

# Weight Management and Obesity Symposium

*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

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### 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.

### Introduction

The United States is undergoing an epidemic of diabetes and obesity with profound consequences on our health and on health care costs.<sup>1,3</sup> 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.<sup>4</sup> The

exciting findings of the Diabetes Prevention Study<sup>5</sup> and of the Diabetes Prevention Program<sup>6</sup> 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.<sup>7,8</sup> Identification of approaches that lead to sustained, long-term

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.<sup>9</sup> Nonetheless, treatment of obesity is the cornerstone of both diabetes care<sup>9</sup> and diabetes prevention.<sup>5,6</sup> Two of every three diabetic patients are overweight,<sup>10</sup> and obesity is increasing rapidly throughout the United States.<sup>11-13</sup> Weight loss reduces medical costs; improves control of glycemia, lipoproteinemia, and blood pressure;<sup>14</sup> and reduces mortality risk among patients with diabetes.<sup>15</sup> The economic burden of obesity may exceed \$100 billion per year.<sup>16</sup> Weight management requires a life-long commitment to healthy eating practices as well as to daily physical activity.<sup>17</sup> Regaining weight after successful completion of a drug

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

### 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%).<sup>19</sup> About two thirds of Hawaii's Native Hawaiians, Filipinos, and Japanese—and about half of Hawaii's whites—maintain a sedentary lifestyle.<sup>20</sup> In Hawaii, 46% of Native Hawaiians are obese compared with 24% of the general population of Hawaii.<sup>20</sup> 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.<sup>20</sup> Native Hawaiians are the only US ethnic group with a life expectancy below 70 years (68 years),<sup>20</sup> and obesity and diabetes are the primary reason. Filipinos and Japanese in Hawaii also have high rates of diabetes.<sup>20</sup> 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.<sup>21</sup> Despite strong evidence of benefit from sustained weight loss,<sup>22,23</sup> 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

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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.<sup>24</sup> 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<sup>4,7,8,21,25-52</sup> 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.

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.

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

Service	Cost <sup>a</sup>	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

<sup>a</sup> 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.

## 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.<sup>53,54</sup> Sedentary lifestyle is also an important risk factor for cancer.<sup>55-57</sup> In the United States, about 60% of adults are inadequately physically active, and one quarter report engaging in no physical activity at all.<sup>58</sup> The Surgeon General's Report on Physical Activity and Health<sup>58</sup> 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.<sup>25</sup>

The Diabetes Prevention Program clearly showed the importance of exercise in diabetes prevention.<sup>26</sup> Physical activity counseling by physicians affects patient exercise levels,<sup>59-62</sup> but more research is needed on how to incorporate exercise counseling into the medical setting.<sup>63</sup> The Physician-based Assessment and Counseling for Exercise (PACE) Program<sup>63,64</sup> 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.<sup>65</sup> Medical systems need effective system support pro-

grams 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.<sup>28,66-69</sup> One very-low-calorie diet program<sup>21</sup> 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<sup>70,71</sup> developed a lifestyle approach to increasing physical activity based on the Stages of Motivational Readiness Model<sup>72</sup> and on the Social Cognitive Theory Model.<sup>73</sup> A similar approach has been widely used by Stevens et al<sup>66-68,74</sup> in research programs. Barriers to engaging in physical activity have been widely studied, as have interventions designed and tested to overcome those barriers.<sup>75-79</sup> 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.<sup>29</sup>

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.<sup>60,80,81</sup> 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.<sup>33</sup> The PACE program<sup>64</sup> 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 intervention<sup>59</sup> 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,<sup>7</sup> and the components of successful maintenance programs are gradually emerging. The VLCD approach is associated with

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greater initial weight loss and maintenance of weight loss than are low-energy, balanced diets and may be associated with better sustained weight loss.<sup>8</sup> 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.<sup>34</sup> Walsh and Flynn<sup>21</sup> 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.”<sup>82:abstract</sup>

### Relapse Prevention

The Relapse Prevention Model<sup>52</sup> 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.<sup>37,83</sup> Development of personalized strategies for maintaining weight loss is associated with long-term maintenance of weight loss.<sup>84</sup>

### Social Support

Social support interventions maintain behavior change through social relationships and interpersonal interactions<sup>38</sup> and emphasize ex-

change 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.<sup>39,40,84,85</sup> 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.<sup>35,41,42,86</sup> Seven of nine diabetes studies showed that chronic care management reduces health care use and costs of care.<sup>4</sup> 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.<sup>25,41,86</sup> The health care system is a “bully

pulpit” for intervening in health-related behavior. Relatively small amounts of weight loss confer disproportionate health benefits,<sup>22,36</sup> 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.<sup>7</sup> 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.<sup>42,43</sup> Some low-cost, minimal intervention strategies (such as phone contact, mail contact, or both<sup>47</sup>) 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,<sup>87</sup> 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 behavioral prevention services.<sup>88</sup> More than 60 randomized trials have

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shown that brief physician assessment and advice substantially raises long-term smoking cessation rates among patients,<sup>89,91</sup> but only a few encouraging studies have addressed dietary<sup>92</sup> and exercise<sup>63,64,93</sup> change in response to intervention provided in the medical office. The Trials of Hypertension Prevention<sup>67</sup> 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.<sup>66</sup> Physical activity enhances weight-loss success<sup>30</sup> and can help sustain achieved weight loss.<sup>27</sup> Health systems have a uniquely important role to play in promoting increased physical activity.<sup>25</sup> Case management is effective for improving glycemic control among diabetics<sup>94</sup> 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.<sup>33</sup> 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,<sup>89,95</sup> 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 the context of medical care.<sup>92,95,96</sup> The impact of a message is greater when it is tailored to an individual patient,<sup>96</sup> and long-term maintenance of weight loss definitely en-

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hances 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.<sup>97-99</sup> In addition, medical training does not prepare physicians to deliver nutritional counseling.<sup>100</sup> However, physician counseling skills and practices can be improved,<sup>101</sup> 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,<sup>102</sup> 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.

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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.<sup>7,8,103</sup>

A skeptical review<sup>103</sup> 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<sup>7,82,84,87</sup> 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 studies<sup>4</sup> 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 despite the nation's epidemic of obe-

sity 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.<sup>88</sup> 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<sup>104,105</sup> 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. ❖

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### 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*