

The Permanente Journal

Supplement 2003

Special Journal Symposium Supplement
A Focus on Weight Management



KAISER
PERMANENTE®

www.kp.org/permanentejournal

Mission: *The Permanente Journal* is written and published by the clinicians of the Permanente Medical Groups and KFHP to promote the delivery of superior health care through the principles and benefits of Permanente Medicine.

Special Journal Symposium Supplement

A FOCUS ON WEIGHT MANAGEMENT

This symposium is created from material taken from the Care Management Institute and Centers for Disease Control-cosponsored symposia, a Southern California Symposium, and the Northwest Permanente Physicians and Surgeons-sponsored symposium on weight management and obesity. Presenters spoke, answered questions, and participated in panel discussions in individual areas of expertise, including nutrition, physician activity, cultural competence, cardiovascular implication, etc. The edited transcripts are excerpted along with other compelling articles addressing weight management and obesity in this Supplement taken from the Spring and Summer 2003 issues of *The Permanente Journal*.

-
- | | |
|---|--|
| 1 The Epidemic of Obesity: Challenges and Opportunities for Kaiser Permanente
William Caplan, MD | 39 The National Weight Control Registry
James Hill, PhD; Rena Wing, PhD |
| 3 Approaches to the Epidemic of Weight Management and Obesity
William Dietz, MD, PhD | 43 Promoting Physical Activity and Exercise
Paul O Jacobs, MD |
| 6 Obesity Research: Winning the Battle, Losing the War
Thomas M Vogt, MD, MPH;
Victor J Stevens, PhD | 47 One Step at a Time—The 10,000 Steps Program Increases Physical Activity
Nico Pronk, PhD |
| 16 Stigma and Discrimination in Weight Management and Obesity
Kelly D Brownell, PhD;
Rebecca Puhl | 49 Preventing Obesity in Children and Adolescents
Thomas N Robinson, MD, MPH |
| 19 Cultural Competence in the Prevention and Treatment of Obesity: Latino Americans
John P Foreyt, PhD | 52 Weight Control in Children and Adolescents Proves Successful in a Family-Based Program
Lawrence Hammer, MD |
| 23 Cultural Competence in the Prevention and Treatment of Obesity: African Americans
Njeri Karanja, PhD | 54 Severe Obesity
Sasha Stiles, MD |
| 26 Energy Density and Nutrition in Weight Control Management
Barbara Rolls, PhD | 58 A Pound of Prevention ... Is Worth a Ton of Cure
Scott M Gee, MD |
| 29 Concepts and Controversies on Diet: Stop Recommending Low-Fat Diets!
Walter C Willett, MD, DrPH | 60 An Overview of the Care Management Institute's Weight Management and Obesity Initiative
William Caplan, MD; Trina Histon, PhD; Helen S Pettay, BA |
| | 66 KP Regional Weight Management Programs
Trina Histon, PhD |

Weight Management and Obesity Symposium

The Epidemic of Obesity: Challenges and Opportunities for Kaiser Permanente



William Caplan, MD
Weight Management
and Obesity Symposium
Editor

The editors welcome William Caplan, MD, Kaiser Permanente (KP) Care Management Institute (CMI) Director of Clinical Development, and Helen S Pettay, KP CMI Communications Director and The Permanente Journal CMI Liaison, as our guest editors for this two-issue symposium on weight management and obesity. The material for this symposium is taken from transcripts of the CMI and Centers for Disease Control cosponsored symposia held on June 27-28, 2002, and November 7-8, 2002, in Denver, CO. We are also including material taken from transcripts from the Northwest Permanente, PC, Physicians and Surgeons-sponsored symposium in Portland, OR, December 11, 2002.

Through an innovative collaborative partnership, Dr Caplan and William Dietz, MD, PhD, Director of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control, lead an exploration into "a challenging public health 'issue of epidemic proportion' that has great import to both Kaiser Permanente and the health of our nation."

Obesity in the United States is accelerating at an unprecedented rate. The prevalence of obesity among adults in this country, now at 30%, has doubled in the past 20 years.¹ Similarly, overweight in children and adolescents, now at approximately 15%, has tripled in this same period.² Overall prevalence of obesity is expected to double again in the next 30 years and to increase most rapidly in the subset of the population at the 99th percentile of body mass index (BMI).³ Approximately one of 20 adults is now a candidate for bariatric surgery.¹ If unaltered, this trend will mean that millions more people with extreme obesity (BMI greater than 40) will require treatment. Among adults, obesity has the same impact on health status as aging 20 years.⁴ Obesity adversely affects health-related quality of life even more than does smoking.⁴ Comorbid conditions and risk factors, such as hypertension, dyslipidemia, gallbladder disease, and sleep apnea, are commonly found in the obese population.⁵ Obese adults have 100% increased incidence of sudden death in addition to substantially increased overall mortality.⁵ Perhaps the most disturbing consequence of the obesity epidemic is increasing prevalence of cardiovascular risk factors in overweight children and adolescents. In the Bogalusa Heart Study,⁶ about 60% of overweight children between the ages of five and ten years have one cardiovascular risk factor (eg, hypertension, dyslipidemia), and about 20% have two or more risk factors. Type II diabetes is now commonly diagnosed among overweight adolescents.

Is it any wonder that the World Health Organization has concluded that obesity is the major unmet public health problem worldwide?⁷

These health risks are also accompanied by major economic consequences. Indirect and direct costs attributed to obesity in the United States are estimated at more than \$100 billion per year⁸ and account for approximately 5.5% to 7% of total health care expenditures annually.⁹ Studies done by the Kaiser Permanente (KP) Division of Research in Northern California and by the Centers for Health Research in the KP Northwest Region have documented the increased health care expenditures associated with increasing BMI. For example, total cost of care for a cohort of KP members with a BMI of 35 or more was 44% greater than total cost of care for a cohort with a BMI ranging from 20 to 24.9.¹⁰

Slowing the epidemic increase in prevalence of overweight and obesity will be extremely challenging; our approaches must be grounded in understanding the causes of this epidemic. Biologically, humans evolved in an environment of inconstant food supply and a high level of required physical activity.¹¹ Thus, physiologic processes evolved to ensure consumption of food when available and conservation of energy when activity was not required.

Today, we live in an environment where food is available at low cost and where physical activity has been engineered out of daily life. When a positive energy balance as little as 10 kcal per day leads to a one-pound weight gain per year,¹² the challenge of overcoming these physiologic processes is depressingly obvious.

Lifelong cognitive efforts are required to overcome these physiologic drivers. Humans find it difficult to evolve these new cognitive abilities fast enough to

Among adults, obesity has the same impact on health status as aging 20 years.

outpace the increasingly rapid adaptation of “fast food,” to name only one societal influence. “Super-sized” french fries, available at McDonald’s® restaurants since 1998, are considered to be only “large-sized” today. In fact, 1500 kcal can now be purchased for a few dollars at most fast-food establishments. At the same time, public policy and market forces have reduced availability of fruits and vegetables while increasing accessibility of energy-dense foods.

Reduced levels of physical activity contribute to increased prevalence of obesity at least as much as the factors already mentioned.¹³ Twenty-seven percent of US adults engage in no daily, leisure-time physical activity.¹⁴ In the United Kingdom during the period extending from 1980 through 1990, daily core consumption decreased by a mean 750 calories per day—but mean daily energy expenditure declined by 800 calories per day, thus leading to a positive energy balance of 50 kcal per day, an amount sufficient to cause increasing levels of obesity in the British population.¹⁵ As Shiriki Kumanyika stated, “We are unable to undereat sufficiently to compensate for being inactive.”^{16:p299}

Strategies to address the epidemic of obesity must encompass a range of behavioral, social, and environmental factors. We must take a broad-based approach to the public health crisis of obesity by collaborating with experts from academia, medicine, other health care delivery systems, research, and the federal government. The Weight Management and Obesity Symposium contained in this and the next issue of *The Permanente Journal* therefore reflects the current range of clinical and public health perspectives on obesity.

The content of these articles is derived from a series of forums that included experts from both within and outside KP. Formal presentations are supplemented by a wide variety of viewpoints, expressed in the *Discussion* sections. The overall intent is to translate clinical research and experience into practical, implementable interventions and effective social and environmental solutions. Practical tools and an evidence-based clinical algorithm designed to help implement these interventions will be discussed in a subsequent issue of *The Permanente Journal*.

We have much to be proud of in KP for the many programs already instituted. We hope that this symposium will add support and guidance that will boost our efforts to reverse the obesity epidemic. ❖

Acknowledgments

Sara C Pimental, MLLS, assisted with bibliographic retrieval.
Marianne Dequina, AA, assisted with preparing the manuscript.

References

1. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA* 2002 Oct 9;288(14):1723-7.
2. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002 Oct 9;288(14):1728-32.
3. Freedman DS, Khan LK, Serdula MK, Galuska DA, Dietz WH. Trends and correlates of class 3 obesity in the United States from 1990 through 2000. *JAMA* 2002 Oct 9;288(14):1758-61.
4. Sturm R. The effects of obesity, smoking, and drinking on medical problems and costs. Obesity outranks both smoking and drinking in its deleterious effects on health and health costs. *Health Aff (Millwood)* 2002 Mar-Apr;21(2):245-53.
5. National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda (MD): National Heart, Lung, and Blood Institute; 1998. (NIH Publication No. 98-4083) Available from: www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf (accessed March 19, 2003).
6. Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. *Pediatrics* 1999 Jun;103(6 Pt 1):1175-82.
7. World Health Organization. Obesity: preventing and managing the global epidemic: report of a WHO consultation on obesity, Geneva June 3-5, 1997. Geneva: World Health Organization, Division of Noncommunicable Disease, Programme of Nutrition, Family and Reproductive Health; 1998.
8. Wolf AM. What is the economic case for treating obesity? *Obes Res* 1998 Apr;6 Suppl 1:2S-7S.
9. Thompson D, Wolf AM. The medical-care cost burden of obesity. *Obes Rev* 2001 Aug;2(3):189-97.
10. Quesenberry CP Jr, Caan B, Jacobson A. Obesity, health services use, and health care costs among members of a health maintenance organization. *Arch Intern Med* 1998 Mar 9;158(5):466-72.
11. Peters JC, Wyatt HR, Donahoo WT, Hill JO. From instinct to intellect: the challenge of maintaining healthy weight in the modern world. *Obes Rev* 2002 May;3(2):69-74.
12. Nielsen SJ, Popkin BM. Patterns and trends in food portion sizes, 1977-1998. *JAMA* 2003 Jan 22-29;289(4):450-3.
13. Blair SN, Nichaman M. The public health problem of increasing prevalence rates of obesity and what should be done about it [editorial]. *Mayo Clin Proc* 2002 Feb;77(2):109-13.
14. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the United States. *JAMA* 2001 Sep 12;286(10):1195-200.
15. James WP. A public health approach to the problem of obesity. *Int J Obes Relat Metab Disord* 1995 Sep;19 Suppl 3:S37-45.
16. Kumanyika SK. Minisymposium on obesity: overview and some strategic considerations. *Annu Rev Public Health* 2001;22:293-308.

Strategies to address the epidemic of obesity must encompass a range of behavioral, social, and environmental factors.

Weight Management and Obesity Symposium

*A conversation with the Care Management Institute
Board of Directors and William Dietz, MD, PhD*

Approaches to the Epidemic of Weight Management and Obesity

By William Dietz, MD, PhD

Editor's Note: Through a series of working meetings, the Centers for Disease Control and Prevention (CDC) and the Care Management Institute (CMI) have brought together leading experts from academia, medicine, health care delivery systems, research, and the federal government to assess and promote implementation of programs for managing overweight and obesity. William Dietz, MD, PhD, has been an active leader of this collaboration.

As the disease burden in the United States has shifted from acute infectious diseases to chronic diseases, public health officials, the medical community, and health policymakers have begun to focus on those nonacute problems that account for a substantial proportion of morbidity and mortality in this country. Increasingly, obesity and overweight have taken the spotlight as one of the nation's most rapidly growing and, from the public health perspective, deeply troubling health problems.¹

Both adult and pediatric obesity are areas of tremendous concern.

Obesity in adults is defined as a body mass index $\text{wt}[\text{kg}]/\text{ht}[\text{m}^2]$ (BMI) of 30 or more.² Prevalence data from the CDC's current National Health and Nutrition Examination Survey (NHANES)³ show that 30% of American adults fall into that category—a proportion that is increasing annually.⁴

... obesity and overweight have taken the spotlight as one of the nation's most rapidly growing and ... deeply troubling health problems.

Even more alarming is the fact that growth in prevalence of severe obesity—in adults with a BMI of 40 or above—is far outstripping even the growth rate for simple obesity.⁵ The number of American adults classified as severely obese has tripled in the past 15 years, and 15% of African-American women have a BMI of 40 or more.³

People who have a BMI of 40 or higher are a priority population for weight control. The only way to address severe obesity for many such patients is gastric bypass surgery. The collaboration between Kaiser Permanente (KP) and the CDC was prompted by recognition that to address this problem effectively, we need to do so well before people reach a BMI of 40. Moreover, when 30% of the population has a problem, effective care becomes a public health issue, and effective care for obese patients is what has driven our interest in this collaboration.

Additional research suggests that prevalence of pediatric obesity is increasing even more rapidly than prevalence of adult obesity.⁶ Data from nationally representative surveys show that childhood (ages 6-11 years) overweight has doubled between 1980 and 1999^{6,7} and that adolescent overweight, affecting youth from ages 12 to 17 years, tripled during the same period.^{6,7} Fifteen percent of children and adolescents are overweight,⁷ and persistence of childhood overweight into adulthood may account for the rapid increases currently seen in class 3 obesity (represented by a BMI of 40 or more). Data from longitudinal studies suggest that children with onset of overweight before eight years of age who become obese adults have an average BMI of more than 40.⁸ Children and adolescents represent another priority population.

The question that originally brought the CDC and KP together was “What practical, effective, nonsurgical approaches should exist or should be considered for prevention and treatment of overweight patients and obesity in medical settings?”

- *Practical*—What can we do now without waiting for a new body of research?
- *Effective*—In many cases, we have efficacy but not effectiveness.

- *Nonsurgical*—KP has surgical options for obesity in almost all of its regions, and we didn't want to exclude surgery. However, if people reach the stage at which obesity can only be treated surgically, we have not done an effective job of treating people earlier or of preventing obesity.

Although the initial query emphasized the medical setting, the KP/CDC working group participants recognized that an approach limited to medical settings was not likely to be effective without reinforcing what is done there with strategies in the community, workplace, and home. This approach requires expanded partnerships among health care providers, communities, schools, and nongovernmental organizations as well as community, state, and national government agencies—especially health care providers and payers at these levels.

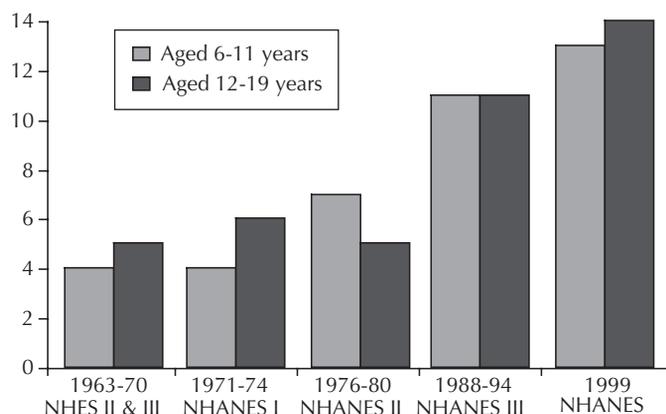
No state Medicaid program reimburses for routine care of obesity. The opportunity now exists to begin a dialog in a number of states where the obesity problem is growing. Obesity may begin to drive coverage of preventive health services through Medicaid, because it's so clearly an issue of “pay now [for prevention] or pay later [for disease].” In addition,

William Dietz, MD, PhD, Director of the Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention. Email: Wcd4@cdc.gov.



Weight Management and Obesity Symposium

Prevalence of Overweight^a Among US Children and Adolescents



^a Gender- and age-specific BMI > the 95th percentile.

Source: Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS) National Health Examination Survey (NHES), National Health and Nutrition Examination Survey (NHANES).

sity is. Existing survey data suggest that people do not believe that obesity is a health risk—it's much more commonly perceived as a cosmetic problem. Most people think that "obesity" may apply to a person with a BMI of 40 or 50, not 30. A very important challenge remains in understanding what kind of language we should use to talk about this issue.

Finally, what policy and environmental changes need to be made so that healthy choices in nutrition and physical activity become easy choices? Infectious diseases were successfully controlled in the last century because of policies such as assured water potability. What are the elements of policy or environmental change that need to be adopted to address this problem effectively for the next 100 years? Successful approaches to obesity will also be successful approaches to diabetes, cardiovascular disease, and cancer. Obesity is one of the drivers of chronic disease, but we now have a chance to change the approach to chronic

diseases in a way that was not possible in the past.

The formation of partnerships of all kinds will continue to be a critical element in effective treatment and prevention of obesity and overweight. Already expressing concerns about the issue and actively seeking solutions are the United States Department of Health and Human Services; several state governments; medical societies, such as the American Dietetic Association and the American Academy of Pediatrics; research sponsors, such as the Robert Wood Johnson Foundation; major employers, such as General Motors; public service organizations, such as the YMCA; health care associations, such as the American Heart Association and the American Cancer Society; and a host of schools, community groups, and other organizations. Although the oppor-

tunity clearly exists to build a very broad coalition around this issue, several crucial strategic decisions must be made, such as whether these partnerships should be formed at the national, state, or local level.

The opportunity exists to engage a wide coalition of partners in this effort, and not the least of these partners in terms of importance and stature is KP. The initiative really needs to come from the health care arena.

KP is ideally suited to take a leadership role in participating in and fostering these activities. KP has the authority needed to discuss the health care impact of

obesity and overweight management and to bring others to the table to discuss this issue. Since our initial telephone conference 12 months ago, the energy and progress generated by the partnership between the CDC and KP has been extraordinary. But a medical

shift alone will not be sufficient to address this problem. The opportunity is for broader partnerships and alliances that will help to take this issue forward. ❖

References

1. Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. The disease burden associated with overweight and obesity. *JAMA* 1999 Oct 27;282(16):1523-9.
2. National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Washington (DC): National Institutes of Health; 1998. (NIH Publication No. 98-4083) Available from: www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.htm (accessed March 13, 2003).
3. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA* 2002 Oct 9;288(14):1723-7.
4. Mokdad AH, Ford ES, Bowman BA, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *JAMA* 2003 Jan 1;289(1):76-9.
5. Freedman DS, Khan LK, Serdula MK, Galuska DA, Dietz WH. Trends and correlates of class 3 obesity in the United States from 1990 through 2000. *JAMA* 2002 Oct 9;288(14):1758-61.
6. Troiano RP, Flegal KM. Overweight children and adolescents: description, epidemiology, and demographics. *Pediatrics* 1998 Mar;101(3 Pt 2):497-504.
7. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002 Oct 9;288(14):1728-32.
8. Freedman DS, Khan LK, Dietz WH, Srinivasan SR, Berenson GS. Relationship of childhood obesity to coronary heart disease risk factors in adulthood; the Bogalusa Heart Study. *Pediatrics* 2001 Sep;108(3):712-8.
9. The Diabetes Prevention Program. Design and methods for a clinical trial in the prevention of type 2 diabetes. *Diabetes Care* 1999 Apr;22(4):623-34.
10. Increasing physical activity. A report on recommendations of the Task Force on Community Preventive Services. *MMWR Recomm Rep* 2001 Oct 26;50(RR-18):1-14.
11. Yanovski SZ, Yanovski JA. Drug therapy: obesity. *N Engl J Med* 2002 Feb 21;346(8):591-602.
12. Nielsen SJ, Popkin BM. Patterns and trends in food portion sizes, 1977-1998. *JAMA* 2003 Jan 22-29;289(4):450-3.
13. Young LR, Nestle M. Expanding portion sizes in the US marketplace: implications for nutrition counseling. *J Am Diet Assoc* 2003 Feb;103(2):231-4.

Successful approaches to obesity will also be successful approaches to diabetes, cardiovascular disease, and cancer.

Thomas Vogt, MD, MPH, and Victor Stevens, PhD,
discuss the need to treat obesity as a chronic disease

Obesity Research: Winning the Battle, Losing the War

By Thomas M Vogt, MD, MPH; Victor J Stevens, PhD

Abstract

Diabetes and obesity have increased dramatically in the United States during the past quarter century and are having a profound, negative impact on morbidity, mortality, quality of life, and cost of medical care. New research confirms that diabetes can be prevented or delayed through aggressive weight management. After years of discouraging reports on the failure of weight management programs to produce sustained weight loss, several approaches are now known to contribute to long-term weight control. However, despite this good news, most weight control programs—those housed within medical care systems—are of low quality, have inadequate resources, and are not accountable for their results. Moreover, most of these programs are not covered benefits and are instead treated as optional public relations services instead of as integral parts of medical care. Most clinical advice and counseling about weight and diet is delivered to patients sporadically, briefly, inexpertly, and only after clinically significant morbidity is already present. Ironically, assessment of weight occurs almost to the point of obsession but with little meaningful follow-up. Given the magnitude of the problem as well as the new, encouraging research findings, programs—those housed within medical care systems generally and in Kaiser Permanente (KP) must become as proactive in treating obesity as the organization already is in treating hypertension and heart failure: We must treat obesity as a chronic disease. To reduce morbidity and mortality and to improve quality of life for patients with obesity, health care practitioners must correctly apply effective, available remedies for this chronic disease.

weight loss is a wakeup call to health care systems that have generally neglected weight management, particularly for their patients who are not already ill with obesity-related conditions such as diabetes, cardiovascular, and musculoskeletal diseases. KP members incur an enormous burden from obesity-related morbidity and mortality as well as from the enormous cost of treating the resulting preventable diseases.

Consequences of Obesity

Obesity has not been treated systematically in medical care systems, although treating its comorbid conditions without preventing and treating the obesity itself could be considered unethical.⁹ Nonetheless, treatment of obesity is the cornerstone of both diabetes care⁹ and diabetes prevention.^{5,6} Two of every three diabetic patients are overweight,¹⁰ and obesity is increasing rapidly throughout the United States.¹¹⁻¹³ Weight loss reduces medical costs; improves control of glycemia, lipoproteinemia, and blood pressure;¹⁴ and reduces mortality risk among patients with diabetes.¹⁵ The economic burden of obesity may exceed \$100 billion per year.¹⁶ Weight management requires a life-long commitment to healthy eating practices as well as to daily physical activity.¹⁷ Regaining weight after successful completion of a drug

... treatment of obesity is the cornerstone of both diabetes care and diabetes prevention.

Introduction

The United States is undergoing an epidemic of diabetes and obesity with profound consequences on our health and on health care costs.¹⁻³ This epidemic cannot be addressed without involving patients and health care systems in an effective, integrated approach to managing the lifestyle behavior that leads to the problem.⁴ The

exciting findings of the Diabetes Prevention Study⁵ and of the Diabetes Prevention Program⁶ make clear that Type II diabetes is a preventable disease and that—after many years of disappointing efforts—we have at last begun to identify components of effective obesity maintenance intervention.^{7,8} Identification of approaches that lead to sustained, long-term



Thomas M Vogt, MD, MPH, (left) is a physician and epidemiologist. He is a Fellow of the American Heart Association and Director of the Kaiser Permanente Center for Health Research Hawaii program. E-mail: tom.m.vogt@kp.org
Victor J Stevens, PhD, (right) is the assistant director of the CHR's epidemiology and disease prevention program. He is a behavioral psychologist conducting research on lifestyle change interventions. E-mail: victor.j.stevens@kp.org

Weight Management and Obesity Symposium

with diet and exercise program is common, mainly because of the scarcity of adequate programs for maintaining weight loss.¹⁸

Disparate Racial and Ethnic Distribution of Obesity and Diabetes

The population of Hawaii is one of the world's most ethnically diverse and includes whites (21.8%), Japanese (19.1%), Native Hawaiians/part-Hawaiians (19.4%), Filipinos (12.6%), Chinese (3.9%), Other (8.3%), and mixed (15.0%).¹⁹ About two thirds of Hawaii's Native Hawaiians, Filipinos, and Japanese—and about half of Hawaii's whites—maintain a sedentary lifestyle.²⁰ In Hawaii, 46% of Native Hawaiians are obese compared with 24% of the general population of Hawaii.²⁰ In Hawaii, diabetes among people aged 36 to 64 years is more than twice as prevalent among Native Hawaiians as in non-Hawaiian residents, and diabetes among people older than 65 years is about one-and-one-half times as prevalent in Native Hawaiians as in non-Hawaiian residents.²⁰ Native Hawaiians are the only US ethnic group with a life expectancy below 70 years (68 years),²⁰ and obesity and diabetes are the primary reason. Filipinos and Japanese in Hawaii also have high rates of diabetes.²⁰ Among KP members in Hawaii, excellent health is self-reported by 27% of whites, by only 17% of Japanese and Filipinos, and by only 13% of Native Hawaiians. Poor health is self-reported by 11% of whites, 18% of Hawaiians, 19% of Japanese, and 21% of Filipinos. If this disparity among ethnic groups in Hawaii and among similar groups in other parts of the United States is to be effectively addressed, health care systems must pay attention to race, culture, and personal habits of patients.

Weight Control Programs Can be Cost-effective for Health Care Systems

The cost of losing a kilogram of weight in an intensive, long-term, very-low-calorie diet program has been estimated at \$630.²¹ Despite strong evidence of benefit from sustained weight loss,^{22,23} few data balance the cost against medical care utilization rates. Research is needed to estimate the impact of various weight management programs and their cost against change in medical care utilization levels.

Whatever the program and whatever its cost, one fact remains: Ineffective programs and half-hearted interventions are the most costly of all because they don't produce change. In a one-year pilot program for weight loss among 200 obese patients whose body mass index (BMI) ranged from 30 to 56, 72% remained in contact and at least partially complied with recommended lifestyle changes after 12 months. Medical care savings per patient equaled \$380 for the year.²⁴ Despite the cost of these programs, obese and diabetic patients use about three to four times more medical care resources than the average Health Plan member. Thus, even expensive interventions are cost-effective if they help patients to lose weight and to maintain this weight loss.

Weight Control Interventions that Lead to Sustained Weight Loss

Two major barriers are encountered by health systems attempting to implement effective weight management programs: 1) the myth that no program is effective in the long term; and 2) failure to integrate lifestyle issues into our medical care paradigm. We talk about lifestyle but are not accountable for addressing it in the way that we are accountable for treating hypertension.

Consequently, assistance with weight management is not standard medical practice. Table 1^{4,7,8,21,25-52} shows obesity intervention components that have been associated with sustained weight loss. If included in serious, high-quality, appropriately funded programs, these effective interventions could reduce the number of morbid and mortal outcomes from obesity.

Physical Activity

Exercise clearly improves outcome of behavioral weight management programs. One third of deaths from cardiovascular disease and diabetes may result from physical inactivity.^{53,54} Sedentary lifestyle is also an

The cost of losing a kilogram of weight in an intensive, long-term, very-low-calorie diet program has been estimated at \$630.

Table 1. Weight interventions associated with long-term sustained weight loss

Intervention	Selected references
Physical activity	7, 21, 25, 26, 27, 28, 29, 30, 31, 32
Very-low-calorie diet	7, 8, 33, 34
Case management	4, 25, 30, 35, 36
Social support	37, 38, 39, 40
Number of contacts and length of maintenance	41, 42, 43, 44, 45, 46
Group approaches	47
Low-fat diet	8, 48, 49
Achievement of initial weight loss >20 kg	8, 50, 51
Relapse prevention/personal strategies	37, 49, 52

Note: Bariatric surgery is effective but applicable to only a small group of extremely obese persons and is not included in this discussion.

Table 2. Patterns of weight measurement and dietary counseling among 774 adults in a large HMO, 1992-1996

Service	Cost ^a	Total, 5 years	No. person per year	Total No. for 5 Years					
				0	1-2	3-5	6-10	11-20	>20
Weight measurement	\$2.40	14111	3.6	25	47	78	121	233	270
Any diet/obesity advice or counseling	\$11.13	1320	0.3	360	218	139	45	12	0

^a Measured in 1996 dollars. Weight based on one minute of RN time; advice based on mean two-minute interaction during a primary care visit or four-minute interaction with trained counselor plus video. Most clinic exchanges about diet are shorter, and referrals to dietitians and weight programs are longer.

important risk factor for cancer.⁵⁵⁻⁵⁷ In the United States, about 60% of adults are inadequately physically active, and one quarter report engaging in no physical activity at all.⁵⁸ The Surgeon General's Report on Physical Activity and Health⁵⁸ makes clear the importance of physical activity in reducing morbidity and identifies promising strategies for intervention. Health care systems have a critical role in promoting physical activity and disease management strategies needed to foster physical activity among diabetic patients.²⁵

The Diabetes Prevention Program clearly showed the importance of exercise in diabetes prevention.²⁶ Physical activity counseling by physicians affects patient exercise levels,⁵⁹⁻⁶² but more research is needed on how to incorporate exercise counseling into the medical setting.⁶³ The Physician-based Assessment and Counseling for Exercise (PACE) Program^{63,64} trained physicians to counsel patients about diet, weight, and physical activity, but physicians have little time to add behavioral counseling. Physical activity counseling is as effective as structured exercise programs for increasing physical activity.⁶⁵ Medical systems need effective system support programs endorsed by physicians but delivered by nonphysician support staff who are

specifically trained for the task.

The most effective weight loss programs include exercise as an integral part of their approach.^{28,66-69} One very-low-calorie diet program²¹ showed that four-and-a-half years after treatment, continuing exercisers had 7.4 times as much weight loss (mean loss of 21 lb [9.53 kg]) as those who did not exercise (mean loss of 2.9 lb [1.3 kg]). Blair et al^{70,71} developed a lifestyle approach to increasing physical activity based on the Stages of Motivational Readiness Model⁷² and on the Social Cognitive Theory Model.⁷³ A similar approach has been widely used by Stevens et al^{66-68,74} in research programs. Barriers to engaging in physical activity have been widely studied, as have interventions designed and tested to overcome those barriers.⁷⁵⁻⁷⁹ Successful approaches to adopting a physically active lifestyle assure that the individual 1) perceives a net benefit; 2) chooses an enjoyable activity; 3) feels competent in doing the activity; 4) can easily access the activity on a regular basis; 5) can fit the activity into the daily routine; 6) perceives no major financial or social cost to the activity; 7) experiences few negative consequences (eg, injury or ridicule) from the activity; and 8) can successfully resolve any competing time demands.²⁹

The most effective weight loss programs include exercise as an integral part of their approach.

Although physicians have been encouraged to counsel their patients on exercise, physicians are less likely to counsel patients about exercise than about smoking and other health behaviors.^{60,80,81} Ethnicity may influence whether advice and counseling are provided. In the KP Hawaii Region, Filipinos are less likely to be counseled by their physicians about physical activity than are other ethnic groups.³³ The PACE program⁶⁴ assisted clinicians in counseling their patients to overcome barriers to exercise. The INSURE Project on Lifecycle Preventive Health Services was effective for promoting adoption of high levels of exercise 12 months after intervention⁵⁹ and showed that brief advice sessions in the medical office (similar to effective smoking intervention in the medical office) increases patients' total weekly minutes of exercise.

The Very-Low-Calorie Diet (VLCD)

Behavioral and cognitive intervention approaches combined with a very-low-calorie diet (VLCD) and a chronic disease case management model may be the most effective strategy for helping patients to lose weight and maintain that weight loss. Contrary to the pessimism of many clinicians and researchers, effective long-term weight loss can be achieved,⁷ and the components of successful maintenance programs are gradually emerging. The

Weight Management and Obesity Symposium

VLCD approach is associated with greater initial weight loss and maintenance of weight loss than are low-energy, balanced diets and may be associated with better sustained weight loss.⁸ Participants in the wellness program in the KP Southern California Region, Positive Choice, achieved a mean weight loss of 57 lbs (25.9 kg) during a six-month intervention.³⁴ Walsh and Flynn²¹ reported a mean initial weight loss of 59.8 lbs (27.1 kg) for men and 42.4 lbs (19.2 kg) for women. Brief periods of VLCD are “associated with successful weight control in a substantial portion of patients several years after treatment.”^{82:abstract}

Relapse Prevention

The Relapse Prevention Model⁵² combines applied behavioral analysis, social learning theory, models of stress and coping, and strategies for responding to temptation and brief lapses in adherence to behavior change efforts. The Relapse Prevention Model focuses on avoiding situations that lead to lapses or relapse (antecedents) and on identifying and practicing alternative coping strategies (eg, avoidance, adaptation, adopting new constructive behaviors). The Relapse Prevention Model involves learning and practicing cognitive (influencing thoughts) as well as behavioral (learning and applying skills) approaches.^{37,83} Development of personalized strategies for maintaining weight loss is associated with long-term maintenance of weight loss.⁸⁴

Social Support

Social support interventions maintain behavior change through social relationships and interpersonal interactions³⁸ and emphasize exchange of information, advice, suggestions, empathy, and caring among

close friends, family, and others facing the same challenges (eg, trying to change diet, to increase exercise, or to quit smoking). Social support intervention includes small-group sessions with varying degrees of structure and professional guidance as well as other forms of support, such as one-to-one meetings, “buddy systems” (pairing up), and telephone contacts. Social support intervention and support from family and friends improve the effectiveness of weight loss maintenance.^{39,40,84,85} Relapse prevention and social support approaches are not mutually exclusive but represent two distinct emphases in strategies to enhance maintenance of behavior change. Because they include activities based on each person’s unique situation, these strategies are ideally suited for application in multiethnic, multicultural populations.

Case Management of Obesity as a Chronic Disease

Obesity is a chronic disease requiring long-term care.^{35,41,42,86} Seven of nine diabetes studies showed that chronic care management reduces health care use and costs of care.⁴ The failure of the medical care system to effectively address obesity arises, in part, from reluctance of medical systems to undertake expensive, long-term financial commitment for care that may be too costly to sustain. However, abundant data now show the effectiveness of health systems in changing risk-related behavior. Treatment programs must involve medical systems and must include a variety of health professionals—including physicians, dietitians, exercise physiologists, and geneticists.^{25,41,86} The health care system is a “bully pulpit” for intervening in health-related behavior. Relatively small

amounts of weight loss confer disproportionate health benefits,^{22,36} and guidelines for management of chronic disease help integrate current knowledge into everyday medical practice. Ignoring obesity in medical encounters and in assigning covered benefits may be as damaging as ignoring hypertension.

Long-term Maintenance

Although weight loss sustained as long as a year may provide health benefits, these benefits are limited if the weight loss is not sustained over the long term. Unfortunately, weight regain is common, and many persons who lose substantial amounts of weight regain that weight during the next two to four years.⁷ The most promising methods for sustaining weight loss over long periods of time include increasing number of contacts with the program and extending length of the maintenance.^{42,43} Some low-cost, minimal intervention strategies (such as phone contact, mail contact, or both⁴⁷) may improve sustained weight loss. Weight management programs without a maintenance component are probably not worth their cost.

Group Participation

Participation in group sessions (as opposed to individual sessions) also is associated with better weight maintenance,⁸⁷ probably because of the peer support provided.

Can Weight Management Programs Succeed in Medical Care Systems?

Medical care systems are neither efficient nor effective for delivering

Development of personalized strategies for maintaining weight loss is associated with long-term maintenance of weight loss.

Health systems have a uniquely important role to play in promoting increased physical activity.

behavioral prevention services.⁸⁸ More than 60 randomized trials have shown that brief physician assessment and advice substantially raises long-term smoking cessation rates among patients,⁸⁹⁻⁹¹ but only a few encouraging studies have addressed dietary⁹² and exercise^{63,64,93} change

in response to intervention provided in the medical office. The Trials of Hypertension Prevention⁶⁷ tested efficacy of weight loss and sodium restriction programs—alone and in combination—using blood pressure change as the primary outcome measure. Physical activity was an essential intervention component, and individual weight differences between intervention and control groups remained statistically and biologically significant after three years of follow-up.⁶⁶ Physical activity enhances weight-loss success³⁰ and can help sustain achieved weight loss.²⁷ Health systems have a uniquely important role to play in promoting increased physical activity.²⁵ Case management is effective for improving glycemic control among diabetics⁹⁴ but is rarely integrated into management of obesity.

Patterns of Diet, Weight Assessment, and Counseling in KP

The KP Hawaii Region recently completed a study in which 774 randomly selected adult medical charts were comprehensively reviewed for receipt of 25 adult preventive services during a five-year period.³³ On the basis of observation and staff interviews, we estimated that the actual cost of weighing a patient was about \$2.40 and that the cost of brief (two-minute) dietary advice was

\$11.13 during 1996, our final year of observation (Table 2). Because medical chart notes on dietary or weight loss advice were cursory and vague, we defined any mention of diet or weight management (eg, “lose weight” or “change diet”) as advice or counseling. During the five-year observation period (January 1, 1992 through December 31, 1996), the 774 persons were weighed 14,111 times, or 18 times each (a mean of once every 3.3 months). Thirty-five percent of the group was weighed more than twenty times. Only 3% (n = 25) of the sample was never weighed during the five years, whereas 65% of persons were weighed more than ten times. Conversely, 47% of the group never had any mention of diet or weight in their chart notes over the entire five-year period.

The KP Regions have a wide variety of programs for obesity management. Few of these programs have resulted in lengthy maintenance of weight loss, and those that do generally have low attendance. With the exception of a few seminars and one-session interventions, all the programs involve copayments, which are often substantial. The San Diego area of the KP Southern California Region offers a 16-week Optifast medical weight loss program for extremely obese patients, and Group Health Cooperative (GHC) of Puget Sound offers a special behavioral and counseling program for patients who must lose more than 30 lbs (13.6 kg). Except for GHC, which offers several programs of unlimited duration for long-term maintenance of weight loss, most intervention programs are limited in duration and do not focus on management of chronic disease.

Discussion

Obesity is rapidly becoming our

nation’s leading health problem. Diabetes rates are exploding. Diabetic patients require several times the health care resources that non-diabetic patients need. Consequently, obesity has also become a major economic problem. Health care systems responded rapidly and aggressively to the HIV/AIDS epidemic but not to obesity. Most KP regions have weight management programs, but few of these programs are integrated into chronic disease management programs, and most are not subject to performance evaluation and accountability. In addition, most weight management programs are viewed largely as public relations programs instead of as integral components of medical care. The best programs still lack a population-based approach and frequently are not covered benefits but are instead fee-for-service programs.

New data show that long-term, skilled approaches to weight management are successful; however, as for any other medical care process, inadequate training and support produce inadequate results. Existing data about these programs are not perfect and have resulted in conflicting reports, but weight management can definitely prevent or delay progression of glucose intolerance into diabetes. How then can we possibly justify not applying this knowledge to persons so likely to be future candidates for amputation, renal failure, blindness, and early death?

Many people make changes in their weight, exercise, and diet—only to relapse soon thereafter. Initial behavior changes can be achieved with minimal intervention,^{89,95} but long-term maintenance of those changes remains a problem. Nonetheless, years of research have shown improved diet and lipid levels in response to low-intensity messages, counseling, or both—in

Weight Management and Obesity Symposium

the context of medical care.^{92,95,96} The impact of a message is greater when it is tailored to an individual patient,⁹⁶ and long-term maintenance of weight loss definitely enhances long-term compliance.

Barriers to dietary and obesity counseling in the medical office include insufficient physician training as well as lack of time, support staff, and compensation.⁹⁷⁻⁹⁹ In addition, medical training does not prepare physicians to deliver nutritional counseling.¹⁰⁰ However, physician counseling skills and practices can be improved;¹⁰¹ and although physician support of patients' behavioral change is critical, physicians need not deliver the intervention. With appropriate training and video-based support, nurses can improve substantially on physician advice to quit smoking,¹⁰² and trained behavior change counselors can be even more effective. A system for using physician credibility to support effective counseling delivered by other medical staff can save money and physician time and can allow counseling delivered by personnel who are properly trained for this task.

Although health care providers often grow discouraged at what they view as inadequate impact of lifestyle messages, data shows that consistent change results when clinicians make an issue of lifestyle. However, not everyone is changed by therapy: 80% to 90% of persons treated for hypertension for many years would be fine without therapy, and cardiovascular events are prevented in only a fraction of persons who receive preventive therapy. Nonetheless, a substantial minority (as many as a quarter to a third) of persons who complete a well-designed weight management program sustain a clinically beneficial level of weight loss over long periods of time.^{7,8,103}

A skeptical review¹⁰³ of 870 weight management studies identified only 37 that met rigid criteria for inclusion. These 37 studies suggested that weight reduction methods are ineffective for periods longer than two years. However, even in that skeptical review, selected pharmacologic, dietary, and surgical interventions and long-term maintenance were associated with sustained weight management. In the past three to four years, a growing amount of literature^{7,82,84,87} has contradicted prevailing pessimism in this area. We have not included pharmacologic intervention in the group of programs we believe are likely to have long-term benefit because we think the jury is still out on this issue. Weight loss drugs in current use have been used for only a few years, and the long-term benefits and risks of these drugs are still being examined.

The factors in Table 1 have been linked to sustained weight loss reliably but not universally or inevitably. The relative effects vary—probably depending on the nature, quality, and duration of intervention. This knowledge has been largely ignored by health care systems, many of which have expensive and elaborate bariatric surgery programs for an extremely small fraction of the population—and only after they have already become morbidly obese. Most health systems have enormous budgets for managing diabetes and cardiovascular disease but reject serious weight management efforts on the grounds that “nothing works” and that they “can't afford it.” Those assertions are no longer valid: The few studies⁴ done to date suggest that such programs may actually be cost-saving. Whether these programs are or are not cost-saving, however, does not explain the extraordinary lack of action by health care systems de-

spite the nation's epidemic of obesity and diabetes. Particularly difficult to comprehend is the neglect of intervention at the time glucose intolerance is diagnosed.

Like other lifestyle intervention, weight management is largely outside the paradigm of what the health care industry perceives as its proper business.⁸⁸ Weight management programs exist but rarely include evidence-based activities, content, and design. What the doctor says matters. If a physician regards weight control as a cosmetic issue or as simply a matter of a patient's willpower, a clear message is given: Diet and weight are not important to health. At the same time, the reports of consensus prevention task forces^{104,105} emphasize the critical role of behavioral intervention within the medical care system. The United States must begin to address these lifestyle issues effectively through its medical care system if we have any hope of raising our morbidity and mortality rates above those in the bottom tier of developed nations while we lead the world in health care costs and in the proportion of population who are without health care. ♦

Weight management programs exist but rarely include evidence-based activities, content, and design.

Acknowledgments

This paper was supported in part by Centers for Disease Control and Prevention Grant No. UR5/CCU917124.

The author would like to acknowledge inspiration and conceptual input from Sasha Stiles, MD, of the Hawaii Permanente Medical Group when the work was done (now with the Permanente Medical Group in Northern California); and from Faruque Ahmed, MD, PhD, of the Centers for Disease Control and Prevention.

References

- McGinnis JM. Diabetes and physical activity: translating evidence into action. *Am J Prev Med* 2002 May;22(4 Suppl 1):1-2.
- Mokdad AH, Ford ES, Bowman BA, et al. Diabetes trends in the US: 1990-1998. *Diabetes Care* 2000 Sep;23(9):1278-83.
- Mokdad AH, Ford ES, Bowman BA, et al. The continuing increase of diabetes in the US. *Diabetes Care* 2001 Feb;24(2):412.
- Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness: the chronic care model, Part 2. *JAMA* 2002 Oct 16;288(15):1909-14.
- Tuomilehto J, Lindstrom J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001 May 3;344(18):1343-50.
- Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002 Feb 7;346(6):393-403.
- Jeffery RW, Drewnowski A, Epstein LH, et al. Long-term maintenance of weight loss: current status. *Health Psychol* 2000 Jan;19(1 Suppl):5-16.
- Anderson JW, Konz EC, Frederich RC, Wood CL. Long-term weight-loss maintenance: a meta-analysis of US studies. *Am J Clin Nutr* 2001 Nov;74(5):579-84.
- Institute for Medical Studies. Effective weight loss: The cornerstone of treatment for obese NIDDM patients. *Clinical Courier* 1998;16:1-11.
- Cowie CC, Harris MI. Physical and metabolic characteristics of persons with diabetes. In: Harris MI, Cowie CC, Stern MP, Boyko EJ, Reiber GE, Bennett PH, editors. *Diabetes in America*. 2nd ed. Bethesda (MD): National Institutes of Health; 1995. (NIH Publication No. 95-1468) p 117-164.
- Kuczmarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among US adults. *The National Health and Nutrition Examination Surveys, 1960-1991*. *JAMA* 1994 Jul 20;272(3):205-11.
- Obesity: preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser* 2000;894:i-xii, 1-253.
- Mokdad AH, Serdula MK, Dietz WH, Bowman BA, Marks JS, Koplan JP. The spread of the obesity epidemic in the United States, 1991-1998. *JAMA* 1999 Oct 27;282(16):1519-22.
- Maggio CA, Pi-Sunyer FX. The prevention and treatment of obesity. Application to type 2 diabetes. *Diabetes Care* 1997 Nov;20(11):1744-66.
- Williamson DF, Thompson TJ, Thun M, Flanders D, Pamuk E, Byers T. Intentional weight loss and mortality among overweight individuals with diabetes. *Diabetes Care* 2000 Oct;23(10):1499-504.
- Wolf AM. What is the economic case for treating obesity? *Obes Res* 1998 Apr;6 Suppl 1:2S-7S.
- Position of the American Dietetic Association: weight management. *J Am Diet Assoc* 1997 Jan;97(1):71-4.
- Stunkard AJ. Current views on obesity. *Am J Med* 1996 Feb;100(2):230-6.
- Health trends in Hawai'i: a profile of the health care system. 5th ed. Honolulu (HI): Hawaii Health Information Corporation; 2001. Available from: www.healthtrends.org; click on "Demographics" tab; select "Ethnic Distribution" from drop-down menu (accessed July 1, 2003).
- Office of Hawaiian Affairs, Planning and Research Office. *Native Hawaiian data book, 1998*. Honolulu (HI): Office of Hawaiian Affairs; 1998. Available from: www.oha.org/databook/databook1996_1998/index98.html (accessed June 10, 2003).
- Walsh MF, Flynn TJ. A 54-month evaluation of a popular very low calorie diet program. *J Fam Pract* 1995 Sep;41(3):231-6.
- Aronne LJ. Treating obesity: a new target for prevention of coronary heart disease. *Prog Cardiovasc Nurs* 2001 Summer;16(3):98-106,115.
- Rippe JM, Crossley S, Ringer R. Obesity as a chronic disease: modern medical and lifestyle management. *J Am Diet Assoc* 1998 Oct;10(Suppl 2):S9-15.
- Kayman S, Epel A, Potosky D, Kieschnick T, Morrisey KG. Improving the health of patients with chronic conditions and obesity. Oakland (CA): Kaiser Permanente, Northern California, Regional Health Education; 1994.
- Task Force on Community Preventive Services. Recommendations for healthcare system and self-management education interventions to reduce morbidity and mortality from diabetes. *Am J Prev Med* 2002 May;22(4 Suppl):10-4.
- Kriska A. Striving for a more active community. Lessons from the Diabetes Prevention Program and beyond. *Am J Prev Med* 2002 May;22(4 Suppl):6-7.
- Skender ML, Goodrick GK, Del Junco DJ, et al. Comparison of two-year weight loss trends in behavioral treatments of obesity: diet, exercise, and combination interventions. *J Am Diet Assoc* 1996 Apr;96(4):342-6.
- Ewbank PP, Darga LL, Lucas CP. Physical activity as a predictor of weight maintenance in previously obese subjects. *Obes Res* 1995 May;3(3):257-63.
- Physical Activity and Cardiovascular Health. NIH Consensus Statement 1995 Dec 18-20;13(3):1-33
- Saris WH. Exercise with or without dietary restriction and obesity treatment. *Int J Obes Relat Metab Disord* 1995 Oct;19 Suppl 4:S113-6.
- National Institutes of Health, Heart, Lung, and Blood Institute in cooperation with The National Institute of Diabetes and Digestive and Kidney Diseases. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda (MD): National Heart, Lung, and Blood Institute; 1998. (NIH Publication No. 98-4083) Available from: www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf (accessed June 10, 2003).
- Grodstein F, Lvine R, Troy L, Spencer T, Colditz GA, Stampfer MJ. Three-year follow-up of participants in a commercial weight loss program. Can you keep it off? *Arch Intern Med* 1996 Jun 24;156(12):1302-6.
- Vogt TM, Aickin M, Ahmed F, Schmidt M, Hornbrook M. Improving prevention in managed care: final report. [Atlanta (GA):

Weight Management and Obesity Symposium

- Disease Centers for Control and Prevention; 2001.
34. Felitti VJ, Williams SA. Long-term follow-up and analysis of more than 100 patients who each lost more than 100 pounds. *Perm J* 1998 Summer;2(3):17-21.
 35. Logue E, Sutton K, Jarjoura D, Smucker W. Obesity management in primary care: assessment of readiness to change among 284 family practice patients. *J Am Board Fam Pract* 2000 May-Jun;13(3):164-71.
 36. Rippe JM. The case for medical management of obesity: a call for increased physician involvement. *Obes Res* 1998 Apr;6 Suppl 1:23S-33S.
 37. Stevens VJ, Hollis JF. Preventing smoking relapse, using an individually tailored skills-training technique. *J Consult Clin Psychol* 1989 Jun;57(3):420-4.
 38. Heany CA, Israel BA. Social networks and social support. In: Glanz K, Lewis, FM, Rimer BK, editors. *Health behavior and health education: theory, research and practice*. 2nd ed. San Francisco: Jossey-Bass; 1997. p 179-205.
 39. Kayman S, Bruvold W, Stern JS. Maintenance and relapse after weight loss in women: behavioral aspects. *Am J Clin Nutr* 1990 Nov;52(5):800-7.
 40. McConaghy J. Adults' beliefs about the determinants of successful dietary change. *Community Health Stud* 1989;13(4):492-502.
 41. Coulston AM. Obesity as an epidemic: facing the challenge. *J Am Diet Assoc* 1998 Oct;10 Suppl 2):S6-8.
 42. White E, Shattuck AL, Kristal AR, et al. Maintenance of a low-fat diet: follow-up of the Women's Health Trial. *Cancer Epidemiol Biomarkers Prev* 1992 May-Jun;1(4):315-23.
 43. Perri MG, McAdoo WG, Spevak PA, Newlin DB. Effect of a multicomponent maintenance program on long-term weight loss. *J Consult Clin Psychol* 1984 Jun;52(3):480-1.
 44. Hartman WM, Stroud M, Sweet DM, Saxton J. Long-term maintenance of weight loss following supplemented fasting. *Int J Eat Disord* 1993 Jul;14(1):87-93.
 45. DePue JD, Clark MM, Ruggiero L, Medeiros ML, Pera V Jr. Maintenance of weight loss: a needs assessment. *Obes Res* 1995 May;3(3):241-8.
 46. NHLBI Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. *The practical guide: identification, evaluation, and treatment of overweight and obesity in adults*. Bethesda (MD): Heart, Lung, and Blood Institute; 2000. (NIH Pub. No. 00-4084) Available from: www.nhlbi.nih.gov/guidelines/obesity/practcde.htm (accessed June 10, 2003). p 24.
 47. King AC, Frey-Hewitt B, Dreon DM, Wood PD. Diet vs exercise in weight maintenance. The effects of minimal intervention strategies on long-term outcomes in men. *Arch Intern Med* 1989 Dec;149(12):2741-6.
 48. Klem ML, Wing RR, McGuire MT, Seagle HM, Hill JO. A descriptive study of individuals successful at long-term maintenance of substantial weight loss. *Am J Clin Nutr* 1997 Aug;66(2):239-46.
 49. McGuire MT, Wing RR, Klem ML, Hill JO. Behavioral strategies of individuals who have maintained long-term weight losses. *Obes Res* 1999 Jul;7(4):334-41.
 50. Quinn Rothacker D. Five-year self-management of weight using meal replacements: comparisons with matched controls in rural Wisconsin. *Nutrition* 2000 May;16(5):344-8.
 51. Ditschuneit HH, Flechtner-Mors M, Johnson TD, Adler G. Metabolic and weight-loss effects of a long-term dietary intervention in obese patients. *Am J Clin Nutr* 1999 Feb;69(2):198-204.
 52. Marlatt GA, Gordon JR, editors. *Relapse prevention: maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press; 1985.
 53. Powell KE, Blair SN. The public health burdens of sedentary living habits: theoretical but realistic estimates. *Med Sci Sports Exerc* 1994 Jul;26(7):851-6.
 54. Berlin JA, Colditz GA. A meta-analysis of physical activity in the prevention of coronary heart disease. *Am J Epidemiol* 1990 Oct;132(4):612-28.
 55. Colditz GA, Cannuscio CC, Frazier AL. Physical activity and reduced risk of colon cancer: implications for prevention. *Cancer Causes Control* 1997 Jul;8(4):649-67.
 56. Gammon MD, John EM, Britton JA. Recreational and occupational physical activities and risk of breast cancer. *J Natl Cancer Inst* 1998 Jan 21;90(2):100-17.
 57. Kramer MM, Wells CL. Does physical activity reduce risk of estrogen-dependent cancer in women? *Med Sci Sports Exerc* 1996 Mar;28(3):322-34.
 58. Surgeon General. *Physical activity and health: a report of the Surgeon General*. [Atlanta (GA)]: US Department of Health and Human Services; [1996] Available from: www.cdc.gov/nccdphp/sgr/prerep.htm (accessed June 9, 2003).
 59. Logsdon DN, Lazaro CM, Meier RV. The feasibility of behavioral risk reduction in primary medical care. *Am J Prev Med* 1989 Sep-Oct;5(5):249-56.
 60. Lewis BS, Lynch WD. The effect of physician advice on exercise behavior. *Prev Med* 1993 Jan;22(1):110-21.
 61. Calfas KJ, Long BJ, Sallis JF, Wooten WJ, Pratt M, Patrick K. A controlled trial of physician counseling to promote the adoption of physical activity. *Prev Med* 1996 May-Jun;25(3):225-33.
 62. Calfas KJ, Sallis JF, Oldenburg B, French M. Mediators of change in physical activity following an intervention in primary care: PACE. *Prev Med* 1997 May-Jun;26(3):297-304.
 63. Marcus BH, Bock BC, Pinto BM. Initiation and maintenance of exercise behavior. In: Gochman DS, editor. *Handbook of health behavior research*. Vol 2. Provider determinants. New York: Plenum; 1997. p 335-52.
 64. Long BJ, Calfas KJ, Wooten W, et al. A multisite field test of the acceptability of physical activity counseling in primary care: Project PACE. *Am J Prev Med* 1996 Mar-Apr;12(2):73-81.
 65. Dunn AL, Marcus BH, Kampert JB, Garcia ME, Kuhl HW 3rd, Blair SN. Reduction in cardiovascular disease risk factors: six-month results from Project Active. *Prev Med* 1997 Nov-Dec;26(6):883-92.
 66. Stevens VJ, Obarzanek E, Cook NR, et al. Long-term weight loss and blood pressure: results of the Trials of

- Hypertension Prevention, Phase II. *Ann Intern Med* 2001 Jan 2;134(1):1-11.
67. The effects of nonpharmacologic interventions on blood pressure of persons with high normal levels. Results of the Trials of Hypertension Prevention, Phase I [published erratum appears in *JAMA* 1992 May 6;267(17):2330]. *JAMA* 1992 Mar 4;267(9):1213-20.
 68. Effects of weight loss and sodium reduction intervention on blood pressure and hypertension incidence in overweight people with high-normal blood pressure. The Trials of Hypertension Prevention, Phase II. The Trials of Hypertension Prevention Collaborative Research Group. *Arch Intern Med* 1997 Mar 24;157(6):657-67.
 69. Glasgow RE, La Chance PA, Toobert DJ, Brown J, Hampson SE, Riddle MC. Long-term effects and costs of brief behavioral dietary intervention for patients with diabetes delivered from the medical office. *Patient Educ Couns* 1997 Nov;32(3):175-84.
 70. Blair S, Kohl H, Gordon N. Physical activity and health: A lifestyle approach. *Med Ex Nutr Health* 1992;1:54-57.
 71. Blair S, Brownell D, Hager D. Exercise and physical activity. In: Blair SN, Wolfe BL, editors. *The lifestyle counselor's guide for weight control*. Dallas (TX): American Health; 1996. p 262-319.
 72. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: towards an integrative model of change. *J Consult Clin Psychol* 1983 Jun;51(3):390-5.
 73. Bandura A. *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs (NJ): Prentice-Hall; 1986.
 74. Stevens VJ, Rossner J, Greenlick M, Stevens N, Frankel HM, Craddock S. Freedom from fat: a contemporary multi-component weight loss program for the general population of obese adults. *J Am Diet Assoc* 1989 Sep;89(9):1254-8.
 75. King AC, Haskell WL, Taylor CB, Kraemer HC, DeBusk RF. Group vs home-based exercise training in healthy older men and women. A community-based clinical trial. *JAMA* 1991 Sep 18;266(11):1535-42.
 76. Marcus BH, Banspach SW, Lefebvre RC, Rossi JS, Carleton RA, Abrams DB. Using the stages of change model to increase the adoption of physical activity among community participants. *Am J Health Promot* 1992 Jul-Aug;6(6):424-9.
 77. Marcus BH, Eaton CA, Rossi JS, Harlow LL. Self-efficacy, decision-making, and stages of change: an integrated model of physical exercise. *J Appl Soc Psychol* 1994;24(6):489-508.
 78. McAuley E. The role of efficacy cognitions in the prediction of exercise behavior in middle-aged adults. *J Behav Med* 1992 Feb;15(1):65-88.
 79. Wankel L. Decision-making and social support strategies for increasing exercise adherence. *J Cardiac Rehabil* 1984;4:124-35.
 80. Mullen PD, Tabak ER. Patterns of counseling techniques used by family practice physicians for smoking, weight, exercise, and stress. *Med Care* 1989 Jul;27(7):694-704.
 81. Orleans CT, George LK, Houtp JL, Brodie KH. Health promotion in primary care: a survey of US family practitioners. *Prev Med* 1985 Sep;14(5):636-47.
 82. Wadden TA, Frey DL. A multicenter evaluation of a proprietary weight loss program for the treatment of marked obesity: a five-year follow-up. *Int J Eat Disord* 1997 Sep;22(2):203-12.
 83. Brownell KD, Marlatt GA, Lichtenstein E, Wilson GT. Understanding and preventing relapse. *Am Psychol* 1986 Jul;41(7):765-82.
 84. Perri MG, Nezu AM, Mckelvey WF, Shermer RL, Renjilian DA, Viegener BJ. Relapse prevention training and problem-solving therapy in the long-term management of obesity. *J Consult Clin Psychol* 2001 Aug;69(4):722-6.
 85. Bovbjerg VE, McCann BS, Brief DJ, et al. Spouse support and long-term adherence to lipid-lowering diets. *Am J Epidemiol* 1995 Mar 1;141(5):451-60.
 86. Hill JO. Dealing with obesity as a chronic disease. *Obes Res* 1998 Apr;6 Suppl 1:34S-38S.
 87. Renjilian DA, Perri MG, Nezu AM, McKelvey WF, Shermer RL, Anton SD. Individual versus group therapy for obesity: effects of matching participants to their treatment preferences. *J Consult Clin Psych* 2001 Aug;69(4):717-21.
 88. Vogt TM, Hollis JF, Lichtenstein E, Stevens VJ, Glasgow R, Whitlock E. The medical care system and prevention: the need for a new paradigm. *HMO Pract* 1998 Mar;12(1):5-13.
 89. Kottke TE, Battista RN, DeFries GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice. A meta-analysis of 39 controlled trials. *JAMA* 1988 May 20;259(19):2883-9.
 90. The Agency for Health Care Policy and Research Smoking Cessation Clinical Practice Guideline. *JAMA* 1996 Apr 24;275(16):1270-80.
 91. Hollis JF, Lichtenstein E, Vogt TM, Stevens VJ, Biglan A. Nurse-assisted counseling for smokers in primary care. *Ann Intern Med* 1993 Apr 1;118(7):521-5.
 92. Neil HA, Roe L, Godlee RJ, et al. Randomized trial of lipid lowering dietary advice in general practice: the effects on serum lipids, lipoproteins, and antioxidants. *BMJ* 1995 Mar 4;310(6979):569-73.
 93. Wiesemann A, Metz J, Nuessel E, Scheidt R, Scheurermann W. Four years of practice-based and exercise-supported behavioral medicine in one community of the German CINDI area. *Countrywide Integrated Non-Communicable Diseases Intervention*. *Int J Sports Med* 1997 May;18(4):308-15.
 94. Norris SL, Nichols PJ, Caspersen CJ, et al. The effectiveness of disease and case management for people with diabetes. A systematic review. *Am J Prev Med* 2002 May;22(4 Suppl):15-38.
 95. Beresford SA, Curry SJ, Kristal AR, Lazovich D, Feng Z, Wagner EH. A dietary intervention in primary care practice: the Eating Patterns Study. *Am J Public Health* 1997 Apr;87(4):610-6.
 96. Campbell MK, DeVellis BM, Strecher VJ, Ammerman AS, DeVellis RF, Sandler RS. Improving dietary behavior: the effectiveness of tailored messages in primary care settings. *Am J Public Health* 1994

Weight Management and Obesity Symposium

- May;84(5):783-7.
97. Schucker B, Bailey K, Heimbach JT, et al. Change in public perspective on cholesterol and heart disease. Results from two national surveys. *JAMA* 1987 Dec 25;258(24):3527-31.
 98. Langner NR, Hasselback PD, Dunkley GC, Corber SJ. Attitudes and practices of primary care physicians in the management of elevated serum cholesterol levels [published erratum appears in *CMAJ* 1989 Aug 15;141(4):278]. *CMAJ* 1989 Jul 1;141(1):33-8.
 99. Glanz K, Gilboy MB. Physicians, preventive care, and applied nutrition: selected literature. *Acad Med* 1992 Nov;67(11):774-9.
 100. Davis CH. The report to Congress on the appropriate federal role in assuring access by medical students, residents, and practicing physicians to adequate training in nutrition. *Public Health Rep* 1994 Nov-Dec;109(6):824-6.
 101. Ockene JK, Ockene IS, Quirk ME, et al. Physician training for patient-centered nutrition counseling in a lipid intervention trial. *Prev Med* 1995 Nov;24(6):563-70.
 102. Hollis JF, Lichtenstein E, Mount K, Vogt TM, Stevens VJ. Nurse-assisted smoking counseling for medical settings: minimizing demands on physicians. *Prev Med* 1991 Jul;20(4):497-507.
 103. Douketis JD. The long-term effectiveness of weight reduction interventions in patients with obesity: a critical review of the literature. *Journal of Clinical Outcomes Management* 2000 May;7(5):31-44.
 104. US Preventive Services Task Force. Guide to clinical preventive services: report of the US Preventive Services Task Force. 2nd ed. Washington (DC): US Department of Health and Human Services; [1989]. Available from: <http://odphp.osophs.dhhs.gov/pubs/guidecps/> (accessed June 11, 2003).
 105. US Preventive Services Task Force. Guide to clinical preventive services, 2000-2003: report of the US Preventive Services Task Force. 3rd ed. Available from: www.ahcpr.gov/clinic/cps3dix.htm (accessed June 11, 2003).

The Web of Life

For this we know: the earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man did not weave the web of life, he is but a strand in it. Whatever he does to the web he does to himself.

Chief Seattle, c 1786-1866, Suquamish Chief

Kelly Brownell, PhD, and Rebecca Puhl on bias against obese people

Stigma and Discrimination in Weight Management and Obesity

By Kelly D Brownell, PhD; Rebecca Puhl

We have been studying bias and discrimination in obesity for four years and have found striking results. Clear discrimination against overweight people has been documented in three areas: education, health care, and employment. The reason for this appears to be very strong anti-fat attitudes. For example, 28% of teachers in one study¹ said that becoming obese is the worst thing that can happen to a person; 24% of nurses said they are 'repulsed' by obese persons; and, controlling for income and grades, parents provide less college support for their overweight children than for their thin children.

These attitudes can be studied explicitly or implicitly. Explicit attitudes are typically measured by paper and pencil surveys. Numerous studies²⁻⁶ document explicit negative attitudes about obesity among physicians, nurses, dieticians, and medical students. These attitudes include: obese people lack self-control and are lazy, obesity is caused by character flaws, and failure to lose weight is due only to noncompliance.

Measuring implicit attitudes requires methods for studying attitudes that are beyond the subject's awareness. The Implicit Associations Test (IAT) is a powerful way to identify prejudice with respect to race, gender, and other factors.

Use of the IAT to study implicit anti-fat biases among health care professionals reveals a pervasive implicit bias against obesity, even among those who specialize in its treatment. Importantly, the evidence for implicit bias exists in the presence of only minimal evidence for explicit bias.⁷ That is societal anti-fat attitudes are so pervasive that even those who dedicate their lives to treating obesity aren't immune from these attitudes despite wishing to avoid prejudice; these clinicians are not consciously aware of this bias.

Several studies⁸⁻¹¹ indicate that obesity may influence health care professionals' judgments and practices. For instance, mental health workers evaluating a case his-

tory more frequently assigned negative symptoms to an obese patient than to overweight and average-weight clients and rated obese patients more severely in terms of psychological functioning.⁸

A survey of more than 1200 physicians assessed attitudes, interventions, and referral practices for obese patients.⁹ Although physicians recognized obesity's health risks and perceived many patients as overweight, these physicians didn't intervene as much as they should, were ambivalent about how to manage obese clients, and were unlikely to refer them to weight loss programs. Only 18% of physicians reported that they would discuss weight management with overweight patients, and 42% of physicians would have this discussion with mildly obese patients.⁹

Another study¹⁰ suggests that physicians may be ambivalent about treating obesity. Among a sample of 211 primary care physicians, only 33% reported feeling responsible for managing their patient's obesity. They indicated that insufficient time, lack of medical training, and reimbursement issues made managing obesity difficult.¹⁰

Finally, a survey of the attitudes and practices of 752 general practitioners in weight management reported mixed results.¹¹ These physicians reported positive views about their roles in obesity management. Unfortunately, they also underused practices which promote lifestyle changes in patients, described weight management as professionally unrewarding, and noted that they were commonly frustrated by what they perceived as poor patient compliance and motivation.¹¹

Negative attitudes in physicians may lead obese persons to avoid seeking health care. In one study,¹² 290 women and more than 1300 physicians anonymously responded to questionnaires about the influence of obesity on the frequency of pelvic examination. Among women, reluctance to undergo pelvic exams increased with weight, and very overweight women

Negative attitudes in physicians may lead obese persons to avoid seeking health care.



Kelly D Brownell, PhD, (left) is Professor and Chair of Psychology and Professor of Epidemiology and Public Health at Yale University. E-mail: kelly.brownell@yale.edu.
Rebecca Puhl (right) is an intern in clinical psychology. E-mail: rebecca.puhl@yale.edu.

Weight Management and Obesity Symposium

were significantly less likely to report receiving annual pelvic exams.¹²

Among physicians, 17% reported reluctance to provide pelvic exams to very obese women, and 83% indicated reluctance to provide a pelvic exam if the patient herself was hesitant.¹² Given that overweight women may hesitate to obtain exams and that physicians are reluctant to perform exams on obese or reluctant women, many overweight women may not receive necessary preventive care.

Two other studies^{13,14} also documented delays in seeking medical care by obese women. One study¹³ found a significant relation between body mass index (BMI) and appointment cancellation. More than 12% of women indicated they delayed or canceled physician appointments because of weight concerns. In addition, 32% of women with BMI over 27 and 55% of women with BMI over 35 delayed or canceled visits because they knew they would be weighed. The most common reason for delaying appointments was embarrassment about weight.¹³

A study of nearly 7000 women,¹⁴ included in the National Health Interview Survey for 1992, found that increased BMI was associated with both increased physician visits and decreased preventive health care services. Obese women were significantly more likely than non-obese women to delay breast and gynecologic exams and Pap tests, despite more frequent visits.¹⁴

It is important to note that the stigma of obesity is somewhat unique from that of other marginalized groups, in that obese people internalize societal anti-fat and pro-thin biases. Obese people agree with society's assessment that an imperfect body represents an imperfect person.

Obese people attempt to cope with stigma through one or more variably effective and adaptive means, including confirming negative societal stereotypes, providing socially acceptable explanations for excess weight, confrontation, social activism, avoidance, compensation, and losing weight through medical or surgical treatments.¹⁵

Self-report studies show substantial changes in perceived discrimination after bariatric surgery. In one,¹⁶ 87% of presurgical patients reported that their weight prevented them from being hired for a job, 90% reported being stigmatized by coworkers, 84% avoided being in public places because of their weight, and 77% reported daily depression. Fourteen months after surgery, every patient reported reduced discrimination, most reported rarely or never perceiving prejudice after surgery, and 90% reported substantially increased

cheerfulness and confidence.¹⁶ Studies are limited by self-reports and self-selected samples, but it is important to consider the influence of social perceptions in motivating the decision to undergo surgery.

Efforts to reduce bias toward obese people have been limited. One intervention study¹⁷ attempted to reduce stigma toward obese patients among medical students. Before random assignment to a control group or an education intervention using videos, written materials, and role-playing exercises, the majority of medical students in the study characterized obese individuals as lazy, sloppy, and lacking in self-control, despite the students indicating that they had an accurate understanding of obesity's cause. After the intervention, students demonstrated significantly improved attitudes and beliefs about obesity compared with the control group. One year later, the effectiveness of the intervention was still evident.¹⁷

Other studies to assess strategies for reducing implicit bias against obese people in the general population have been reported.¹⁸ Using the IAT, strong anti-fat implicit attitudes and stereotypes were demonstrated before any intervention but no anti-fat bias was seen. Participants of normal and excess weight were assigned to one of three groups: no intervention, reading a "news story" identifying the cause of obesity as genetic, or reading a similar story reporting the cause of obesity as overeating and lack of exercise.

Other subjects were asked to read one of three stories: a neutral story, a story about discrimination experienced by an individual with a physical handicap, or one about discrimination experienced by an obese person.¹⁸

The pattern of results was somewhat surprising. The group that received information that indicated obesity was predominantly caused by behavioral factors (such as overeating and lack of exercise) had higher anti-fat bias compared with that of other groups; the group that received information that indicated obesity was mainly due to genetics did not have lower implicit or explicit bias. Similarly, attempts to evoke empathy through stories of discrimination against an overweight young woman did not produce lower bias across the whole sample.¹⁸

However, in two studies, the interventions did lead to lower implicit bias for *overweight* participants. Given that obese individuals internalize society's bias, this may have interesting implications.¹⁸

Awareness training is important in helping health care

Efforts to reduce bias toward obese people have been limited.

professionals recognize that the societal anti-fat bias is shared by everyone, including them. We must pay attention to specific ways bias manifests, including subtle ways such as waiting room chairs and treatment gowns that aren't large enough or care providers who have negative, callous, or ambivalent attitudes. As a society, our goal must be to provide the same level of care for overweight people that others receive. To do so, we must also be attentive to the special needs of this population; obese individuals may be more reluctant to come in for preventive care, such as mammograms, because they're afraid of being weighed and criticized. The health care system must go out of its way to address these issues and encourage people to get the care they need and deserve. ❖

References

1. Puhl R, Brownell KD. Bias, discrimination, and obesity. *Obes Res* 2001 Dec;9(12):788-805.
2. Price JH, Desmond SM, Krol RA, Snyder FF, O'Connell JK. Family practice physicians' beliefs, attitudes, and practices regarding obesity. *Am J Prev Med* 1987 Nov-Dec;3(6):339-45.
3. Hoppe R, Ogden J. Practice nurses' beliefs about obesity and weight related interventions in primary care. *Int J Obes Relat Metab Disord*. 1997 Feb;21(2):141-6.
4. Maroney D, Golub S. Nurses' attitudes toward obese persons and certain ethnic groups. *Percept Mot Skills* 1992 Oct;75(2):387-91.
5. Oberrieder H, Walker R, Monroe D, Adeyanju M. Attitudes of dietetics students and registered dietitians toward obesity. *J Am Diet Assoc* 1995 Aug;95(8):914-6.
6. Blumberg P, Mellis LP. Medical students' attitudes toward the obese and morbidly obese. *Int J Eating Disord* 1985;4(2):169-75.
7. Teachman BA, Brownell KD. Implicit anti-fat bias among health professionals: is anyone immune? *Int J Obes Relat Metab Disord* 2001 Oct;25(10):1525-31
8. Young LM, Powell B. The effects of obesity on the clinical judgments of mental health professionals. *J Health Soc Behav* 1985 Sep;26(3):233-46.
9. Kristeller JL, Hoerr RA. Physician attitudes toward managing obesity: differences among six specialty groups. *Prev Med* 1997 Jul-Aug;26(4):542-9.
10. Pratt CA, Nosiri UI, Pratt CB. Michigan physicians' perceptions of their role in managing obesity. *Percept Mot Skills* 1997 Jun;84(3 Pt 1):848-50.
11. Campbell K, Engel H, Timperio A, Cooper C, Crawford D. Obesity management: Australian general practitioners' attitudes and practices. *Obes Res* 2000 Sep;8(6):459-66.
12. Adams CH, Smith NJ, Wilbur DC, Grady KE. The relationship of obesity to the frequency of pelvic examinations: do physician and patient attitudes make a difference? *Women Health* 1993;20(2):45-57.
13. Olson CL, Schumaker HD, Yawn BP. Overweight women delay medical care. *Arch Fam Med* 1994 Oct;3(10):888-92.
14. Fontaine KR, Faith MS, Allison DB, Cheskin LJ. Body weight and health care among women in the general population. *Arch Fam Med* 1998 Jul-Aug;7(4):381-4.
15. Puhl, R, Brownell, KD. Ways of Coping with Obesity Stigma: review and conceptual analysis. *Eating Behaviors* 2003;4:53-78.
16. Rand CS, Macgregor AM. Morbidly obese patients' perceptions of social discrimination before and after surgery for obesity. *South Med J* 1990 Dec;83(12):1390-5.
17. Wiese HJ, Wilson JF, Jones RA, Neises M. Obesity stigma reduction in medical students. *Int J Obes Relat Metab Disord* 1992 Nov;16(11):859-68.
18. Teachman BA, Gapinski KD, Brownell KD, Rawlins M, Jeyaram S. Demonstrations of implicit anti-fat bias: the impact of providing causal information and evoking empathy. *Health Psychol* 2003 Jan;22(1):68-78.

What is Essential

It is only with the heart that one can see rightly;
what is essential is invisible to the eye.

The Little Prince, Antoine de Saint-Exupéry, 1900-1940, French poet, pilot, and author

Weight Management and Obesity Symposium

John P Foreyt, PhD, discusses weight management among Latino Americans

Cultural Competence in the Prevention and Treatment of Obesity: Latino Americans

By John P Foreyt, PhD



If I were in charge of treating obesity in the United States, I'd spend all the money working with children like this boy. He's Latino and lives on the US-Mexico border, across the Rio Grande from Mexico. His mother was a patient of ours; she's diabetic, going blind, and having a leg amputated. The boy too could be at risk of becoming diabetic one day; that's what's happening to this population.

Along with African Americans, Latino Americans are now one of the two largest minority groups in the United States;¹ this situation happened very quickly be-

cause these groups tend to have many children. Latinos are younger than the white population, less well educated, and have lower incomes; 27% live below the poverty level.¹

Prevalence of overweight and obesity in Latinos is 73%.² Along with prevalence of obesity, Latinos have more risk-taking behaviors that contribute to diabetes, hypertension, alcoholism and cirrhosis, many types of cancer, and violent as well as accidental death.³⁻⁹

The statistics make it clear that we must find ways to help. Behavioral analysis is needed. Researchers must involve themselves in the Mexican culture and see what can be done. Short-term studies of weight management in minorities exist, but, unfortunately, few randomized controlled trials of weight management have been conducted in minority populations. We do know that recruiting minority participants is more difficult than recruiting white participants; moreover, Latino participants who join drop out more

often, and those who participate lose less weight than their white counterparts.¹⁰

What factors are associated with obesity among Latinos? First and foremost, poverty. Poverty is the driving force in our culture. Poor people tend to be heavy; rich people, skinny.¹¹⁻¹⁷

Acculturation is also a factor: As people assume for themselves the values of the white population, they become heavier. Acculturated Latinos eat more fried foods and less fruit, and Latinos of low socioeconomic status (SES) have fewer low-fat dietary practices. Compared with whites, Latinos eat more servings of meat; Latinos also eat a less varied diet, in general.¹⁸

Maternal nutrition knowledge and feeding practices are factors in obesity. So are cultural beliefs like *fatalismo*, the idea that whatever happens, happens: "I'm going to get diabetes like my parents and my grandparents." Language issues are also a factor.^{19,20}

How can we improve

cultural relevance and sensitivity? First, understand cultural differences. Perhaps emphasize factors like diabetes and hypertension instead of weight itself. Second, incorporate culturally based food preferences and reinforce healthy food choices. Consider the "food pyramid" only in relation to special dietary needs; for example, remember that the food pyramid isn't relevant to a population that doesn't eat many vegetables—and along the US-Mexico border, Latinos don't eat many vegetables. One of our dietitians doing a nutrition demonstration had brought a salad with her, and the grandfather said, in Spanish, "Woman, get those weeds out of here."

Third, work with extended families—such as the grandmother who heads the family—instead of focusing on individual family members. Instead of discussing "basic food groups," talk about folk systems of food classifica-

Maternal nutrition knowledge and feeding practices are factors in obesity.

John P Foreyt, PhD, a professor at Baylor College of Medicine in Houston, Texas, is the Director of the DeBakey Heart Center's Behavioral Medicine Research Center, Department of Medicine. He has published 17 books and more than 250 articles in the areas of diet modification, cardiovascular risk reduction, eating disorders, and obesity. E-mail: jforeyt@bcm.tmc.edu.



tion. This approach is used by our therapists, who are Mexican-American bilingual dietitians who live in the culture.

Three Studies of Dietary Practices in Latino Populations

We studied a Latino population in Starr County (Texas), along the Rio Grande River, 300 miles from Houston. The county is largely Latino and is the second-poor-est county in the United States. Most Latinos there are migrant workers who live substantially below the poverty level. From this population, we recruited obese Latina women in support groups; for example, we recruited schoolteachers as a group. We randomized groups, not individuals, so that participants would already have a self-established social support system. We also enlisted participation of local community leaders, such as the local nurse, disc jockey, and sheriff.

Weight was our primary outcome measure. Using traditional foods, we replaced flour tortillas with corn tortillas; replaced lard with other oils; and made other substitutions. We wanted to introduce a healthy diet to the study subjects while allowing them to retain as much of their traditional Latino diet

as possible.

We also encouraged groups to walk together, and we designed behavioral modification strategies that were adapted to the culture. Reward systems for walking and other behavioral strategies were important. We held award ceremonies, at which local grocery stores presented fruit baskets to study participants.

The study resulted in a mean weight loss of nearly five pounds per participant. Many women did lose a substantial amount of weight, but overall weight loss was disappointing. Participants maintained the weight loss for a while but then started to regain the weight. The problem, I think, was that the study was administered from 300 miles away.

In another study, the target population of which was obese mothers, we included the whole family because social support was an important element of the study design. Families were randomized to treatment or control groups; the control group consisted of mothers only. The groups did not speak or read English—or read Spanish—very well. We therefore used illustrations in which food groups were indicated in red or in green. Green indicated fruits and vegetables, and red indicated higher-fat foods. We taught study participants to shift the

highest proportion of foods in their diet—and thus colors on their progress chart—from red to green.

Among participants in this study, mean change in BMI was two to three units—double the weight loss seen in the Starr County study—and weight loss was maintained reasonably well during the treatment year. The control group also lost weight but not as much as did the treatment group. For a subset of patients with a record of acceptable dietary choices, self-reported data about intake of calories and fat grams showed improvement in both the treatment group and the control group.

We conducted our third, most recent study in Houston using the same interventions and culturally relevant strategies but adding use of orlistat, a weight loss drug that blocks metabolism of about a third of fat consumed. The data are currently under review but are favorable so far. Subjects have lost about 9% of their body weight—a loss of about 20 pounds in these Latina women. The combination of pharmacotherapy and lifestyle modification thus seems to be effective.

So, what do we know? The prevalence of obesity in minority populations in the United States is very high and is accompanied by lack of pressure to lose

weight. We found that many people don't care about losing weight, and it's difficult to recruit them for a weight-loss program. Those who participate have higher attrition rate and lose less weight. We need to conduct behavioral analysis of weight management within the Latino culture to identify the factors contributing to obesity and the barriers to losing weight.

Moving from a clinical to a public health point of view, how do we address obesity? First, reduce poverty. If we raise the income level of Latinos, we'll reduce obesity. How do we do that? I don't know. Second, the population approach is the only practical strategy. Clinically, we'll make a small difference, and we obviously need to do that. But, again, if I were in charge of treating obesity in this country, I'd do things like bring physical education back into schools and require health education. I'd make sure that people had equal access to treatment and that fresh fruits and vegetables were more available and subsidized. I'd definitely focus on prevention, working with children rather than adults. If we apply all our strategies among children, we might have a chance to reduce the prevalence of obesity and reverse its upward trend. ❖

The study resulted in a mean weight loss of nearly five pounds per participant.

Weight Management and Obesity Symposium

After Dr Foreyt's presentation, the panel discussed some of the issues raised:

Dr Dietz: Let me begin with a comment. We're beginning to understand from objective data that the availability of grocery stores in many impoverished neighborhoods is sparse. A study from Philadelphia suggests that mortality rates from nutritional diseases corresponds geographically to the density of supermarkets.²¹ How do we craft dietary or physical activity strategies in neighborhoods that aren't safe or that lack access to affordable sources of food and fresh fruits and vegetables?

Dr Foreyt: Dr Carlos Poston was the senior investigator on a study in which we randomly picked a low-income neighborhood and a high-income neighborhood in Kansas City. We sent students to observe presence of sidewalks and grocery stores, items for sale in grocery stores and taverns, and every consumer item that we thought could possibly contribute to obesity. Of course, we also examined prevalence of obesity in each neighborhood. This prevalence was substantially higher in the low-income neighborhood than in the high-income neighborhood that had all the benefits of sidewalks, parks, and stores. We found that the envi-

ronmental determinants of obesity were very strong in the low-income neighborhood.

So, how do you raise the income level and make more places to walk safely? That's what all communities are facing, and it's the issue I'm consulting with colleagues about at the Marshfield Clinic in Wisconsin. They invited to a symposium all sectors of the community: elected politicians, teachers, cafeteria and school employees, and parks and recreation staff. Coalitions were formed, each of which was given a small project—something that would make neighborhoods safer. Grassroots efforts, small steps at the local level, are the way to do it.

Dr Karanja: It's also a political issue. Zoning rules are established by local governments, not by businesses. In Portland, Oregon, the Center for Health Research has formed an alliance with the Food Policy Council (a county organization that includes farmers and businesses) to present to the government our case for health. The government has the power to determine how sidewalks are maintained and where markets and parks are to be located.

Dr Dietz: Do you have focus group data explaining the difference in fruit and vegetable consumption on either side of the US-Mexico border?

Dr Foreyt: Information gathered by dietitians in West Texas towns along the border showed that price and accessibility were factors. Mexico has an excellent cuisine, but on that side of the border, people are very poor, many foods are inaccessible, and many people continually move to follow the crop harvest.

Dr Dietz: A viable strategy is to connect growers and institutions. Six of 12 states that receive funds for obesity work are agricultural states: North Carolina, Florida, Texas, California, Washington, and Michigan. We've begun to explore how to build connections between producers and schools. A barrier to this connection is that producers can't deliver unprocessed produce to a school. We must consider innovative ways to make those connections work.

Community gardens are also a viable strategy, and they provide benefits through both physical activity and the produce grown.

Dr Karanja: Mexican Americans and African Americans are very embedded in their families. They do better when they're in the systems they know and understand.

Dr Foreyt: And that means a system that includes grandmother, mother, child ...

Dr Karanja: Exactly. To promote breastfeeding among Native Ameri-

cans, we go to the great-grandmothers—women who have experience with breastfeeding. Most mainstream institutions focus on the individual person, and this approach doesn't work very well with minority populations.

Dr Caplan: In what kind of settings might we most effectively care for minority populations?

Dr Foreyt: We must care for these people within the context of their own families or existing systems instead of trying to pull individual people into clinics.

Dr Dietz: What about churches?

Dr Karanja: Everybody descends on the black churches, and the ministers say, "I'm here to minister to people, not to advance your research agenda." To make the effort more organic, some seminaries are building a health curriculum to create health ministries.

Dr Robinson: Two factors are important when working with communities. First, the organization must have a real presence in the community through outreach and by ensuring that members of targeted groups work as staff members delivering programs and fill positions of power or leadership.

The other key factor is building partnerships, a process which takes a lot of work. Programs can succeed in communities and neighborhoods only with

A study from Philadelphia suggests that mortality rates from nutritional diseases corresponds geographically to the density of supermarkets.

the help of partnerships that give ownership of the program to the community itself. The community must feel that they are part of the entire program. ❖

References

- Pollard KM, O'Hare WP. America's racial and ethnic minorities. *Popul Bull* 1999 Sep;54(3):1-34.
- Kumanyika SK. Obesity in minority populations: an epidemiologic assessment. *Obes Res* 1994 Mar;2(2):166-82.
- Wallace JM Jr, Bachman JG, O'Malley PM, Johnston LD, Schulenberg JE, Cooper SM. Tobacco, alcohol, and illicit drug use: racial and ethnic differences among US high school seniors, 1976-2000. *Public Health Rep* 2002;117 Suppl 1:S67-75.
- Park YW, Zhu S, Palaniappan L, Heshka S, Carnethon MR, Heymsfield SB. The metabolic syndrome: prevalence and associated risk factor findings in the US population from the third National Health and Nutrition Examination Survey, 1988-1994. *Arch Intern Med* 2003 Feb 24;163(4):427-36.
- Bond Huie SA, Hummer RA, Rogers RG. Individual and contextual risks of death among race and ethnic groups in the United States. *J Health Soc Behav* 2002 Sep;43(3):359-81.
- Marks G, Garcia M, Solis JM. Health risk behaviors of Hispanics in the United States: findings from HHANES, 1982-84. *Am J Public Health* 1990 Dec;80 Suppl:20-6.
- Sundquist J, Winkleby MA, Pudarcic S. Cardiovascular disease risk factors among older black, Mexican-American, and white women and men: an analysis of NHANES III, 1988-1994. *Third National Health and Nutrition Examination Survey. J Am Geriatr Soc* 2001 Feb;49(2):109-16.
- Crespo CJ, Smit E, Carter-Pokras O, Andersen R. Acculturation and leisure-time physical inactivity in Mexican American adults: results from NHANES III, 1988-1994. *Am J Public Health* 2001 Aug;91(8):1254-7.
- Lee DJ, Markides KS. Health behaviors, risk factors, and health indicators associated with cigarette use in Mexican Americans: results from the Hispanic HANES. *Am J Public Health* 1991 Jul;81(7):859-64.
- Kumanyika SK, Obarzanek E, Stevens VJ, Hebert PR, Whelton PK. Weight-loss experience of black and white participants in NHLBI-sponsored clinical trials. *Am J Clin Nutr* 1991 Jun;53(6 Suppl):1631S-8S.
- Sobal J, Stunkard AJ. Socioeconomic status and obesity: a review of the literature. *Psychol Bull* 1989 Mar;105(2):260-75.
- Sobal J. Obesity and socioeconomic status: a framework for examining relationships between physical and social variables. *Med Anthropol* 1991 Sep;13(3):231-47.
- McGinnis JM, Ballard-Barbash RM. Obesity in minority populations: policy implications of research. *Am J Clin Nutr* 1991 Jun;53(6 Suppl):1512S-4S.
- Kumanyika SK. Obesity in minority populations. In: Fairburn CG, Brownell KD, editors. *Eating disorders and obesity: a comprehensive handbook*. 2nd ed. New York: Guilford; 2002. p 439-44.
- Foreyt JP. Weight loss programs for minority populations. In: Fairburn CG, Brownell KD, editors. *Eating disorders and obesity: a comprehensive handbook*. 2nd ed. New York: Guilford; 2002. p 583-7.
- Flegal KM, Harlan WR, Landis JR. Secular trends in body mass index and skinfold thickness with socioeconomic factors in young adult women. *Am J Clin Nutr* 1988 Sep;48(3):535-43.
- Flegal KM, Harlan WR, Landis JR. Secular trends in body mass index and skinfold thickness with socioeconomic factors in young adult men. *Am J Clin Nutr* 1988 Sep;48(3):544-51.
- Murphy SP, Castillo RO, Martorell R, Mendoza F. An evaluation of food group intakes by Mexican-American children. *J Am Diet Assoc* 1990 Mar;90(3):388-93.
- Nestle M, Wing R, Birch L, et al. Behavioral and social influences on food choice. *Nutr Rev* 1998 May;56(5 Pt 2):S50-64; discussion S64-74.
- Joiner TE Jr, Perez M, Wagner KD, Berenson A, Marquina GS. On fatalism, pessimism, and depressive symptoms among Mexican-American and other adolescents attending an obstetrics-gynecology clinic. *Behav Res Ther* 2001 Aug;39(8):887-96.
- The Food Trust. *Food for every child: the need for more supermarkets in Philadelphia*. Philadelphia (PA): The Food Trust; 2001. Abstract available from: www.thefoodtrust.org/reports.html (accessed March 25, 2003).

A Good Heart

A good heart is better than all the heads in the world.

— Edward Bulwer-Lytton, 1803-1873, writer

Weight Management and Obesity Symposium

Njeri Karanja, PhD, Kaiser Permanente Northwest, discusses providing care to African Americans

Cultural Competence in the Prevention and Treatment of Obesity: African Americans

By Njeri Karanja, PhD

I was a little surprised when I was asked to give this talk because I was trained in nutrition, not cultural sensitivity, and I'm from Africa, not the United States. However, the term 'African American' does have the word 'African' in it, so I agreed. I don't consider myself an expert in cultural competence, so I hope that those of you who work in this area can correct me if needed. However, I have had a chance to work with the African-American population, and, for obvious reasons, I'm passionate about the care that African Americans receive.

I'd like to talk a little about morbidity and mortality among African Americans to explain why we are focusing on this population. The three leading causes of death in the US are coronary heart disease, stroke, and cancer.¹ For each of these conditions, African-American men and women have a higher rate of death than do white men and women.² Data are more sketchily gathered for other racial groups, and we'll certainly have a better overall picture once the data are collected. For now, though, we have comprehensive data for whites and blacks.

The Problem of Obesity in the African-American Population

When you examine the risk factors for coronary heart disease, stroke, and cancer, namely overweight, obesity, and inactivity, you find that they are more common among African Americans, particularly women.^{3,4} Although the prevalence of obesity is rising steeply for everyone,⁴ prevalence of class II and class III obesity is significantly higher in black women.⁴ In addition, some conditions appear earlier and in more severe forms in African Americans.^{5,6} For instance, hypertension and prostate cancer occur earlier in life and in

more severe or aggressive forms in black men than in white men.^{5,6}

I reviewed some of the National Institutes of Health strategic plans for addressing disparity in health between diverse racial populations, plans that include studying variation in patterns and biology of disease attributable to race. We are beginning to believe that clinical guidelines and delivery of routine care may need to be adjusted for different racial populations. Dr Arline Geronimus advanced the 'weathering hypothesis'⁷ for African-American women, which suggests the deterioration of health earlier than would be expected from chronological age. For example, Dr Camara Jones has shown that the population distribution of blood pressure in black women is different compared with that of white women; blood pressure in 40-year-old black women is the same as in 50-year-old white women.⁸ If the weathering hypothesis holds true, it raises important questions about how we interpret data and create clinical guidelines for treatment and care.

Patterns of disease prognosis also differ between blacks and whites. For instance, *incidence* of breast cancer is lower in black women,⁹ but *mortality* rate is higher in black women than in white women.¹⁰ One explanation for this discrepancy is that black women seek care later,¹⁰ which may be true. But if, for example, black women's bodies are aging earlier, would it make sense for them to start having mammograms at 30 as opposed to 40? If a black woman asks to have a mammogram at age 35, the response she receives may well be a mark of cultural competence on the part of the clinician, assuming that the weathering hypothesis may be in operation.

Sociodemographic and Philosophical Basis of African-American Culture

I'm not presenting diversity training in the traditional sense but am assuming that you understand the general principles and are ready to provide care to specific populations. One primary recommendation is that you learn the culture of the people coming to you for care. So I've put together some cultural, demographic, and social factors we need to understand to work with African Americans.

First, the African-American population in the US is growing faster than the white population but a little slower than Latino populations.¹¹ It will double in 50 years and is increasingly diverse due to immigration of people from the Caribbean and Africa.¹¹

Although the economic status of African Americans has improved, the majority still live in poverty.¹¹ Only 33% of African-American households have an income above \$35,000 compared with 70% of white households.¹¹ Unemployment is high. Many African Americans are first-generation middle class¹¹ and so lack the wealth that has been built by other Americans, primarily through home ownership. If an African-American grandfather couldn't purchase housing in 1909 because of discriminatory mortgage lending practices, enough time has not yet elapsed to develop family wealth. More African-American children than white children have both parents working.¹¹ Many poor families live in inner cities and are multigenerational, and, in some areas of the country, about 60% of African-American households are headed by women.¹¹

African-American culture has African roots and has been shaped by the experience of

Njeri Karanja, PhD, is a senior investigator at the Kaiser Permanente Center for Health Research and a research associate professor of medicine at the Oregon Health Sciences University. Her primary area of research is nutrition and chronic disease prevention, with a special focus on minority populations. E-mail: njeri.karanja@kpchr.org.

... many cultural scholars now believe that the melting-pot theory is impractical and may not be desirable.

slavery, which affects how African Americans relate to other cultures within the US. African-American culture is also influenced by European culture in outward ways, such as by language, clothing, and some cultural practices. However, in

terms of inner values, many people who study culture think that African Americans have retained their African roots in three key ways.

First, according to African metaphysics, human beings are part of the whole cycle of existence and do not dominate nature; they are part of nature. Second, a study of the African value system shows that Africans, including those in the diaspora, value relationships and human networks. That value was strengthened by the experience of slavery and is probably responsible for the resilience of African-American families. The third value is what philosophers call epistemology: the study of how knowledge is acquired and who possesses knowledge. In African epistemology, a supreme being is all-knowing. Ancestors, then elders, are next in this hierarchy, and the rest of us are at the bottom.^{12,13} This hierarchy has implications for intercultural communications. A young doctor who is well educated may be valued differently than he or she expects; the person who is respected most within African-American culture may be an older woman because of her lived experience, which is considered more important than the formal technical training of the young doctor. Difficult relationships can result if you don't understand this cultural value.

Other aspects of African-American culture include a less rigid perception of time and a highly valued past;¹⁴ you are who you are today because of where you've come from. That's very important and affects how African Americans experience the world. This is not to say that African Americans do not value the future but that they place greater emphasis on the past relative to cultures that originated in Europe.¹⁴

The legacy of slavery is foremost among African Americans, even though it's very uncomfortable to talk about slavery. It influences their day-to-day living in significant ways. They are the only racial group in America

that did not immigrate here voluntarily, and, by their own accounts, they experience all forms of racism in small, continuous, and cumulative ways.¹¹

African Americans are often stereotyped negatively as lazy, prone to violence, less intelligent,

less patriotic, or dependent on white largesse. Consequently, some dehumanizing economic and noneconomic practices have been adopted within our society that greatly marginalize African Americans. During studies of obesity, we've been documenting presence of fast-food restaurants and liquor stores and lack of grocery stores around playgrounds and recreational areas in black neighborhoods. In my neighborhood, there are many corner stores with expensive, but nutrient-poor foods. Cigarette ads are placed three feet from the ground, and it's a question of who, other than children, is being targeted by these ads. One of the most important findings was in the Institute of Medicine report this year¹⁵ stating that good-quality care is still denied minority populations. In this case, the prototypical minority population studied was African Americans.

Evolving Thinking for More Effective Treatment

My recommendations assume that you practice the general principles of culturally competent care. It's important to understand African-American demographics, psychosocial experience, and the legacy of slavery and to begin to structure ways of relating to African-American patients that they interpret as respectful.

First, accept differences; many cultural scholars now believe that the melting-pot theory is impractical and may not be desirable. Perhaps differences are not a bad thing. Second, we must build bridges among institutions and communities of color, including African-American communities; because of past experience, African Americans don't trust mainstream institutions, including health care institutions. Providing health education is one strategy for building those bridges. African-American focus groups report a knowledge gap about health; and health education is

highly valued in these communities. Institutional contributions to community campaigns, such as those to reduce cigarette ads, can help. Inviting community members to serve on advisory boards is another strategy, but one has to keep in mind that although they have a rich knowledge base about their communities and their life experiences, community members may be people of limited material wealth. Offering them paid advisory positions may be a better approach.

I cannot overemphasize how important it is to understand the influence of racial prejudice on the collective psyche of African Americans. We must create an atmosphere that allows staff and clientele to correct inappropriate behavior.

We must also rethink the assumption that African Americans are overly sensitive. When the injuries of racism accumulate, someone may eventually protest, and sometimes protest may occur for a reason that others might consider a minor inconvenience. For an African American, however, the issue may be substantial or perhaps has been faced five times that day. We all make mistakes, but there are some things that are patently offensive. It's important to work with staff and whomever else you need to in order to find out what patients experience in your practice setting.

Another recommendation is to understand the deeper aspects of African-American life. Spiritual life is central and keeps African Americans connected to a highly valued social network. For instance, "I had to go to the funeral of a church member" is a very valid reason for missing an appointment. Understanding how social networks are organized also allows you to use them, because they can be a great source of support for your African-American clients.

My last recommendation is to cultivate authenticity. African Americans often talk about 'being real.' This is different from just going through the professional motions. A young white woman from Arkansas led a lifestyle change intervention group of older black clients for us, and they loved her because they could see how much she cared. She had a passion for changing the world, and they saw it. You gain credibility for trying to be real. ❖

Weight Management and Obesity Symposium

After Dr Karanja's presentation, she and the panel responded to questions from the audience:

Our Kaiser Permanente (Panorama City) population is perhaps 40% Latino and perhaps 5 to 10% African American. There is an impression that Latinos and African Americans are somewhat resistant to losing weight for cultural reasons. Would you agree?

Dr Karanja: When you ask overweight African-American or Latina women whether they'd like to lose weight, they respond as all other women would. They know when it hurts to go up the stairs. However, they may be distracted by life events. I don't think it's that simple—that they like being overweight.

Dr Foreyt: As you go up the socioeconomic ladder, the pressures to lose weight become stronger.

Dr Dietz: Let me add a comment on poverty's potential relationship to body size. A small but growing body of literature links increased rates of obesity with hunger. Excess weight may have a protective effect, operating as a buffer against food insecurity. We don't appreciate poverty's potential to influence food availability. That's probably not something we ask about when we take a weight or dietary intake history.

Have studies looked at BMI by socioeconomic status across ethnic groups? My hypothesis is that you wouldn't see very much difference. Overweight is probably very prevalent in poor white populations as well. Is that true?

Dr Dietz: In white men, the curve is pretty flat across socioeconomic status. In white women, a reciprocal relationship exists between income and fatness. The curves are flatter in African-American and Latino groups.

It's easy to talk about a culture's liabilities, but culturally competent weight management works when we celebrate culture and its strengths. Successful food programs celebrate traditions, emphasizing the positives.

Dr Karanja: I agree. We can create environments that allow people to revisit their traditions. Instead of having mixed groups during behavioral intervention studies, we've

had African-American groups. Sometimes slavery was an important focal point: members talked about how 'we ate that way when we worked in the fields and we can't continue now.' You can hardly discuss food in exactly this way in mixed groups.

Dr Foreyt: In schools, you could bring in elders and teach strategies in which tradition and culture make a big difference. I would always work with the youngest kids possible.

Returning to the clinical setting for a moment, what are the key competencies and skills for our health care professionals? If you had to pick two or three key principles or key activities for us to enhance within Kaiser Permanente, what would they be?

Dr Karanja: Cross-cultural communication would be the key one that I would emphasize. One that comes to mind is interpretation services. Providers speaking through an interpreter should speak directly to the client and not to the interpreter. Another principle is body language. Most non-European cultures are what we call 'high-context cultures,' so they may be listening to what you're saying but they are really watching your actions and behaviors and nonverbal cues a lot more.

Is there anything particular about body language for African Americans, for instance?

Dr Karanja: African Americans are a bit more complicated in that they've had 400 years of "studying" Western ways of communicating. They've had to learn how to listen and act on the basis of what they hear; however, their long-term perceptions about interacting with a given provider may still be shaped more by the actions and behaviors than by the words of the care provider. Communications with people from immigrant cultures benefit the most when you pay attention to body language. Newly integrated people tend not to know how to interpret the spoken word without attention to its context. ❖

References

- Anderson RN. Deaths: leading causes for 2000. National Vital Statistics Reports 2002 Sep 16;50(16):1-85.
- United States. National Center for Health Statistics. Health, United States, 2001 with urban and rural health chartbook. Hyattsville (MD); 2001. Tables 37, 39, 67 and 69. Available from: www.cdc.gov/nchs/data/hus/01.pdf (accessed April 1, 2003).
- Schoenborn CA, Barnes PM. Leisure-time physical activity among adults: United States, 1977-1998. Advance Data from Vital and Health Statistics 2002 Apr 7;325:1-23. Available from: www.cdc.gov/nchs/data/ad/ad325.pdf (accessed April 1, 2003).
- Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. JAMA 2002 Oct 9;288(14):1723-7.
- Flack JM, Ferdinand KC, Nasser SA. Epidemiology of hypertension and cardiovascular disease in African Americans. J Clin Hypertens (Greenwich) 2003 Jan-Feb;5 Suppl 1:5-11.
- Stephenson RA, Stanford JL. Population-based prostate cancer trends in the United States: patterns of change in the era of prostate-specific antigen. World J Urol 1997;15:331-5.
- Geronimus AT. The weathering hypothesis and the health of African-American women and infants: evidence and speculations. Ethn Dis 1992 Summer;2(3):207-21.
- Weidenbach K. Violence aside, racism may be harmful to our health. Focus 1998 Feb 6. Available from: http://focus.hms.harvard.edu/1998/Feb6_1998/pubhealth1.html (accessed April 4, 2003).
- US Cancer Statistics Working Group. United States cancer statistics, 1999 incidence. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Cancer Prevention and Control; 2002. Available from: www.cdc.gov/cancer/npcr/npcrpdfs/USCSreport.pdf (accessed April 2, 2003).
- Li CI, Malone KE, Daling JR. Differences in breast cancer stage, treatment, and survival by race and ethnicity. Arch Intern Med 2003 Jan 13;163(1):49-56.
- Williams JD, Sharp MC. African Americans: ethnic roots, cultural diversity. In: Sharp MC. Marketing and consumer identity in multicultural America. Thousand Oaks (CA): Sage Publications; 2001. p 165-211.
- Tempels P. La philosophie Bantoue. Paris: Éditions africaines; 1949.
- Onyewuenyi I. Is there an African philosophy? In: Serequeberhan T, editor. African philosophy: the essential readings. New York: Paragon House; 1991. p 29-46.
- Ponterotto JG, Casas JM. Handbook of racial/ethnic minority counseling research. Springfield (IL): CC Thomas; 1991. p 55.
- Smedley BD, Stith AY, Nelson AR, editors. Unequal treatment: confronting racial and ethnic disparities in health care. Washington (DC): Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care; National Academies Press; 2003. Available from: www.nap.edu/books/030908265X/html/ (accessed March 18, 2003).

Barbara Rolls, PhD, discusses the role of energy density in weight control

Energy Density and Nutrition in Weight Control Management

By Barbara Rolls, PhD

In 1998, an evidence-based report of the National Heart, Lung and Blood Institute¹ concluded that low-fat diets are associated with spontaneous reduction of energy intake and body weight. The report further stated that reducing caloric intake confers additional benefits. The key question I consider in this presentation is: How do people who are trying to reduce their caloric intake avoid hunger and feel satisfied?

Here is Where Diet Composition Becomes Important

Low-fat diets are associated with weight loss because they have low energy density, defined as number of calories per portion. At an energy density of 9 kcal/g, fat has more than twice the number of the calories that carbohydrates or protein (each with 4 kcal/g) have.^{2,3} In general, my colleagues and I have found that among foods most commonly consumed in the United States, the higher the fat content, the higher the energy density.⁴ However, an even stronger relation exists between water content and energy density: The higher the water content of a food, the lower its energy density⁴ (Table 1). Water adds weight and volume to foods without adding calories. Water-rich foods provide bigger, more satisfying portions than do dry foods. For example, a 100-calorie portion of grapes is eight times larger by weight than 100 calories of raisins (Figure 1).

The energy density of foods in-

fluences hunger, satiety, and food intake. My colleagues and I have studied how adding water to food (ie, decreasing energy density) affects satiety. One study⁵ compared the effect of each of three first courses—a vegetable-and-rice casserole, the same casserole served alongside a ten-ounce glass of water, and a soup made by cooking the water and casserole together—on the quantity of lunch eaten a few minutes later. Compared with intake of the casserole alone, water consumed as a beverage with the casserole provided no additional reduction in lunch intake, whereas incorporating water into the casserole (to make soup) resulted in a 100-calorie reduction in later intake.⁵

Any number of possible explanations may account for the effect of energy density on satiety. In studies using direct intragastric infusion, my colleagues and I found that people are sensitive to the volume of stomach contents.⁶ Some of the effect is cognitive and relates to portion size; some of the effect relates to the

sensory stimulation provided by a bigger portion.

Some studies^{4,7,8} show that energy density—not fat content of foods—affects satiety and food intake. Studies showed also that subjects tended to eat a constant volume of food and that reduced energy density was associated with spontaneous decrease in daily energy intake without increased hunger.^{9,10}

To help consumers use information about energy density to manage their weight, Robert Barnett and I wrote a book, *The Volumetrics Weight-Control Plan*,^{2,3} in which foods are divided into four categories according to their energy density.

The first category consists of foods with very low energy density, ie, foods containing between 0.0 and 0.6 kcal/g. We encourage

... an even stronger relation exists between water content and energy density: The higher the water content of a food, the lower its energy density.

people to eat as much as they wish of these foods, which include soups, fruits, and vegetables.

The second category includes most foods that we eat daily: starchy fruits and vegetables, beans, and lean meat. Under the volumetrics concept, people may continue to consume relatively large portions of these foods. The energy density for this category is between 0.6 and 1.5 kcal/g.

The energy density of foods in the third category ranges from 1.5 to 4.0 kcal/g and includes a wide variety of foods, such as cheese, salad dressings, some snack foods, and desserts. Intake of these foods, particularly those with higher energy density, should be moderated.

The energy density of foods in the fourth category ranges from 4.0 to 9.0 kcal/g. These foods have the highest energy density and include chocolates, fatty foods (eg, nuts, chips, and other deep-fried foods), and candy. In-

Table 1. Water content of foods

Food	Water content
Soup	85-95%
Fruits and vegetables	80-95%
Hot cereal	85%
Egg, boiled	75%
Pasta	65%
Fish and seafood	60-85%
Meats	45-65%
Bread	35-40%
Cheese	35%
Nuts	2-5%
Oil	0%



Barbara Rolls, PhD, holds the endowed Guthrie Chair of Nutrition at The Pennsylvania State University, has been president of the North American Association for the Study of Obesity and the Society for the Study of Ingestive Behavior, and has served on the advisory council of the National Institutes of Health's Institute of Diabetes & Digestive & Kidney Diseases (NIDDK). E-mail: Bjr4@psu.edu.

Weight Management and Obesity Symposium

take of these foods requires careful portion control.

The volumetrics approach does not reinvent nutrition; the approach simply follows recommended dietary guidelines and leads to healthy food choices. Consuming an adequate balance of nutrients is particularly important for people who eat fewer calories, because these people are at greater risk for nutritional deficiency. What's new here is the advice to be more cautious about low-moisture-content foods, such as pretzels and crackers.

Several clinical trials using energy density to guide food choices are underway. Don Hensrud at the Mayo Clinic—the editor of a book on the subject¹¹—has had success using energy density in a clinical trial. Michael Lowe and colleagues at Drexel University studied energy density in the weight maintenance phase of a weight-loss trial¹² and found that using energy density yielded better results than did traditional types of behavior therapy. My colleagues and I are also doing a clinical trial at The Pennsylvania State University.

Conclusion

We urgently need action to combat obesity. The bad news is that the eating environment is at least partially driving the obesity epidemic; the good news is that the eating environment can be changed. We must give the food industry reasons to provide foods that promote satiety: lower-energy-density, good-tasting foods that don't cost more than less-healthy choices. Although consumers are responsible for what they put into their mouths, we can make it easier for them to make reasonable choices. ❖

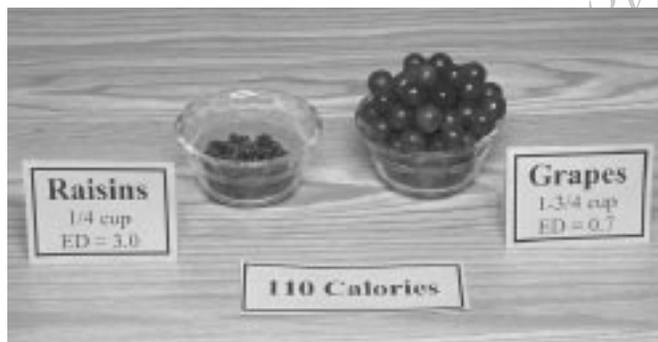


Figure 1. Water rich grapes provide bigger, more satisfying portions of less-energy-dense food than do dried raisins.

After the presentation, Dr Rolls answered questions from the audience:

The fast-food industry is showing signs of improvement. For instance, McDonald's® decided to reduce the amount of trans fat contained in foods that the company produces. Pepsico® also recently announced plans to reduce the fat content of snack products by 25% and to eliminate use of trans fat. Marketing data clearly show that public preferences are moving in this direction; we must support parallel movement in the food industry. How can this message—that the energy density of foods must be decreased—be translated into action by the food industry?

The message about reducing energy density has two parts 1) Fat still counts, so reduce it—but not so much that you don't enjoy food; 2) Increase the water content of your food, primarily by adding fruits and vegetables.

Having energy density stated on food labels would be good. Even without this information, though, people can quickly assess energy density: If the number of calories per serving stated on the Nutri-

tion Facts label is lower than the number of grams, the food has low energy density. When the number of calories is close to twice the number of grams (or higher), the food is in an energy density category that requires the consumer to be more cautious about portion size. Beyond that, people know what highly energy-dense foods are: high-fat, low-water-content (ie, dry) foods.

In clinical trials, how were subjects taught to do this calculation? Can this idea be translated into clinical practice?

Michael Lowe used my book, *Volumetrics*, which is also being used in some National Institutes of Health (NIH) clinical trials and in the Pennsylvania public school system. The messages in *Volumetrics* could certainly be made more visual. For instance, you could have interactive computer programs where you could change portion sizes as energy density varies. My book could be made more fun with pictures, more examples, and simpler recipes—the book could be made very appealing to consumers. I'd love someone to develop a brochure based on the concepts discussed in the book.

Can you comment on the difficulty people have reading

Michael Lowe and colleagues at Drexel University studied energy density in the weight maintenance phase of a weight-loss trial and found that using energy density yielded better results than did traditional types of behavior therapy.

nutrition labels and on how we might be able to get the food industry to give consumers better food labels?

The food industry worked hard to introduce a standard label that contained a satisfactory amount of information; when you suggest yet another number to include, they're a little horrified. However, I think a simple number that people could understand more readily—a number stated in terms of energy density and portion size—would be great.

Incidentally, one concern is that once people understand energy density, they will simply eat more if they know they are eating foods that have lower energy density. We therefore studied the effect of adding information about energy density on the label and found that in a group of people who were trained about energy density, labels didn't affect eating behavior. At least, we found this result in a laboratory-based study.¹³

Do you believe in daily consumption of five smaller meals (ie, consisting of 250 to 300 calories each) instead of

three larger meals a day? And do you think the protein recommendation (15% of daily caloric intake) is too low?

Frequency of eating is a difficult area of research. The evidence about whether frequency affects metabolism and body weight is controversial.

We can't justifiably say that one pattern will work for everybody. Part of the challenge is to identify meal patterns and types of foods that people can live with.

Animal and human studies indicate that of the macronutrients, protein has the most satiety value.^{14,15} But has any really good study been done on protein and satiety? I don't think so; we clearly need to do more work. Protein comes with fat, too, and epidemiologic data indicate that, in general, people who eat more protein are heavier.

One concern is that consumption of fruits and vegetables will be inadequately emphasized if we focus only on labeling. How do we keep fruits and vegetables in view?

First, we want to tell people that they can, in general, eat unlimited amounts of fruits and vegetables. The minimum five-a-day-fruit-and-vegetable message is very valid. Under the auspices of the Produce for Better Health Foundation and the Centers for Disease Control and Prevention (CDC), we are working on a review of the effect of fruits and vegetables on weight management.

However, problems with fruits and vegetables exist: Produce is often of poor quality, unavailable, or simply not consumed. Therefore,

although the government's job is not necessarily to increase public consumption of fruits and vegetables or to make them more affordable, the US Department of Agriculture (USDA) is actively rethinking the food stamp and Women, Infants and Children (WIC) programs as a way to increase intake of fruits and vegetables.

We must think both about each individual person's behavior and about population-level strategies—including food pricing—to reinforce what we're trying to achieve clinically.

In my general pediatrics practice, I often see kids drinking juice from "sippy" cups or bottles. Excessive drinking of juice drinks—even drinks consisting of 100% juice—is an important issue.

Parents are in charge of what children are offered, and children can choose to eat it or not. The notion that children may consume as much juice as they want is really the wrong message.

Most studies show that, in general, sodas and alcoholic beverages add calories to food calories. Some early research also shows that whole fruit is more satiating than fruit juice. The more processed the food, the less satisfying it is for the same number of calories.

Would you comment on Gary Taubes' article about dietary fat, "What if it's all a Big Fat Lie?"¹⁶ which appeared in the New York Times Magazine?

This field presents so many controversies that you can "tell the truth" simply by selectively including or excluding facts, as

Taubes appears to have done. However, scientists do agree that we should eat more fruits and vegetables and fewer refined carbohydrates and that protein sources should be lean. ❖

Acknowledgment

The National Institute of Diabetes & Digestive & Kidney Diseases supported the research.

References

1. National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda (MD): Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute; 1998.
2. Rolls B, Barnett RA. Volumetrics: feel full on fewer calories. New York: HarperCollins; 2000.
3. Rolls B, Barnett RA. The volumetrics weight-control plan: feel full on fewer calories. New York: HarperTorch; 2003.
4. Rolls BJ, Bell EA. Dietary approaches to the treatment of obesity. *Med Clin North Am* 2000 Mar;84(2):401-18, vi.
5. Rolls BJ, Bell EA, Thorwart ML. Water incorporated into a food but not served with a food decreases energy intake in lean women. *Am J Clin Nutr* 1999 Oct;70(4):448-55.
6. Rolls BJ, Roe LS. Effect of the volume of liquid food infused intragastrically on satiety in women. *Physiol Behav* 2002 Aug;76(4-5):623-31.
7. Rolls BJ, Bell EA, Castellanos VH, Chow M, Pelkman CL, Thorwart ML. Energy density but not fat content of foods affected energy intake in lean and obese women. *Am J Clin Nutr* 1999 May;69(5):863-71.
8. Stubbs RJ, Johnstone AM, O'Reilly LM, Barton K, Reid C. The effect of covertly manipulating the energy density of mixed diets on ad libitum food intake in 'pseudo free-living' humans. *Int J Obes Relat Metab Disord* 1998 Oct;22(10):980-7.
9. Bell EA, Castellanos VH, Pelkman CL, Thorwart ML, Rolls BJ. Energy density of foods affects energy intake in normal-weight women. *Am J Clin Nutr* 1998 Mar;67(3):412-20.
10. Bell EA, Rolls BJ. Energy density of foods affects energy intake across multiple levels of fat content in lean and obese women. *Am J Clin Nutr* 2001 Jun;73(6):1010-8.
11. Hensrud, DD, ed. Mayo Clinic on healthy weight. Rochester (MN): Mayo Clinic; 2000.
12. Lowe MR, Annunziato R, Riddell L, et al. Controlled trial of a nutrition-focused treatment for weight loss maintenance. *Int J Obes Relat Metab Disord* 2002 Aug;26 Suppl 1:S24.
13. Kral TVE, Roe LS, Rolls BJ. Does nutrition information about the energy density of meals affect food intake in normal-weight women? *Appetite* 2002 Oct;39(2):137-45.
14. Eisenstein J, Roberts SB, Dallal G, Saltzman E. High-protein weight-loss diets: are they safe and do they work? A review of the experimental and epidemiologic data. *Nutr Rev* 2002 Jul;60(7 Pt 1):189-200.
15. St Jeor ST, Howard BV, Prewitt TE, Bovee V, Bazzarre T, Eckel RH. Dietary protein and weight reduction: a statement for healthcare professionals from the Nutrition Committee of the Council on Nutrition, Physical Activity, and Metabolism of the American Heart Association. *Circulation* 2001 Oct 9;104(15):1869-74.
16. Taubes G. What if it's all a big fat lie? *New York Times* 2002 Jul 7;Sect. 6:22(col. 1).

Walter Willett, MD, DrPH, discusses current concepts of nutritional management

Concepts and Controversies on Diet: Stop Recommending Low-Fat Diets!

By Walter C Willett, MD, DrPH

History of Dietary Recommendations

I will provide an overview of what is increasingly being seen as an optimally healthy diet and will then focus on how nutritionists and physicians can help control the problems of obesity and overweight—problems which are engulfing this country and the world.

The Food Guide Pyramid

The major means of communicating advice about nutrition to the general public is the US Department of Agriculture's Food Guide Pyramid. The main message of the dietary pyramid is that all fats are bad and that we should try to minimize their use in our diet. Because most calories in the US diet are derived from fats and carbohydrates, adhering to a low-fat diet implies eating large amounts of carbohydrates. Carbohydrates form the base of the Food Guide Pyramid and we are told to eat as many as 11 servings of starch per day. The pyramid includes potatoes as a vegetable, so we may consume as many as 13 servings of starch per day. Is that amount really healthful for us? When pressed, representatives of the Department of Agriculture acknowledge that no evidence exists supporting inclusion of large amounts of starch in a healthful diet. Indeed, information that has accumulated during the past decade may indi-

cate that consuming large amounts of starch can contribute to health problems—particularly when we refer to starchy foods such as potatoes, white bread, white rice, white pasta, bagels, and other refined starches.

Fat: Facts and Fallacies

Thirty years ago, the Keys et al¹ and Hegsted et al² equations provided the basis for dietary guidance in the United States. These equations resulted from meta-analyses of many carefully controlled feeding studies that evaluated the way in which total serum cholesterol level was affected by replacing dietary carbohydrates with different types of fat. We learned that saturated fat has a positive coefficient: The more saturated fat in the diet, the higher the serum cholesterol level. However, polyunsaturated fat has a negative coefficient: The more polyunsaturated fat in the diet, the lower the serum cholesterol level. Thus, the concept conveyed by the 1992 Food Guide Pyramid—that all types of fat are unhealthful—is inconsistent with what we have known for more than 30 years.

After publication of the Keys and Hegsted equations, the main dietary recommendation during the 1960s and 1970s was to replace saturated fat with polyunsaturated fat; as a result, polyunsaturated fat intake in the US doubled. Retrospect suggests

that this dietary change was the dominant contributor to the 50% decline in coronary event mortality during the same period. In the early 1980s, the message subtly shifted from “replace saturated fat with polyunsaturated fat” to “remove all fat from the diet.” Exactly how this shift happened is unclear, but a segment of the nutrition community believed that messages about different types of fat in the diet were too complex and that promoting reduction of total dietary fat made more sense. However, no evidence showed that the message of “remove all fat from the diet” was easier for people to understand or practice.

By the 1990s, published information from the American Heart Association strongly advised use of nonfat products,³ a recommendation which marked the beginning of the big, national crusade against dietary fat. We were supposed to avoid foods such as regular yogurt, margarine, and butter because they were high in fat; instead, we were supposed to eat nonfat yogurt, butter-flavored granules, nonfat salad dressing, and fat-free cookies and crackers, even though these substitutes typically had just as many calories as the products we were supposed to avoid. Were these substitutes really better for us? Important findings from a population study in Holland by Mensink and Katan⁴ have been replicated many

Walter C Willett, MD, DrPH, is a professor at the Harvard School of Public Health. He is also a co-investigator of the Nurses' Health Study I and the principal investigator of The Nurses' Health Study II. Dr Willett is author of the nationally best-selling book, “Eat, Drink and be Healthy: The Harvard Medical School Guide to Healthy Eating.” E-mail: walterwillett@channing.harvard.edu.



times.⁵ Those authors studied the effect on serum cholesterol and triglycerides in people who had been eating a typical “Western” diet (about 40% of total calories from fat) when they replaced 10% of calories from saturated fat with calories either from olive oil (mostly monounsaturated fat) or from complex carbohydrates. The strategy of replacing fat calories with carbohydrate calories is consistent with the advice from the American Heart Association. A similar decrease in total serum cholesterol was seen in people on both replacement diets; if anything, replacement of saturated fat calories by monounsaturated fat calories reduced total serum cholesterol slightly more than did replacement by carbohydrate calories. However, the most important differential effect was in high-density lipoprotein cholesterol (HDL-C, the “good cholesterol”) level. As carbohydrates in the diet increased, serum HDL-C level decreased; however, as saturated fat was replaced by monounsaturated fat, serum HDL-C level remained stable. In addition, increased dietary carbohydrates resulted in increased fasting serum triglycerides. The higher monounsaturated fat diet was apparently healthier than the low-fat, high-carbohydrate diet because although both reduced total serum cholesterol, the higher monounsaturated fat diet resulted in better serum HDL-C and triglyceride levels.

Understanding Trans Fatty Acids

The story on dietary fat has become a bit more complex with the realization that trans fatty acids (trans fats) are also important. Trans fats are extremely prevalent in processed foods. Trans fats are created from polyunsaturated fats during the partial hydrogenation process that

converts liquid vegetable oil, soybean oil, or corn oil into solid fats such as margarine or shortening (Crisco); cis-isomers are transformed to trans-isomers, a change that causes the molecules to straighten and organize into a solid. In addition, omega-3 fatty acids are destroyed during partial hydrogenation, a reaction that creates a product with a longer shelf life (important to the food industry) but with less nutritional value.

For a long time, we believed that fat was fat, and that the form of dietary fat didn’t really matter. But in the 1970s, we became concerned that the partial hydrogenation process may be transforming an essential fatty acid that has important biologic function into a molecule that may have very different biologic function. Mensink and Katan et al⁶ studied the effect on serum cholesterol level after people replaced 10% of their dietary calories from monounsaturated fat with calories from either trans fat or saturated fat and found less of an increase in total serum cholesterol level with replacement by trans fat. For a number of years, the food industry used these results deceptively by saying that be-

cause trans fats reduced total serum cholesterol level relative to saturated fats, trans fats should be used regularly in our food supply. This message was erroneous, because although increased dietary trans fat or saturated fat similarly increases LDL-C cholesterol level, trans fat also causes undesirable decreases in HDL-C level.

In a meta-analysis of studies on the effect of various dietary fats on blood lipids (eg, total cholesterol: HDL-C

ratio),⁷ the negative effect of dietary trans fat was about twice that of saturated fat on a calorie-for-calorie basis. We now also know that dietary trans fats have additional adverse effects, including increased serum triglyceride⁷ and lipoprotein(a)⁸ levels and adverse effects on endothelial function.⁹

Findings from The Nurses’ Health Studies

Although this discussion has focused on the effects of trans fat and other types of dietary fat on blood lipid levels, researchers now know that many other mechanisms can potentially mediate an effect of diet on risk of heart disease. These mechanisms include systemic or local inflammation, hypertension, homocysteine, and prooxidant and antioxidant processes. Now, researchers are recognizing the important role mediated by the threshold for ventricular fibrillation.

If we consider only the effect of diet on blood lipids, we could be misled about how the dietary factor influences the risk of heart disease—which is, of course, what we are ultimately concerned about.

Ideally, researchers could conduct a series of large randomized trials comparing different types of dietary fat in different amounts and proportions to assess the effects on risk of coronary heart disease. However, this type of study requires large numbers of people, long follow-up periods, and strict dietary compliance; consequently, few such studies exist. An alternative strategy for a prospective study would be one in which dietary and health data were collected from large numbers of people over time, with regular

... the negative effect of dietary trans fat was about twice that of saturated fat on a calorie-for-calorie basis.

Weight Management and Obesity Symposium

updates as participants' diets changed; this study would measure and control for potentially confounding variables, such as smoking and physical activity. My colleagues and I planned and are conducting three such studies. In 1976, Frank Spizer established The Nurses' Health Study,¹⁰ in which 121,000 female nurses participated. In 1989, The Nurses' Health Study II¹⁰ began with more than 116,000 of the next generation of female nurses enrolled. Because both of these studies included women only, we began the Health Professionals Follow-Up Study in 1986 and enrolled 52,000 men.¹¹ These studies are unique, not only because of their large size but also because we periodically reevaluate diet—a very important factor because people gradually change their diet. These studies track participants' diet and assess risk of cancer, cardiovascular disease, and other major health conditions.

In The Nurses' Health Study, we evaluated levels of different types of dietary fat and associated risk of heart disease (after controlling for other variables) after 14 years of follow-up.¹² On the basis of about 1000 incident cases of coronary heart disease, the deleterious effect of trans fats on blood lipids would have predicted that trans fat was clearly the worst type of dietary fat.

Risk of coronary heart disease increased only slightly with increases in dietary saturated fat compared with increase in dietary carbohydrates. This result is not surprising because replacing calories from saturated fat with calories from carbohydrate does not alter the serum

HDL-C level. In contrast, replacing calories from carbohydrate with calories from saturated fat increases levels of total serum cholesterol, LDL-C, and HDL-C, so the ratio does not change. Just substituting saturated fat calories for carbohydrate calories does not have much effect on coronary heart disease.

To substantially decrease risk of heart disease, we have to replace calories from the "bad" fats—trans fat or saturated fat—with calories from the "good" fats—monounsaturated or polyunsaturated fat—or from some proportion of both. In our studies, level of total dietary fat was not related to risk of heart disease, because most women ate some bad fats and some good fats. The key association was in the balance of types of fat in the diet. Women with a high proportion of trans fat to polyunsaturated fat in the diet had up to three times the risk of heart disease compared with women with a high proportion of polyunsaturated fat to trans fat in the diet.

In our studies, level of total dietary fat was not related to risk of heart disease, because most women ate some bad fats and some good fats.

Why did some women have high levels of trans fat and low levels of polyunsaturated fat in their diet? The sad fact is that nutritional messages told women that they should eat margarine instead of butter, Crisco, or vegetable shortening because margarine was lower in saturated fat. Although some of the women were perhaps eating unhealthful foods, such as donuts or fast-food hamburgers, these women primarily were doing what they had been told was good for them. During the late 1970s and early 1980s, most physicians were

telling people to use margarine instead of butter; but at that time, almost all the margarines were less healthful than butter. Fortunately, with publication of results of studies about trans fat, some margarines are now manufactured that are free of trans fats.

Polyunsaturated Fats: About Omega-3 Fatty Acids

Polyunsaturated fats can be divided into two main classes, omega-6 and omega-3 polyunsaturated fats.

A growing body of compelling evidence indicates that omega-3 fatty acids have antiarrhythmic properties. One of the most conclusive studies, the large, randomized GISSI trial¹³ conducted in Italy, showed that people with a previous myocardial infarction (MI) episode who ingested fish oil (in capsule form) had moderately reduced risk of recurrent cardiovascular disease compared with that of patients with previous MI who took placebo. In this study, the benefits of fish oil related specifically to prevention of sudden death, presumably caused by arrhythmia. The Physicians' Health Study¹⁴ evaluated risk of heart disease in 18,000 men and found no relation between serum omega-3 fatty acid level and total incidence of heart disease. However, when Albert and her colleagues categorized incident events of heart disease as sudden death versus all other events, they found strong inverse relation between serum level of omega-3 fatty acids and risk of sudden death. Men with the highest serum levels of omega-3 fatty acids had about 80% lower risk of sudden death.¹⁴

Primary dietary sources of omega-3 fatty acids include fish oil, plant oil, and walnuts.

Fish Oil

The most popular source of dietary omega-3 fatty acids is fish oil. Fatty fish, such as mackerel, lake trout, herring, sardines, and albacore tuna contain high levels of omega-3 in the forms of eicosapentaenoic and docosahexaenoic acid.

Plant Oil

Despite fish oil's popularity as a source of omega-3 fatty acids, the greatest quantity of omega-3 fatty acids in our food supply is found in plant oil. About 10% of the fat in canola oil, 7% of the fat in soybean oil, 5% to 10% of the fat in walnuts, and 50% of the fat in flaxseed oil is omega-3 fatty acid, specifically alpha-linolenic acid.

The most important source of omega-3 fatty acid in the diet of participants in The Nurses' Health Study was oil-and-vinegar, full-fat salad dressing, because most dressings were made with either soybean oil or canola oil. Salad dressings are not hydrogenated; if they were, they would be of solid consistency in the refrigerator. We found a 50% lower risk of fatal coronary heart disease among women who ate full-fat salad dressing most days of the week compared

with women who rarely ate full-fat salad dressing.¹⁵ Unfortunately, because the American Heart Association and others have been telling people to avoid full-fat salad dressing, many people could have died thinking they were making the healthier choice by using fat-free dressing.

Nuts

Another misinformed nutritional message was to avoid eating nuts,

because nuts are high in fat. Nut consumption by participants in The Nurses' Health Study decreased by about 50% after 1980 because women were doing what they were told was healthful. However, incidence of myocardial infarction was about 30% lower in women who ate nuts almost daily compared with that of women who rarely ate nuts.¹⁶ This result is expected, because the fat in nuts is almost all unsaturated. A number of carefully controlled feeding studies concluded that if you consume more nuts, you improve your blood lipids. And in all of these studies, people who consumed more nuts did not weigh more, because nuts satisfied their hunger. These studies provide evidence that you do not get fat just because you eat high-fat products.

To summarize, coronary heart disease rates can be dramatically reduced by nutritional means, but this benefit will not be achieved by replacing saturated fat with carbohydrate.

Is Dietary Change After Myocardial Infarction Too Late?

The good news is that definite benefit results from dietary change after a coronary event. In the Lyon Diet Heart Study,¹⁷ conducted in France, people who had already had an MI were randomized to either the experimental diet (what they called a Mediterranean-type, high alpha-linolenic-acid diet) or the control diet. The experimental diet consisted of high quantities of fruits and vegetables, low amounts of red meat, low amounts of trans fat and saturated fat, and moderate amounts of whole grains. This diet also had substantially increased amount of omega-3 fatty acids in the form of canola oil (10% alpha-linolenic acid). The control diet was the

American Heart Association diet. The results were dramatic: far better survival on the experimental diet with about 70% reduction in recurrent coronary heart disease and coronary heart disease mortality. The benefit showed up within months of changing to the experimental diet. A confirmation study¹⁸ was done in India, where similar dietary changes were made using mustard oil (the genetic precursor of canola oil) as the source of omega-3 fatty acids. These researchers also observed a dramatic reduction in recurrent coronary heart disease in participants after a short time on what they called an Indo-Mediterranean diet, which had Indian seasonings but nutritionally was similar to the Mediterranean diet used in the Lyon Heart Study.

So it's not too late to make dietary improvements after a heart attack.

Dietary Fat and Cancer

Although recommending low-fat diets may not decrease coronary heart disease, if a high percentage of calories from fat in the diet has other deleterious effects, we still might reasonably recommend low-fat diets.

Breast Cancer

Breast cancer was thought to be related to high-fat diets. This hypothesis was derived, to a large extent, from comparison of fat intake and breast cancer rates between Western and Asian countries. Because of many differences between Western and traditional Asian diets and lifestyle, great potential exists for confounding factors in these international comparisons. For that reason, the relation between total fat intake and breast cancer risk was a primary study objective in the Nurses' Health Study and was the primary justification for funding the

... coronary heart disease rates can be dramatically reduced by nutritional means, but this benefit will not be achieved by replacing saturated fat with carbohydrate.

Weight Management and Obesity Symposium

dietary component of the Nurses' Health Study. On the basis of about 3000 women in whom breast cancer developed during 14 years of follow-up, we did not find any support for an important relation between fat total intake and breast cancer.¹⁹ Over a wide range of fat intake, no hint was found of a positive association with breast cancer. In fact, the trend was inversely statistically significant in that the highest breast cancer rates were in the women who had the lowest total fat intake.

Colon Cancer

For colon cancer, we saw a somewhat different result. Although no association existed between level of animal fat intake and risk of breast cancer, such an association was seen for risk of colon cancer. With more detailed examination, however, this association appeared to result entirely from red meat consumption data, particularly of processed red meat. Although we are not sure of the cause, the fat in red meat does not appear to increase risk of colon cancer.²⁰

In summary, after examining many different outcomes within The Nurses' Health Study and our cohort of men as well, we did not see any disease that is clearly related to total intake of fat.

Fruits, Vegetables, Alcohol, and Folic Acid

Many aspects of diet besides fat and type of fat clearly influence the risk of coronary heart disease. Our study demonstrated an inverse relation between consumption of fruits and vegetables and risk of coronary heart disease. Probably

many components of fruits and vegetables contribute to this reduction in risk. One probable component is potassium, because potassium does lower blood pressure—a major risk factor for coronary heart disease.

One component of fruits and vegetables that does seem important is folic acid. Level of homocysteine in the blood is now fairly well established as an independent risk factor for coronary heart disease.²¹ Despite a small genetic contribution, blood level of homocysteine is primarily determined by the amount of folic acid in the diet.

Reducing the homocysteine blood level is fairly easy. For example, when we look at folic acid and coronary heart disease, we see a benefit as well as a strong interaction with alcohol. Dr Arthur Klatsky (KP North-

ern California), using data from Kaiser Permanente,²² provided some of the first good evidence that regular, moderate consumption of alcohol reduces risk of coronary heart disease compared with not drinking

at all. A moderate drinker has the very beneficial effect of having more folic acid in the diet. Women who had the highest amount of folic acid and were moderate drinkers had about one fourth the risk of coronary heart disease compared with women who were non-drinkers and had low amounts of folic acid in the diet. Almost every time we look at folic acid, we see interaction with alcohol.

How can we increase our folic acid level? It's very simple: just take a multiple vitamin. Although a good diet is also certainly important be-

cause you get other benefits from fruits and vegetables, absorption of folic acid from fruits and vegetables is somewhat inconsistent. Without some sort of supplementation, you can't be certain that you are getting adequate folic acid.

Carbohydrates: About Glycemic Index and Glycemic Load

Carbohydrate intake has been a fairly neglected area until recently—a surprising fact because carbohydrate accounts for most calories in most diets. Part of the reason for this neglect has been the "party line" from the American Diabetes Association, which says that all carbohydrates are the same. I believe that the evidence clearly shows that all carbohydrates are not the same.

Until recently, when we talked about the importance of different kinds of carbohydrates, we talked about high-fiber, whole-grain types of carbohydrates. The fiber content of grains does appear important. We published an article²³ that showed no relation between fiber intake and colon cancer, and this finding has been reproduced in a number of other studies as well.^{25,25} In The Nurses' Health Study and the Health Professionals Follow-Up study, we found a 30% lower risk of coronary heart disease with higher intake of cereal fiber but not with fruits or vegetables.²⁶ This finding has been reproduced in about a dozen epidemiologic studies.

Glycemic Index

However, more than just the fiber content of cereal products and carbohydrates may need to be considered; glycemic index may also be important. During the last few years, the evidence has become convincing that coronary heart disease benefit is not conveyed solely by high-

... we found a 30% lower risk of coronary heart disease with higher intake of cereal fiber but not with fruits or vegetables.

fiber carbohydrates but also by low-glycemic-index carbohydrates. High-glycemic-index carbohydrates could be, for example, bagels. This is what happens if you sneak off and have your bagel: you very rapidly break down that refined starch into glucose in the stomach. That glucose is very rapidly absorbed, and your blood sugar increases sharply, or “spikes.” Of course, the body does not want high blood sugar so the pancreas pumps out a big blast of insulin, and the blood sugar comes crashing down. Often, then, by three or four hours after eating refined starch, people are a bit hypoglycemic relative to the fasting level of glucose.

This reaction has several potentially adverse consequences. First, this rapid decline in blood sugar makes you feel hungry and you want to run for the refrigerator. That’s great if the refrigerator is a mile away, but, it’s usually not. Despite what Kenneth H Cooper, MD, MPH, (founder Cooper Aerobics Center; author of *Aerobics*) would like, the refrigerator is often just in the next room or around the corner—just all too easy to get more calories into our environment. Second, these high levels of glucose and insulin appear related to the adverse metabolic response we talked about earlier—to low HDL-C and high triglycerides that would predict higher risk of coronary heart disease. Third, high demand over the years for insulin—and for high amounts of insulin—may well lead to pancreatic exhaustion and risk of Type II diabetes.

In contrast, when you have low-glycemic-index carbohydrate, such as a coarsely ground whole-grain muffin, whole-grain pasta, or an apple, that kind of carbohydrate is absorbed less rapidly. The rise in blood glucose and in insulin is less,

and you don’t get that midmorning depression in glucose level. You’re less likely to get hungry before the next meal with low-glycemic-index carbohydrates, as has been shown in short-term studies.

Glycemic Load

Using data from The Nurses’ Health Study, we computed what we call glycemic load (the amount of carbohydrate available times its glycemic index), because glycemic load will most specifically relate to elevation in blood glucose. The glycemic index has been misused by some people, and popular books on this topic tell you to avoid carrots because the carbohydrate in carrots has a high glycemic index. However, because carrots have such a small amount of carbohydrate, blood glucose level won’t rise much no matter what the glycemic index is. You must eat about a pound-and-a-half of carrots to consume the 50 g of carbohydrate used to test for glycemic index. So, the amount of carbohydrate and its quality (as is reflected in the glycemic index) is what we used to calculate glycemic load: the amount of carbohydrate multiplied by its glycemic index.

Glycemic Load and Disease Risk

Risk of Type II diabetes increases with higher glycemic load or higher glycemic index and lower cereal fiber in the diet. Women in The Nurses’ Health Study with a high-glycemic-load, low-cereal-fiber diet had about 2.5-fold increased risk of diabetes compared with women who had a low-glycemic-load, high-cereal-fiber diet.²⁷ And we’ve reproduced this finding in the Health Professionals Follow-Up Study²⁸ and, more recently (although we haven’t published it yet), in The Nurses’ Health Study II as well. So how did

these women get that high-glycemic-load, low-cereal-fiber diet? Well, they were following the Food Guide Pyramid. They were loading up on carbohydrate—they may have had the bagel for breakfast in the morning or maybe a bagel and jam. That’s the best thing—fat-free, right? Isn’t that supposed to be the paradigm of a healthful breakfast? For lunch, they may have had some pasta with fat-free sauce on it and come home for dinner and had a baked potato—also what we were told is a virtuous thing to have, with no fat on it and fat-free salad dressing. And they might have had some fat-free yogurt for dessert, which has a lot of sugar, and maybe even a fat-free cookie, which is high in sugar, and they might have felt very good about all of that. But they were putting themselves at high risk for Type II diabetes in the process, even though they were doing what they were told—and that’s particularly tragic. It’s hard enough to get people to follow advice, but when we misguide them—then that’s a real tragedy.

Looking at coronary heart disease incidence among participants in The Nurses’ Health Study was interesting, because we saw an interaction between glycemic load and body mass index (BMI).²⁹ Participants who were really lean did not experience much adverse effect from a high-glycemic-load diet. However, women who were of average or above-average BMI almost doubled their risk of coronary heart disease by eating a high-glycemic-load diet compared with eating a low-glycemic-load diet. This interaction explains why traditional Asian countries can live on high amounts of rice in the diet and not have adverse problems. They are very lean and physically active and have extremely low prevalence of insulin

Weight Management and Obesity Symposium

resistance. Gerald Reaven at Stanford University demonstrated this interaction first in a carefully controlled feeding study³⁰ in which he replaced monounsaturated fat with carbohydrate and overall saw depressed HDL-C and elevated triglycerides with a higher-carbohydrate diet. But that adverse metabolic change was far worse if women had an underlying degree of insulin resistance. Insulin resistance, which is mainly in our population because of our overweight and inactivity, greatly exacerbates the adverse metabolic response to a high-carbohydrate diet. Again, if you're very lean and active and have low insulin resistance, you can tolerate the higher-glycemic-load diet, but if you're overweight and have more insulin resistance, you cannot tolerate the high glycemic load so well. Ironically, if people go to see a dietician in most institutions—maybe not here, but in most places—the first thing they're told is “You've got to go on a low-fat, high-complex-carbohydrate diet.” These are the very people who metabolically cannot tolerate that kind of diet. And we've seen in the Nurses' Health Study confirmation of Gerald Reaven's findings—that there's a much worse adverse metabolic picture among women on a high-glycemic-load, low-fat diet if they're overweight.

Overweight, Obesity, and Disease Risk

I'll summarize some of the adverse consequences of higher BMI that we found in the Nurses' Health Study and in the Health Professionals Follow-Up Study. Very strong associations exist between BMI and adverse health outcomes. The worst, of course, is Type II diabetes, the disease most closely linked with being overweight. Someone who has

a BMI of 23 has four times the risk of Type II diabetes compared with a person with a BMI of less than 21, and a BMI of 25 is considered within the range of healthy weight. Thus, many people who are considered within the healthy weight range are far from their optimal weight. People in the mid or upper range of overweight also have a two- to three-fold increased risk of coronary heart disease, gallstones, and hypertension. Of course, during the last three years, we've come to appreciate many other consequences of overweight besides those of more classic cardiovascular disease and diabetes. We analyzed incidence of breast cancer in postmenopausal women in The Nurses' Health Study.³¹ For a while, we had trouble understanding the results until we stratified women by their use of hormone replacement therapy. All women who were using hormone replacement therapy were at elevated risk of breast cancer, regardless of BMI. However, among women who never used hormone replacement therapy, about a two-fold higher risk of breast cancer existed for women who had gained 20 kilograms or more since they were 18 years old compared with women who had maintained stable weight during their adult lives. What this shows is that the major effect of being overweight is mediated by elevated estrogens. For example, women who are obese have about three times the blood level of estradiol compared with that of lean women. Taking a hormone replacement pill did not, in fact, further elevate breast cancer risk among the women who were most overweight. Addition of progesterone changes that picture; progesterone has substantial additional adverse effects on breast can-

cer risk above and beyond the estrogen alone.

What Diet Can We Recommend?

One of the concerns to us was that if we looked at the changes over time in the United States—a big upturn in obesity occurred starting around the late 1970s and early 1980s. Until that time, prevalence of obesity was still an important problem, but the prevalence was rather flat and not increasing. But then the rates skyrocketed up. Interest shifted about that time from removing certain types of fat to removing all fats from the diet.

Just until the last two years or so, the “party line” in the nutrition community was that it's only fat calories that count, and that really goes along with the official dietary pyramid. I've had colleagues who said you can't get fat from eating carbohydrates—that you only get fat by eating fat in the diet. Farmers have known for thousands of years that is not true. How do you make the fattened lamb or fattened anything? You put the animals in a pen so they don't run around and get physical activity, and you feed them grain—even whole grain—and they get fat. And this sad story appears to apply to people—not just lambs. Unfortunately, we probably have collectively as a nutrition community contributed to the overweight problem—perhaps because people were given the impression that they could eat all the carbohydrates they wanted to—that you

... the possibility exists that high carbohydrate intake, particularly of highly refined carbohydrates and sugars ... may also have contributed to the problem of overweight for metabolic reasons ...

could have your box of fat-free cookies and it wouldn't make you fat. I think this picture has changed in the last couple of years: recognition that total calories count has evolved. But the possibility exists that high carbohydrate intake, particularly of highly refined carbohydrates and sugars (as the dominant form of carbohydrate in the US diet) may also have contributed to the problem of overweight for metabolic reasons, which I discussed when describing the glycemic index.

A tremendous debate has begun, which I'm sure everyone is familiar with, about what type of diet best helps with weight loss and management. This question should ideally be settled by randomized trials: it's not impossible and not nearly as difficult to do randomized trials looking at weight as those studying incidence of coronary heart disease. For heart disease, you may need tens of thou-

sands of people; you need perhaps 100 or 200 people for a reasonable study of dietary effects on body weight. This topic may also have been misinterpreted, because most of the randomized trials done until recently used only short follow-up periods, a few weeks or a few months, from which you can get quite misled. Clearly, long-term weight control is most important. People lose weight on almost any diet in the short term; the real challenge is to maintain weight loss and weight control.

We analyzed³² results of a series of randomized trials that examined the effect of diets with lower levels of dietary fat as a percentage of total calorie intake and that lasted one year or more. Our analysis showed no weight benefit accrued after one year or more. Although a number of studies showed some modest decrease in body weight during the first few months, weight either stabilized or was regained by 12 to 18

months. It's very clear that low-fat diets are really not effective, on average, for long-term weight control. Some people can go on a low-fat diet and have enough willpower to lose weight, but randomized studies show that most people do not lose weight on low-fat diets.

These findings are surprising, because most of these studies were seriously biased in favor of the low-fat group. In most of the studies, the control group got no intervention, and the low-fat-diet group got intensive, state-of-the-art intervention with monitoring of food intake, keeping diaries, weighing food, group support, and lots of counseling. Still, they didn't do any better than the control group. Evidence suggests that just intensive monitoring and attention to diet can help people lose a few pounds, so this result was surprising.

On the basis of a small meta-analysis (restricted to the four studies that had similar-intensity intervention in both groups), low-fat diets did worse. A study by McManus et al³³ had similar-intensity intervention for both groups. One group, on what was called "high-fat" but probably better called "moderate-fat," ate a diet with 35% of total calorie intake from fat, a Mediterranean-type, healthful diet. This diet included low amounts of red meat, lots of whole grains, lots of vegetables, and the fat was from nuts, olive oil, and salad dressing. The "low-fat" group ate a diet with 20% of calories from fat, an American Heart Association type of diet. What researchers saw was a paradigm for what's happened in the United States. In the first six months, similar weight loss occurred in both groups, but the people on the low-fat diet just couldn't adhere to this diet; they

The Atkins Diet

Many are troubled by this diet because it usually contains the recommendation to eat all the red meat and butter and cheese you want. But a handful of studies have been published recently indicating that people on that type of diet are able to lose more weight and control their weight better than people on a low-fat diet, a finding which adds important evidence that a low-fat, high-carbohydrate diet makes it difficult for many people to control their weight. Weight reduction, if somebody is overweight, is so important and so beneficial that reducing weight can counter the adverse effects of eating large amounts of saturated fat in the diet.

Thus, it's important to pay attention to these studies and to learn from them, even though I wouldn't recommend long-term high intake of animal fat to anybody. If it's true (and it probably is true) that substantially decreasing carbohydrate intake can make it easier to control total calories, you can have a very-low-carbohydrate diet and have it be a healthful diet at the same time if—instead of red meat and butter—you consume salmon, nuts, olive oil, and plenty of salad. That combination is a good diet that's low in carbohydrates and may be useful for many people. For most people, a Mediterranean-type diet such as I've suggested, which includes modest amounts of whole-grain forms of carbohydrate, will probably be most acceptable and beneficial in the long run. But more long-term studies of the effects of various diets on weight control are clearly needed.

Weight Management and Obesity Symposium

dropped out at a very high rate. When researchers brought these participants back in to weigh them, they had regained much of the weight. But the people on the higher-fat, Mediterranean-type diet had about twice the weight loss by 18 months compared with loss in the low-fat group, and these people felt satisfied. Their diet was something they could live with, and they didn't feel deprived.

Conclusion

To emphasize the tremendous potential of dietary intervention and lifestyle, I'll summarize with a look at how much disease could be prevented. As Dr Cooper emphasized, not smoking is important and we saw that BMI is important and that activity, even fairly modest activity, is important. We defined a good diet by using a score based on low trans fat, high polyunsaturated fat, low glycemic load, high cereal fiber, fish twice a week or more, and high folic acid. We also defined moderate drinking as five or more grams of alcohol per week. That's about a half a drink, so it's a very modest amount of alcohol that seems to be beneficial.

During 14 years of follow-up to The Nurses' Health Study, we found that had participants followed this very moderate, very achievable set of behaviors, they could have avoided more than 80% of cases of coronary heart disease, 92% of cases of Type II diabetes, and 71% of cases of colon cancer.

The Food Guide Pyramid does not provide people with good dietary advice because the guide ignores type of fat, form of carbohydrate, and source of protein in the diet—all of which can make an enormous difference to health. ❖

Acknowledgment

Support for much of the research described was provided by the National Institutes of Health.

References

1. Keys A, Anderson JT, Grande F. Serum cholesterol response to changes in the diet. IV. Particular saturated fatty acids in the diet. *Metabolism* 1965 Jul;14(7):776-87.
2. Hegsted DM, McGandy RB, Myers ML, et al. Quantitative effects of dietary fat on serum cholesterol in man. *Am J Clin Nutr* 1965 Nov;17:281-95.
3. Krauss RM, Deckelbaum RJ, Ernst N, et al. Dietary guidelines for healthy American adults. A statement for health professionals from the Nutrition Committee, American Heart Association. *Circulation* 1996 Oct 1;94(7):1795-800.
4. Mensink RP, Katan MB. Effect of a diet enriched with monounsaturated or polyunsaturated fatty acids on levels of low-density and high-density lipoprotein cholesterol in healthy women and men. *N Engl J Med* 1989 Aug 17;321(7):436-41.
5. Mensink RP, Zock PL, Kester AD, et al. Effects of dietary fatty acids and carbohydrates on the ration of serum total to HDL cholesterol and on serum lipids and apolipoproteins: a meta-analysis of 60 controlled trials. *Am J Clin Nutr* 2003 May;77(5):1146-55.
6. Mensink RP, Katan MB. Effect of dietary trans-fatty acids on high-density and low-density lipoprotein cholesterol levels in healthy subjects. *N Eng J Med* 1990 Aug 16;323(7):439-45.
7. Katan MB, Zock PL, Mensink RP. Effects of fats and fatty acids on blood lipids in humans: an overview. *Am J Clin Nutr* 1994 Dec;60(6 Suppl):1017S-1022S.
8. Katan MB, Mensink R, Van Tol A, et al. Dietary trans-fatty acids and their impact on plasma lipoproteins. *Can J Cardiol* 1995 Oct;11 Suppl G:36G-38G.
9. de Roos NM, Bots ML, Katan MB. Replacement of dietary saturated fatty acids by trans-fatty acids lowers serum HDL cholesterol and impairs endothelial function in healthy men and women. *Arterioscler Thromb Vasc Biol* 2001 Jul;21(7):1233-7.
10. Welcome to the home page of the Nurses' Health Study at Brigham and Women's Hospital [Web site]. Available from: www.channing.harvard.edu/nhs/ (accessed June 5, 2003).
11. Harvard School of Public Health. Health Professionals Follow-Up Study [Web site]. Available from: www.hsph.harvard.edu/hpfs/ (accessed June 5, 2003).
12. Hu FB, Stampfer MJ, Manson JE, et al. Trends in the incidence of coronary heart disease and changes in diet and lifestyle in women. *N Engl J Med* 2000 Aug 24;343(8):530-7.
13. Dietary supplementation with n-3 polyunsaturated fatty acids and vitamin E after myocardial infarction: results of the GISSI-Prevenzione trial. Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto miocardico. *Lancet* 1999 Aug 7;354(9177):447-55.
14. Albert CM, Campos H, Stampfer MJ, et al. Blood levels of long-chain n-3 fatty acids and the risk of sudden death. *N Engl J Med* 2002 Apr 11;346(15):1113-8.
15. Hu FB, Stampfer MJ, Manson JE, et al. Dietary intake of alpha-linoleic acid and risk of fatal ischemic heart disease among women. *Am J Clin Nutr* 1999 May;69(5):890-7.
16. Hu FB, Stampfer MJ, Manson JE, et al. Frequent nut consumption and risk of coronary heart disease in women: prospective cohort study. *BMJ* 1998 Nov 14;317(7169):1341-5.
17. de Lorgeril M, Salen P, Martin JL, et al. Mediterranean diet, traditional risk factors, and the rate of cardiovascular complications after myocardial infarction: final report of the Lyon Diet Heart Study. *Circulation* 1999 Feb 16;99(6):779-85.
18. Singh RB, Niaz MA, Sharma JP, et al. Randomized, double-blind, placebo-controlled trial of fish oil and mustard oil in patients with suspected acute myocardial infarction: the Indian experiment of infarct survival—4. *Cardiovasc Drugs Ther* 1997 Jul;11(3):485-91.
19. Holmes MD, Hunter DJ, Colditz GA, et al. Association of dietary intake of fat and fatty acids with risk of breast cancer. *JAMA* 1999 Mar 10;281(10):914-20.
20. Willett WC, Stampfer MJ, Colditz

- GA, et al. Relation of meat, fat, and fiber intake to the risk of colon cancer in a prospective study among women. *N Engl J Med* 1990 Dec 13;323(24):1664-72.
21. Ford ES, Smith SJ, Stroup DF, et al. Homocyst(e)ine and cardiovascular disease: a systematic review of the evidence with special emphasis on case-control studies and nested case-control studies. *Int J Epidemiol* 2002 Feb;31(1):59-70.
 22. Klatsky AL. Moderate drinking and reduced risk of heart disease. *Alcohol Res Health* 1999;23(1):15-23.
 23. Fuchs CS, Giovannucci EL, Colditz GA, et al. Dietary fiber and the risk of colorectal cancer and adenoma in women. *N Engl J Med* 1999 Jan 21;340(3):169-76.
 24. Alberts DS, Martinez ME, Roe DJ, et al. Lack of effect of a high-fiber cereal supplement on the recurrence of colorectal adenomas. Phoenix Colon Cancer Prevention Physicians' Network. *N Engl J Med* 2000 Apr 20;342(16):1156-62.
 25. Terry P, Giovannucci E, Michels KB, et al. Fruit, vegetables, dietary fiber, and risk of colorectal cancer. *J Natl Cancer Inst* 2001 Apr 4;93(7):525-33.
 26. Wolk A, Manson JE, Stampfer MJ, et al. Long-term intake of dietary fiber and decreased risk of coronary heart disease among women. *JAMA* 1999 Jun 2;281(21):1998-2004.
 27. Salmeron J, Manson JE, Stampfer MJ, et al. Dietary fiber, glycemic load, and risk of non-insulin-dependent diabetes mellitus in women. *JAMA* 1997 Feb 12;277(6):472-7.
 28. Salmeron J, Ascherio A, Rimm EB, et al. Dietary fiber, glycemic load, and risk of NIDDM in men. *Diabetes Care* 1997 Apr;20(4):545-50.
 29. Liu S, Willett WC, Stampfer MJ, et al. A prospective study of dietary glycemic load, carbohydrate intake, and risk of coronary heart disease in US women. *Am J Clin Nutr* 2000 Jun;71(6):1455-61.
 30. Reaven GM. Diet and Syndrome X. *Curr Atheroscler Rep* 2000 Nov;2(6):503-7.
 31. Huang Z, Hankinson SE, Colditz GA, et al. Dual effects of weight and weight gain on breast cancer risk. *JAMA* 1997 Nov 5;278(17):1407-11.
 32. Willett WC, Leibel RL. Dietary fat is not a major determinant of body fat. *Am J Med* 2002 Dec 30;113 Suppl 9B:47S-59S.
 33. McManus K, Antinoro L, Sacks F. A randomized controlled trial of a moderate-fat, low-energy diet compared with a low-fat, low-energy diet for weight loss in overweight adults. *Int J Obes Relat Metab Disord* 2001 Oct;25(10):1503-11.

Our Ambitions

To wrest from nature the secrets, which have perplexed philosophers in all ages, to track to their sources the causes of disease, to correlate the vast stores of knowledge, that they may be quickly available for the prevention and cure of disease—these are our ambitions.

Sir William Osler, 1849-1919, physician, professor of medicine, and author

Weight Management and Obesity Symposium

James Hill, PhD, and Rena Wing, PhD, discuss lessons from patients who have lost and sustained significant weight loss

The National Weight Control Registry

By James Hill, PhD
Rena Wing, PhD

Introduction

We want to share some things we have learned from a unique group of people: “successful losers,” as subjects in the National Weight Control Registry like to be called. As we know, our major challenge in treating obesity is not losing weight but keeping it off—and participants in the National Weight Control Registry have taught us a lot about how to maintain weight loss.

Defining Success

Let's start by defining successful obesity management. Most people are gaining weight, and if we do nothing, the weight of the population will continue to increase. Moreover, the heavier people are probably gaining weight at a slightly higher rate—and if we do not help our overweight or obese patients, they will probably become even more overweight or obese. Thus, one measure of weight management success would be to stop the weight gain: Just by doing this, we might prevent development of diabetes in many patients.

Weight normalization by obese people is rare. Therefore, a second goal for obesity management would be to help patients achieve modest weight loss, which we may define as losing 5% to 10% of the patient's initial weight. Substantial data show clear health benefits from such weight loss. Most patients with body mass index (BMI) above 30 kg/m² will not reduce their BMI to below 25 kg/m² and will not achieve the same success as achieved by subjects in the National Weight Control Registry, who are exceptional people.

Losing Weight

Although the popular media encourage the perception that almost no one succeeds at long-term weight loss—a 99% failure rate is the figure perpetuated most commonly—we are getting better at helping people achieve weight loss sufficient to greatly improve their health. We have come a long way in using protocols—structured, skill-based, group, and individual—to produce lifestyle change. One great example is the

recent Diabetes Prevention Program,¹ in which a 7% weight loss in overweight and obese persons at high risk for diabetes was associated with a 58% reduction in this risk. This finding illustrates the benefit of modest weight loss.

Maintaining Weight Loss

What do we currently know about maintaining weight loss? Most of what we know comes from university-based weight loss programs; with some exceptions, commercial programs neither collect nor publish data showing the results achieved by clients. Consequently, we generally know little about the way real-world people maintain their weight loss. Much of what we know has been learned from people who lose but then regain weight—ie, those who have failed at weight loss maintenance.

If successful weight loss is defined as intentionally losing 10% of initial body weight and not regaining it, we can say that 20% of overweight and obese people in the United States have lost weight successfully. But a 20% success rate still isn't very good; therefore, whatever criteria for success are used, we must accept one major truth: To ensure that our ability to manage obesity reaches the necessary level of effectiveness, we must improve our methods.

Why are so few people successful at long-term weight maintenance? We argue about whether this lack of success is caused by our physiology or by our behavior, but the reason is probably a combination of both factors. Physiology certainly plays a role in obesity, but substantial data show that people can make behavior changes allowing them to achieve and maintain a healthy body weight. I believe that our lack of success in getting more people to make and achieve this change has two causes: We focus too much on diet and not enough on physical activity; and we focus too much on losing weight and not enough on keeping it off. Results from the National Weight Control Registry are presented here to illustrate these points.

James Hill, PhD, (right) a national expert in the field of overweight and obesity, is the Director of the Center for Human Nutrition at the University of Colorado Health Sciences Center. E-mail: james.hill@uchsc.edu.

Rena Wing, PhD (left) is a Professor of Psychiatry and Human Behavior at Brown University. She established and directs the Weight Control and Diabetes Research Center at Miriam Hospital. E-mail: rwing@lifespan.org.



The National Weight Control Registry

The group of people described here participated in the National Weight Control Registry, a database founded by myself and Dr Rena Wing, a behavioral psychologist at Brown University. Together, we set out to see if we could find—and learn from—people who were successful at long-term maintenance of weight loss. Our study was not a randomized controlled trial (people self-selected to participate in the study), and most of our data were obtained from self-reports of participants; these features are limitations of our work, as is our inability to determine whether participants in the National Weight Control Registry are a biologically unique group whose results do not apply to others trying to achieve weight control. Despite these potential limitations, however, I think the information obtained from these subjects can be useful for clinicians treating overweight or obese patients.

Motives reported by participants for losing weight showed little commonality ...

The criterion for joining the National Weight Control Registry is maintenance of at least a 30 lb (6.6 kg) weight loss for at least one year, which I think most people would agree represents some measure of success.

Our purposes in establishing the National Weight Control Registry were 1) to identify a large group of people who successfully maintained weight loss; and 2) to quantitatively describe strategies used by these people to achieve and maintain weight loss.

The 4000 participants in the National Weight Control Registry have a number of characteristics in common that can be effectively used by those helping others to lose weight. Because our study was not a randomized, controlled study, we cannot be certain that the characteristics shared by registry participants contributed to the success of weight loss; however, we believe that the strategies used by these subjects to maintain their weight loss are sensible and could be used by others to help themselves achieve and maintain weight loss more successfully.

Weight Loss Study Results

Most subjects in the National Weight Control Registry are white women; men comprise only 20% of participants, and few minorities are represented. Most subjects are aged 44 to 49 years.

Most participants gained weight early in life. Forty-six percent were overweight by age 11 years, a quarter became overweight between ages 12 to 18 years, and 28% became overweight as adults. Forty-six percent of participants had one parent who was over-

weight, and 27% reported that both parents were overweight. Thus, many participants have an obesity history predicting metabolic propensity to obesity and resistance to treatment.

Most registry participants (90%) reported previous attempts at weight loss. For most participants, these attempts consisted of weight loss followed by weight regain. Few participants successfully lost weight and maintained the weight loss on the first attempt. Most registry participants had used numerous popular diet programs.

How much weight did participants lose? The mean weight loss among all registry participants was 30 kg (66 lbs). Men lost slightly more weight than did women. The group maintained weight loss for a mean 5.5 years.

We could identify few commonly shared features of how these people lost weight. The only common characteristic was that 89% of registry participants used both diet and physical activity to lose weight: only 10% used diet alone, and 1% used exercise alone. This finding is very important because most weight loss programs focus primarily on dietary restriction. We could not identify any successful diet common to these people: Many reported that they restricted their intake of certain foods; some participants stated that they restricted the amount of food consumed; some participants counted calories or grams of fat consumed; some used prepackaged liquid formulas; and some used different kinds of exchange diets. We could not find factors common to the diets used by registry participants for weight loss. We studied people who lost weight on their own as well as people who lost weight by participating in a formal program. We found no major differences in outcome between these two groups. Women appeared to prefer a more formal program, whereas men preferred to lose weight on their own.

Motives reported by participants for losing weight showed little commonality: Some participants reported that they lost weight for health reasons; some, for lifestyle reasons (eg, to improve appearance in preparation for a wedding or class reunion); and some, for emotional reasons (eg, after a child asked why mommy was fat). In contrast, methods for maintaining weight loss had several factors in common. This difference in commonality suggests that the two processes—losing weight and maintaining weight loss—may have important differences. In particular, the optimum strategy for successful weight loss may differ from the optimum strategy for successfully maintaining weight loss.

Weight Management and Obesity Symposium

Behavioral Factors

We found four types of behavior common to the National Weight Control Registry participants: 1) eating a low-fat, high-carbohydrate diet; 2) eating breakfast almost every day; 3) frequent self-monitoring of weight; and 4) participation in a high level of physical activity.

Information about food intake was determined from questionnaires asking respondents to describe their intake of various foods. Although a great deal of error exists in self-reports of food intake, this method of data collection can provide some indication of usual diet. Registry participants almost certainly underreported their total energy intake, although this phenomenon is not uncommon among other populations of questionnaire respondents. Registry participants reported consuming 1300 to 1500 calories per day, of which 23% to 24% came from fat. This underreporting probably characterized total energy intake as well as energy intake from fat. Nonetheless, these subjects probably were consuming a relatively low-fat diet. Participants also reported that, on average, they ate out at fast-food establishments about once per week and ate four or five times per day.

The second characteristic common to these subjects was that they tended to eat breakfast regularly. This finding did not surprise us, but we were surprised that most registry participants ate breakfast every day without exception. Starting the day with breakfast may therefore be even more important for weight maintenance than previously thought.

A third characteristic relates to a controversial issue: Participants reported that they self-monitor their weight regularly. Many people recommend against relying on the scale to achieve weight loss, but we found that registry participants weighed themselves frequently: 75% of participants weighed themselves at least once per week, and many weighed themselves daily. Frequent weighing may therefore serve as an “early warning system” for these people. I suspect that when they have gained a few pounds, they implement strategies to prevent further weight gain. Although this possibility represents speculation, many participants told us that they have a plan for what to do if the scale reaches a certain number. Other studies have found that self-monitoring predicts success in long-term maintenance of weight loss.

The final common behavior among registry participants was that they engaged in extensive physical activity. As reported by participants, the mean energy they expended in physical activity was 2500 kcal/week for women and 3300 kcal/week for men.

This level of physical activity is very high and equates to about 60 to 90 minutes of moderate-intensity physical activity per day.

Type of Physical Activity

Only 9% of registry participants reported keeping their weight off without engaging in physical activity. Substantial weight loss can be maintained with diet alone but occurred rarely in this group. Walking appeared to be the most popular form of physical activity, but most people also engaged in some planned exercise. Twenty-eight percent of participants used only walking as their chosen form of physical activity, and about half combined walking with another form of planned exercise (eg, aerobics classes, biking, or swimming). To quantify the walking done by this population, we placed pedometers on a sample of registry participants and found that, on average, they took between 11,000 and 12,000 steps per day—about 5.5 to 6 miles per day. Thus, these people exceeded by far the minimum physical activity recommended by the US Surgeon General.

Although we can confidently state that a great deal of physical activity is necessary to maintain substantial weight loss, our data does not necessarily help us to establish guidelines for the amount of physical activity necessary for primary prevention of weight gain. The Dietary Reference Intake (DRI) Committee of the National Academy of Sciences recently increased its recommendation for physical activity to 60 minutes daily;² for comparison, the US Surgeon General’s recommendation is for 30 minutes of physical activity daily.³ No current data shows how much physical activity is required to prevent weight gain in people who have never been obese.

We also asked whether this group showed any signs of “metabolic abnormality” that might be a factor contributing to weight regain. We measured resting metabolic rate and body composition in a group of 50 National Weight Control Registry participants and in 50 matched, never-obese control subjects. Because resting metabolic rate varies with lean body mass, we determined the regression line for this relation in each group. We found no difference between groups, a result suggesting that resting metabolic rate in registry participants was appropriate for their fat-free body mass. We thus found no indication that registry participants had a low resting metabolic rate that could predispose them to regaining body weight.

The final common behavior among registry participants was that they engaged in extensive physical activity.

Quality of Life

We asked participants how weight loss had affected their overall quality of life. Almost all participants (95%) reported that their overall quality of life was improved after weight loss.

To summarize, almost all patients who successfully maintained long-term weight loss used both diet and physical activity to lose weight. These people also shared strategies for maintaining the weight loss: eating a low-fat, high-carbohydrate diet; eating breakfast almost every day; weighing themselves frequently; and engaging in 60 to 90 minutes per day of moderate-intensity physical activity. Although we do not know for certain, we think that this behavior probably led to their success in keeping weight off. These characteristics could be effectively used as components of programs for helping overweight and obese people to achieve and maintain weight loss.

Patients who qualify for the National Weight Control Registry can enroll online at www.nwcr.ws. We hope people will be motivated to realize that if they can maintain loss of at least 30 lbs (6.6 kg) for at least one year, they can join this group.

After the presentation, Dr Hill answered questions from the audience:

Question: *What about patients who lose weight with bariatric surgery—how do they lose weight compared with people who lose weight through behavior change?*

Answer: We conducted a study⁴ in which a group of people who lost weight from bariatric surgery were compared with a matched group of registry participants. People who had bariatric surgery reported a much-higher-fat diet and engaged in much less physical activity than registry participants reported. Therefore, I believe that bariatric surgery affects metabolism differently than the way lifestyle change influences weight loss.

Question: *What is the role of naturopathy, herbs, or other alternative strategies in weight management?*

Answer: We have not looked at the role of complementary and alternative medicine in the National Weight Control Registry. However, I am skeptical about much

Patients who qualify for the National Weight Control Registry can enroll online at www.nwcr.ws.

of this kind of material because I have not seen any scientific studies suggesting its usefulness for weight management. To be fair, however, few scientific studies on this topic have been done. We certainly need some research studies before we can conclude that naturopathy is useful for weight management. ❖

Acknowledgments

The research was supported by National Institutes of Health Grants DK42549 and DK48520.

Suzanne Phelan, PhD, at Brown University, Providence, Rhode Island; Mary Lou Klem, PhD, at the University of Pittsburgh Western Psychiatric Institute; and Holly Wyatt, MD, at the University of Colorado collaborated in the research projects.

References

1. Knowler WC, Barrett-Conner E, Fowler SE, et al; Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002 Feb 7;346(6):393-403.
2. Institute of Medicine of the National Academies. Panel on Macronutrients, Panel on the Definition of Dietary Fiber, Subcommittee on the Upper Reference Levels of Nutrients, Subcommittee on Interpretation and Uses of Dietary Reference Intakes, and the Standing Committee on the Scientific Evaluation of Dietary Reference Intakes. *Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids*. Washington (DC): The National Academies Press; 2002. p 12-1. Available from: www.nap.edu/books/0309085373/html/ (accessed June 9, 2003).
3. Surgeon General. *Physical activity and health: a report of the Surgeon General*. [Atlanta (GA)]: US Department of Health and Human Services; [1996] p 12. Available from: www.cdc.gov/nccdphp/sgr/prerep.htm (accessed June 9, 2003).
4. Klem ML, Wing RR, Chang CC, et al. A case-control study of successful maintenance of a substantial weight loss: individuals who lost weight through surgery versus those who lost weight through non-surgical means. *Int J Obes Relat Metab Discord* 2000 May;24(5):573-9.

Paul Jacobs, MD, Northwest Permanente Medical Group, discusses ways clinicians can help patients increase activity levels

Promoting Physical Activity and Exercise

By Paul O Jacobs, MD

Introduction

The US Surgeon General has been impressing upon the American public the need for more physical activity and exercise in their lives and to this end has called clinicians to action.¹

In this article, I focus on four points made by the Surgeon General:

- We must recognize that obesity is a major public health problem.
- We can help manage this problem by educating our patients in our offices about the benefits of good dietary habits as well as good physical activity habits.
- Because we live in a complex, multicultural society, the advice we give one person may not fit all people. Our advice, strategies, and prevention efforts must be appropriate for our diverse group of patients.
- Our job does not—and must not—end at the walls of our offices: We must link our patients to community resources that can facilitate weight control.

How Did This Obesity Epidemic Happen?

For many years, we've had access to good information about what constitutes a healthful diet. Research has shown that fewer than 3% of people actually follow four of the five dietary recommendations for intake of fruits, vegetables, whole grains, breads and cereals, and other protein sources (meat and soy).²

Moreover, less than one third of the US population also follow the common recommendation for 30 minutes of physical activity at least three to five times per week.² A 1999 study³ showed that, as a group, children have the most sharply increasing rates of obesity. In the past 20 years, the rate of obesity has doubled among preteenagers and has tripled among adolescents. Although the number of hours spent watching television has declined slightly in the past 20 years among children of high school age, well over a third of children of this age spend three or more hours watching TV each day.⁴ Why we are faced with this problem of obesity and how we have reached this point is thus no mystery.

Widely held opinion asserts that losing only 5% of excess weight constitutes success. Why? Because, as we know, gaining weight and being overweight are really substantial health problems, and loss of only 5% to 15% of excess body weight has a substantial impact on the most deadly diseases facing us—primarily cardiovascular disease and diabetes.⁵ Just as important as weight reduction are the psychosocial benefits derived from increased activity. Depression and mood swings improve substantially with exercise.

The Role of Metabolism in Obesity

Understanding metabolism—in particular, fat storage and mobilization—is also important.⁶ Fat storage primarily takes the form of triglycerides,

most of which are located in the fat cells. Muscle also stores fat. The same visual pattern of fat that we see in beef—the effect that we call marbling—is in our muscles as well.

Men and women differ in the way they store fat. In women, normal body content of fat is between 25% and 32%; in men, the normal percentage is 18%.⁷ The distribution pattern of fat also differs between the sexes. A central (abdominal) obesity pattern is more common in men, whereas the pear-shaped pattern—accumulation of fat around the hips and thighs—is more common in women. The central obesity pattern more commonly seen in men is also correlated with a higher risk of cardiovascular disease.⁸

Now, here is both the good news and the bad news. When sitting, women do not burn as much fat as men do when sitting. However, when a woman stands up and starts moving around, the rate of fat metabolism in the woman actually increases more than it does in a man walking next to her. Part of the reason is the location of fat stored in the body. In people with the central obesity pattern, epinephrine released by exercise stimulates the fat cells to mobilize fat stores. The receptors that are stimulated by epinephrine during exercise are the alpha and beta receptors. Lipolysis (breakdown of fat) is stimulated

In the past 20 years, the rate of obesity has doubled among preteenagers and has tripled among adolescents.

Paul O Jacobs, MD, has been with Northwest Permanente Group in Portland, OR since 1974. He began as an Internist, and an interest in musculoskeletal pain led to a second residency in Physical Medicine and Rehab. In 1990, he began his practice as a Physiatrist. E-mail: paul.o.jacobs@kp.org.



... people experience psychological and emotional benefits as they become more physically active, even if they don't lose much weight with an exercise program.

through the beta receptors, and the laying down (storage) of fat is stimulated through the alpha receptors. Beta receptors are more sensitive in abdominal fat than in hip region fat. Therefore, in people with the pear-shaped obesity pattern, the receptors appear to be less sensitive to this effect of epinephrine.⁹ A clinical correlate of this difference is one that we see often: Exercise changes body appearance much more quickly and readily in men with the central obesity pattern than in women with the pear-shaped fat distribution pattern.

Women and men also have a different metabolic preference for selection of an energy source—and I am not talking about Krispy Kreme™ versus Dunkin' Donuts®. Instead, I am referring to fat versus carbohydrate sources. Carbohydrate sources of energy tend to be the storage forms used most commonly in very-high-energy exercise activity. One reason that women burn fat more readily with activity is that they tend to have more fat distributed in muscle tissue than men do.

Reasons to Combine Exercise and Dietary Change

Activity and exercise have physiologic benefits, and one of these is weight loss. However, asking our patients to exercise as the primary source of eliminating excess weight has had a disappointing outcome.¹⁰ But combining exercise with a dietary program gives a better outcome: The effects on carbohydrate metabolism and on fat metabolism are substantial. Studies indicate that when people exercise regularly, their insulin resistance begins to fall.^{11,12} Fat cells are sensitive to the epinephrine released with exercise. When exposed to this epinephrine, the fat cells give up their fat more

readily. This metabolic effect persists for 24 to 48 hours after activity.¹¹ So, if we advise our patients to do some exercise—even if it is every other day—they will probably experience some persisting metabolic benefit.

In addition, people experience psychological and emotional benefits as they become more physically active, even if they don't lose much weight with an exercise program. In one interesting study,¹³ children watched television or videos for 15 minutes. A cohort of this group then exercised moderately. Measurable improvement in mood stabilization was seen in the children who were active.¹³ This finding is particularly important given the increasing concerns about depression and suicide among younger children these days.

Although the degree of improvement in clinical depression with regular exercise therapy has been disappointing, the uplift and stabilization of mood (decreased severity of affective disturbance) as well as the stress hardiness that accrues from regular exercise is very potent—and that effect is what I “sell” to my patients. I tell them that they will really feel better and will be better able to cope with their day-to-day stress. In addition, most activities and exercise programs cause people to get out and connect with other people, and the social support aspects of this effect become highly beneficial for many people. Many people who are overweight or obese have never liked the way they look in exercise or active sportswear; however, as someone who becomes more active can begin to normalize the sense of themselves as a person who can be active.

If Exercise is So Good, Why Don't We Do It?

Psychologists have been examin-

ing that question for a long time.¹⁴ People need to be ready to change. A person's own attitude about the ability to perform exercise is very important. People who say, “You know, I have never been an athletic person: I am kind of a ‘klutz’” are inclined to be sedentary because they don't see themselves as having the skills to be active.

We encounter many barriers to getting our patients—and even ourselves—involved in exercise. As overweight people become less active, they lose strength, endurance, and their flexibility. Becoming active can therefore hurt. And as people become overweight, their weight-bearing joints and other structures begin to fatigue, and physical impairment develops. We therefore must help our overweight patients to find exercises and activities that can be done despite various types of impairment.

In our culture, it's easier to sit around too much and be inactive. We caregivers share with our overweight and obese patients the same barriers to getting enough exercise in our daily lives. For kids, a wide assortment of competing products serves as enticement to inactivity, whereas working adults are hindered from exercise by work-related stress, family demands, and worry about the economy and world affairs. All these things tend to demote physical activity to a lower-priority level in our daily lives. For elderly people, many of whom have physical impairment to worry about or are socially isolated, just getting to and from an exercise activity can be more difficult than for younger people.

As we Americans age, our fitness level falls and our weight increases. Whereas most young people think about exercise as fun, many older

Weight Management and Obesity Symposium

people associate activity with discomfort and have very real fears about injury and falls. For these people, social isolation compounds the difficulty of gaining access to exercise opportunities.

What Defines a Good Exercise Program?

Basically, we want to say this to our patients: “you know, I want you to do something moderately active three to five times a week.” “Moderate” physical activity is activity that raises the heart rate to about half its maximum but does not feel overwhelming to the patient. We know also that low-intensity and long-duration activity is better than short bursts of high-intensity activity for burning fat.

As people intensify their exercise, they burn more calories, a greater proportion of which comes from carbohydrates. From the standpoint of what’s practical for our overweight and obese patients, we want to emphasize moderate, low-impact, long-duration physical activity.

Patients should also participate in different forms of exercise—not only to keep exercise interesting but to spare the body from overuse types of strain. We must link this advice to teaching our patients where to get good information. For instance, Kaiser Permanente (KP) maintains a collection of excellent videos at our Health Education Resource Centers. We can also educate people about community centers with swimming pools and exercise programs.

Is Exercise Safe?

Clinicians with overweight patients have two major concerns about advising these patients to increase their exercise activity: Risk of injury and risk of death. Musculoskeletal injury is common

among exercisers but is usually not serious. To reduce physical stress on bones, joints, muscles, and tendons, we recommend that patients increase their level of exercise slowly. The greater concern of clinicians—“Is my patient going to drop dead?”—can be answered this way: I think the chances of overweight patients dropping dead are a lot higher if they don’t get up out of their chairs and do some type of exercise! Because of the potential for overweight patients to have comorbid conditions, such as coronary artery disease and diabetes, clinicians must obtain from these patients a thorough medical history to identify these conditions and evaluate them as clinically indicated.

For overweight and obese patients, we should emphasize three types of low-impact exercise: walking during daily activities, use of a stationary bicycle, and exercise in a swimming pool. In an aquatic environment, many overweight and obese patients feel a physical freedom that they haven’t felt for years and that improves the joint range of motion. Aquatic exercise can also mobilize lymphedema and regular edema. We should recommend exercise programs that emphasize repetition and low resistance; those types of exercise are much more peaceful for the musculoskeletal system. The balance of activity and stretching also is very important: As people become more active, stretching helps to reduce musculoskeletal strain.

The word “exercise” is often scary to our patients, so we should use the word “activity,” which is a much kinder-sounding word. To demonstrate this concept, I’ve got my pedometer strapped on my belt all the

time for daily use in my practice. I point out to people that using a pedometer is both a scientific and a fun way to track daily physical activity. Basically, the difference between being sedentary and maintaining a good level of activity is about 10,000 steps a day (roughly five miles). I used to think I was pretty active—then I attached

the pedometer to my belt and discovered that on most days, I took only 5000 or 6000 steps! In contrast, my wife—who is a nurse in an ambulatory care setting—walks 24,000 steps per day. If your patients have a dog, get them to walk the dog; the exercise is great for both dog and person.

How to Design an Exercise Program for Your Patient

Design different exercise programs for different groups of patients. For example, the elderly do better in social groups. Many of my elderly patients come in to my office very excited about the KP Silver Sneakers Program. They love it! They get to talk to other people in their own age group. They do exercises that are physically appropriate for the patients’ fitness level. For these patients, we should concentrate on activities that improve balance and coordination, because good balance and coordination help prevent falls. Keep the program simple: As people age, they don’t think of themselves as physically adept. And because some elders might think they don’t have enough fun in their lives, make the exercise program fun for them.

For children, provide a different array of activities so that the kids are not constrained into doing something

Design different exercise programs for different groups of patients.

they don't like. Anything we can do to get them off the couch and away from the television is good; remember that even short periods of activity are very good for improving children's mood fluctuations.

In general, men and women differ in the types of exercise they select. Men often seek to build muscular strength, and they enjoy the competitive aspect of physical activity. Women more often select exercise because they know it improves their health. They look for mood benefits, weight control, and social support. The social contact they get is very important—they enjoy and benefit from it, whereas more men appear to be content to just run off into the sunset all by themselves. We must understand that in our culture, women are most often the caregivers for elderly parents and for children and that our programs must therefore provide support for women by addressing their childcare needs, thus allowing them to participate in an exercise program. In addition, women perceive the discomfort of exercise to a greater degree than men. This perception can discourage women from activity but can be overcome with gently persistent efforts. Women struggle much more than men with our social imprinting on how we view and judge our bodies. The exercise environment is a great place to teach women to be healthy and strong instead of focusing solely on their weight and their appearance.

Conclusion

As caregivers, we are uniquely positioned to address our nation's challenging epidemic of overweight and obesity. The words that we use, the advice that we give, and the examples that we set can be powerful

As caregivers, we are uniquely positioned to address our nation's challenging epidemic of overweight and obesity.

tools to equip our patients with the knowledge, experience, and hope that enables them to change lifelong patterns of inactivity, thus freeing them to see a brighter and healthier future. Sometimes—now, for example—any step can be a step in the right direction. ♦

References

1. Office of the Surgeon General. The Surgeon General's call to action to prevent and decrease overweight and obesity, 2001. Rockville (MD): US Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001. Available from: www.surgeongeneral.gov/library; click on "Calls to Action"; click on title (accessed March 18, 2003).
2. United States. Department of Agriculture. Agricultural Research Center. Continuing survey of food intakes by individuals, 1994-96, 1998 [CD-ROM]. Beltsville (MD): Beltsville Human Nutrition Research Center; 1998.
3. National Center for Health Statistics. Prevalence of overweight among children and adolescents: United States, 1999-2000. Available from: www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm (accessed October 31, 2001).
4. National Center for Education Statistics. The condition of education 2001. Indicator 22: Student's use of time. Washington (DC): US Department of Education, National Center for Educational Statistics; 2001. Available from: <http://nces.ed.gov/programs/coe/2001/section3/indicator22.asp> (accessed March 19, 2003).
5. Calle EE, Thun MJ, Petrelli JM, Rodriguez C, Heath CW Jr. Body-mass index and mortality in a prospective cohort of US adults. *N Engl J Med* 1999 Oct 7;341(15):1097-105.
6. Vella CA, Kravitz L. Gender differences in fat metabolism. *IDEA Health & Fitness Source* 2002 Nov-Dec;20(10):36-46, 69.
7. Heyward VH. Advanced fitness assessment and exercise prescription. 4th ed. Champaign (IL): Human Kinetics; 2002. p 162.
8. National Institutes of Health, National Heart, Lung, and Blood Institute. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. Bethesda (MD): National Heart, Lung, and Blood Institute; 1998. (NIH Publication No. 98-4083) Available from: www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf (accessed March 18, 2003). p 169.
9. Braun B, Horton T. Endocrine regulation of exercise substrate utilization in women compared to men. *Exerc Sport Sci Rev* 2001 Oct;19(4):149-54.
10. Grundy SM, Blackburn G, Higgins M, Lauer R, Perri MG, Ryan D. Physical activity in the prevention and treatment of obesity and its comorbidities. *Med Sci Sports Exerc* 1999 Nov;31(11 Suppl):S502-8.
11. Ferguson MA, Gutin B, Le NA, et al. Effects of exercise training and its cessation on components of the insulin resistance syndrome in obese children. *Int J Obes Relat Metab Disord* 1999 Aug;23(8):889-95.
12. Castaneda C, Layne JE, Munoz-Orians L, et al. A randomized controlled trial of resistance exercise training to improve glycemic control in older adults with type 2 diabetes. *Diabetes Care* 2002 Dec;25(12):2335-41.
13. Williamson D, Dewey A, Steinberg H. Mood change through physical exercise in nine- to ten-year-old children. *Percept Mot Skills* 2001 Aug;93(1):311-6.
14. Gavin J, Spitzer AM. The psychology of exercise. *IDEA Health & Fitness Source* 2002 Nov-Dec;20(10):48-59, 69-70.

Weight Management and Obesity Symposium

Nico Pronk, PhD, provides a summary of HealthPartners' highly successful 10,000 Steps® program

One Step at a Time—The 10,000 Steps® Program Increases Physical Activity

By Nico Pronk, PhD

Related publication: Lindberg R. Active living: on the road with the 10,000 Steps program. *J Am Diet Assoc* 2000 Aug;100(8):878-9.

Introduction

The mission of HealthPartners, a health plan based in Minneapolis, Minnesota, is “to improve the health of our members, our patients, and the community.” With obesity and its accompanying health complications an increasing problem nationwide,¹ finding a way to address obesity and overweight became a key component of the organization’s Partners for Better Health initiative. Begun in 1994 and now in its second iteration, the program—currently titled *Partners for Better Health 2005*—seeks to create measurable improvement in member health and includes five-year goals in areas of need.² These goals provide focus for the organization and emphasize partnerships among many stakeholders, such as clinics, employers, the health plan and its members, and the community.

In creating goals for *Partners for Better Health 2005*, program developers considered—and then chose to focus on—the role of physical activity in improving health and preventing health problems. Specifically, the goal articulated by *Partners for Better Health 2005* is “to increase the proportion of individuals among our members and our community who choose to live a physically active life.” Several

objectives are included in this goal:

- Among adult members 18 to 65 years, increase the mean number of physically active days by two days per week.
- Among adolescent members, increase the mean number of physically active days by two days per week.
- Among senior members 75 years or older, reduce prevalence of completely sedentary behavior by 50%.
- Increase to 90% the proportion of people who can identify twice as many advantages as disadvantages associated with being physically active.

The 10,000 Steps® Program

As one way to meet these objectives, HealthPartners chose to seek improvement one step at a time—literally. The result was the 10,000 Steps® Program, a pedometer-based program of tracking, motivation, health education, and participation incentives. The goal for enrollees—to take 10,000 total steps per day—is deceptively simple because working toward this goal causes participants to develop new habits and new attitudes about physical activity that program developers believe could last a lifetime.

A pedometer-based program was selected because it would provide

a well-designed method to increase physical activity among overweight people. To successfully influence members who had generally been inactive, no activity component could be of high intensity—not only to avoid injuries but also to combat the discouragement that sedentary people frequently feel when confronted with an exercise program. The key is continuing to purposefully differentiate between *exercise* and *physical activity*. Many inactive people—especially those who are overweight—have a very low level of fitness and can become completely demotivated when presented with an exercise program that they perceive as too difficult. A pedometer program is something people of all fitness levels can use.

Extensive planning and analysis were used to design a program that would be appealing, accessible, and motivating. Clearly envisioning the target audience was crucial, as was creating a message that consistently promoted readiness to change (the staging construct). Program developers also reviewed cur-



The key is continuing to purposefully differentiate between *exercise* and *physical activity*.

Nico Pronk, PhD, is vice president of the HealthPartners Center for Health Promotion, research investigator in the HealthPartners Research Foundation, codirector of the Population Health Unit, and director of the Health Care CORE of the Minnesota Obesity Center. E-mail: nico.p.pronk@healthpartners.com.



The 10,000 Steps® Program — cumulative enrollment

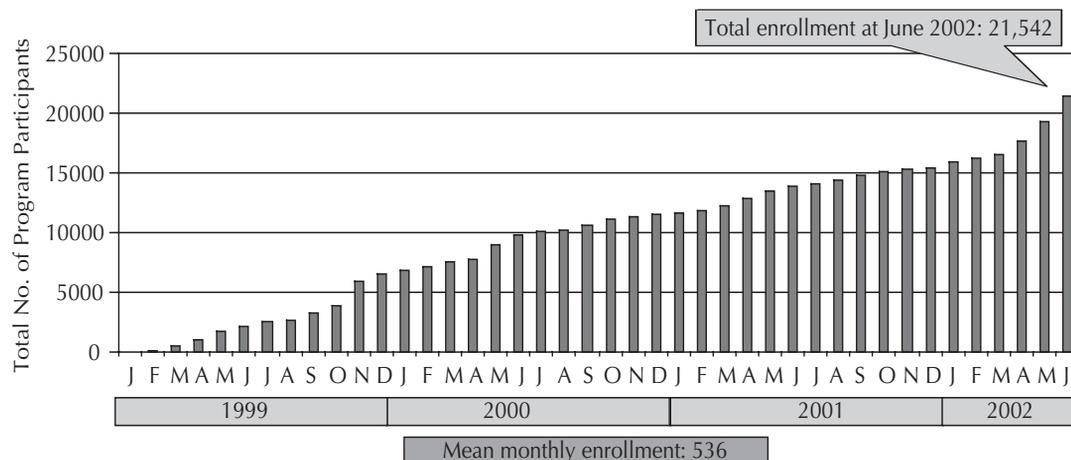


Figure 1. Graph shows continuous rise in enrollment in the 10,000 Steps® Program during its four years of existence.

rent literature on physical activity and related trends observed at the national and state levels. In addition, two focus groups consisting of health plan members offered consumer input on program development as well as on artwork and layout for the program's printed materials.

As a pilot program, the 10,000 Steps® Program made enrollment entirely voluntary. Enrollees were mailed a kit that included a pedometer; a personal action planner; a log for tracking steps; motivational mailings sent biweekly for eight weeks after enrollment and then bimonthly for the next six months; and prize drawings as additional incentive for continued participation.

Because steps are tracked as they are taken, users receive immediate positive feedback—a major motivator that counteracts discouragement, one of the greatest deterrents to increased activity.

The pilot program included 92 adult health plan members. Nearly

70% of these participants increased the number of steps they took during the first eight weeks of the program, and 31% actually reached the goal of taking 10,000 steps daily. Half the participants had not reached the goal of taking 10,000 total steps but believed that their level of activity had increased.

These results were encouraging but had only a small role in determining whether the program would be extended to the rest of the organization's members: HealthPartners' members had already made up their minds—affirmatively. Before the pilot program reached its conclusion, the program attracted a greatly increased number of requests for enrollment. In the past year, 15,000 people enrolled in the program, which was never formally marketed to the members. This enrollment marked a 248% increase over the 2001 enrollment. In early January 2003, the 10,000 Steps® Program went on-line (see www.healthpartners.com/10000steps), a development that enabled members to participate in every way, ranging from enrollment

to tracking their own progress online. This online version further enhances accessibility, scalability, and sustainability of the program, which is already regarded as one of HealthPartners' most successful programs for promoting health and wellness. ♦

Acknowledgments

Rebecca Lindberg, RD, MPH; Deborah Condon, BA; and Eve Gehling, RD, MEd, CDE, assisted with the implementation and coordination of the project.

10,000 Steps® is the registered trademark of HealthPartners, Inc.

References

- Office of the Surgeon General. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville (MD): US Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001. Available from: www.surgeongeneral.gov/topics/obesity/calltoaction/toc.htm (accessed March 14, 2003).
- Lindberg R. Active living: on the road with the 10,000 Steps program. *J Am Diet Assoc* 2000 Aug;100(8):878-9.

Because steps are tracked as they are taken, users receive immediate positive feedback—a major motivator that counteracts discouragement, one of the greatest deterrents to increased activity.

Weight Management
and Obesity

Symposium

Thomas N Robinson, MD, MPH discusses school-based interventions

Preventing Obesity in Children and Adolescents

By Thomas N Robinson, MD, MPH

Introduction

Five years ago, Dr Ken Resnicow (Professor of Behavioral Science and Health Education at Emory University) and I reviewed and summarized the results of all randomized controlled cardiovascular disease prevention studies conducted in US schools.¹ Across the studies, we found significant improvement in 65% of the smoking outcomes reported, 36% of the objective physical outcomes, 34% of the dietary intake outcomes, 34% of the lipid outcomes, 30% of the physical activity outcomes, and 18% of the blood pressure measures reported. At the very bottom of the list, there was significant improvement in only 16% of the adiposity outcomes reported.¹ These results suggest that obesity may be more difficult to change through school-based health education interventions than some of the other cardiovascular disease risk factors.

In this presentation, I describe some successful pediatric obesity prevention programs. I also identify factors which appear to be shared by these successful programs.

The Stanford Adolescent Heart Health Program

Joe Killen and Michael Telch, two psychologists, in the mid-1980s started the Stanford Adolescent Heart Health Program (SAHHP),² which studied tenth-grade students at four public high schools in Santa Clara, California. In that study, two schools were randomized to intervention and two schools served as untreated control schools.

Based in social cognitive theory (the main theoretical framework for our work), the SAHHP included a 20-session, multirisk factor classroom intervention. We trained teachers to deliver the programs in the schools. Program goals were to increase physical activity and fitness and to decrease dietary fat

intake, body adiposity, and smoking. Assessment was done at baseline and two months after the end of the 20-session intervention.²

As determined from self-reports, the percentage of tenth graders who were physically active improved substantially in the treatment group compared with the control group. We defined physical activity as at least 20 minutes of physical activity three days per week and vigorous enough to “work up a sweat.” Consistent with the self-reports, we also saw significant improvement in resting heart rate, a measure of cardiorespiratory fitness, in both boys and girls. In boys and girls, statistically significant changes occurred also in self-reported low-fat, high-fiber food choices.²

The SAHHP also examined body mass index (BMI) as an objective measure of change in caloric balance. Compared with controls, boys in the treatment group had a statistically significantly smaller increase in BMI and girls in the treatment group had a decrease in BMI. Similar statistically significant changes were seen in triceps and subscapular skinfold thickness for the treatment groups.²

TV Watching and Pediatric Obesity

Another school-based approach we have studied recently is reducing children’s television viewing.³ This approach was tested at two public elementary schools in San Jose, California, in a total sample of 192 third- and fourth-grade children. One school was randomized to a curriculum developed to decrease use of television, videotapes, and videogames; we trained the regular classroom teachers to deliver this curriculum. Both schools received assessment at the beginning and at the end of the study in the fall and spring of a single school year.

Compared with children in the control school, the treatment school had about a one-

third reduction in use of television, videotapes, and video games. The intervention—which did not address physical activity or diet—resulted also in substantial improvement in BMI in the treatment school compared with the control school. BMI for the treatment school increased nearly half as much as in the control school, a difference of about two pounds per child of average height—quite a large reduction in weight gain for a non-high-risk sample. Children in the intervention school grew in waist circumference by nearly an inch less than with children in the control school.³

We are not the only researchers to report improvement from reducing television viewing. In a two-year intervention, Steve Gortmaker’s *Planet Health* program⁴ also targeted television viewing—as well as physical activity and diet changes—in children attending middle school. Compared with the control group, girls in the treatment group had statistically different (lower) prevalence of obesity, a combined measure defined as BMI and triceps skinfold thickness greater than the 85th percentile.

Results in Other School-Based Health Programs

In addition to classroom curricular programs, other approaches have targeted school food service programs, physical education, and, more recently, after-school programs. In controlled trials, no school food service intervention and only a few physical education interventions have had any effect on measures of body fatness. Almost no data exist so far for after-school programs.

Intervention relating to physical education is effective when researchers introduce other activities into the school day instead of changing physical activity within existing physical education paradigms. In one study,⁵ we studied 81 seventh-grade students attending low-

Thomas N Robinson, MD, MPH, an Assistant Professor of Pediatrics and Medicine at Stanford University School of Medicine, is the director of the Pediatric Weight Control Program at Lucile Packard Children’s Hospital. E-mail: tom.robinson@stanford.edu.

income schools in East Palo Alto, California. Of the 81 students, slightly more than half were girls, and the mean age was 12.5 years. The study population included mostly African-American and Latino students. Participants were randomized to a 12-week physical education program of either Hip-Hop dance (three days a week for 40 to 50 minutes during the regular “PE” period) or standard physical education led by the regular teacher. Medical students or undergraduates volunteered to lead the dance groups.

For girls only (compared with boys), the 12-week intervention produced statistically significant fitness benefits: Girls showed substantial response in resting heart rate and BMI. Girls in the dance program had no increase in BMI, whereas BMI increased in girls in the control group.⁵

The National Institute of Diabetes and Digestive and Kidney Diseases recently funded an after-school multiethnic dance program in schools for us. The program will offer African dance, Hip-Hop, *ballet folklórico*, Filipino dance, and Hawaiian dance for girls. In a randomized controlled trial, we will compare results of this after-school dance class program with results of a more traditional program consisting of nutrition and physical activity education.

The Stanford Girls Health Enrichment Multi-site Studies (Stanford GEMS) pilot study tested an intervention that included after-school dance classes and a family-based program to reduce TV viewing. In this 12-week pilot study, we studied eight- to ten-year-old African-American girls at high risk for obesity. These girls were randomized to either a nutrition education program with newsletters, community lectures, and nutrition demonstrations for families or to an intervention consisting of family TV reduction and after-school dance classes.

No statistically significant differences were seen in this pilot study, which included 61 families. However, in only 12 weeks, the girls receiving the dance and TV viewing reduction intervention gained only about half as much in BMI and waist circumfer-

ence as did girls in the nutrition education group. This result is promising, and we have received funding to conduct a full-scale trial with 260 families.

Conclusions: What We Have Learned

As these programs have shown, successful models for childhood and adolescent obesity prevention do exist—and so do unsuccessful approaches. We must build from successful models and must stop replicating the models that haven’t worked. We have learned also that we must focus on obesity as a behavioral problem by targeting specific, “countable” and changeable types of behavior that contribute to energy intake and expenditure.

The effective programs have been strongly based on theories of behavioral change and include motivation as an important component. Our pediatric patients—and the public—are not as motivated by future good health as we clinicians are. Instead, they’re motivated by things like fun and taste. We must therefore think less about what motivates us and must instead think more about what motivates our target audience.

Another important observation is that the minimum length of the pilot studies discussed was 12 weeks and consisted of more than health lectures. Successful programs deliver a large dose of content and include many sessions over a long duration.

Future school-based research should focus on improving interventions and on small-scale efficacy trials. Etiologic research is also very important, but to make any progress in slowing the obesity epidemic, we need to focus much more on efficacy trials of specific behavioral strategies (including environmental change strategies) followed by large-scale effectiveness trials to help translate the efficacious strategies into effective public health programs. We need also to study how best to disseminate successful programs. For example, even if an intervention is successful in Oakland, California, we may not know how to extend it to other locations and populations across the country. ❖

After the presentation, Dr Robinson answered questions from the audience:

How did you get children to watch less television?

Dr Robinson: We started by creating a challenge for them. Eight- to ten-year-old kids are often motivated by a challenge, especially if adults doubt that they can do something.

Then, through self-monitoring activities, we made the kids aware of how much time they spent watching TV. We asked them, “What do you really like to do with your time?” Most kids don’t place television viewing at the top of this list; most kids would rather play with their pets, build things, or play with friends. Kids pick their own motivators; we just point out how much more of these activities the kids could do if they watched less television.

Next, a “television turnoff” challenged kids to go without television, videotapes, or video games for 7 to 14 days. This approach builds confidence and skills to go without TV. We also deliver a series of lessons to help promote efficacy of the approach. Many kids—about two thirds in our studies—can go without television for this period of time.

We then add competition, self-challenge, and levels of achievement to the program. We focus on goal-setting by saying, “You don’t have to cut out television altogether. Just choose a goal and try to stay under that.” Most classrooms came up with a 7-hour-per-week goal. No intervention study has shown a good dose-response threshold for TV viewing, but limiting TV viewing to one hour per day makes sense.

Kids moved from one level of achievement to the next; we thus used the same strategy that video games use. Kids don’t need prizes or big awards; they can be given the opportunity to clean the blackboard or to collect papers for the teacher. Things we might otherwise think of as punishment seem like privileges to a child in a classroom.

We also worked on “intelligent viewing,” a process in which the whole family identifies beforehand what they want to watch. For in-

Weight Management and Obesity Symposium

stance, if the baseball *World Series* is scheduled to be on, each family member must know that you can't watch an hour of TV every day of the week and still have enough TV time left to watch the game.

We worked with families on environmental change too, but that's a very tough area to change. Televisions are at the center of many homes, and parents can be more resistant to change than children are. Parents are enlisted in the process by focusing on children.

What level of concern about obesity do you see among school boards or superintendents of schools?

Dr Robinson: The level of concern is rising, but even school districts that adopt these programs hesitate to end soda contracts in high schools or to eliminate fast food from the cafeteria. The school districts feel dependent on these sources of revenue, perhaps because California schools are so poorly funded. The same situation may be the case in other parts of the country.

The Los Angeles Unified School District School Board just passed a policy banning availability of sodas throughout all

schools starting in 2004.⁶ How can we encourage this type of policy change?

Dr Robinson: I support the use of policy to change the food environment to which kids are exposed in schools. However, I haven't come up with a way of doing it. I think that this change must come from parents and from leaders in the community, because each school district is independent.

Dr Dietz: Communities can receive income from vendors and still offer healthful options. And school districts can carefully restrict the availability of those vending machines and determine what is stocked in them.

School foodservice programs that have been successful in getting healthy choices included have worked closely with stakeholders and student leadership to be sure that school cafeterias offer menu selections that the students will eat. ❖

Acknowledgements

The research was supported in part by the National Heart, Lung, and Blood Institute, National Institutes of Health, and a Generalist Physician Faculty Scholar Award from the Robert Wood Johnson Foundation.

References

1. Resnicow K, Robinson TN. School-based cardiovascular disease prevention studies: review and synthesis. *Ann Epidemiol* 1997;7:14-S31.
2. Killen JD, Telch MJ, Robinson TN, Maccoby N, Taylor CB, Farquhar JW. Cardiovascular disease risk reduction for tenth graders. A multiple-factor school-based approach. *JAMA* 1988 Sep 23-30;260(12):1728-33.
3. Robinson TN. Reducing children's television viewing to prevent obesity: a randomized controlled trial. *JAMA* 1999 Oct 27;282(16):1561-7.
4. Gortmaker SL, Peterson K, Wiecha J, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Arch Pediatr Adolesc Med* 1999 Apr;153(4):409-18.
5. Flores R. Dance for health: improving fitness in African American and Hispanic adolescents. *Public Health Rep* 1995 Mar-Apr;110(1):189-93.
6. Trustees expel soft drinks from Los Angeles schools. *Contra Costa Times* 2002 Aug 28. Available from: www.bayarea.com/mld/cctimes/living/education/3953073.htm (accessed March 14, 2003).

Teach Them Well

The grandfathers and the grandmothers are in the children; teach them well.

— Ojibway proverb

Lawrence Hammer, MD, discusses the Stanford Pediatric Weight Control Program

Weight Control in Children and Adolescents Proves Successful in a Family-Based Program

By Lawrence Hammer, MD

Introduction

The Stanford Pediatric Weight Control Program is a family-based behavioral program designed to promote healthier eating and exercise habits for overweight children aged 8 to 12 years and their families. With the exception of a hiatus in the early 1990s, the program has existed continuously since the mid 1980s and is based on the model of family-based behavioral treatment developed by Leonard Epstein, MD, at the University of Pittsburgh.¹

Before this approach to family-based treatment existed, most treatment efforts addressed weight control by using a more traditional medical model—that of individual therapy. By having children and their parents meet in separate groups, Epstein showed, in a series of controlled studies, that weight loss could be achieved and maintained over an extended period of time.² In this model, groups of parents meet at the same time as groups of children meet. Material is covered by group leaders in separate group settings for children and parents.

Structure of the Program

The Stanford program, directed by Thomas Robinson, MD, Assistant Professor of Pediatrics, consists of 24 weekly sessions spanning six months. Groups are conducted in either English or Spanish and include 9 to 12 families who pay a deposit to encourage attendance. Participants learn to classify foods into “red-light foods” (high-calorie, low-nutrient value), “yellow-light foods” (the major portion of their diet), and “green-light foods” (foods containing <20 calories per serving). Another module of the program adds exercise habits, and the maintenance-phase module alternates discussion sessions of specialized topics (eg, fast food, holidays) with a family exercise class.

Another important program component is the time

spent in each session during which the family meets together to talk or to solve problems. Children and parents create reciprocal contracts in which children set goals to reduce red-light foods and parents set goals to create a red-light-food-free environment.

Program evaluation consists of weekly weight measurement, monthly height measurement, counting the number of red-light foods whose quantity was reduced in the diet, and observing the extent to which healthier habits were acquired. The goal for each child is to maintain weight or to gradually lose no more than one pound per week; the change in percentage overweight is calculated for a six-month period.

Results for Program Participants

During one evaluation period, English-language groups included 65 children from 62 participating families. Parents and children were a mean 71% overweight. At the outset of the program, 17 parents were of normal weight, 39 were overweight (body mass index [BMI] 25-30), 26 were obese (BMI 30-40), and 7 were severely obese (BMI >40). Seventy-two parents were measured and weighed both before and after the program. Of the mothers, 63% lost a mean 4 lb each; 67% of the fathers lost a mean 6 lb each.

Thirty-two children from 30 Spanish-speaking families participated; these children were a mean 71% overweight. Twenty-three of these Spanish-speaking parents were measured before and after the program. Six were of normal weight, 11 were overweight, 18 were obese, and 1 was very obese. Of the mothers, 77% lost a mean 9 lb each. Of the fathers, 83% lost a mean 3 lb each.

Benefits of Family-Based Programs

Studies published by Epstein¹⁻³ and (to a limited extent) by others,^{4,5} show that family-based, group weight control programs may be more feasible, efficient, and effective than individual counseling received from primary care providers. Such an approach is consistent with recommendations published by an expert com-

... family-based, group weight control programs may be more feasible, efficient, and effective than individual counseling received from primary care providers.

Weight Management and Obesity Symposium

mittee under the auspices of the Maternal and Child Health Bureau in the US Department of Health and Human Services.⁶

Recognizing the positive efforts of a family trying to improve eating and exercise habits is very important. Changing these habits—whether for an individual person or for an entire family—is incredibly challenging. Families may have had so many difficult and failed experiences of making changes that it's hard for them to imagine that they could ever succeed. An important strategy is to notice even the smallest change and to offer congratulatory and positive comments about it. Taking the opportunity to notice each small change can be very powerful and can give families the opportunity to think about themselves in new and exciting, positive ways. ❖

Acknowledgment

Tom Robinson, MD, MPH, provided expert advice.

References

1. Epstein LH. Family-based treatment for pre-adolescent obesity. *Advances in Developmental and Behavioral Pediatrics* 1985;6:1-39.
2. Epstein LH, Valoski A, Wing RR, McCurley J. Ten-year follow-up of behavioral, family-based treatment for obese children. *JAMA* 1990 Nov 21;264(19):2519-23.
3. Epstein LH. Family-based behavioral intervention for obese children. *Int J Obes Relat Metab Disord* 1996 Feb;20 Suppl 1:S14-21.
4. Levine MD, Ringham RM, Kalarchian MA, Wisniewski L, Marcus MD. Is family-based behavioral weight control appropriate for severe pediatric obesity? *Int J Eat Disord* 2001 Nov;30(3):318-28.
5. Golan M, Weizman A. Familial approach to the treatment of childhood obesity: conceptual mode. *J Nutr Educ* 2001 Mar-Apr;33(2):102-7.
6. Barlow SE, Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations. The Maternal and Child Health Bureau, Health Resources and Services Administration and the Department of Health and Human Services. *Pediatrics* 1998 Sep;102(3):e29. Available at: www.pediatrics.org/cgi/content/full/102/3/e29 (accessed March 20, 2003).

Kid Feedback

"What I liked about the program was that it taught me how many red lights I was eating."

"I liked the motivation I got from other people."

"It was fun to talk to other overweight kids."

"I think that it's really nice to talk about how our weeks go, and get suggestions, or have people say you did a good job."

Parent Feedback

"The program concept is easy to understand. Keeping track of what we ate really helps. Just staying consistent in writing our food and exercise was tough at times. I know it works because when we were consistent, we lost/maintained our weight."

"I liked the fact that the program involved the family. I also like the fact that the program did not fixate on weight loss but more on healthy lifestyle."

Obstacles

Obstacles are those frightful things you see when you take your eyes off the road.

— Hannah More, 1745-1833, playwright, novelist, poet

Sasha Stiles, MD, Kaiser Permanente Hawaii, discusses approaches to treating severe obesity

Severe Obesity

By Sasha Stiles, MD

Introduction

As one becomes severely overweight, lifestyle becomes compromised. Comorbid conditions increase, and life expectancy decreases. Mobility decreases. Social acceptance plummets. Depression mounts and quality of life diminishes. To compound the issue, severely obese people have a statistically low probability of losing weight.

Despite all the negative consequences, severe obesity in the United States has increased tremendously within the last several years. Almost 5% of our population is severely obese¹ and would qualify for bariatric surgery according to National Institutes of Health (NIH) guidelines.² One patient explained it to me this way: "In my house, every person has their own refrigerator. When we are happy, we eat. When we are sad, we eat. When we get up, we eat. When we go to bed, we eat."

Comorbid Conditions: Type, Origin, and Prevention

Conditions associated with severe obesity are numerous and can be grouped into four general areas: metabolic, anatomic, degenerative, and neoplastic. Metabolic syndrome (also known as dysmetabolic syndrome, insulin resistance syndrome, or syndrome X) is now believed to affect 43.5% of people 60 to 85 years old. This syndrome includes the conditions of impaired glucose tolerance, Type 2 diabetes, dyslipidemia, nonalcoholic fatty liver, nonalcoholic steatohepatitis, cardiovascular disease, and hyperuricemia.^{3,4}

Pancreatitis and cholecystitis increase with obesity. The syndrome of renal failure of obesity has been identified. Sleep apnea is significantly increased in the severely obese, as is asthma. Venous insufficiency, thrombophlebitis, and incidence of nonhealing venous stasis ulcers increase as weight increases. Pain from osteoarthritis of weight-bearing joints devastates many severely obese people. Esophageal and abdominal cancer increases with obesity. And the list continues.

A once-common belief—that obesity represents a self-inflicted condition arising from a person's weakness—has been replaced by recognition that the etiology of obesity is complex and crosses the disciplines of basic

science, clinical medicine, psychiatry, and behavioral medicine. We have learned that obesity is a precursor of many of the conditions we try to treat. If we could decrease or prevent severe obesity, we could ameliorate many of these conditions, which would extraordinarily affect quality of life and health care costs.

Treating Obesity

The NIH consensus report on overweight and obesity recommends bariatric surgery as an option that has had long-term success for patients with clinically severe obesity;⁵ no other long-term maintenance program was recommended. The NIH stated that more research was needed into programs with a multidisciplinary approach to obesity that use a wide variety of dietary, exercise, behavioral, and other strategies. Although workable weight loss strategies may exist for people who need to lose 20 to 50 lbs, no strategy aside from bariatric surgery achieves statistical significance for severely obese people. Furthermore, most severely obese people have tried multiple diets and have lost significant weight only to regain it—and more.

Nonsurgical Treatment of Severe Obesity

Before discussing bariatric surgery, which is statistically successful, let me review some nonsurgical approaches for severely obese patients. All multidisciplinary approaches should be viewed as pilot, or preliminary studies. Extensive further research is mandated.

Dr Vincent Felitti's vanguard work⁶ on obesity as it relates to early childhood trauma is integrated into the Kaiser Permanente (KP) San Diego Positive Choice Program. An initial (20-week) very-low-calorie diet (VLCD) is paired with state-of-the-art interactive behavioral strategy. Group leaders use a playbook, developed and fine-tuned during the last 15 years, that includes standard behavioral approaches, dietary information, and exercise prescriptions. Participants in the Positive Choice Program also discuss early childhood trauma, in the second weekly group session. Theater arts therapists often lead the groups, and role-playing is spontaneous. After the 20-week program, many options for long-term maintenance exist.⁷

... severely obese people have a statistically low probability of losing weight.

Weight Management and Obesity Symposium

Although the Positive Choice Program offers a wealth of creative and stimulating ideas, it has not been rigorously tested. Program participants choose different options for long-term maintenance programs, options which have variable success and demographics, so conclusions about long-term maintenance have yet to be drawn to the satisfaction of the research community. However, it is time to give this vanguard work the attention it deserves.

Sami Alskaf, MD, Director of the KP Panorama City Obesity Treatment Center, has expanded the Felitti program in a systematic way through a freestanding business entity, which is used by KP physicians as a primary referral location for obesity services. Patients are placed into various programs: VLCD, pharmacotherapy, behavioral therapy, bariatric surgery, or a combination of programs. An onsite gym and a pickup service for healthy, low-calorie family meals are being developed. Again, long-term, research-driven maintenance protocols are outside the scope of this program. However, Dr Alskaf's business plan and programs deserve our rigorous review as potential prototypes for treatment of severely obese patients at KP.

Throughout KP, we have adopted systematic case management protocols for chronic diseases, protocols which include patient care registries. We need to develop a similar registry for cases of obesity and severe obesity. KP Hawaii, under Tom Vogt, MD, has submitted an NIH proposal to research long-term weight loss using therapy which includes VLCD, case management, and exercise—therapy that is solidly based on decision making and behavioral theory. Another study of potentially high value would use VLCD for initial weight loss followed by long-term behavioral therapy and pharmacotherapy. Until we understand the physiology of hunger and weight loss, we can reasonably assume that long-term pharmacotherapy will be necessary for a segment of our obese population.

The Trevoze Behavioral Modification Program is a low-cost, long-term weight maintenance program that uses lay-facilitated weekly support groups. I call it the “tough love” approach. Participants who fail to maintain a prescribed weight loss must leave the program. After five years, 21% were still in the program, maintaining a mandatory 5% or more weight loss.⁸ Although 5% may not sound like much, it is a national “best.”

Surgical Treatment of Severe Obesity

This summary of treatment options brings us to bariatric surgery as an intervention for severe obesity. The outcome of this surgery varies between institutions and between procedures; however, a generally accepted sta-

tistic is that at least 50% of those who receive bariatric surgery maintain 50% of the excess weight loss for five years or longer.⁹ [Excess weight is defined as the difference between ideal weight and preoperative weight.]

The rate at which bariatric surgery is performed is rising steadily. In 2002 alone, the KP Northern California Region conducted 1800 bariatric surgery consultations and did 300 bariatric operations; the rest were referred to non-KP facilities at considerable expense. KP Northwest did approximately 100 bariatric operations, all by laparotomy (open procedure). Group Health Cooperative Puget Sound and KP Hawaii each did approximately 100 bariatric operations, many of which were laparoscopic procedures. After Al Roker of “The Today Show” had the procedure, our waiting list in KP Hawaii grew from 75 to 150 patients. I would like to believe this was partially because of our excellent, multidisciplinary pre- and postoperative programs.

Although about six bariatric surgical procedures are currently performed, Roux-en-Y gastric bypass is preferred throughout the US. Open procedures have been done for 20 years. Long-term outcome is statistically similar between open and laparoscopic procedures, except for increased risk of incisional hernia after an open procedure. Laparoscopic procedures are more difficult and require a skilled laparoscopist. Once the requisite skill level is achieved, complication rate is comparable between the two procedures, and hospitalization and recovery times are shorter with laparoscopy. Reduced comorbidity after Roux-en-Y gastric bypass has been verified in many cohort studies.¹⁰⁻¹²

The 6 to 18 months after surgery is affectionately known by patients as “the honeymoon period.” Weight falls off without much effort. Portion size is greatly restricted by the surgically decreased gastric volume. Patients call the frequent absence of hunger a true miracle; changes in ghrelin metabolism may be the cause of loss of hunger in the early postoperative period.⁹ Later, the stomach stretches enough to allow one to eat more than necessary and still be comfortable. At this time, developing a new lifestyle is critical. As one of my patients said, “They did surgery on my stomach but not my brain.” Emotion-driven eating habits return as hunger returns and the stomach stretches.

However, as noted before, studies⁹ show that postoperatively a mean of 50% excess weight loss is maintained long term. This statistic is remarkable considering the preoperative degree of metabolic, clinical, and psychological morbidity in this high-risk population. Again, we advocate use of multidisciplinary pro-

grams that work with patients pre- and postoperatively to foster long-term success.

The composition of KP bariatric surgery programs varies widely between regions. In the larger regions, demand for surgery is so high that little time is available to fine-tune program components. Performing 100 bariatric operations a year, our KP Hawaii program is fortunate to have created an excellent team. Patients see our medical bariatric consultants and behavioral specialist; attend structured dietary classes and weekly lay-facilitated, behaviorist-supervised support groups; work with a physical therapist; and have their comorbid conditions diagnosed and stabilized before surgery. Diabetic patients visit with diabetic educators to help decrease high blood glucose levels, thereby decreasing incidence of wound infection. We attend to sleep disorders, eating disorders, and cardiac problems. However, we do not automatically require orthopedic consultation when 400 lb patients complain of severe knee pain.

We expect all patients to demonstrate that they can adhere to a long-term program. We work with them for six months before surgery and expect them to lose weight preoperatively. In KP Hawaii, we do not specify a percentage of excess weight loss, but the KP Northern California Region recommends a 10% loss before surgery.

Regional programs are at different stages in developing long-term postoperative protocols. The trend is for indefinite metabolic follow-up of bariatric surgery patients with review of clinical laboratory test results every 6 to 12 months.

Most programs offer group support indefinitely, and some require patients to visit a primary care provider or a bariatric medical specialist indefinitely. The general consensus is that this high-risk group requires long-term monitoring.

The NIH guidelines are purposely vague in several ways, because no evidence exists that compels them to be specific. The guidelines do not always specify criteria for defining comorbidity. For example, do we presumptively diagnose osteoarthritis in a patient who weighs 400 lb and whose knees hurt? Or does the patient require diagnostic evaluation and orthopedic consultation? However, we are not likely to see a new set of guidelines for another five years. The National Institute of Diabetes & Digestive & Kidney Diseases recently sent out a request for applications for grants to fund five research centers and one data collection site that will gather evidence to inform more definitive parameters for bariatric surgery. At least one KP region will submit an application to qualify as a research center.

The criteria for entry into our bariatric surgery program may differ from other KP regions; and although the NIH guidelines are intentionally vague, many KP programs are passionate about their entry criteria. Addressing the merits of each set of guidelines is beyond the scope of this discussion. As yet, neither KP nor the NIH has enough evidence to identify best practice. However, for the majority of KP regions, consensus criteria for bariatric surgery eligibility appear to be the following: body mass index (BMI) of 35 to 40 and a severe, life-threatening comorbid condition; or BMI of 40 to 50 and significant, although not life-threatening, comorbidity; or BMI greater than 50. Please note that this is a statement of general consensus, not a Programwide standard. Qualifying comorbidity standards vary between KP regions.

Predicting Long-Term Success

What predicts successful long-term weight loss? McGuire et al¹³ looked at multiple attributes of patients before and after weight loss and weight regain. Coping skills did not change from baseline for those who lost weight or those who regained it. Instead, from the outset, those who lost weight had a different set of coping skills and showed less binge-eating behavior, less dietary disinhibition (lack of intake control while eating), and less depression. In addition, those who regained weight reported markedly less long-term participation in exercise programs. The authors¹³ found also that subjects who began regaining weight early had less long-term success.

Perri et al¹⁴ found that after completing treatment for addictive behavior, clients remained susceptible to relapse when faced with stressful circumstances. However, a program of extensive physical activity, peer-group engagement, and therapist intervention showed promise in promoting long-term weight loss success.

Cook¹⁵ described habits that predict success after bariatric surgery: personal accountability (ie, weighing oneself at least once per week); portion control; proper nutrition, including vitamins and hydration; and regular exercise. I would add three more habits—no snacking, eating breakfast, and eating slowly—to that list.

Many of the same issues any person may face can affect long-term success for bariatric patients. Family dysfunction; previous emotional, physical, or sexual abuse; and eating disorders must be addressed. Distressing life events occur. Families are still dysfunctional. Other forms of addiction may surface: drugs, alcohol, smoking, exercise, gambling, shopping, and others. Continued treatment of addictive behavior rep-

... we advocate use of multidisciplinary programs that work with patients pre- and postoperatively to foster long-term success.

Weight Management and Obesity Symposium

resents an ongoing struggle for many bariatric patients. Finding reasons for an addiction goes far beyond behavioral modification strategies and perhaps beyond the scope of most weight loss programs as well. Dr Felitti would tell us that unless we solve these deeper issues, weight regain is highly likely.

Bariatric surgery patients have a slight long-term advantage over those who lose weight by other means, because they experience continuous, surgically induced malabsorption, and many are never able to eat as much at one time as before surgery. The metabolic consequences of dumping syndrome (gastrointestinal symptoms resulting from rapid gastric emptying) also favor long-term success of bariatric surgery patients compared with patients who do not have surgery. Although the long-term consequences of bariatric surgery give these patients a certain metabolic advantage over patients who lose weight without surgery, much of the premorbid disposition for both groups remains similar and needs to be addressed. Both require well-thought-out strategies for long-term behavioral, dietary, psychological, exercise, and group support.

Care Management Institute Helping Severely Obese KP Members

KP, through CMI, brought together members of our bariatric community from each KP Region into a Severe Obesity Workgroup that has met for more than a year. Under the direction of Trina Histon, we have completed our initial task of developing a source book of all regional protocols and program components. Now we are beginning to identify and collect key clinical indicators to illuminate important facets of bariatric surgery programs. We will be working with other CMI groups to develop nonsurgical programs to treat severe obesity. We are developing a primer for primary care providers to use as a guide for treating bariatric surgery patients. Later, we intend to develop a KP standard for bariatric surgery that we hope will gain national respect and recognition. Our position will be developed on the basis of the best existing evidence and, moreover, coordinated and well-documented experiences resulting from the full participation of all KP regions.

The rise in obesity in America is epidemic. The implications for HMOs and for use of the health care dollar in general are alarming. Severe obesity is a disease process gaining hold in a society which has become dependent on mechanical devices for transportation and pleasure. As the social fabric of our populations disintegrate, this dysfunction turns to food

as a primary relationship. To cure this disease will take an extraordinary new breed of linked therapies. This article is only the beginning of this author's exploration into what must be created ... quickly! ♦

References

1. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA* 2002 Oct 9;288(14):1723-7.
2. NIH conference. Gastrointestinal surgery for severe obesity. Consensus Development Conference Panel. *Ann Intern Med* 1991 Dec 15;115(12):956-61.
3. Ford ES, Giles WH, Dietz WH. Prevalence of the metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. *JAMA* 2002 Jan 16;287(3):356-9.
4. Klein BE, Klein R, Lee KE. Components of the metabolic syndrome and risk of cardiovascular disease and diabetes in Beaver Dam. *Diabetes Care* 2002 Oct;25(10):1790-4.
5. Executive summary of the clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults. *Arch Intern Med* 1998 Sep 28;158(17):1855-67.
6. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med* 1998 May;14(4):245-58.
7. Felitti VJ, Williams SA. Long-term follow-up and analysis of more than 100 patients who each lost more than 100 pounds. *Perm J* 1998 Summer;2(3):17-21.
8. Latner JD, Stunkard AJ, Wilson GT, Jackson ML, Zelitch DS, Labouvie E. Effective long-term treatment of obesity: a continuing care model. *Int J Obes Relat Metab Disord* 2000 Jul;24(7):893-8.
9. Brolin RE. Gastrointestinal surgery for obesity. *Semin Gastrointest Dis* 1998 Oct;9(4):163-75.
10. Sjostrom CD, Lissner L, Wedel H, Sjostrom L. Reduction in incidence of diabetes, hypertension and lipid disturbances after intentional weight loss induced by bariatric surgery: the SOS Intervention Study. *Obes Res* 1999 Sep;7(5):477-84.
11. Witgrove AC, Clark GW. Laparoscopic gastric bypass, Roux-en-Y. 500 patients: technique and results, with 3-60 month follow-up. *Obes Surg* 2000 Jun;10(3):233-9.
12. Schauer PR, Ikramuddin S, Gourash W, Ramanathan R, Luketich J. Outcomes after laparoscopic Roux-en-Y gastric bypass for morbid obesity. *Ann Surg* 2000 Oct;232(4):515-29.
13. McGuire MT, Wing RR, Klem ML, Lang W, Hill JO. What predicts weight regain in a group of successful weight losers [published erratum appears in *J Consult Clin Psychol* 1999 Jun;67(3):282] *J Consult Clin Psychol* 1999 Apr;67(2):177-85.
14. Perri MG, McAllister DA, Gange JJ, Jordan RC, McAdoo G, Nezu AM. Effects of four maintenance programs on the long-term management of obesity. *J Consult Clin Psychol* 1988 Aug;56(4):529-34.
15. Cook CM, Edwards C. Successful habits of long-term gastric bypass patients. *Obes Surg* 1999 Feb;9(1):80-2.

To cure this disease will take an extraordinary new breed of linked therapies.

Scott Gee, MD, advocates for early assessment and intervention in preventing overweight and obesity

A Pound of Prevention ... Is Worth a Ton of Cure



Scott M Gee, MD

In the United States, the prevalence of overweight and obesity (body mass index (BMI) \geq 25) among adults reached 64.5% in 1999-2000.¹ Kaiser Permanente (KP) has taken a proactive response to the epidemic of obesity.² This issue of *The Permanente Journal* highlights recent advances in treatment of obesity in adults and current activities in different KP regions. In the article "Obesity Research: Winning the Battle, Losing the War,"³ (page 11) the authors detail effective weight management interventions from the recent literature and how the health care industry must respond to the epidemic of obesity as they have with the treatment of chronic conditions. This article also describes the chronic nature of obesity and the need for long-term weight maintenance strategies. Comprehensive, moderate-intensity weight management interventions with long-term maintenance have significant costs, which will need to be financed by the health care industry or by consumers. Americans already spend millions of dollars each year on weight loss strategies. With the staggering cost of obesity and the challenges of treatment and relapse, the importance of prevention becomes clear.

Obesity, like many other health conditions, begins very early in life and in most cases can be prevented. From the early 1960s to the late 1990s, prevalence of overweight among children and adolescents more than tripled.⁴ Overweight children are at risk for becoming obese adults. About a third of overweight preschool children and half of overweight school-age children remain overweight as adults.⁵ The risk for becoming an overweight child or adult can begin during pregnancy with additional risk factors throughout life. Pre-

natal risk factors for childhood overweight include being small (SGA) or large for gestational age (LGA).⁶ Appropriate weight gain during pregnancy,⁷ glycemic control, and tobacco cessation are some of the prenatal strategies to prevent SGA and LGA. During infancy, breastfeeding may provide some protection against childhood overweight.⁸ Adiposity and BMI decline from infancy and reach a nadir between five and six years of age. Children who reach this nadir earlier (early adiposity rebound) are at increased risk of becoming obese adults.⁹ The diagnosis of early adiposity rebound using BMI represents an important early intervention strategy to prevent overweight in childhood and adulthood. A recent review of the literature identified several key strategies for preventing overweight during childhood and adolescence.¹⁰ These strategies included increasing PE and recreational physical activity and decreasing television viewing and sweetened-beverage consumption. During early adulthood, the average weight gain is approximately 1.8-2.0 pounds/year. Weight maintenance by making small improvements in physical activity or portion sizes are key strategies for preventing obesity among young adults.¹¹ Weight maintenance for a young adult requires a 100 kcal/day deficit compared with a 300-1000 kcal/day deficit required to produce a 10% weight loss in six months for an obese adult. It is therefore much easier and less costly to prevent obesity than to treat obesity. A longitudinal approach to preventing obesity is shown below.

Preventing obesity must begin with conception. BMI and other risk factors must be tracked throughout life and effective weight management interventions must

A longitudinal approach to preventing obesity				
Fetus →	Infants →	Toddlers →	Children →	Adults
<i>Preventing:</i> • SGA • LGA	<i>Promoting:</i> • Breastfeeding	<i>Diagnosing:</i> • Early adiposity rebound	<i>Increasing:</i> • Physical activity <i>Decreasing:</i> • TV viewing • Sweetened beverage consumption	<i>Increasing:</i> • Physical activity <i>Decreasing:</i> • Portion size <i>Encouraging:</i> • Weight maintenance

Scott M Gee, MD, has worked for The Permanente Medical Group for over 15 years as a pediatrician at KP Pleasanton and as the Medical Director, Prevention and Health Information for Kaiser Permanente Northern California. E-mail: scott.gee@kp.org.

Weight Management and Obesity Symposium

be directed at different age groups. Early interventions are less intensive and less costly than weight management interventions later in life. KP's integrated structure and information technology systems provide a unique advantage to accomplish this goal. Every physician, nurse, and medical assistant must play a role in preventing and treating of obesity. Physicians and other clinical practitioners can provide lifestyle advice to all patients, identify patients at risk using BMI, and provide counseling to motivate and reinforce behavior change. Environmental changes in homes, schools, worksites, and communities are also needed to facilitate long-term behavior change. Health professionals can play a key role in making environmental changes in schools, communities, and worksites. The health care industry must balance resources between prevention and treatment to manage the obesity epidemic effectively. Past success in reducing tobacco use provides a framework for addressing the obesity epidemic and gives hope for the future. ❖

References:

1. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999-2000. *JAMA* 2002 Oct 9;288(14):1723-7.
2. Caplan W, Histon T, Pettay H, Green J. An overview of CMI's Weight Management and Obesity Initiative. *Perm J* 2003 Summer;7(3):41-7.
3. Vogt T, Stevens V. Obesity Research: winning the battle, losing the war. *Perm J* 2003 Summer, 7(3):11-20.
4. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002 Oct 9;288(14):1728-32.
5. 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 Mar;22(2):167-77.
6. Martorell R, Stein AD, Schroeder DG. Early nutrition and later adiposity. *J Nutr* 2001 Mar;131(3):874S-880S.
7. Bianco AT, Smilen SW, Davis Y, Lopez S, Lapinski R, Lockwood CJ. Pregnancy outcome and weight gain recommendations for the morbidly obese woman. *Obstet Gynecol* 1998 Jan;91(1):97-102.
8. von Kries R, Koletzko B, Sauerwald T, et al. Breast feeding and obesity: cross sectional study. *BMJ* 1999 Jul 17;319(7203):147-50.
9. Whitaker RC, Pepe MS, Wright JA, Seidel KD, Dietz WH. Early adiposity rebound and the risk of adult obesity. *Pediatrics* 1998 Mar;101(3):E5.
10. Ritchie L, Crawford P, Woodward-Lopez G, Ivey S, Masch M, Ikeda J. Prevention of childhood overweight: what should be done? [Berkeley (CA)] The Center for Weight and Health, College of Natural Resources, University of California; 2001. Available from: www.cnr.berkeley.edu/cwh/PDFs/Prev_Child_Oweight-10-28-02.pdf (accessed 6/19/03).
11. Hill JO, Wyatt HR, Reed GW, Peters JC. Obesity and the environment: where do we go from here? *Science* 2003 Feb 7;299(5608):853-5.

Life Goes Not Backward

You may strive to be like them, but seek not to make them like you.
For life goes not backward nor tarries with yesterday. You are the
bows from which your children, as living arrows, are sent forth.

The Prophet, 1923, Kahlil Gibran, 1883-1931, Lebanese poet, philosopher, and artist

CMI is using a multidimensional, public health approach

An Overview of the Care Management Institute's Weight Management and Obesity Initiative

By William Caplan, MD
Trina Histon, PhD
Helen S Pettay, BA

One of the strongest collaborations has been forged between CMI and the Centers for Disease Control and Prevention (CDC).

Weight Management and Obesity Initiative Strategic Model, Focus, and Goals

As prevalence of overweight and obesity reached epidemic proportions,¹ clinical intervention alone became obviously insufficient to address the problem. In January 2002, the Care Management Institute (CMI) of Kaiser Permanente (KP) launched the Weight Management and Obesity (WMO) Initiative to develop and implement a plan to address this critical public health issue. The strategic model for weight management includes the following five interlocking components:

- a research network;
- successful practice dissemination;
- legislative and public policy;
- community partnerships; and
- clinical management—the keystone that holds the other four pieces of the model together.

This multidimensional, public health approach evolved through the expertise and commitment of a clinical network of stakeholders and experts within and outside KP. Clinical leads included Warren Taylor, MD, KP Northern California; Jonathan Brown, PhD, Center for Health Research, KP Northwest; Scott Gee, MD, KP Northern California; Gary H Wong, MD, KP Southern California; Sasha Stiles, MD, Codirector, Multidisciplinary

Weight Management Program, formerly KP Hawaii, currently KP Northern California; and Keith H Bachman, MD, KP Northwest. This clinical advisory group documented the current “KP landscape” in weight management, delivered initial tools and strategies for primary care settings, and began a rigorous evidence review to identify optimal intervention.

Under the leadership of William Caplan, MD, and Trina Histon, PhD, of CMI, the initiative also set longer-term goals: to establish prevention and management of overweight and obesity as an organizational priority; to develop metrics to quantify effectiveness; to optimize and standardize program components; to develop evidence-based risk stratification approaches; and to enhance clinician and member skills through tools and education.

External Collaboration

Given the public health approach to combating such a complex and multilayered problem, CMI also sought external collaboration with other health plans, federal agencies, and academia to identify and disseminate effective models for prevention and treatment of overweight and obesity. Organizations represented in the collaboration have included the following: Centers for Disease Control and Prevention, HealthPartners, National

Institutes of Health, Geisinger Clinic, Robert Wood Johnson Foundation, American Dietetic Association, American Academy of Family Practice, American Association of Health Plans, North American Association for the Study of Obesity, and International Life Sciences Institute Center for Health Promotion.

KP/CDC National Meetings

One of the strongest collaborations has been forged between CMI and the Centers for Disease Control and Prevention (CDC). As part of that partnership, a working group was formed with the goals to identify practical, effective non-surgical approaches for the prevention and treatment of overweight and obesity; to increase the likelihood of adoption and implementation of these interventions and partnerships, thus leading to improved health outcomes for KP members and communities; to identify clinical research opportunities that support these goals; and to create a forum linking colleagues in the academic and research communities, federal agencies, and practicing clinicians who are actively engaged in assessing and implementing programs for overweight and obese patients.

Although the initial goals fo-



William Caplan, MD, (top) is the Director of Clinical Development at the Care Management Institute. He is a Board Certified endocrinologist and Associate Clinical Professor of Medicine at the University of California San Francisco. E-mail: william.caplan@kp.org.

Trina Histon, PhD, (right) is a Care Management Consultant at the Care Management Institute. She is the project director for CMI's Weight Management Initiative. Prior to this, Trina helped develop CMI's depression program. E-mail: trina.histon@kp.org.

Helen S Pettay, BA, (left) is the Communications Director for the Care Management Institute. E-mail: helen.pettay@kp.org.

Weight Management and Obesity Symposium

cused on the medical setting, the KP/CDC working group participants quickly recognized that an approach limited to medical settings would probably not be effective without reinforcing strategies in the community, workplace, and home. This recognition reemphasized the need for expanded partnerships between health care providers, communities, schools, nongovernmental organizations, and state and national government—especially between health care providers and payers at that level.

Four KP subgroups convened to address specific areas of concern:

- prevention and treatment of obesity in children and adolescents
- primary prevention in adults
- identification and management of adults at high risk
- treatment of severe obesity.

Weight Management Strategies Identified

Meetings, held in June and November of 2002, were structured to identify practical, effective strategies that could be rapidly implemented to help prevent and treat obesity among KP's 8.3 million members. Speakers were invited from numerous entities, including research, government, health care, and private industry as well as from KP.

Brief presentations, followed by long discussion, produced much insight and suggestions for population-based weight management strategies. The following section summarizes strategies by general category; presenters are attributed (in parentheses) and are listed in Table 1. (Many of these presentations were included as part of *The Permanente Journal's* Weight Management and Obesity Symposium Vol 7, No. 2.)

Lessons learned from smoking cessation (Gee). Dr Gee described how successful smoking cessation program strategies do not directly transfer to programs for preventing and treating obesity.

How to talk to patients about obesity: stigma and discrimination (Brownell). Dr Brownell stated that attention to tone and technique is required to work effectively with obese members. Varying acceptability of terms used to describe excess weight exists among overweight and obese people, a factor making it necessary to test prevention and treatment messages for acceptability.

Prevention and treatment in children and adolescents (Dietz, Hammer, Gee). Drs Dietz and Hammer addressed growing prevalence of obesity in children and adolescents and described a family-based, group behavioral program for over-

Table 1. Presenters from KP and Centers for Disease Control and Prevention at national meetings on treating and preventing obesity

Kelly Brownell, PhD, Director of the Center for Eating and Weight Disorders, Yale University
William Dietz, MD, PhD, Director, Division of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention
John Foreyt, PhD, Baylor College of Medicine
Scott Gee, MD, Medical Director of Prevention and Health Information, KP Northern California
Lawrence Hammer, MD, Professor of Pediatrics at Stanford University
Jim Hill, PhD, Director, Center for Human Nutrition, University of Colorado
Njeri Karanja, PhD, KP Center for Health Research
Esther Myers, PhD, RD, American Dietetic Association
Tim McDonald, PA, MHSA, Manager, Health Promotion, General Motors Corporation
Paul Nussbaum, Secretary, Department of Health and Human Services, State of West Virginia
F Xavier Pi-Sunyer, MD, Professor of Medicine, Columbia University College of Physicians and Surgeons
Nico Pronk, PhD, Vice President, Center for Health Promotion, HealthPartners
Tom Robinson, MD, MPH, Stanford University
Barbara Rolls, PhD, Guthrie Chair of Nutrition, Pennsylvania State University
Warren Taylor, MD, Director of Chronic Conditions Management, KP Northern California
Jim Sallis, PhD, Professor, San Diego State University
Sasha Stiles, MD, Co-Director, Multi-Disciplinary Weight Management Program, formerly KP Hawaii, currently KP Northern California
Victor Strecher, PhD, Director, Health Media Research Lab, University of Michigan
Deborah Tate, PhD, Assistant Professor, Brown University Medical School
Rodolfo Valdez, PhD, Epidemiologist, Division of Diabetes Translation, Centers for Disease Control and Prevention
Thomas Wadden, PhD, Director, Weight and Eating Disorders Program, University of Pennsylvania School of Medicine
Gail Woodward-Lopez, RD, MPH, Center for Weight and Health, University of California, Berkeley
George Isham, MD, MS, Medical Director and Chief Health Officer, HealthPartners

weight children and their parents. Family-based group weight control programs may be more feasible, efficient, and effective than individual counseling in pediatric primary care settings. Addressing cultural diversity in program design is crucial. Dr Gee presented a pediatric obesity prevention and treatment program based on a treatment room poster and on motivational interviewing.

Prevention and treatment in adults (Pi-Sunyer, Myers). Drs Pi-Sunyer and Myers discussed the Diabetes Prevention Program, the NIH guidelines for treating obesity, and the role of medical nutrition therapy. Obesity is a chronic disease, for which modest weight loss (5%-10% of body weight) offers considerable medical benefits. Lifestyle change (diet and physical activity) is the basis of therapy, and registered dietitians are preferable providers for addressing dietary issues.

Building a population-based approach (Taylor). Dr Taylor discussed components of addressing obesity at the population level. Primary and early secondary prevention are important, and a broad spectrum of programs is appropriate for overweight and at-risk members. KP must move ahead with programs in the absence of conclusive evidence about efficacy; incorporating measures of effectiveness into program design is important too.

Increasing physical activity (Pronk, Hill). Drs Pronk and Hill described pedometer-based programs to increase physical activity. Because the environment is important for promoting or discouraging physical activity, community partnerships are needed to implement effective programs. Multiple points of entry to pedometer-based programs already exist at KP—mandating flexible program models—and broad worksite implementation at KP is fundamental.

Behavioral intervention (Brownell, Gee). Dr Brownell reviewed the current status of behavioral treatment in research trials, and Dr Gee discussed brief negotiation, a motivational interviewing strategy. Behavioral treatment is associated with increased weight loss, but the degree to which behavioral treatment can be offered in primary care settings at KP is not resolved. Brief negotiation increases primary care providers' confidence levels in addressing behavior change and can be learned quickly.

Bariatric surgery (Stiles). Dr Stiles addressed the need for a national database to capture information about all bariatric surgery patients because such a database is essential to developing models of care, best practices, and long-term effectiveness studies.

Role of interactive technology in supporting weight loss and weight maintenance (Sallis, Strecher, Tate). This panel presented their experience with computer- and Internet-based weight management technology. Computer-based programs apparently work for adolescents as well as for adults and allow individual participants to change more than one behavior at a time. Tailored messaging enhances effectiveness, and the Internet can be an effective way to deliver behavioral therapy components of weight management programs.

Nutritional approaches for preventing and treating overweight and obesity (Dietz, Myers, Rolls). These panelists discussed many existing and potential—and potentially conflicting—key nutritional messages for preventing and treating obesity. For example, a simple and visually appealing construct is the energy density of foods; the related message focuses on lowering the energy density of food to control weight.

Definitions of the metabolic syndrome (Valdez). Dr Valdez discussed multiple existing definitions of the metabolic syndrome. Consensus is still emerging about what criteria define this syndrome. Impaired glucose tolerance, waist circumference, and triglyceride:HDL-C ratio are proposed indicators of metabolic risk.

Role of pharmacotherapy in weight management (Wadden). Dr Wadden discussed several studies evaluating effectiveness of sibutramine and orlistat for inducing and maintaining weight loss. Pharmacotherapy is useful as adjunctive therapy in weight loss programs, to which lifestyle change in diet and in physical activity is fundamental.

Culturally competent care for overweight and obese members (Karanja, Foreyt). Drs Karanja and Foreyt discussed weight loss intervention in African American and Mexican American populations, which are at much greater risk for obesity and related conditions than is the non-Hispanic white population. Community- and family-based intervention takes on increasing importance, socioeconomic and environmental issues change effectiveness of weight management intervention, and cultural differences regarding dietary preference and weight-related issues must be considered and respected. Cultural strength can form the foundation of effective programs, and community coalitions can address environmental issues.

Community-based intervention (Robinson, Woodward-Lopez). Drs Robinson and Woodward-Lopez addressed community- and school-based intervention. School-based programs to reduce TV viewing and to increase physical activity have proved effective, and community coalitions can result in rapid program development.

Weight Management and Obesity Symposium

Purchasers' perspective (Isham, McDonald). Drs Isham and McDonald discussed weight management as viewed by employer-purchasers of health care services. A discussion of health promotion and prevention activities must be framed in terms that employers understand; return on investment is a successfully used concept, as is incorporating primary prevention in any discussion of more costly secondary and tertiary health care.

National, state, and community initiatives (Dietz, Nussbaum). Drs Dietz and Nussbaum described political and governmental initiatives to address obesity. All levels of community coalitions and stakeholders—such as physicians, parents, and educators—are fundamental to creating program and environmental change.

Clinical Management Tools and Resources CMI Weight Management Source Book²

A source book of weight management and bariatric surgery programs in KP also has been developed as part of the Weight Management Initiative. The purpose of the *CMI Weight Management Source Book* is to provide an informational resource for clinicians, administrators, and managers interested in improving care for patients who are overweight or obese or who are at risk of becoming overweight or obese.

The *Source Book* provides information on the process of planning as well as building a business case for weight management activities and outlines key elements of both weight management and bariatric surgery programs throughout KP. The *Source Book* is intended to meet the needs of anyone within KP who wants tools, knowledge, and support for improving or creating a weight management program.

The *Source Book* provides an early snapshot of what KP currently provides to members regarding weight management activities. The book may also serve as a vehicle to further explore these themes and to help prioritize, standardize, refine, and evaluate approaches to weight management programwide. The resources are meant to help begin an active process of integrating appropriate models of weight management at the regional and local levels within KP to ensure that excellent care happens routinely and is not a matter of chance. The *Source Book* can be found at the Permanente Knowledge Connection: <http://pkc.kp.org>.

Guidelines

CMI is working with one of its health system collaborators (HealthPartners in Minneapolis) to conduct a literature review from which evidence-based guidelines, models of care, and successful practices for evaluation and treatment of overweight and obesity can be developed.

In addition, the initiative's subgroup focusing on identification and management of adults at high risk for overweight and obesity has been working with KP Regions to develop evidence-based guidelines on treatment for high-risk populations, eg, populations with impaired glucose tolerance and sleep apnea.

Posters and Tipsheets

Two clinical examination room posters, originally developed by KP Northern California's Regional Health Education Department, were modified by a subgroup to meet the needs of all KP Regions.

The posters can be used to raise awareness and to catalyze conversations between clinicians and patients in the framework of motiva-

tional interviewing. Posters have been printed in Spanish as well as English and include information directed to the Spanish-speaking culture. A tipsheet accompanies the posters and expands on key messages and action items in the poster.

Get More Energy, a poster designed for children and adolescents, incorporates the following messages in a colorful and motivating way:

- Get up and play hard
 - At least 30-60 minutes a day
- Cut back on TV and video games
 - No more than one hour a day
 - Remove TV from the bedroom
- Eat five helpings of fruits and vegetables a day
 - One fruit or 1/2 cup of vegetables equals one helping
- Cut down on sodas and juice drinks
 - No more than one can or small cup a day
 - Drink water when thirsty

The accompanying tipsheets, designed for children and adolescents and their families, can be used as a support tool by giving parents tips on how to better motivate and support their children in managing the children's weight. The goal is to have a *Get More Energy* poster in every pediatric examination room KP Programwide.

The *Getting in Balance* poster, printed in English and Spanish, displays motivational messages for adults:

- Get Up and Get Moving:
 - Be physically active, exercise for at least 30-60 minutes each day.
 - Walk more. Count your steps with a pedometer.
- Eat Healthy:
 - Eat at least five helpings of vegetables and fruit a day.

- Replace soda and juice with water.
- Take Time to Take Care of Yourself:
 - Balance your work and relaxation to help manage stress.
 - Commit to small changes and healthy choices.
- Strive for a healthy weight; holding your weight steady is a great first step.

The accompanying tipsheets incorporate the Stages of Change model by asking: "How ready are you to make a change and to get in balance?"

The Body Mass Index (BMI) Wheel

Ascertaining body mass of patients is an efficient and important first step in helping clinicians treat patients who are overweight or obese. Many KP Regions use body mass index (BMI) charts. A BMI Wheel also has been developed and is being distributed to KP clinicians as part of structured training sessions. The BMI Wheel, which calculates BMI based on height and weight, has two sides: one side for adults and the other side for children. Having the BMI data enables clinicians to take a population-based approach to care by stratifying members according to their risk and treating them appropriately for their risk level. Plans call for the automated medical record being implemented within KP to capture BMI. In the meantime, clinicians are encouraged to chart both height and weight for their patients in the medical record. From the perspective of the health care system, knowing the BMI for KP membership allows us to profile by BMI not only risk of disease but also cost.³

Pedometer Program

A national KP workgroup has been formed to develop and implement a pedometer program in the

KP Regions with employees and clinicians as its initial audience. The physical activity program includes selling pedometers to staff at a reduced price and encouraging them to participate in the 10,000 Steps Program developed by HealthPartners.⁴ Participants are asked to walk 10,000 steps a day and are sent health prompts, tips, and recipes via e-mail messages. Participants also register with a *10,000 Steps* Web site that helps them track the number of steps they've taken and gives them access to a reading room containing information about how physical activity improves health.

Almost every KP Region has implemented a pedometer program for KP audiences. Plans are that the programs will be shared with the Health Plan members.

Research Network

Establishing a research network has been an integral component of the initiative work. The approach has been to create cohesion in the research community by escalating information flow to increase energy and ensure participation. A KP Programwide research network comprised of 30 KP scientists in six regions was formed with the following objectives:

- Make KP's weight management programs and processes more effective and efficient
- Create and disseminate new knowledge
- Enhance KP's reputation
- Obtain external research funding
- Support the WMO Initiative

The KP Research Network also will collaborate with researchers outside KP through the HMO Research Network and academic scientists.

The Kaiser Permanente Garfield Memorial Fund also has established a Weight Management Research Initiative allocating funds for research to

evaluate strategic issues in weight management within KP and in the community. The research initiative will be cochaired by a KP clinician and a researcher. A request for application (RFA) is expected by the end of 2003. The Garfield Fund may also be used in partnership with other funding opportunities from the Robert Wood Johnson Foundation and others.

Successful Practices Dissemination

Disseminating successful practices is one of the five components of the CMI public health model. Because of this, each KP Region has formed an obesity task force. These regional groups share strategies and tools and promulgate them at the grassroots level.

One of the most effective dissemination strategies to date is the motivational interviewing training being conducted by Dr Scott Gee in the KP Northern California Region. Dr Gee teaches clinicians how to help patients change behavior according to the Stages-of-Change model. Dr Gee developed the program in the KP Northern California Region and, by request, has trained about 200 providers in KP's Southern California Region also.

CMI-sponsored workshops on the topic of weight management and obesity took place at the KP Primary Care Conference in April 2003. At that conference, KP members—who paid for their own transportation—spoke passionately about their experience managing their own weight and offered perspectives on their care experience at KP.

KP and its partners also have made presentations at state and national medical conferences outside KP, including one at the West Virginia State Medical Association given by request of the National Governors Association. The talk focused on the clinical

Ascertaining body mass of patients is an efficient and important first step in helping clinicians treat patients who are overweight or obese.

Weight Management and Obesity Symposium

nature of the obesity epidemic and on the impact of bias and discrimination in clinical practice toward overweight patients. Presenters also gave an overview of and training in motivational interviewing.

CMI also has developed a *How-to Guide* for clinicians to assist them in making decisions about treatment options. The *How-to Guide* is available on the Permanente Knowledge Connection Web site at <http://pkc.kp.org>.⁵

Community Partnerships

CMI's WMO Initiative is designed to complement community partnerships that can help deepen and extend the knowledge base in this area. Numerous activities are underway. For example, CMI and KP's Community Benefit Program are working with community clinics in the area of overweight and obesity. Messages about weight management are included in the Educational Theatre production, "*Zip's Great Day*," and the "*Get More Energy*" posters have been adapted to incorporate pictures of the characters from the play. These weight management posters will be available at schools when KP Educational Theatre productions are staged there.

Influencing Policy and Legislation

The final piece of the interlocking public health model looks at changing societal structures to help prevent and treat overweight. In August 2003, a major national roundtable discussion will be held in Washington, DC, called "*Prevention and Treatment of Overweight and Obesity: Toward a Roadmap for Advocacy and Action*." The roundtable will include 45 to 50 people and will be structured around information in a white paper developed by KP. The objective of the meeting is to provide a forum for critical discussion among such diverse

stakeholders as representatives of health plans and providers, employers, consumers, food industry representatives, researchers, analysts, community-based organizations, and policymakers.

In addition to KP's CMI and Institute for Health Policy, sponsors of the meeting include the American Association of Health Plans, Centers for Disease Control and Prevention, HealthPartners, the Robert Wood Johnson Foundation, and the Washington Business Group on Health.

The goals of the roundtable meeting are as follows:

- To summarize effective, evidence-based prevention and treatment strategies for overweight and obesity; and to apply lessons from other social change initiatives to weight control.
- To create an action plan for expanding the Chronic Care Model so that it effectively applies to the issues of overweight and obesity. The Chronic Care Model,^{6,7} developed by Improving Chronic Illness Care at the MacColl Institute for Healthcare Innovation in Seattle with support from the Robert Wood Johnson Foundation, identifies elements essential to high-quality chronic disease management. These elements include the community, the health system, self-management support, delivery system design, decision support, and clinical information systems.
- To identify short- and long-term public policy intervention or other actions that may be necessary to improve prevention and treatment of overweight and obesity.

Future Directions

The Weight Management Initiative signifies commitment of KP to address the critical public health issue of over-

weight and obesity in a comprehensive and sustainable manner. We have the good fortune of being able to build upon the talents and dedication of many physicians and other health care professionals and administrative support. Our links with experts and organizations external to KP have significantly strengthened our efforts and brought national recognition to KP. We have built a strong foundation and are well positioned to address the challenges ahead. ❖

Acknowledgment

Jennifer Green provided editorial assistance.

References

1. Freedman DS, Khan LK, Serdula MK, Galuska DA, Dietz WH. Trends and correlates of class 3 obesity in the United States from 1990 through 2000. *JAMA* 2002 Oct 9;288(14):1758-61.
2. Kaiser Permanente Care Management Institute. Weight management source book: a guide for program development. [Oakland (CA): Care Management Institute]; 2002. Available from: <http://pkc.kp.org/national/cmi/programs/weightmgmnt/> (accessed June 18, 2003).
3. Quesenberry CP Jr, Caan B, Jacobson A. Obesity, health services use, and health care costs among members of a health maintenance organization. *Arch Intern Med* 1998 Mar 9;158(5):466-72.
4. Pronk N. One step at a time—the 10,000 Steps Program® increases physical activity. *Perm J* 2003 Spring;7(2):35-6.
5. Kaiser Permanente Northwest. Weight management: obesity: a practice resource. 2002. Available from: <http://internal.or.kp.org/cpg/resource/R20916.HTML> (accessed June 18, 2003).
6. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. *JAMA* 2002 Oct 9;288(14):1775-9.
7. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness: the chronic care model, Part 2. *JAMA* 2002 Oct 16;288(15):1909-14.

The *How-to Guide* is available on the Permanente Knowledge Connection Web site at <http://pkc.kp.org>.

Trina Histon, PhD, summarizes the purpose, methods, and scope of programs currently being offered

KP Regional Weight Management Programs

By Trina Histon, PhD

We at Kaiser Permanente (KP) can justifiably take pride in offering our members many options for attaining and maintaining healthy body weight. KP Regions offer many programs to meet the needs of children, adolescents, and adults who are mildly overweight to severely obese. This brief, general summary of KP Regional Weight Management Programs introduces to The Permanente Journal readers the purpose, methods, and scope of these programs currently being offered in many KP Regions.

Diverse Selection of Weight Management Programs

The broad diversity of weight management programs offered to KP members results from several factors. First, our membership is diverse: Our patients represent all ages, body mass indexes, ethnic and racial groups, health status, and other characteristics germane to weight management. A one-session weight management class can meet the needs of some Health Plan members, but other members want the continuing support of ongoing group and professional guidance throughout the long, complex processes of achieving and maintaining weight loss. Many overweight and obese members also have chronic disease and therefore need specialized resources not only to support weight loss but to help cope with chronic medical conditions while emphasizing each patient's critical role in influencing his or her future health status.

The diversity of these weight

management programs reflects the complexity of achieving and maintaining weight loss as well as the lack of evidence-based information about these processes, particularly the difficult process of maintaining weight loss. For example, we know from the Finnish Diabetes Prevention Study Group¹ that intensive lifestyle intervention for people with impaired fasting glucose can delay onset of diabetes, but we do not know whether this strategy is effective for other medical conditions. In addition, although we know that the core component of effective weight management programs is information—about diet, nutrition, physical activity, and methods of modifying behavior and maintaining weight loss—we have not yet identified what components, if any, are most effective for specific populations. All KP Regional Weight Management Programs offer various versions and combinations of these resources.

Relation Between KP Organizational Strength and Successful Weight Management Programs

With an estimated 4.4 million overweight or obese adult KP members nationwide, we are challenged to take a population-level approach to weight management. What types of intervention can address the growing prevalence of excess weight most effectively and efficiently?

The unique strengths of KP's organizational structure enable us to parse the problem of epidemic excess weight into segments, each of which can be matched with a problem-solving strategy. Our organizational structure facilitates active collaboration among researchers inside and outside KP and allows us to track new recommendations from outside entities such as the US Preventive Services Task Force, an

independent panel of experts in primary care and prevention. In addition to ongoing or completed evaluation of weight management programs, several KP Regions are standardizing forms for evaluating patients at intake, assessment, and follow-up to facilitate more systematic study.

We must continue to develop weight management programs in the absence of definitive, long-term study results. As our knowledge base increases, we can improve programs by eliminating nonessential elements and augmenting effective ones.

Current weight management programs in each KP Region are described in the next section and are summarized in Table 1.

Current KP Regional Weight Management Programs KP Colorado

In partnership with the American Heart Association's *Slim for Life* program, KP Colorado has, since 1997, offered a one-year weight management class for adults that encourages them to introduce dietary change and more physical activity into their lifestyle. During the year, participants attend seminars on weight-related behavioral issues (for example, motivation and "emotional eating") and meet five times with a case manager who assesses participants' progress. Participants who meet the criteria for

With an estimated 4.4 million overweight or obese adult KP members nationwide, we are challenged to take a population-level approach to weight management.



Trina Histon, PhD, is a Care Management Consultant at the Care Management Institute. She is the project director for CMI's Weight Management Initiative. Prior to this, Dr Histon helped develop CMI's depression program. E-mail: trina.histon@kp.org.

Weight Management and Obesity Symposium

pharmacotherapy are offered this treatment option, for which participants bear the full cost of any nonformulary medications prescribed. Of 262 participants who completed the program in 1999 and 2000, about 28% lost at least 5% of their initial weight, and 11.8% of participants lost at least 10% of their initial weight. Mean weight loss per person was 8.3 pounds—about 1.4 pounds per month.

Bariatric surgery is also available at KP facilities for Health Plan members who meet the criteria for this procedure, an open (transabdominal) Roux-en-Y procedure.

KP Mid-Atlantic States

For six years, dieticians in the KP Mid-Atlantic States Region have offered a weight manage-

ment class containing instructional material about several topics: healthy dietary change; beliefs and attitudes about weight; factors that influence eating and physical activity; and healthy lifestyle choices. This program has not yet been formally evaluated.

Members who meet the criteria for bariatric surgery may receive this surgery at non-KP facilities, where non-KP physicians perform the open Roux-en-Y procedure under contract with KP.

KP Northwest

In KP Northwest, a weight management program began in 1989 and gradually developed into three programs that range from a self-study guide, *Weight Loss Basics*,² to a 12-week program (or alternatively, a five-week pro-

gram) which encourages participants to develop new life skills instead of dieting restrictively. During both the five-week and the 12-week programs—which provide information about readiness to change, dietary improvement, and finding ways to increase physical activity—participants lose a mean 1.1 pounds per week.

In addition, members who meet the criteria for bariatric surgery may receive this surgery (the open Roux-en-Y procedure) from KP surgeons.

KP Northern California

Weight management programs in KP Northern California (KPNC) started in 1996 and now include a variety of adult-oriented programs, the cornerstone of which is a multisession class, *Lifestyle and*

Weight Management Program.

This class is facilitated by a team consisting of a dietician, a counselor, a health educator and/or exercise physiologist. At various sites throughout KPNC, the program is augmented by strategies such as offering group appointments or tailoring classes to specific issues (eg, medical weight management, self-esteem and emotional issues, and weight loss for African Americans).

A counseling protocol developed by the KPNC Regional Health Education Department on the basis of a four-session intervention is designed to help primary care clinicians to counsel members effectively about physical activity, healthy eating, and lifestyle change. A resource guide is available to help primary care clinicians and staff incorporate information about body mass index (BMI) into routine care and provide additional weight management resources for KP clinicians and members. Members who meet the criteria for bariatric surgery may receive this surgery either by KP surgeons or at non-KP facilities. KP surgeons and non-KP physicians contracting with KP usually perform the open Roux-en-Y procedure but sometimes use the laparoscopic approach.

Weight management programs tailored for different pediatric age groups are offered at KP and non-KP facilities. These programs are family-based, focus on behavior modification, and range from single classes to multisession programs.

Get More Energy, a poster developed by the department, is posted in pediatric and family practice settings and is used as a training tool for pediatricians. The poster includes information about

Table 1. Kaiser Permanente regional weight management programs

Region	No. of centers	Components	Duration	Cost to member
Colorado	6	Health education; diet, physical activity, behavior modification. Case management.	1 year	\$100-170 Nonformulary drugs at member expense.
Mid-Atlantic States	2 to 5 each quarter	Health education; diet, physical activity, behavior modification.	4 sessions	\$10/session
Northwest	11	Health education; diet, physical activity. Group support.	5-12 weeks	\$60-140
Northern California	28	Adults: Health education; diet, physical activity. Group appointment. Primary care counseling protocol.	8-16 weeks	\$0-100
	20	Pediatrics: Family-based health education; diet, physical activity, behavior modification. Group support.	2-10 weeks	\$0-500
Southern California	12	Adults: Health education; diet, physical activity. Children, adolescents, and caregivers: Health education; diet. Obesity Center. Meal replacement, counseling, behavior modification, telephone follow-up, telephone classes, weight maintenance. Case management.	1 session to 1 year	Fees vary.
Group Health Cooperative, Ohio and Georgia	3	Health education; diet, physical activity, behavior modification. Meal replacement, telephone classes, weight maintenance.	Up to 18 months	\$15-35/week

BMI and effective weight management counseling for children and families.

KPNC is collaborating with its Division of Research to evaluate this weight management program. Results of the evaluation will be available this year.

KP Southern California

At each of its 12 medical centers, KP Southern California (KPSC) offers a variety of weight loss programs ranging from single classes to extended programs lasting six months or longer. These programs teach behavior modification and methods of solving problems under close medical supervision. In addition, a unique, freestanding, fee-for-service metabolic obesity center operates in KPSC and offers classes tailored to specific issues, such as the effects of sexual abuse on weight.

For adult Health Plan members who meet the criteria for bariatric surgery, this treatment (the open or laparoscopic Roux-en-Y procedure) is available from KP physicians as well as from non-KP physicians who have contracted with KP to do the procedure. Weight management programs for adolescents and for their caregivers consist of one or two sessions and address reasons for weight gain,

caloric content of food (including “fast food”), low-fat cooking, and strategies designed to increase physical activity.

Programs about pediatric weight management are offered to parents and caregivers and teach about food choices, including the relation between fast-food consumption and weight gain.

This weight management program has not yet been formally evaluated.

Group Health Cooperative

Group Health Cooperative (GHC) provides four different weight management programs: meal replacement, weekly classes, individual contact (by phone or in person) with a health educator, or a combination of these services. Programs are tailored to members' needs and address such topics as weight maintenance and achieving various degrees of weight loss (ie, 10 pounds, 30 pounds, or more). At-home counseling is available for Health Plan members who are unable to attend classes at a clinic location.

For adult members who meet the criteria for bariatric surgery, this treatment (usually the laparoscopic Roux-en-Y procedure) is available at GHC facilities and is done by GHC physicians.

A five-year analysis of GHC

weight management activities is underway. Results are expected to be available later this year.

KP Ohio, KP Georgia, and KP Hawaii

For members of KP Ohio and KP Georgia who meet the criteria for this procedure an open Roux-en-Y procedure is performed. Non-KP physicians perform the surgery under contract with KP.

Members who meet criteria in KP Hawaii receive surgery by KP physicians at a KP facility; the preferred procedure is laparoscopic Roux-en-Y.

Conclusion

This overview of KP Regional Weight Management Programs presents a region-by-region snapshot of where we are now and helps provide a roadmap for where we need to go. ❖

Acknowledgments

In facing the critical public health issue of weight management, KP is building upon the talents and dedication of hundreds of KP physicians and health care professionals working at the regional level. It is their innovation, commitment, and collaborative spirit that ultimately will allow KP to address the challenges ahead.

I would like to take this opportunity to thank some representatives from Care Management Institute's Weight

Management Clinical Network who have been working together on an interregional basis to develop tools, programs, and training to enhance our program's ability to respond to this epidemic quickly and with a solid understanding of the evidence. Thanks to them, also, for helping to ensure accuracy of these overviews for their regions.

Helen M Seagle, MS, RD, Program Coordinator, Weight Management Program, KP Colorado; John Crawford, MPH, Health Education Services, KP Northwest; Evelyn Eckberg, MSN, RN, Clinical Strategy Consultant, Department of Clinical Services, KP Southern California; Kathy Edris, MS, Director of Weight Management Programs, Group Health Cooperative of Puget Sound; Veenu Aulakh, MPH, Senior Project Manager, Pediatric and Adolescent Regional Health Education, KP Northern California; Rachele Mirkin, MPH, Director of Regional Health Education, Prevention, KP Northern California; Alethia Alford, MA, Program Manager, KP Mid-Atlantic States; Stacey C Shapiro, MPH, RD, Director, Regional Self-Care and Prevention Program, KP Mid-Atlantic States.

References

1. Tuomilehto J, Lindstrom J, Erikson JG, et al. Finnish Diabetes Prevention Study Group. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001 May 3;344(18):1343-50.
2. Kaiser Permanente Northwest. Weight-loss basics: self-study packet. [Portland (OR)]: Kaiser Permanente Northwest; [n.d.].

The Beginning

The beginning is always today.

Mary Wollstonecraft, 1759-1797, writer and feminist