very low energy diets (VLEDs) and hypo-energetic diets (HEDs) showed that:

- Five-year outcomes from VLEDs (<800 Kcal/day) and (HEDs like 1,200 to 1,500 calories) demonstrate that VLEDs are superior for weight maintenance (7.1kg vs. 2.0kg);
- Patients who exercised more as part of their intervention had significantly greater weight loss maintenance than those who exercised less; and
- The percentage weight loss maintained was 29% (VLED) vs. 17% (HEDs).

Overall, this meta-analysis shows that patients do not necessarily gain all their pre-intervention weight back. Five-years after program completion individuals maintained a weight loss of 3 kilograms and greater than 3% of initial body weight.⁷⁶

Low Calorie Diets (LCD) and Very Low Calorie Diets (VLCD). Low calorie diets (LCD- like Weight Watchers and Jenny Craig) are less effective than very low calorie diets (VLCD- <800 kcal/day), but can produce a 0.5 kg weight loss per week if people reduce caloric intake by 500 to 1,000 kcal/day.²³ VLCDs produce greater weight loss than LCDs, and they provided 400 to 500 kcal/day versus LCDs at 1,000-1,200 kcal per day²³ This pattern converges at 12 months. Both diets should be medically supervised.

Surgery. The Swedish Obesity Study (SOS) results indicate that some comorbid conditions and quality of life improve following bariatric surgery. The best evidence for improvement in comorbidity is for diabetes. At 5.5 year follow-up patients who had surgery saw a marked reduction in symptoms of diabetes as compared to non-surgical patients (6.3% vs. 18.5%). Patients with hypertension also had a better symptom profile post-surgery, but these differences only last for two years post-surgery.⁷⁷ Patients who have bariatric surgery can lose up to 50% of their starting weight in a six- to twelve-month period. The change at eight-year follow-up shows that patients maintain an average loss of 6.8 BMI units and a 16.3% decrease in total body weight.⁷⁷

Complication rates for laparoscopic Roux-en Y in a series of 188 patients are highest for those who have sleep apnea and/or hypertension and whose operating surgeon has performed less than 120 Roux-en Y laparoscopic procedures. Over 26% of patients required some invasive therapeutic methods to relieve these complications.⁷⁸ The overall mortality rate from Roux-en Y is 0.5%.²³

X. Appendix C. Policy Interventions and Potential Areas for Action

A. Schools and Youth-Serving Organizations

Children spend up to half their waking day at school – they may consume two-thirds of their meals on campus, and the school day may represent their only opportunity for regular physical activity. As such, schools and other youth services represent an integral component in any effort to prevent and treat overweight and obesity amongst our nation’s youth. Incorporating nutrition education, physical activity, and policy responses into these settings can help students develop healthy attitudes and behaviors. Possible strategies and actions include:

School Policies and Management

- Require nutrition directors/ managers to meet education or training standards
- Employ registered dietitians in school systems, placing them in decision-making roles
- Establish school health and nutrition councils to identify health priorities and coordinate health improvement initiatives within the school system
- Encourage the development of comprehensive school health policies, which include nutrition and physical activity components
- Encourage schools to participate in federally-assisted meal programs like the National School Lunch Program, the School Breakfast Program, the Special Milk Program, and the Summer Food Service Program
- Tighten standards for foods and beverages served at cafeterias to improve nutritional quality of school meals, limiting fat and sugar content and increasing nutritional value
- Establish standards for foods and beverages served in vending machines, limiting fat and sugar content and increasing nutritional value
- Establish nutrition standards for foods and beverages served at school-sponsored parties, celebrations, and special events
- Educate teaching staff not to use food as rewards or punishments for students (e.g., food coupons for receiving A’s or withholding snacks for misbehaving)
- Schedule appropriate timing and duration for school meals

Curricula

- Promote efforts to incorporate daily physical education and sports programs in primary and secondary schools (e.g., through increased funding, coordination of curricula requirements, special training for physical education or nutrition teachers, or increased hiring of qualified teachers or coaches)
- Conduct comprehensive and age-appropriate nutrition and physical education in classroom settings throughout all grade levels

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

- Incorporate nutrition messages in core curriculum areas such as math, science, and language arts
- Take students on field trips to places such as farms, farmers' markets, and restaurant kitchens to educate them on food production and preparation

Environment/Access

- Ensure that students eat breakfast; consider alternate breakfast services or delivery options (e.g., in class, between classes – grab and go)
- Restrict availability of soft drinks, candy, and foods high in fat and sugar in vending machines and school cafeterias
- Increase availability of water, low-fat milk, healthy juices, fruits, and vegetables in vending machines and school cafeterias (e.g., install a salad bar for students to self-serve their fruits and vegetables)
- Subsidize the price of fruits and vegetables in school cafeterias
- Ensure that water fountains function and are well-placed for students to have access to water at meals and throughout the day

Support Services

- Provide school clinics/nurses with appropriate information, training, and guidelines for discussing overweight/obesity with students and their parents
- Ensure appropriate medical and psychological services are available for at risk for overweight
- Coordinate culturally-relevant information, education, and action campaigns for obesity prevention for high-risk students (e.g., charity walks, clean-up days, competitions)
- Conduct supervised Walk-to-School programs for children as an alternative to school buses
- Conduct school nutrition program evaluation and research
- Establish partnerships with Parent Teacher Associations to educate parents about school initiatives and to encourage proper nutrition and physical activity at home

Youth-Serving Organizations/Programs

- Incorporate nutrition and physical activity messages and programs in youth activities such as summer camps
- Participate in the federally-assisted Summer School Food Program to provide eligible children with access to healthy meals during summer months

Potential State or Federal Actions

- Increase monitoring and enforcement of nutritional requirements for schools participating in federally-assisted meal programs, and extend requirements to non-participating schools as well
- Provide subsidies to schools to allow them to offer healthy food options at lower prices to students
- Enact legislation limiting the sale of unhealthy or nutritionally-dense snacks and beverages on school campuses
- Set state or federal requirements for teachers and food service staff to complete yearly nutrition and nutrition education training
- Mandate daily physical education for students in all grade levels K - 12
- Increase federal, state, or local funding for school nutrition and physical activity programs

B. Work Sites and Employer Programs

As is the case with schools and children, many adults spend more than half of their waking hours at work. Like school-based efforts to improve nutrition and increase physical activity, workplace interventions also hold great potential as routes for addressing overweight and obesity. This is particularly true as evidence suggests that working conditions are becoming increasingly sedentary and that United States employees are working longer hours – leaving employees little opportunity to be physically active. Worksite policies, incentives, and facilities design can change the work environment to not only provide opportunities, but also actively encourage employees to adopt healthy behaviors and dietary practices to manage their weight. These changes may not only contribute to healthier and more productive employees, but may also benefit employers through reductions in health care costs associated with overweight and obesity. Possible strategies and actions include:

The Physical Environment

- Install showers and changing rooms in buildings where people work
- Create accessible walking trails and/or bike routes near the work site
- Provide clean and safe stairwells and promote their use through signs posted near elevators and stairwells
- Provide facilities for workers to keep bicycles secure
- Provide healthy snacks and beverages in vending machines, in break rooms, and at company events
- Provide healthy meal choices in cafeterias and at company events
- Ensure that water fountains function and are well placed for employees to have access to water throughout the day

Health Plan Contracting

- Contract with health plans that offer free or reduced-cost memberships to health clubs
- Contract with health plans that help enrollees with weight management through services such as nutrition counseling, weight reduction programs, or prescription drug coverage for weight-reducing drugs

Employer-Sponsored Programs and Policies

- Create incentives for walk- or bike-to-work programs
- Sponsor company fitness challenges
- Support lunchtime walking/running clubs or company sports teams
- Provide incentive programs to promote physical activity
- Offer a health risk appraisal to all employees, and follow-up with those at risk for obesity and overweight
- Allow flexible work schedules so employees can exercise or participate in weight-loss programs
- Disseminate nutrition information to employees (e.g., work with a weight management vendor to provide information about the nutritional content of cafeteria foods)
- Ask voluntary health associations, health care providers, and/or public health agencies to offer on-site nutrition and healthy lifestyle education classes
- Provide access to registered dietitians as a resource for employees who want counseling on healthy eating/meal planning or weight control
- Provide access to a fitness “trainer” to help overweight employees meet health and fitness goals
- Sponsor support groups to help employees who are trying to lose weight (e.g., Weight Watchers) and provide access to meeting space at convenient times (e.g. before or after work, during the lunch hour)
- Subsidize healthy foods and beverages in the cafeteria or vending machines
- Offer financial incentives such as reduced health insurance cost sharing for employee participation in health promotion/weight management/disease management programs

Potential State or Federal Actions

- Provide employers a tax deduction for the value of fitness and health promotion benefits provided to employees
- Enact a tax exclusion for employer-sponsored fitness and health promotion benefits so that they are not included as taxable income for workers

- Change policies in the Social Security program to allow higher earnings without a reduction in benefits in order to encourage seniors to continue working and maintaining active lifestyles

C. Community Support Programs, Services, and Policies

Outside of work or school, children, adults, and families spend their time in a variety of home and community settings that provide additional avenues for promoting proper nutrition and physical activity. As a result, incorporating overweight and obesity interventions into these settings through community support programs and services can further contribute to the prevention and treatment of these conditions. Religious centers, shopping malls, community service centers, and more can all serve as platforms for providing a broad array of programs and services that can improve community nutrition and physical activity levels. In addition, they can facilitate individual efforts to manage weight and improve health through the social, environmental, and policy support mechanisms they provide. Possible strategies and actions include:

Community-Based Programs and Services

- Establish wellness councils in neighborhoods and communities to organize and direct activities aimed at promoting physical activity and healthy eating
- Establish walking or biking clubs/coalitions
- Sponsor exercise classes in community facilities, like churches or recreation centers
- Promote joint/shared use of facilities among schools, parks, libraries, health care clinics, and community based organizations to increase opportunities for physical activity
- Conduct special events to encourage physical activity (e.g., “Kids Walk to School” initiatives)
- Conduct health fairs with free nutrition counseling
- Offer free BMI and waist circumference measurement and counseling in settings like shopping malls or community centers
- Establish standards for foods served at cafeterias, vending machines, snack stands on city/county property, and in government buildings
- Add more drinking fountains in public buildings and outdoor areas
- Provide services/tools to promote healthy behaviors:
 - Lifestyle counseling
 - Pedometers
 - Athletic shoes at reduced or no cost

Family-Based Programs and Services

- Empower parents to manage family weight and health through parenting skills, meal planning, and behavioral management training

- Promote alternatives to watching television and other sedentary behaviors by children and their families
- Encourage parents to serve as role models in their dietary intake and physical activity practices

Potential State or Federal Actions

- Modify government-sponsored food assistance programs to encourage better nutrition by:
 - Developing incentive systems to encourage food stamp recipients to purchase healthy foods
 - Improving the USDA commodity food program on American Indian reservations by increasing availability of low-fat foods and fresh fruits and vegetables
 - Expanding food options under the Women, Infants, and Children (WIC) program to include a greater variety of fresh fruits and vegetables and other healthy foods
- Provide tax incentives to encourage physical activity or other weight management efforts:
 - Eliminate or reduce sales taxes for purchase of exercise equipment or bicycles
 - Increase taxes for electronic or sedentary entertainment equipment (e.g., home entertainment technology)
 - Provide tax credits or direct subsidies for individuals and families to help them purchase fitness center memberships
- Increase federal, state, or local funding for community-based education, outreach, and support programs around physical activity and nutrition

D. Community Design

In addition to the social aspects of community described above, the physical design, layout, and structure of community settings can also facilitate – or impede – individuals in their efforts to engage in regular physical activity. For example, research shows that suburban communities segregated by residential, commercial, or industrial use discourage walking and bicycling as regular forms of transportation compared to non-segregated urban areas.⁵² Alternately, community design that includes parks and trailways near homes or work promotes physical activity.⁵³ Communities can take these considerations into account and develop safe and accessible environments that encourage walking, running, biking, or other forms of physical activity. This can increase community members' overall levels of health and well-being and reduce their risk for becoming overweight or obese. Possible strategies and actions include:

Design-Specific Support Services

- Establish community taskforces to change city/regional ordinances and environmental conditions to support physical activity and healthy eating (e.g., ordinances for park, trail, and greenway development; development of community gardens)
- Establish standards for inclusion of sidewalks and pedestrian-friendly designs for new housing, shopping and office developments
- Establish urban growth boundaries to preserve open space for physical activity

- Increase patrolling, neighborhood watch programs, or other programs to improve safety in the community as a means to promote physical activity
- Increase accessibility of farmers' markets in low-income areas and other areas where fresh produce is less available

Community Design Changes

- Establish well-lit walking, jogging, and bicycling paths
- Install mile markers along trails, beaches, neighborhoods, and city blocks
- Install well-marked crosswalks
- Make stairways open, accessible, and safe
- Develop convenient methods for taking bicycles onto subways and buses
- Create secure parking for bicycles
- Build bicycle boulevards or bicycle paths that are a safe distance from the road
- Build "bike central" stations that provide showers, changing facilities, and long-term bicycle storage for biking commuters
- Establish traffic calming measures such as lower speed limits, stop lights, narrower streets, alternative street surfaces
- Convert vacant lots into community gardens

Potential State or Federal Actions

- Increase funding to municipal governments to implement innovative community design and development projects that promote walking and other forms of physical activity
- Institute city or regional ordinances that support development of mixed-use lands or other design features such as parks or trails that encourage walking and other forms of physical activity
- Increase tax on gasoline to fund community design projects
- Establish liability protections for users and producers of physical activity facilities and spaces

E. The Food Industry and Food Marketing

The way in which food is prepared and delivered to individuals and families can dramatically impact consumption patterns and weight gain. As the health effects of overweight and obesity have become better understood, the food industry and its preparation, packaging, and marketing practices have come under scrutiny as major contributors to the obesity epidemic. Food-related law suits and increasing regulatory oversight – including the recently announced regulation requiring food producers to include trans fatty acid content on food labels – reflect the new level of accountability to which the public and the government are holding the food industry. With increasing outside pressure – as well as new internal commitments to promoting healthier alternatives – food industry

practices could be modified to communicate appropriate nutrition information, increase access to healthful foods, and encourage healthy eating practices. Possible strategies and actions include:

Food Processing and Packaging

- Encourage the use of healthier fats and oils in the production of processed foods
- Encourage manufacturers to package food in smaller sizes
- Encourage manufacturers to include complete nutrition and energy density information on food labels

Food Marketing

- Restrict or ban television advertising of unhealthy foods during television programming aimed at children
- Discourage marketing techniques that target children (e.g., use of cartoon images) in the advertisement of unhealthy foods

Food Retail Outlets

- Encourage development of grocery stores in inner-city areas or other areas where fresh produce is less available, or increase accessibility of farmers' markets
- Encourage food outlets to increase availability of low-calorie, nutritious food items
- Encourage development of neighborhood shops and restaurants that are more accessible by foot or bicycle

Restaurants

- Encourage restaurants – including fast food restaurants – to provide healthy choices, appropriate portion sizes based on USDA guidelines, and information about calories and nutrition content on menus
- Encourage restaurants to provide salads (or other fruits or vegetables) with meals or to reduce the prices of the most nutritious foods on their menus

Potential State or Federal Actions

- Levy state and local government taxes on soft drinks, candy, and high-fat, high-sugar snacks;
- Require manufacturers to include complete nutrition and energy density information on food labels.
- Enact regulations that require restaurants to provide calorie and nutrition information of foods to consumers;
- Restructure farm subsidies to promote consumption of healthier foods; and/or

F. Health Care Systems

The health care system can offer many services and resources for the appropriate prevention and/or treatment of overweight or obesity. Individuals turn to these systems for health care services and advice, and in fact, 74% of recent survey respondents indicated that health care providers should play a major role in fighting obesity.⁵⁴ Accordingly, health care systems can be important contributors to helping individuals achieve or maintain healthy weight levels. By aligning the organization and delivery of health care with disease management and preventive health priorities, and by coordinating the multiple facets of the health system to incorporate appropriate weight management strategies, health care systems can greatly facilitate individuals' weight control efforts. Possible strategies and actions include:

Community Relations

- Encourage health care systems to partner with community organizations to:
 - Link patients to exercise or support groups
 - Develop health education materials in multiple languages
 - Tailor weight management interventions in culturally-appropriate ways
- Offer weight management health education classes in community settings

Health System Organization

- Establish organizational priorities for effectively coordinating services to prevent and treat overweight and obesity
- Support staff efforts to incorporate weight management strategies into service delivery at all levels, including rearranging resources or staff time
- Offer provider incentives to incorporate weight management services in their patient encounters
- Implement appropriate quality control measures to ensure weight management strategies are incorporated

Self-Management Support

- Train providers on discussing and supporting their patients' weight management efforts, in particular emphasizing the need for culturally appropriate strategies for self-management
- Provide skills training and tools to patients to support self-management activities
- Schedule regular telephone calls, emails, group appointments, or other mechanisms to support patient self-management activities

Delivery System Design

- Establish provider teams to coordinate patient care and ensure continuity and efficiency in the prevention and treatment of overweight or obesity
- Develop a triage system to identify patients at high risk for overweight or obesity, and deliver health education and support services accordingly

Decision Support

- Utilize evidence-based guidelines to conduct patient assessments, identify patients at risk for overweight or obesity, and provide appropriate care
- Incorporate BMI measurement into patient assessments and use it as a guide for providing education, referrals, or treatment recommendations
- Implement appropriate decision-support tools within the care delivery setting, such as BMI wheels and electronic reminders

Clinical Information Systems

- Utilize electronic medical records to better track patient information with respect to risk factors for overweight or obesity
- Utilize electronic medical records to coordinate care of overweight or obese patients among different members of provider teams
- Develop an electronic registry of overweight or obese patients to identify risk profiles, monitor treatments and their efficacy, and track patient outcomes
- Embed electronic reminders throughout the clinical information system to serve as decision support tools and improve care delivery

Potential State or Federal Actions

- Reimburse health care providers under state and federal employee health benefit plans, Medicaid, SCHIP and Medicare for nutrition and obesity counseling and other cost-effective prevention and treatment interventions
- Include performance on overweight and obesity control measures as a basis for tiered reimbursement in pay-for-performance Medicare and Medicaid plans
- Provide federal or state grants to health care institutions to conduct overweight and obesity prevention and treatment programs in partnership with community-based organizations

G. Communications and Public Advocacy

Adopting appropriate communications and public advocacy strategies can be critical for effecting the social change needed to reverse the current trends in overweight and obesity. As past experience with social change movements demonstrates, strategies such as social marketing, media campaigns,

and public policy changes can be highly successful in leading to target outcomes. Particularly because media has such a widespread influence on social and cultural norms – and an unparalleled ability to communicate health information to the public – its role should not be underestimated. Without a fundamental shift in public attitudes and behaviors regarding nutrition, food intake, and physical activity, overweight and obesity will continue to pose a serious population-wide threat. Communications and public advocacy efforts are crucial for driving that shift, contributing to increased awareness and prioritization of appropriate diet, exercise, and weight management practices. Possible strategies and actions include:

Messages

- Promote walking and cycling as a means of transportation
- Promote water as the beverage of choice
- Promote proper nutrition, including eating at least five servings of fruits and vegetables a day
- Promote realistic depiction of appropriate serving sizes in advertisements and other media

Communications and Media Strategies

- Conduct a national communications campaign of sufficient duration, frequency, and reach to foster public awareness of the health benefits of regular physical activity, healthful dietary choices, and maintaining a healthy weight, based on the DHHS/USDA *Dietary Guidelines for Americans*
- Encourage community-based education campaigns on the above topics
- Coordinate media publicity in conjunction with nutrition or physical activity events or programs (e.g., contests, incentive programs)
- Incorporate messages (e.g., using public service announcements) about nutrition and physical activity in youth-oriented television programming
- Use news outlets (e.g., editorials, news segments) to communicate the importance of healthy lifestyles and proper nutrition
- Train nutrition and exercise scientists and specialists in media advocacy skills that will empower them to disseminate their knowledge to a broad audience
- Use actors as role models to demonstrate healthy eating and physical activity lifestyles
- Conduct media-based research to assess the effectiveness of media messages and communications efforts, including
 - Research on the effects of popular media images of different body types on viewers' attitudes and behaviors, particularly as they impact health decisions and outcomes
 - Research to ensure that nutrition and physical activity media messages are consistent, relevant, and effective
 - Evaluation of the impact of media and communications campaigns designed to achieve weight management goals

Public Advocacy Strategies

- Develop coalitions or working groups to collaborate on advocacy projects
- Identify specific outcomes (e.g., banning junk food sales in schools, gasoline taxes, or changes in city ordinances) as targets for advocacy efforts
- Initiate grassroots campaigns on local, state, or national levels to demonstrate breadth of concern and commitment for overweight and obesity control efforts
- Initiate direct contact with local, state, and federal elected representatives to express constituency views on the need for government action around overweight and obesity control efforts, including funding, legislation, and increased regulatory oversight

Potential State or Federal Actions

- Strengthen and reinforce federally-funded public awareness campaigns on physical education and nutrition (e.g., HealthierUS Initiative or VERB Youth Media Campaign)
- Increase funding for community-based efforts to encourage physical activity and proper nutrition

XI. Appendix D. Obesity, Nutrition, and Physical Activity Legislation by State

| AREA | NUMBER/STATE |
|---|--|
| <p>SCHOOL NUTRITION</p> <p>Bills to limit or prohibit the sale of soft drinks and/or snack foods deemed “unhealthy” in schools and to establish, implement, or enforce standards for school breakfast and lunch programs</p> | <p>20</p> <p>AK, AR, CA, CT, HI, IL, IN, KY, ME, MD, MA, MO, MT, NC, OR, RI, SC, TN, TX, UT, VA, WA</p> |
| <p>HEALTH AND NUTRITION EDUCATION IN SCHOOLS</p> <p>Bills related to health and nutrition education in schools</p> | <p>5</p> <p>CA, MO, RI, TX, WA</p> |
| <p>PHYSICAL ACTIVITY IN SCHOOLS</p> <p>Bills that encourage or require physical education, recess periods for elementary schools, and/or extracurricular physical fitness programs and clubs</p> | <p>6</p> <p>AR, CA, MS, MT, NC, RI</p> |
| <p>ADVISORY COMMITTEES</p> <p>Bills to establish advisory committees, commissions, or councils to coordinate state or local efforts to combat obesity, collect data, and/or produce studies</p> | <p>10</p> <p>AR, IL, IA, KS, ME, MS, MO, NY, OR, WV</p> |
| <p>STATE PROGRAMS</p> <p>Bills to establish obesity prevention or treatment programs within state departments of health, particularly for medically indigent patients</p> | <p>3</p> <p>CA, CO, NY</p> |
| <p>COVERAGE FOR TREATMENT</p> <p>Bills that encourage or require health insurance coverage for surgical treatment of morbid obesity and/or require insurers to offer optional coverage for the treatment of obesity</p> | <p>5</p> <p>IL, LA, MS, MO, VA</p> |
| <p>NUTRITION INFORMATION</p> <p>Bills that require restaurants to provide consumers with accurate, accessible nutrition information</p> | <p>2</p> <p>ME, NY</p> |
| <p>TAXES</p> <p>Bills to enact a tax on soft drinks to provide funds for prevention, education, research, and/or treatment activities</p> | <p>2</p> <p>NM, NC</p> |

Source: Kaiser Permanente Institute for Health Policy analysis of data from State Legislation Tracker. *Obesity Policy Report*. CRC Press, LLC. Washington, DC, June 29, 2003. <http://www.obesitypolicy.com/files/OPRStateLegislationTracker.html>.

XII. Appendix E. Selected Obesity and Weight Management Initiatives

Public/Private Collaborations

| Initiative | Sponsor(s) | Description |
|---|---|---|
| 5 A Day for Better Health Program www.5aday.gov | National Cancer Institute and the Produce for Better Health Foundation, a nonprofit consumer education foundation representing the fruit and vegetable industry | An initiative that emphasizes the importance of eating five to nine servings of fruits and vegetables daily |
| America On the Move www.americaonthemove.org | Developed with the support of the National Institutes of Health, Centers for Disease Control and Prevention and the Department of Health and Human Services | A nationwide initiative to prevent overweight and obesity by getting people to move more and eat less |
| Hearts N' Parks www.nrpa.org/index.cfm?publicationID=37 | The National Heart, Lung, and Blood Institute and the National Recreation and Parks Association | An initiative that incorporates information about weight management, physical activity, and other factors related to heart health in the regular education activities of parks and recreation departments |
| The Institute on the Costs and Health Effects of Obesity www.wbgh.com/programs/institute | Washington Business Group on Health and a broad coalition of large employers and federal agencies [§] | An Institute founded to provide resources to employers on the health and cost repercussions of obesity and related chronic conditions and to identify strategies for reducing obesity incidence among U. S. workers |
| Obesity Education Initiative www.nhlbi.nih.gov/about/oei | The Office of Prevention, Education, and Control of the National Heart, Lung, and Blood Institute | A national initiative to encourage the adoption of heart-healthy eating patterns and physical activity habits |

[§] Fidelity Investments, Ford Motor Company, General Mills, Inc., Honeywell, IBM, Morgan Stanley, PepsiCo, Inc., Quebecor World, Inc., Saks Incorporated, Starwood Hotels, the UNITED STATES Department of Health and Human Services Health and Services Administration's Maternal and Child Health Bureau and the Centers for Disease Control and Prevention , the American Association of Health Plans, Aetna, Pfizer Pharmaceuticals Group and Whole Health Management, Inc.

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

| Initiative | Sponsor(s) | Description |
|---|---|--|
| Partnership for Healthy Weight Management www.consumer.gov/weightloss | Federal Trade Commission and a coalition of representatives from science, academia, the health care profession, government, commercial enterprises and organizations ^h | A consumer protection initiative whose mission is to promote sound guidance on strategies for achieving and maintaining a healthy weight |
| Partnership to Promote Healthy Eating and Active Living www.ppheal.org/index.html | | A public-private partnership to improve nutrition and physical activity patterns of the population |

^h Partnership for Healthy Weight Management partners include: American Association of Lifestyle Counselors, American Obesity Association, American Society for Clinical Nutrition, American Society of Bariatric Physicians, American Society for Bariatric Surgery, The Center for Bariatric Medicine, Centers for Disease Control and Prevention, Chapman & Company, Charlottesville, Comprehensive Weight Control, Rockville, Council on Size & Weight Discrimination, Department of Nutrition Sciences, University of Alabama at Birmingham, Division of Nutrition Research Coordination, National Institutes of Health, eDiets.com, Federal Trade Commission, Bureau of Consumer Protection, The George Washington University Obesity Management Program, Health Management Resources, Jenny Craig, Inc., Knoll Pharmaceutical Company, Lindora Medical Clinics, Maryland Department of Health and Mental Hygiene, Division of Cardiovascular Health and Nutrition, Medical University of South Carolina Weight Management Center, Metyroplex Health and Nutrition Services, Inc., The National Heart Lung and Blood Institute, National Institutes of Health, The National Institute of Diabetes and Digestive and Kidney Diseases--National Institutes of Health, The New York Obesity Research Center, North American Association for the Study of Obesity, Novartis Nutrition Corporation, Shape Up America!, Slim-Fast Foods Company, Society for Nutrition Education, Tanita Corporation of America, The Theodore VanItallie Center for Nutrition and Weight Management, University of Colorado, Center for Human Nutrition, U. S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, Weight Watchers International, Inc., Wheat Foods Council

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

| Initiative | Sponsor(s) | Description |
|---|---|--|
| Shape Up America! www.shapeup.org | Non-profit organizations concerned about improving the health status of the American public. ⁱ (C. Everett Koop, M.D., Sc.D., Founder) | A national initiative to promote healthy weight and increased physical activity in America, involving a broad-based coalition of industry, medical/health, nutrition, physical fitness, and related organizations and experts. |
| TV-Turnoff Week (April 21 – 22) www.tvturnoff.org/week.htm | TV-Turnoff Network, formally TV-Free America | A national initiative to encourage children and adults to watch much less television in order to promote healthier lives and communities |

Federal Government Initiatives

| Initiative | Sponsor(s) | Description |
|---|---|---|
| HealthierUS Initiative www.healthierus.gov | The White House, under President George Bush | An initiative focused on improving overall health through regular physical activity, proper nutrition, preventive screenings, and healthy lifestyle choices |
| “VERB: It’s What You Do” Youth Media Campaign www.cdc.gov/youthcampaign | US Department of Health and Human Services | An initiative that encourages 9 to 13 year-olds to be physically active and engaged in their communities |
| “Closing the Health Gap” www.healthgap.omhrc.gov | US Department of Health and Human Services in partnership with ABC Radio Networks | A nationwide campaign targeted towards communities of color to help raise awareness about many health disparity areas – particularly diabetes – most often associated with overweight and obesity |

ⁱ Shape Up America Coalition Members Include: Air Force Nutrition Committee, American Academy of Pediatrics, American Alliance for Health, Physical Education, Recreation and Dance, American Association for Active Lifestyles and Fitness, American Association of Retired Persons, American Cancer Society, American College of Preventive Medicine, American College of Sports Medicine, American Diabetes Association, American Dietetic Association, American Fitness Association, American Heart Association, American Institute for Cancer Research, American Medical Association, American Nurses Association, American Obesity Association, American Osteopathic Association, American Public Health Association, American Running Association, American Society for Bariatric Surgery, American Society for Clinical Nutrition, Inc., American Society for Nutritional Sciences, Arthritis Foundation, Association of State and Territorial Health Officials, Association of Teachers of Preventive Medicine, Calorie Control Council, Center for Genetics, Nutrition and Health, Center for Food and Nutrition Policy, Harlem RBI (Reviving Baseball in Inner Cities), Health Resources & Services Administration, Healthy Living 2000 (Greenwich Hospital), Institute for Cancer Prevention, International Sports Sciences Association, Jewish Council for the Aging, KidShape, Maternal Child & Health Bureau, National Association of Community Health Centers, National Association for Health and Fitness, National Association for Sport and Physical Education, National Cattlemen’s Beef Association, National Center for Health Education, National Center for Productive Aging, National Council of La Raza, National Medical Association, National Women’s Health Network, North American Association for the Study of Obesity, Partnership for Prevention, San Francisco League of Urban Gardeners (SLUG), Society for Women’s Health Research, Society for the Study of Ingestive Behavior, TOPS Club, Inc. (Take Off Pounds Sensibly), United States Physical Education Association, Wheeling Hospital (Howard Long Wellness Center), YMCA of the USA

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

| Initiative | Sponsor(s) | Description |
|---|--|---|
| “Walk For Better Health” | US Department of Health and Human Services and US Department of Agriculture | An initiative to promote more physical activity among the federal workforce and consumers. |
| “Eat Smart.Play Hard™” www.fns.usda.gov/eatsmartplayhard | US Department of Agriculture | A campaign for schools aimed at combating the growing prevalence of overweight and obese children in America |
| Team Nutrition www.fns.usda.gov/tn | US Department of Agriculture | An initiative to facilitate the implementation of nutrition guidelines in schools participating in the Federal School Meals Programs |
| Grant to schools to provide fresh produce ⁷⁹ | US Department of Agriculture | A \$6 million grant to 100 schools to provide fresh produce during the school day |
| Nutrition Education Program for Food Stamp Recipients ⁸⁰ | US Department of Agriculture | A 48-state nutrition education program for food stamp recipients |
| WIC Farmers’ Market Nutrition Program www.fns.usda.gov/wic/FMNP/farmersmarketsmenu.htm | US Department of Agriculture | An initiative to provide fresh and locally grown fruits and vegetables to WIC recipients and to expand the awareness, use of, and sales to farmers’ markets |
| Small Steps, Big Rewards campaign ⁸¹ ndep.nih.gov/get-info/dpc.htm | The National Diabetes Education Program (NDEP), which is jointly sponsored by the National Institutes of Health and the Centers for Disease Control and Prevention | A national campaign that emphasizes the importance of modest lifestyle changes to prevent the onset of type 2 diabetes |

BACKGROUND PAPER ON THE PREVENTION AND TREATMENT OF OVERWEIGHT AND OBESITY

- ¹ Ogden C, Flegal K, Carroll M, and Johnson C. Prevalence and trends in overweight among US children and adolescents, 1999-2000 *JAMA* 2002; 288: 1728-32.
- ² Nestle M and Jacobson M. Halting the obesity epidemic: A public health policy approach. *Public Health Reports* 2000; 115: 12-24.
- ³ Pi-Sunyer X. (2003). A clinical view of the obesity problem. *Science*, 299(7): 859-860.
- ⁴ Office of the Surgeon General. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity, 2001*. UNITED STATES Department of Health and Human Services, Public Health Service, Rockville, MD: 2001.
- ⁵ CDC (2003). http://www.cdc.gov/ncbddd/factsheets/pediatrics/Pediatrics_maternal_obesity.pdf
- ⁶ Finkelstein EA, Fiebelkorn IC, and Wang G. National medical spending attributable to overweight and obesity: how much, and who's paying? *Health Affairs*, web exclusive May 2003.
- ⁷ Jacobson M. *The Epidemic of Obesity: The Costs to Employers and Practical Solutions*. Washington Business Group on Health, Washington, DC: 2002.
- ⁸ Hill JO, Goldberg JP, Pate RR, et al. Introduction. *Nutrition Reviews* 2001; 59(3): S4-6.
- ⁹ Wetter AC, Goldberg JP, King AC, et al. How and why do individuals make food and physical activity choices? *Nutrition Reviews* 2001; 59(3): S11-20.
- ¹⁰ Booth SL, Mayer J, Sallis JF, et al. Environmental and societal factors affect food choice and physical activity: rationale, influences, and leverage points. *Nutrition Reviews* 2001; 59(3): S21-39.
- ¹¹ Franklin BA. The downside of our technological revolution? An obesity-conducive environment. *The American Journal of Cardiology* 2001; 87(9): 1093-5.
- ¹² French SA, Story M, and Jeffery RW. Environmental influences on eating and physical activity. *Annual Review of Public Health* 2001; 22: 309-35.
- ¹³ Robinson TN. Television viewing and childhood obesity. *Pediatric Clinics of North America* 2001; 48(4): 1017-25.
- ¹⁴ Centers for Disease Control and Prevention. *Youth Risk Behavior Surveillance System 2001*. Retrieved July 7, 2003 from http://www.cdc.gov/nccdphp/dash/yrbs/2001/summary_results/usa.htm.
- ¹⁵ National Restaurant Association. Retrieved June 18, 2003 from <http://www.restaurant.org/research/magarticle.cfm?ArticleID=138>
- ¹⁶ California Department of Health and Human Services. *Final Report: California's Safe Routes to School Initiative 2002*. Retrieved July 7, 2003 from <http://www.dhs.ca.gov/epic/documents/safertseval1102.pdf>.
- ¹⁷ Sallis JF, Bauman A, and Pratt M. Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine* 1998; 15: 379-97.
- ¹⁸ Sobal, J. Social and Cultural Influences on Obesity. *International Textbook on Obesity*, John Wiley & Sons, Ltd. 2001: 305-22.
- ¹⁹ Morland K, Wing S, et al. Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine* 2002; 22(1): 23-29.
- ²⁰ Economos CD, Brownson RC, DeAngelis MA, et.al. What lessons have been learned from other attempts to guide social change? *Nutrition Reviews* 2001; 59(3) S40-56.
- ²¹ Mercer SL, Green LW, Rosenthal AC, Husten CG, Khan LK, and Dietz WH. Possible lessons from the tobacco experience for obesity control. *Am J Clin Nutr*, 2003; v 77 (suppl): 1073S – 1082S.
- ²² Jeffery R, Drewnowski A, Epstein L., et al. Long-term maintenance of weight loss: Current status. *Health Psychology* 2000; 19-5-16.
- ²³ National Institute of Health. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*. Publication No. 98-4083.
- ²⁴ Gee S. Editorial: A pound of prevention...is worth a ton of cure. *Permanente Journal* (in press).
- ²⁵ Serdula MK, Ivery D, Coates RJ, Freedman DS, Williamson DF, Byers T. Do obese children become obese adults? A review of the literature. *Prev Med* 1993; 22: 167-77.
- ²⁶ Martorell R, Stein AD, Schroeder DG. Early nutrition and later adiposity. *J Nutr* 2001;131:874S-880S.
- ²⁷ Gillman MW, Rifas-Shiman SL, Camargo CA Jr, Berkey CS, Frazier AL, Rockett HR, Field AE, Colditz GA. Risk of overweight among adolescents who were breastfed as infants. *JAMA* 2001; 285(19):2461-7.
- ²⁸ Ritchie L, Crawford P, Woodward-Lopez G, Ivey S, Masch M, Ikeda J. *Position Paper: Prevention of Childhood Overweight – What Should Be Done?* Center for Weight and Health, U.C. Berkeley, 2001. http://www.cnr.berkeley.edu/cwh/PDFs/Prev_Child_Oweight_10-28-02.pdf

- ²⁹ Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *NEJM* 1997; 337(13) 25: 869-873.
- ³⁰ Epstein L, Varoski A, Wing R, McCurley J. Ten-year outcomes of behavioral family-based treatment for childhood obesity. *Health Psychology* 1994; 13(5): 373:383.
- ³¹ Hill J, Wyatt H, Petes J. Obesity and the environment: Where do we go from here? *Science*, 2003; 299:7; 853 – 855.
- ³² Serdula MK, Mokdad AH, Williamson DF, Galuska DA, Mendlein JM, Heath GW. Prevalence of attempting weight loss and strategies for controlling weight. *JAMA* 1999;282:1353-8.
- ³³ Tuomilehto J, Lindstrom J, Eriksson, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *NEJM* 2001; 344 (18): 1343-50.
- ³⁴ Knowler W, Barret-Connor E, Fowler S, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *NEJM* 2002; 346:393-403.
- ³⁵ Klem, M.L., Wing, R.R., McGuire, M.T., Seagle, H.M., & Hill, J.O. A descriptive study of individuals successful at long-term maintenance of substantial weight loss. *Am J Clinl Nutr*, 1997; 66: 239-246.
- ³⁶ Centers for Disease Control and Prevention. Increasing physical activity: a report on recommendations of the Task Force on Community Preventive Services. *MMWR*, 2001; 50 (No. RR-18): 1-15.
- ³⁷ Fanghanel G, Cortinas L, Sanchez-Reyes L, Berber A. A clinical trial of the use of sibutramine for the treatment of patients suffering essential obesity. *Int J Obes Relat Metab Disord* 2000;24:144-50.
- ³⁸ Bray GA, Blackburn GL, Ferguson JM, et al. Sibutramine produces dose-related weight loss. *Obes Res* 1999;7:189-98.
- ³⁹ Fujioka K, Seaton TB, Rowe E, et al. Weight loss with sibutramine improves glycaemic control and other metabolic parameters in obese patients with type 2 diabetes mellitus. *Diabetes Obes Metab* 2000;2:175-87
- ⁴⁰ Ryan DH. Use of sibutramine and other noradrenergic and serotonergic drugs in the management of obesity. *Endocrine* 2000;13:193-9.
- ⁴¹ Glasgow R, Orleans T, Wagner E, et al. Does the Chronic Care Model serve also as a template for improving prevention? *The Milbank Quarterly* 2001; 79(4): 579-612.
- ⁴² Robert Wood Johnson Foundation. Improving Chronic Illness Care. Retrieved June 25, 2003 from <http://www.improvingchroniccare.org/change/model/components.html>.
- ⁴³ Los Angeles County Task Force on Children and Youth Physical Fitness. Paving the way for physically fit and healthy children: findings and recommendations. August 2002.
- ⁴⁴ America on the Move. 2003. <http://www.americaonthemove.org/index.asp>.
- ⁴⁵ American Dietetic Association. Position of the American Dietetic Association, Society for Nutrition Education, and American School Food Service Association – Nutrition services: An essential component of comprehensive school health programs. *Journal of the American Dietetic Association* 2003; 103: 57-67.
- ⁴⁶ Center for Science in the Public Interest. CSPI, Scientists Urge WHO to Combat Obesity by Curbing Industry Marketing Practices. Retrieved May 15, 2003 from: http://www.cspinet.org/reports/codex/whos_global.html.
- ⁴⁷ McBean LD, Miller GD. Enhancing the nutrition of America's youth. *Journal of the American College of Nutrition* 1999; 18: 563 – 571.
- ⁴⁸ Partnership for Prevention. *Healthy Workforce 2010: An Essential Health Promotion Sourcebook for Employers, Large and Small - Creating Change with Healthy People 2010*. Partnership for Prevention: Washington, DC, Fall 2001.
- ⁴⁹ Pratt M. Intervention strategies suggested by the SLOTH model of the economics of physical inactivity. As part of the Partnership to Promote Healthy Eating and Active Living's Conference An Economic Analysis of Eating and Physical Activity Behaviors: Exploring Effective Strategies to Combat Obesity, April 10, 2003, Washington DC.
- ⁵⁰ Torres G, Pittman M, Hollander M, Kraft EM, Henry E. *Healthy Places, Healthy People: Promoting Public Health and Physical Activity through Community Design*. The Robert Wood Johnson Foundation, Princeton: February 2001.
- ⁵¹ United States Department of Agriculture, Food and Nutrition Service 2000. *Changing the Scene: Improving the School Nutrition Environment – A Guide to Local Action*. USDA: Washington, DC.
- ⁵² Health Canada. *Health and Environment*. Ottawa: Minister of Public Works and Government Services; 1997.
- ⁵³ Sallis, J.F., Hovell, M.F., Hofstetter, C.T., et al. Distance between homes and exercise facilities relates to frequency of exercise among San Diego residents. *Public Health Report*. 1990; 105: 179 – 185.
- ⁵⁴ Lake Snell Perry & Associates, Inc. 2003. *Obesity as a Public Health Issue: A Look at Solutions*. Results from a National Poll sponsored by the Harvard Forums on Health.

- ⁵⁵ Dietz, WH, Groves Bland M, Gortmaker SL, Molloy M, Schmidt, TL. Policy tools for the childhood obesity epidemic. *Journal of Law, Medicine, & Ethics* 2002; 30 Suppl.(3):83-87.
- ⁵⁶ UNITED STATES General Accounting Office, *School Lunch Program: Efforts Needed to Improve Nutrition and Encourage Healthy Eating*, GAO-03-506, May 9, 2003.
- ⁵⁷ Kersh, R. and Morone, J. The politics of obesity: Seven steps to government action. *Health Affairs*, November/December 2002: 142-153.
- ⁵⁸ International Food Information Council Foundation. <http://ific.org/foodinsight>
- ⁵⁹ State Legislation Tracker. *Obesity Policy Report*. CRC Press, LLC. Washington, DC, June 29, 2003. <http://www.obesitypolicy.com/files/OPRStateLegislationTracker.html>
- ⁶⁰ State Legislation Tracker. *Obesity Policy Report*, CRC Press, LLC. Washington, DC, Volume 1, Issue 5, April 2003.
- ⁶¹ National Highway Traffic Safety Administration. *Buckle Up New York: A Case Study of a Successful Campaign to Raise the Seat Belt Use Rate*. Retrieved from <http://www.nhtsa.dot.gov/people/injury/airbags/buckleplan/Cases/NewYork.html> on June 20, 2003.
- ⁶² US Department of Health and Human Services. *Child Health USA 2002*. Retrieved from http://www.mchb.hrsa.gov/chusa02/main_pages/page_18.htm on July 8, 2003.
- ⁶³ US Department of Health and Human Services. *HHS Blueprint for Action on Breastfeeding*. Washington, DC: Department of Health and Human Services, Office of Women's Health; 2000.
- ⁶⁴ Philipp BL, Merewood A, Miller LW et al. Baby-friendly hospital initiative improves breastfeeding initiation rates in a US hospital setting. *Pediatrics* 2001; 108(3): 677-681.
- ⁶⁵ Emmons KM, Kawachi I, and Barclay G. Tobacco control: A brief review of its history and prospects for the future. *Hamatol Oncol Clin North Am* 1997; 11(2): 177-95.
- ⁶⁶ Wadden TA, Foster GD. Behavioral treatment of obesity. *Med Clin North Am* 2000; 84:441-61.
- ⁶⁷ Foster, GD, Wyatt, HR, Hill, JO, McGuckin, BG, Brill, C, Mohammed, B, Selma; Szapary, Philippe O.; Rader, Daniel J.; Edman, Joel S.; Klein, Samuel. A randomized trial of a low-carbohydrate diet for obesity *New England Journal of Medicine* 2003;348: 2082-90.
- ⁶⁸ Samaha FF, Iqbal N, Seshadri P, Chicano KL, Daily DA, McGrory J, Williams T, Williams M, Gracely EJ, Stern L. A low-carbohydrate as compared with a low-fat diet in severe obesity. *New England Journal of Medicine*, 2003; 348(21):2074-2081.
- ⁶⁹ McGuire MT, Wing RR, Klem ML, Hill, JO. Behavioral strategies of individuals who have maintained long-term weight losses. *Obes Res* 1999;7:334-41.
- ⁷⁰ Apfelbaum M, Vague P, Ziegler O, Hanotin C, Thomas F, Leutenegger E. Long-term maintenance of weight loss after a very-low-calorie diet: a randomized blinded trial of the efficacy and tolerability of sibutramine. *Am J Med* 1999;106:179-84.
- ⁷¹ Heck AM, Yanovski JA, Calis KA. Orlistat, a new lipase inhibitor for the management of obesity. *Pharmacotherapy* 2000;20:270-9.
- ⁷² Davidson MH, Hauptman J, DiGirolamo M, et al. Weight control and risk factor reduction in obese subjects treated for 2 years with orlistat: a randomized controlled trial. *JAMA* 1999;281:235-42. [Erratum, *JAMA* 1999;281:1174.]
- ⁷³ Hill JO, Hauptman J, Anderson JW, et al. Orlistat, a lipase inhibitor, for weight maintenance after conventional dieting: a 1-y study. *Am J Clin Nutr* 1999;69:1108-16.
- ⁷⁴ Sjostrom L, Rissanen A, Andersen T, et al. Randomized placebo-controlled trial of orlistat for weight loss and prevention of weight regain in obese patients. *Lancet* 1998;352:167-72.
- ⁷⁵ Yanovski, S. Drug therapy: Obesity. *New England Journal of Medicine* 2003; 346(8): 591-602.
- ⁷⁶ Anderson J, Konz E, Frederich R & Wood C. Long-term weight-loss maintenance: a meta-analysis of US studies. 2001. *American Journal of Clinical Nutrition*; 74:597-84
- ⁷⁷ Andersen T, Stockholm KH, Backer OG et al. Long-term (5 year) results after either horizontal gastroplasty or very-low-calorie-diet for morbid obesity. *International Journal of Obesity*, 12(4): 277-84.
- ⁷⁸ Perugi A, Mason R, Czernicah D, et al. Predictors of complication and suboptimal weight loss after laparoscopic roux-en-y gastric bypass. *Archives of Surgery* 2003; 138: 541-546.
- ⁷⁹ <http://www.usda.gov/news/releases/2002/10/hhs.htm>
- ⁸⁰ <http://www.usda.gov/news/releases/2002/10/hhs.htm>
- ⁸¹ <http://www.cce.cornell.edu/food/fdharchives/111202/diabetes.html>