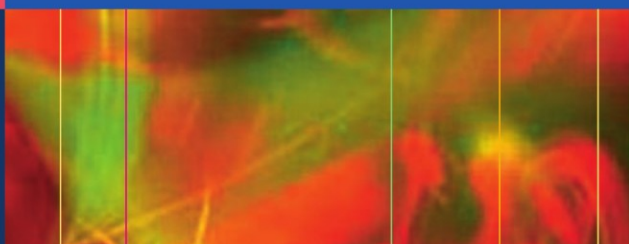


Thomas L. McKnight



# Obesity Management in Family Practice

 Springer

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Thomas L. McKnight, MD, MDIV, MPH

With 30 Illustrations



Springer

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*To my incredible wife, Sue*

# Foreword

The acknowledgment that obesity is a disease—a disease with enormous impact on both the public health and the economy and an incredible burden to its victims—has finally come. This final recognition will hopefully free research dollars and will encourage third party payers to understand the need to cover services for treatment.

Dr McKnight is an honored family medicine educator who combines his sense of academic rigor with the understanding of a compassionate family physician. Thus he approaches this clinical syndrome in the manner of a family physician: he aims to have an effect on the entire person and that person's life, not just some disease entity. His broad-based approach draws on behavioral strategies, diet and exercise modification, and limited use of pharmaceuticals in selected cases. The practical tools presented here will prove to be valuable additions to the armamentarium of care teams that look to develop treatment plans for their patients with this disease.

I myself have been obese as long as I can remember. I am the son of obese parents and my sister has shared this chronic problem. Over my lifetime I have dealt with almost all of the problems of obesity, and I have used all of the excuses. I have dealt with many obese patients during my years in practice, some who have said openly that they chose me as their physician because I really couldn't tell them to lose weight, since I could not myself.

Just a few months before I was to be inaugurated as President of the American Academy of Family Physicians, I received a call from the American Academy's Commission on Public Health asking me if I would be willing to become a "poster boy" for the Academy's AIM Initiative (Americans in Motion). I answered their request, and I made a commitment to be around to see my grandchildren grow up. I decided to approach this differently than I ever had before. I decided on a set of behavior changes that are revealed in this book. My quest has been successful. Today, just over a year after I made the commitment, I have lost over 55 pounds. But, more important, I have discovered a whole new concept of health and wellness that I can now recommend and show to my patients. It has to do with how I think about food and eating, and how I feel about fitness. It has become an almost spiritual quest for me, and I have never felt better, nor have I ever felt better about *me*.

Dr Tom McKnight has done an extensive, scholarly review of the literature, and his findings support the proposition that the management of obesity is indeed a strategy of behavioral changes that must be supported and maintained. This book outlines these strategies, and confirms the primary care physician's mission for creating a new paradigm of health and wellness.

*Michael Fleming, MD, FAAFP*  
Board Chair, American Academy of Family Physicians

# Preface

*Obesity Management in Family Practice* applies the best evidence-based obesity science and national recommendations to patients in the primary care setting. The approach is based on the viewpoint that obesity is a chronic disease that can be controlled by the patient. My clinical perspective is from family practice, with a focus on the health of both the individual and the community. I am dual boarded in both Family Medicine and Preventive Medicine.

*Obesity Management* reviews the best research on obesity, along with commonsense dietary and behavioral tools, and presents the information in a time-efficient process that any physician can use in a primary care setting. The book addresses practical obesity management questions and covers the entire process, from the first visit to the final weight maintenance appointment. *Obesity Management in Family Practice* is written for any physician who delivers primary care medicine, especially family medicine physicians. Pediatricians will find the recommendations on childhood obesity particularly useful.

The first half of the book describes how to identify which patients are ready to begin a weight management program, how to use inexpensive dietary tools in a 6-month program, and how to encourage physical activity. The appropriate approach and goals for children and adolescents are covered, as is pharmacotherapy as an adjunct to a dietary and exercise program. Chapter 7 discusses bariatric surgery options for obese patients with comorbidities.

The last four chapters present an appointment-by-appointment plan that the physician can implement to help the patient apply the weight management science. This program comes from experience in treating obesity in the primary care setting. The clinical process is designed to be used in the context of 15-minute appointments, using tools presented in the figures. The last chapter addresses counseling patients on how to use the plan for lifelong maintenance of appropriate weight.

As a family physician in a rural setting, the economic and educational characteristics of my patients vary greatly. I developed the treatment plan outlined in this book so that all my patients with obesity, not just the highly educated or financially well off, can be offered the best evidence-based science in a practical format that will enable them to have long-term success in controlling their obesity.

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# 1. Obesity as a Chronic Disease

Many of the 21st-century healthcare challenges will be directed toward management of chronic diseases. Congestive heart failure, asthma, and diabetes are examples of chronic diseases that command a tremendous amount of medical resources and provider time. The prevalence of these diseases in the American population is staggering. For instance, a person aged 40 or older has a 1 in 5 lifetime chance of developing congestive heart failure [1]. An infant born in the year 2000, depending on ethnicity, has a 1 in 3 to a 1 in 2 lifetime chance of developing diabetes [2]. The National Health Interview Survey reported that for 2001 an estimated 31 million Americans would be diagnosed by a healthcare provider with asthma within their lifetime [3]. These three chronic diseases impact the lives of millions of patients every day. Healthcare systems, procedures, and protocols are in place to assist the patient in living with the disease. However, the key factor in controlling any chronic disease is patient behavior.

How people live determines the impact of certain chronic diseases. The magnitude of this impact hinges on the patient's lifestyle and willingness to take charge of the disease [4]. An unhealthy lifestyle can advance or enable the presence or consequences of a particular disease. In contrast, a healthy lifestyle can delay or eliminate the development of certain diseases.

Along with genetics, except for certain medical conditions, most patients' obesity is the result of an unhealthy lifestyle of overeating and lack of physical activity. Fortunately, improved medical management has lowered the prevalence of some cardiac risk factors, especially among obese patients. From 1962 to 2000, hypercholesterolemia was reduced among obese patients 21-percentage-points (39% vs 18%), and hypertension by an 18-percentage-point reduction (42% vs 24%) [5]. Yet even with improved medical management of comorbidities associated with obesity, the estimated number of excess deaths in 2000 associated with obesity was 111,909 [6].

A healthy lifestyle can help delay the onset or lessen the consequences of a chronic disease. A study by Mensink et al. showed a healthy lifestyle can improve glucose tolerance [7]. The Diabetes Control and Complication Trial (DCCT) set the standard for demonstrating the powerful impact that a healthy lifestyle and active disease management can have on reducing the risk of potential complications from type 1 diabetes.

The DCCT was conducted over 10 years at multiple centers in America and Canada. Four times a day participants' blood glucose levels were checked and insulin was given. Participants followed a healthy diet and regular exercise and had monthly contact with the healthcare system. The results were remarkable. Compared to the standard of diabetic care at the time of this study, the intervention greatly reduced patients' relative risk of developing microvascular complications. Nephropathy was reduced by 50%, neuropathy by 60%, and retinopathy by 76% [8].

About the time of this study the phrase "controlled diabetic" entered the medical literature. Because of results like the DCCT, the medical community came to believe that if patients "controlled" their diabetes then they could lead a

relatively healthy life. This was a tremendous advance from when diabetes was known as “sugar disease” prior to 1922. After Banting and Best’s discovery of insulin, diabetes moved from a universally fatal disease of the young to a manageable disease with long-term complications. Now the focus has gone from management of the disease to control of the disease and avoidance of long-term complications.

Since the DCCT, the term “controlled diabetic” acknowledges the permanence of the disease but does not accept the inevitable consequences of having the disease. In this sense diabetes is the classic chronic disease model. Either the patient is a controlled diabetic or not a controlled diabetic. This simple but profound shift in thinking followed a logical pattern and greatly contributed to the medical community’s understanding of chronic disease management. The logic for chronic disease management is based on the premise that certain diseases never go away. One might say, “Once a diabetic, always a diabetic.”

The second premise, identified through studies like the DCCT, states that the presence of the disease does not mean the consequences of the disease are inevitable. For a patient who embraces a healthy lifestyle and optimally uses the medical tools available, the relative risk for certain comorbidities of the disease can be greatly reduced.

The conclusion that follows these two premises is that ultimately either the patient controls the chronic disease or the chronic disease controls the patient. Generally, patients who poorly control their diabetes are not lacking available medical care. Patients who deny having the disease, or refuse to eat properly, exercise, take medications, or regularly see their physician are making personal decisions. No matter how hard the medical community tries to help through newer medications, clinical protocols, or surgical interventions, the patient must ultimately be responsible for managing the disease.

Another landmark study that affirms the impact of a healthy lifestyle on a chronic disease is the Diabetes Prevention Program (DPP). This study demonstrated that patients with glucose intolerance could delay progression to diabetes through losing a reasonable amount of weight by eating properly and being physically active. The study’s results were so impressive that the Health and Human Services Secretary, Tommy Thompson, halted the study a year early.

The DPP showed patients with glucose intolerance could reduce their risk of becoming diabetic by losing weight (7% the first year and keeping at least 5% off) and walking about 150 minutes per week. The results indicate that those with healthy lifestyle choices reduced their relative risk of becoming diabetic by 58% compared to a 31% reduction in those who only took medication but did not lose weight and exercise regularly [8].

The next logical step to see the impact of a healthy lifestyle and reasonable weight loss is to compare those at risk for a disease with those who have the disease. The Look AHEAD is an 11-year, multicenter study now under way. Applying the same DPP interventions to patients who have type 2 diabetes, two of the study’s major endpoints are heart attacks and strokes [9].

Like diabetes, the goal for management of other chronic diseases is to control the disease to reduce or eliminate its long-term complications, not to cure the disease. The medical community provides patient education, medical equipment, and appropriate follow-up as a means to empower the patient to be in control. For instance, congestive heart failure patients frequently have home health

nursing care and computer or telephone monitoring equipment that regularly connects the patient with the medical system. The goal is to identify early trends of deterioration so intervention can be made on an outpatient basis and not in the emergency room.

Asthma is a chronic disease whose prevalence is increasing; mortality from asthma more than doubled from 1979 to 1994 [10]. Personal control of this disease involves many variables from not smoking, avoidance of triggers, and appropriate use of medications. A key intervention that provides this control is daily monitoring with peak flow meters (PFM), which provides feedback regarding the severity of bronchospasm. The patient has three PFM zones (green, yellow, red). If the PFM reading is in the green zone, then the patient is to take the medications and go about his or her daily routine. The green zone means the patient is in control of the asthma. If the reading falls into the yellow zone, then medication adjustment and contact with the physician's office is suggested. If the PFM enters the red zone, then the patient has additional instructions to follow and must make immediate contact with the physician or go to the emergency room. A reading in the red zone indicates a crisis where the disease is in control of the patient.

For most patients who have congestive heart failure, diabetes, or asthma, the disease is not likely to go away. Therefore, the management goal is to enable the patient to experience a normal life and to avoid a possible medical crisis through early interventions. Admission to the intensive care unit (ICU) for severe congestive heart failure, diabetic ketoacidosis, or status asthmaticus is the ultimate situation where the disease controls the patient.

The principles of chronic disease management are used in the real world. Consider the Air Force airman who develops either asthma or diabetes. After receiving a medical evaluation and certain deployment restrictions, in many instances the individual is returned to duty with the possibility of completing a 20-year military career. Just having the chronic disease is not an automatic reason for discharge. On the other hand, if the airman is in the emergency room every weekend with poorly controlled blood sugar or difficulty breathing, then the airman will be medically discharged. As a company that requires high health standards of its employees, the Air Force applies the fundamental principle for chronic disease management: if the airman controls the chronic disease, then a military career is possible; if the airman is controlled by the disease, then medical discharge is the only option. The implication of this approach is that the individual is the most important component of chronic disease management. Either the individual wants and achieves control or he does not. There is nothing the healthcare system can do to change this reality. Chronic disease management ultimately rests upon the diligence of the individual who has the disease.

Control of chronic diseases through empowerment is primarily accomplished through patient education. For instance, diabetic patients should know they do not have to lose their legs, eyes, or kidneys. They have a choice. Knowledge about both why and how they should frequently check blood glucose, why they should visit the doctor on a regular basis, have their feet examined, and so on is critical for controlling the disease. Without an effective patient education program, management of any chronic disease will be less than optimal.

Despite popular magazine and TV commercials that promise rapid, painless, weight loss, successful long-term management of obesity follows the principles

for chronic disease management. However, before discussing how to manage or control obesity, let us first understand why obesity is a chronic disease.

## The Obesity Epidemic in America

America is in the midst of an obesity epidemic that is rapidly growing. The prevalence of obesity increased about 50% from 1991 to 1998 [11]. The Behavioral Risk Factor Surveillance Survey (BRFSS) for 2000 to 2001 reported the incidence of obesity increased in that one year by 5.6% [12]. The National Health and Nutrition Examination Survey (NHANES) of 1999 and 2000 reported a national prevalence of overweight and obese adults of 64.5%, an increase from 55.9% reported in the 1988–1994 NHANES III survey [13].

The military must also deal with the obesity crisis. Not only are new accessions drawn from a culture that is more overweight than previous generations but the current force is also struggling with the same health problem. Dr Richard L. Atkinson, Jr announced at the 2001 American Obesity Association meeting that the proportion of overweight military men increased from 54.1% in 1995 to 58.6% in 1998, and of women from 21.6% to 26.1% [14].

Obesity has dramatically increased among the children and youth of America (see Chapter 5). In less than 20 years, the prevalence of obesity among children has increased 50% so that now over 15% of children aged 6 to 19 are obese [15]. However, the disease burden is not evenly distributed. The National Longitudinal Study of Youth reported for 1998 that 12.3% of white, 21.5% of African American, and 21.8% of Hispanic children's weights exceeded 95% of all children [16].

Classically, obesity is defined by calculating a certain mathematical value based on weight compared to height, called the body mass index (BMI). An overweight adult has a BMI of 25 to 29.9, and an obese adult's BMI is 30 or greater. BMI is calculated by dividing weight in pounds by height in inches twice, and then multiplying that value by 703 [17]. For example:  $200\text{lb}/68\text{ inches}/68\text{ inches} \times 703 = \text{BMI } 30.4$ .

The significance of overweight or obese BMI is that it correlates with an increased relative risk for developing chronic diseases and cancers. The data from a 10-year follow-up of the combined Nurses' Health Study and the Physician's Health Professionals Follow-Up Study show men and women who are overweight, compared to a normal BMI of 18 to 24.9, are more likely to develop gallstones, hypertension, high cholesterol, and heart disease. The relative risk (RR) for developing diabetes of an individual with a BMI 35 or greater is 20 times greater than for someone with a normal BMI [18]. The American Heart Association's scientific statement on obesity as an independent risk factor for heart disease states "obesity not only relates to but independently predicts coronary atherosclerosis" [19]. The relative risk (RR) of cardiovascular death increases with BMI. A BMI of 19 to 21.9 has an RR of 1, and a BMI >32 has a RR over 3 [20].

An extremely high BMI has been associated with an increased risk of dying from various cancers. A prospective population of over 900,000 men and women were followed for 16 years. The data showed a BMI of at least 40 was associated

with a greater risk of cancer of the esophagus, colon and rectum, liver, gallbladder, pancreas, and kidney, and death from non-Hodgkin's lymphoma and multiple myeloma. Death from all cancers combined for such men was 52% higher and for such women was 62% higher [21].

Finally, obesity steals years of life. Compared to a non-obese, non-smoker, the Framingham Heart Study has shown that an obese, non-smoking male will die 5.8 years earlier and an obese, non-smoking female 7.1 years earlier. At age 40, a male, obese smoker will die 13.7 years prematurely and an obese, female smoker 13.1 years prematurely [22]. Obesity affects the majority of young and old Americans; it may well become the number one actual cause of death in the 21st century.

The current BMI definitions of overweight and obesity have limitations in the way they relate to percent body fat and the metabolic risk of other diseases and death. Multiple studies have shown that Asian populations have an increased percent body fat at a lower BMI than non-Asian populations [23,24]. To help correct this disparity, it has been suggested that a waist-to-height ratio be used to measure Asians, with 0.5 or less being a healthy value [25], or, alternatively, a lower BMI definition of overweight as 23 and obesity as 25 [23].

The increasing prevalence and health impact of obesity are staggering. With over two-thirds of Americas either overweight or obese, and with those numbers continuing to increase at a dramatic rate, it is vital that physicians be engaged in helping their patients gain control of this chronic disease. Therefore, it is important physicians understand the fundamentals of this disease and can communicate that information to their patients. To begin the process of helping overweight patients, we shall start with the physiology of obesity. Another step will be to consider how obesity can be treated as a chronic disease in the primary care setting.

## Basic Physiology of Obesity

Obesity is the result of excess calories, in the form of triglycerides stored in billions of fat cells or adipocytes. When the calories in versus calories out equation favors excess calories in, then the patient gains weight as fat cells fill up with triglycerides. Excess calories, ingested from carbohydrates, proteins, or fats, are not melted away, eliminated through the kidneys, or passed through the colon. The math is simple. A weight increase of one pound is the result of 3500 extra calories consumed, and the loss of one pound of weight is the expenditure of 3500 calories.

If the caloric seesaw tips towards a negative balance, then the body turns to the adipocytes for release of stored energy. This process is called lipolysis. Stored triglycerides are broken down into glycerol and non-esterified free fatty acids (FFAs) and released into the circulation to be used by various cells for energy. If enough lipolysis occurs, the fat cells shrink and the patient loses weight.

Obesity is a chronic disease based on the fact that fat cells shrink or expand but they never go away. When communicating this to patients, I use the analogy that adipocytes are like balloons. Without water in them, they have little weight,

but when filled with water, balloons weigh as much as the water placed in them. In terms of weight lost and weight regain, fat cells weigh as little or as much as the triglycerides stored in them.

Most obese patients have lost and regained weight over the years but never knew this simple fact about adipocytes. Repeated weight loss followed by weight gain is easily understood using the balloon analogy. It is this basic physiology that explains why obesity is a chronic, recurrent disease driven by the seesaw balance of the calories in versus calories out equation.

Before the body stores excess calories as triglycerides, it tries to use the ingested calories as energy. It does this in three ways: basal metabolic rate (BMR), thermogenesis, and physical activity [26]. Like the idling of an engine, the basal metabolic rate is the body's constant conversion on the cellular level of ATP to ADP for energy. This continuous utilization of energy accounts for 70% of the body's daily caloric expenditure. BMR is influenced by thyroid conditions. BMR slows with hypothyroid and increases with hyperthyroid conditions. Consequently, people with hypothyroidism are often obese because of a slow metabolism, and people with hyperthyroidism are commonly thin.

The muscular mass of an individual influences the caloric needs of the person. Muscular individuals of the same weight as an obese person burn more calories because muscle tissue utilizes more calories per pound than does fatty tissue per pound.

Gender, weight loss, and age impact caloric requirements. Males typically have more muscle mass and therefore expend more calories than females. This is why the average daily caloric requirements for males are higher than for females. As people age they need fewer calories, in part because they have less muscle mass [26]. For both genders, weight loss reduces caloric demands by as much as 30%.

Thermogenesis accounts for about 15% of the body's caloric utilization. Ingested food creates heat by increasing sympathetic tone, raising catecholamine levels, and increasing insulin levels. Thermogenesis is decreased with aging and possibly in insulin-resistant conditions [26].

Physical activity accounts for approximately 15% of calories burned each day. While some people enjoy exercising daily, others have an aversion to the thought of doing jumping jacks, swimming, running, or lifting weights. For whatever reason, the number of individuals who dislike exercising is significant. According to the US Surgeon General's 1996 report on physical activity and health, about 60% of the American population is not regularly physically active, and about 25% is not active at all [27]. Many obese patients are either physically handicapped or else physical activity is too dangerous for them until they lose weight and can avoid injury.

Though there is a wide range in the amount of physical activity among individuals, each person's daily physical activity routine is fairly constant. Consequently, obese patients who have a high level of physical activity are not likely to greatly increase that level in order to lose weight. Physical inactivity is not the cause of their obesity; therefore activity is not the answer either. On the other hand, those who are not physically active are not likely to dramatically increase their level of activity for the reasons already mentioned.

Reduced physical activity or physical labor characterizes American workplaces and home environments. Labor on farms has been replaced by huge

machines or seasonal migrant workers. Factory assembly lines utilize robots or outsource products to other countries. Home electronic conveniences from garage openers, remote controls, or riding lawnmowers lessen the need for physical labor. As a result, physical activity in both the home and work environment is less today than ever before.

Reduced physical activity lessens the need for caloric intake. Couple this trend with an increase in consumption of calories through larger food portion sizes and conditions promote obesity. This process takes place when adipocytes store excess calories by expanding through hypertrophy, which results in obesity. Once the condition of obesity exists, the triglycerides (TGs) stored in adipocytes can cause serious health consequences.

## Adipocytes Function as an Endocrine Gland

Adipocytes filled with TGs function as an endocrine gland [20]. They not only store TGs but produce peptides, hormones, and cytokines. First we will examine the adverse effects of excess TGs stored in adipocytes. These effects result from insulin resistance and endothelial dysfunction, which have important implications for the development of diabetes and cardiovascular disease.

Obese individuals have higher circulating TG levels and FFAs than non-obese individuals. Circulating TGs undergo hydrolysis into non-esterified FFAs by the enzymatic action of adipose tissue lipoprotein lipase [28]. This enables FFAs to enter fat cells and then be reconstituted as TGs in the cells. As the adipocyte storage of TGs grows, the rate of lipolysis increases, thus releasing stored TGs back into circulation as FFAs. The FFAs in circulation go to skeletal muscle for oxidation into energy, directly competing with circulating glucose and causing serum glucose levels to rise. At the same time, the liver also oxidizes FFAs, which stimulates gluconeogenesis, resulting in a direct increase in serum glucose levels.

Serum FFAs compete with glucose on the cellular level and directly contribute to increasing serum glucose through the liver. Together both pathways raise the serum glucose level, thus requiring the pancreas to release more insulin in an attempt to drive the elevated glucose into the cells. This process leads to a hyperinsulinemia condition, which can ultimately result in insulin resistance [29]. Other peptides and hormones released from adipocytes also contribute to increasing serum insulin levels. These substances are tumor necrosis factor-alpha (TNF- $\alpha$ ), interleukin-6 (IL-6), elevated leptin, and resistin [30]. Functioning as an endocrine gland that produces multiple hormones and peptides, hypertrophied adipocytes contribute to development of insulin resistance. This sets the stage for the metabolic syndrome, which places the patient at increased risk for diabetes and heart disease.

Obesity plays an important role in atherosclerosis by reducing the bioavailability of nitric oxide (NO) [31]. NO is produced in endothelial cells by the conversion of L-arginine to L-citrulline by nitric oxide synthase. NO causes vasodilatation by making vascular smooth muscles relax. It is an important

contributor to the health of endothelial tissue in other ways as well. It “inhibits vascular smooth muscle migration and growth, platelet aggregation and thrombosis, monocyte and macrophage adhesion, and inflammation” [32]. Consequently, any decrease in the body’s ability to produce or utilize NO will have a negative effect on vascular health.

Adipocytes contribute in many ways to endothelial damage. First, elevated FFA levels seem to blunt the effect of NO to cause vasodilatation. This activity, coupled with the vascular inflammation produced by the adipocyte release of TNF- $\alpha$ , IL-6, and plasminogen activator inhibitor-1 (PAI-1), causes endothelial damage, which can ultimately result in plaque formation [31–33]. Furthermore, in an obese person, elevated FFA levels cause hyperinsulinemia. Finally, in normal weight individuals, insulin and leptin cause vasodilatation. However, in hyperinsulinemia and hyperleptinemia, endothelial cells appear to be insensitive to stimulation by NO [34,35], which inhibits vasodilatation.

Hypertension is an independent risk factor for heart disease. The pathophysiology of hypertension involves the renin–angiotensin system (RAS). This process begins with the release of angiotensinogen into the circulation. From there it goes to the liver and is converted into angiotensin I. Angiotensin I then goes to the kidney and becomes angiotensin II (AII), a vasoconstrictor that competes against NO [36]. Adipocytes are one source of angiotensinogen and therefore contribute to the development of hypertension, which is a risk factor for both heart disease and strokes.

Other hormones, apart from the ones released by adipocytes, interact with the hypothalamus to influence the storage and release of calories, thereby having an impact on the development of obesity. These hormones include ghrelin, cholecystokinin, peptide YY, and insulin. The ghrelin hormone is produced in the stomach and duodenum and signals hunger to the brain when the stomach is empty. Its level decreases when the stomach is full. Cholecystokinin, produced by the small intestine, stimulates release of pancreatic enzymes and bile for the digestion of food that has entered the small intestine. Along with the vagus nerve, it possibly communicates satiety to the hypothalamus. Peptide YY, also released from the gastrointestinal tract, suppresses appetite between meals. Last, in a normal weight condition, insulin acts in the hypothalamus to decrease appetite, yet loses that influence during hyperinsulinemia [37].

In summary, adipocytes are not just inert fat cells passively waiting to be filled or emptied. Along with the consequences of releasing FFAs into the circulation, adipocytes collectively act as a dynamic endocrine gland producing multiple hormones and peptides with the possibility of exerting a tremendous influence on a patient’s health. Unfortunately, in the condition of obesity, most of this influence is negative, contributing to diabetes, heart disease, cancers, arthritis, gallbladder disease, depression, and ultimately a shortened life.

From both a patient and a national perspective, the primary care medical community must engage the obesity crisis. The first step is to grasp the magnitude of the crisis and to understand obesity as a chronic, recurrent disease that causes adipocytes to function as an endocrine gland. The second step is to ascertain if it is possible to gain control of the disease once it has developed. If the answer is yes, then the third step is to present to patients a medically sound process that enables them to gain control of their obesity.



## Long-Term Control of Obesity

Studies regarding the ability of patients to first lose weight and then keep it off long-term have been discouraging. A recent study by Heshka et al. highlights this dilemma. A 2-year, multicenter, randomized clinical trial involving 65 men and 358 women compared weight loss between a self-help group and a structured commercial program. At 1 year, weight loss through the structured group was a mean 4.3 kg versus 1.3 kg in the self-help group. However, weight regain occurred in both groups. At the end of 2 years, the structured group had lost 2.9 kg and the self-help group 0.2 kg [38]. One implication that could be drawn from this study is that if weight regain is inevitable, then why go to the time, expense, and effort to lose it in the first place? Such a position has discouraged many physicians from trying to help obese patients, and insurers from providing financial coverage for treatment.

Breaking the 4-minute mile was considered a physiologic impossibility until 1954 when Roger Bannister ran one mile in under 4 minutes. One month later John Lundy ran a sub-4-minute mile. Since that time world-class milers all complete the one-mile run under 4 minutes. This major victory in running occurred first in the mind of one man. Now the 4-minute mile is simply a benchmark to be passed, not an unrealistic goal.

Today anyone wanting to be a successful miler studies those who run under-4-minute miles, not just anyone who wants to run a 1-mile race. A similar strategy works for long-term weight loss, too. Studying the winners of the race, not just the runners, is a fundamental shift in the approach needed for long-term control of obesity.

There are now scientific data that strongly suggest that as a chronic disease, obesity can be controlled long-term. First, from a non-medical publication, in May 2002 *Consumer Reports* magazine published data regarding self-reported weight loss. They asked subscribers if they had ever lost weight, kept it off, and how they did it. An amazing 32,213 responses were received. Over 8000 reported at least a 10% weight loss. Over 4000 reported losing 37 lb or more and keeping it off over 5 years [39]. This means about 25% of the population met the National Heart, Lung, and Blood Institute's recommendations of losing 10% as a healthy weight loss goal [17]. Though the majority of respondents were not successful in attaining the recommended weight loss, a significant minority of over 8000 did accomplish that goal.

The limitations of this report are that it was not meant to be a scientific study, and it did not control for self-selection bias. However, the collective experience of those who were successful has something important to say to those who have tried to control their obesity but failed. Such reasoning is exactly what the National Weight Control Registry (NWCR), now with over 4000 registered subjects, followed when it started its database. Therefore, it is worthwhile taking a closer look at the NWCR.

Founded in 1994 by Drs Rena Wing and James Hill, the goal of the NWCR is to collect data from those who have lost at least 30 lb and maintained that weight loss for 1 year. Long-term weight loss is defined as the amount of weight still lost after 1 year. The average member of the NWCR has lost 67 lb and kept at least 30 lb off for an average of 5.5 years. The NWCR com-

position is 80% women, 97% white Caucasian, 67% married; the average age is 45 years [40].

The NWCR reports that successful long-term weight loss consists of four basic behaviors. The first behavior is eating a low-fat, high-carbohydrate diet. Less than 1% of the subjects report eating a high-fat diet. The difference in terms of calories in versus calories out balance is that both a gram of carbohydrate and a gram protein contain 4 calories, whereas a gram of fat contains 9 calories. Therefore, gram for gram, caloric density makes a difference in controlling obesity.

The second behavior is regular monitoring of weight and food intake. About three-fourths of the subjects weigh themselves at least weekly, and most monitor the amount of fat they consume. Self-monitoring of weight is the obesity patient's equivalent of the diabetic's glucose monitor and the asthmatic's PFM. Individuals who do not know where they are in terms of their weight cannot make a timely intervention to control the tendency for regaining weight.

The third behavior is eating breakfast most days of the week. Seventy-eight percent eat breakfast every day, and 91% eat breakfast 4 out of 7 days per week. This eating pattern is consistent with keeping the stomach's ghrelin hormone from signaling the brain that the stomach is empty, thus possibly provoking the individual to overeat.

The fourth behavior is physical activity. Ninety-one percent report activity that is comparable to walking 28 miles per week or moderate-intensity exercise for 1 hour per day. These data suggest that regular activity is critical to maintain weight loss [41].

Conversely, 9% of subjects in the NWCR report minimal physical activity. They control their weight almost solely through control of caloric intake. It is important to understand that though less likely to be successful, it is still possible to lose weight and keep it off long-term without a commitment to physical activity. This is encouraging to those obese patients who either cannot exercise due to physical limitations or do not want to be physically active.

## The Primary Care Setting for Controlling Obesity

Larry Peterson goes around the country encouraging people that they can lose weight and keep it off long-term. His personal story is remarkable. He lost over 265 lb without surgery or using medication. He did it through an intense lifestyle change that he continues to this day. He shares his story with other obese individuals in the hope that they will be inspired to lose weight. Unfortunately, as amazing as Larry's story is, a chronic disease that impacts the majority of Americans, and whose rate increased by over 5% in one year, is not likely to be slowed, stopped, or reversed by one person's success story. The epidemic is simply too great and advancing too rapidly.

Last year approximately 103,000 patients underwent gastric surgery of one form or another [42]. However, even with large numbers of bariatric operations for the morbidly obese, the incidence of this disease may slow but will not stop or reverse its upward trend. The problem is that millions of American adults and children are affected. For most obese patients surgery is not the answer, and the

number of obese patients exceeds the ability of a surgical intervention alone to make a national difference.

The nation's family physicians, pediatricians, and internists collectively are a medical force large enough to make a difference in the rising rate of obesity. They are the nation's primary care physicians and collectively total over 200,000. If each physician assisted just 10 to 20 patients in losing 10% of their weight, as suggested by the National Heart, Lung, and Blood Institute (NHLBI), then the obesity rate in America would begin to slow. The primary care physician movement, coupled with community initiatives and legislative guidance, is America's only hope to slow, stop, and then reverse this healthcare crisis. More surgical cases and dramatic individual success stories are not the medical community's answer to the obesity epidemic.

In the past, to combat this epidemic in the primary setting, physicians had only the NHLBI Obesity Guidelines and various books and articles written by experts outside the primary care arena. What was lacking was a time-efficient process that could be implemented in any rural or urban primary care setting and utilized by any patient regardless of educational or socioeconomic background. Consequently, thousands of obese patients pass through America's primary care doors daily without having their obesity addressed.

Comparing the 1995–1996 National Ambulatory Medical Care (NAMC) data from 55,858 adult visits with the 1988–1994 Third National Health and Nutrition Examination Survey (NHANES) makes this point. Physicians reported obesity in 8.6% of patient visits while the NHANES survey reported a prevalence of 22.7%. Just over 33.3% of patients identified as obese received weight loss counseling [43]. Only 16.6% of obese patients received any care for their disease. Obesity in America only continues to worsen while it is often not addressed in the primary care setting.

Practitioners from a variety of disciplines, including dietitians, behavioral psychologists, and personal fitness trainers, are important components of a comprehensive weight management program. However, most of my obese patients either cannot or will not see these specialists. Typically, rural patients have only their local family doctor to help them manage their obesity. For the most part I serve as my patients' dietician, behavioral psychologist, and personal fitness trainer. Therefore I need dietary, behavioral, and fitness tools that I can share with a patient during a 15-minute appointment.

One such tool focuses on effective communication with the patient. Primary care physicians have little time with each patient to clearly communicate exactly what the patient needs to understand and to do. Succinct words and phrases can quickly communicate such information. For example, the food diary is the best opportunity the healthcare provider will have to obtain a reasonably accurate recording of a patient's food choices. This list is critical in helping patients create a caloric deficit in order to lose weight. Yet obese patients are notorious for underreporting their food intake. A patient who fails to keep any recording or seriously underreports food intake will likely be unsuccessful at weight management. Therefore, at the end of the first appointment, when speaking to the patient about the requirement to keep a 10-day food diary, I always say at least three times before the patient leaves the room, "If it goes in the mouth, it goes on paper." This message is delivered in a friendly, light-hearted way. It eliminates any question about what does or does not need to be recorded. Also, it keeps me from having

to discuss what foods or drinks I am talking about. The phrase is time efficient, simple, memorable, and effective. All patients understand it. More than anything else, this phrase helps patients remember what is to be written in their food diary. I shall discuss communication with patients in greater detail in Chapter 2.

## Summary Points

1. Obesity is a chronic, recurrent disease. Distended adipocytes produce hormones and peptides that impact other organs of the body. The rate of this disease has reached epidemic proportions among both adults and children. Both the individual and the societal impact of obesity will have devastating consequences for generations to come.
2. A major part of the medical community's contribution to challenging this epidemic needs to be through activation of the nation's primary care physicians. This force is large enough in numbers and has daily access to vast numbers of obese patients.
3. The principles of chronic disease management used to control other diseases can be applied to obesity. However, the responsibility for controlling the disease belongs to the patient. The physician can provide the medical tools and encouragement, but the individual is ultimately responsible for success or failure.
4. The behavioral tools explained in the following chapters are based on the NWCR data on those who have gained long-term control of their obesity.

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## 2. The Obesity Bias

Obesity is the chronic disease that is easiest to diagnose. If not obvious to the naked eye, then a simple BMI calculation establishes the diagnosis. Yet obesity is greatly underreported. One reason is a physician bias against obese patients, even among health professionals specializing in obesity [1]. This bias is found among primary care physicians, too. A survey of 620 primary care physicians showed that over 50% believed obese patients were awkward, unattractive, and noncompliant. Though 92% of the physicians in this survey stated that obesity is a chronic disease, 85.7% had not been successful in treating the disease. When compared to 10 other chronic conditions (hypertension, asthma, coronary artery disease, hyperlipidemia, diabetes, depression, osteoarthritis, tobacco dependency, alcoholism, and drug addiction), physicians perceived their clinical effectiveness in treating obesity to be closest to the latter three conditions [2].

Considerable frustration can be felt when trying to treat obese patients. On each visit the medical record shows the patient's weight has increased, the blood pressure is worse, or the hemoglobin A<sub>1C</sub> is higher. In an effort to get the patient to acknowledge the presence of obesity, the physician may record a BMI. What to do with the BMI data can be problematic. If the patient lives near a city, referral to a medical center that treats obesity is an option. Providing brochures for Weight Watchers, Jenny Craig, Take Off Pounds Sensibly (TOPS), or Overeaters Anonymous (OA) is another option. Or the provider can write a prescription and offer the standard advice for weight loss called ELEM (eat less, exercise more). Whatever the intervention, in the back of the physician's mind is the belief that either the patient will not take the advice, or will lose weight short-term but regain the weight in 1 or 2 years.

If seen from a population perspective, individual successes can collectively add up to impact the rate of the disease in a population. For instance, through policy guidelines, educational programs, support groups, and physician involvement, tobacco use among adults in America declined from 41.2% in 1965 to 22.7% in 2001 [3]. Knowing the tobacco rate has declined over this period encourages me because in my clinic it seems most tobacco users do not follow my advice to stop smoking. Yet over the years there have been patients who have stopped smoking and made the comment that my expressed concern was a significant factor in their decision. Therefore, I always tell patients who smoke to stop, and I offer assistance in whatever way they are interested. Seeing a few success stories and knowing the rate of tobacco use has declined in the nation encourages me to keep advising patients to kick the habit.

Treatment of obesity is believed by primary care physicians to be less effective than treatment of diabetes, hypertension, or osteoarthritis [2]. This perceived lack of effective treatment and the increasing prevalence of the disease is a cause for alarm. It is essential that an effective primary care treatment be implemented if the national obesity trend is to be slowed. Unfortunately, physicians are discouraged. Many believe nothing works long-term; physicians feel helpless in not being able to offer scientifically sound medical treatment and frustrated that long-term success in controlling obesity is limited to very few individuals.

However difficult the task of treating obesity, physicians need to remain hopeful. Every physician has met one individual who has succeeded in losing a significant amount of weight and keeping it off long-term. This tells the physician long-term success, though infrequent, is possible. Also, the National Weight Control Registry (NWCRC) database contains thousands of names of patients who lost a significant amount of weight and kept it off over 6 years. These data counter the obesity bias of thinking long-term weight loss is not possible. Maybe there are more successes in long-term weight loss than was once thought, just as far more people have stopped smoking than I expected, based on my clinical experience.

Physicians are also encouraged by federal agencies and medical societies to treat obesity. For instance, in December 2003, the US Preventive Services Task Force (USPSTF) gave a B recommendation, which means there is fair evidence that an intervention or service improves health outcomes and that the benefits outweigh the harm. The report states, "The USPSTF recommends clinicians screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults" [4]. The American Academy of Family Physicians' December 2003 monograph on Practical Advice for Family Physicians to Help Overweight Patients encourages "assessing the patient's BMI and waist circumference at every visit in which weight is measured" [5]. The American College of Preventive Medicine Practice Policy statement recommends periodic BMI measurements on all adults and exercise and diet counseling for all adults, consistent with the National Institute of Health's Obesity Guidelines [6].

In a similar way, successful clinical treatment of obesity must first begin in the physician's mind. The medical bias that long-term control of obesity is not possible is now dispelled by the facts. The data exist stating long-term control is possible. Both federal recommendations and certain medical societies' scientific statements challenge physicians to treat obesity. Where does the primary care medical community go from here? If the clinician is to effectively treat obese patients, certain questions must be answered. One has to do with the role the physician plays in the doctor-patient relationship. Is it different from other doctor-patient encounters? What skills does the physician need? What tools will the patient need? Is there a standardized process or clinical protocol physicians can follow? Is the process practical and time efficient? How does the physician receive payment for services rendered? These questions are addressed in later chapters.

## Physician as Catalyst

Primary care physicians operate their clinics in ways that are different from behavioral psychologists, dieticians, or bariatric specialists. They see patients every 15 minutes. Each patient encounter is almost guaranteed to be different from both the previous appointment and the next patient appointment. There is no obesity treatment room. The schedule does not permit double booking for obese patients. The physician must quickly go from room to room and have all the tools needed at that moment to treat each patient.



Given this environment, how the physician sees himself or herself in the doctor–patient relationship is important. Primary care physicians shift between various doctor–patient roles throughout the day. For instance, a patient who presents to the office having just experienced the death of a spouse needs a physician who will empathetically listen more than talk. In this situation, the physician is a counselor. For the patient presenting with an anaphylactic reaction, the physician must quickly take action. It is not time to be a counselor but instead to take control and make rapid decisions. In either case, the physician’s role is based on the presenting needs of the patient. Treating patients with tobacco dependency, alcoholism, or drug addiction requires a triage approach that is different from treating hypertension or diabetes. My responsibility is to identify how willing a patient is to fight an addiction and then be a catalyst in providing the right intervention at the right moment that will help the patient make a behavior change.

In treating addictive disorders, physicians assess both a patient’s willingness to make a healthful behavioral change and which treatment option is best for that patient at that particular time. This mental triaging occurs in a moment and influences how much time and effort is spent addressing the issue.

Successful treatment of obesity requires a similar understanding of the physician as a catalyst who triages patients based on their desire to control their obesity. Unless referred by other physicians, most obese patients do not present with the chief complaint of wanting to lose weight. In the clinic, the BMI is a vital sign. I make this information available to obese patients and briefly explain what it means. I give the patient a handout that discusses the health consequences of obesity and encourage making a weight management appointment. In this way I am a catalyst trying to spark the patient’s interest in treating their obesity.

To be efficient with this process, there are four categories into which I triage patients. Though not identical to Prochaska’s stages of change model, which describes behavior change as going from pre-contemplation, to contemplation, preparation, action, and maintenance [7], these categories reflect a patient’s desire either to be in control of the disease or to be controlled by it. The triage categories are: Not Interested, Magic Pill, Umbilical Cord, and Personal Responsibility.

The first category, called Not Interested, includes patients who are not interested or able to deal with their weight at this time. They are focused on other life issues and do not want to deal with their weight. Work and family may consume their energy in just trying to get through the day. Some may have low self-esteem regarding their weight; having tried various weight loss products or programs and failed, they do not want to fail again. Whatever the reason, dealing with weight is not on their radar screen at this time. These patients either fall into the pre-contemplation stage of change, or think about change but do not want to attempt it now. For those in this category, I express my concern about their weight and let them know the clinic has an effective obesity treatment program. Unfortunately, the majority of obese patients in my clinic are in this category.

The second category is called the Magic Pill. When the germ theory of disease encountered penicillin, the magic bullet of medicine was discovered. Unfortunately, the commercial world promotes the magic pill theory for treating obesity. A current television commercial promoting this approach features a pill

that allegedly controls the body's cortisol levels, thereby suppressing appetite, which the promoters claim results in weight reduction. Another product, marketed in San Antonio, Texas, was a liquid solution taken at 8 pm, with nothing to eat after that time. It reportedly burned away the fat while the consumer slept. An individual told me she had tried this product four times without success and asked me what she was doing wrong. I told her that her lack of success was due to the fact that the product did not work. Even the medical community has contributed to the magic pill myth. For years physicians have written prescriptions for various obesity medications, typically with poor results. If any one medication was the magic pill for obesity, there would be no overweight physicians. Pharmacotherapy can be a useful adjunct to dietary control and behavior change, but it can never be the primary treatment. Chapter 6 will discuss pharmacotherapy in more depth.

Patients in the first category can benefit from informational material. Then the provider must wait for the patient to ask for help. This may or may not happen. These patients have a medical problem but do not want to deal with it at the present time for whatever the reason. The physician can only treat the comorbidities associated with obesity, which is frustrating since many of these diseases improve with weight loss.

Those who want a magic pill are at least concerned about their weight. Unfortunately, this does not mean that patients in the Magic Pill category want to change their behavior. Changes in activity level, selection of more healthful food choices, or portion control when eating are not choices that this category of patient wants to select. These patients have been effectively marketed by the commercial world to believe in the power of the pill and will go to extremes to obtain a prescription. I recall one patient came to the clinic with some unusual symptoms that could not be explained by her medical conditions or medications. Finally he brought me her bottle of Adipex-P (phentermine) that he had obtained by mail order from another state. His symptoms resolved with discontinuation of the medication. He never chose to attend the program offered by the clinic. He continues to vacillate between the first two categories: either he is not interested in addressing his obesity or he pursues promises promoted on television or the Internet.

Another example of a patient trapped in the Magic Pill delusion involved a high-ranking military officer. It was obvious that he was struggling with being overweight. One day he asked me for the "fat burning pill." With all due respect, I told him control is more about the person than the pill. At that point he changed the discussion because he was not able or willing to change his lifestyle. Using the change behavior model, patients in the Magic Pill category are in the contemplation stage, but unfortunately they are contemplating in the wrong way by thinking the power for change is in the pill.

The third category is called the Umbilical Cord. Patients come to the office and want to know what diet I prescribe. As a clinical expert in treating obesity, I must have some secret or special diet that helps burn the fat away. From their perspective, my job is to pass them the revolutionary Dr McKnight Weight Loss Diet as if it were life flowing from me to them through an umbilical cord. The authors of various diet books promote this myth. In an oversimplified way, the extreme dietary positions are, at one end, Dr Atkins' animal diet [8] and, at the other, Dr Ornish's plant diet [9]. Both physicians claimed to have found the

truth in terms of weight loss, yet their plans are at opposite ends of the dietary spectrum. Add to this the ever-increasing number of diet books on the shelves, and it is no wonder the public is confused by the conflicting advice of all those who claim to have discovered *the* dietary truth regarding weight loss.

Many patients who present to the clinic for weight loss have a collection of weight loss books on their shelves at home. They are looking for the special diet, like a fat-burning suit they can climb into for a period of time that will melt away the fat. These patients gain no insight into how their daily habits cause their obesity. And certainly they have no knowledge, process, or program to keep the weight off other than to eat as a book tells them to. Patients in this category can be disheartened to learn that obesity control is not about the diet but about the person.

Finally, having one's name ascribed to a particular diet is very tempting. Can you imagine the egotistical seduction of patients saying that the long-lost key to losing weight forever is the Dr McKnight weight loss diet? I would not need a promotional agent. With success stories mounting, the publicity alone would carry me to multiple appearances on television talk shows.

On the other hand, there is a downside to the umbilical cord myth. Imagine what words will be spoken by those who are not successful? When people fail and they do not see themselves as being responsible, then whose name will come to their mind as the cause of their failure? Personally, I prefer not to step into that trap. Certain diets and medications are helpful for weight loss for some people, but there is no special diet or magical pill that leads to long-term weight loss for everyone.

Unlike those in the Not Interested group, patients triaged into the second or third category are concerned about their weight and can be moved into the Personal Responsibility category. I do this by spending time in trying to help the patient first understand that obesity is a chronic, recurrent disease. Just like asthma or diabetes, once present it will never go away. Then I ask the patient, "Do you want control of this disease?" If the answer is yes, then I would consider the patient in the fourth category. If the answer is no, then as a catalyst I would continue to provide information and encouragement but realize that the spark to ignite behavioral change is without effect at this time.

The fourth category is called Personal Responsibility. When patients say to me that they know their weight is a problem but they just don't know how to gain control of it and want help, then I get excited! As a catalyst, I am about to provide patients with the best science that will result in more than just shedding pounds. It will empower patients to gain control of their life in the most obvious way—physical appearance. To do so is not easy. Neither a pill nor a diet book teaches patients how to structure their lives to achieve weight control while the vast majority of the population is doing the opposite.

What defines the Personal Responsibility category is the first principle in the five principles of long-term weight loss. It is called Preference versus Passion. The other four principles are discussed in Chapter 11. Patients who prefer to lose weight were already described in the second and third triage category. Clearly they are concerned about their weight, but they have no staying power. Patients with a Preference to lose weight have three characteristics: they use magical thinking about how much weight to lose, assign external responsibility for the weight loss, and are unwilling to focus daily on losing weight.

Magical thinking, such as hoping to lose 20lb in 20 days or 100lb in 4 months without surgery, is not grounded in a healthy weight loss goal. The patient's desire to lose weight quickly is often driven by short-term goals like upcoming vacations or special social events. An extreme expression of this thinking occurred with two different patients who described the starvation diet. In both cases, out of tremendous desperation the individuals simply stopped eating. One patient lost 40lb but regained the weight as soon as he started eating. Neither individual reasonably considered the method of weight loss. This seemed to be the quickest process to produce immediate results. Magical thinkers are driven by desperation, and unless they are at some point grounded in a realistic goal, will not be successful.

Preference patients want someone or something outside themselves to be responsible for their weight loss. This way success or, more likely failure, is someone else's responsibility. Many times I've heard patients say that such-and-such a diet or program did not work for them as if it were the diet's or the program's fault. This approach provides a scapegoat for failure and allows the patient to be a victim and not take personal responsibility for failure.

Finally, Preference patients do not focus daily on what it takes to be successful with weight loss. Gripped by passion and desire today for losing weight, tomorrow it will be as if the previous day's plan and commitment were ancient history. They are not willing or are unable to understand that weight gain and weight loss are both a gradual but a cumulative process. To help patients understand the need for a daily focus on their weight loss program, I tell them successful treatment of obesity is like having a successful pregnancy. No less than 9 months is typically required for the birth of a healthy baby. During those months a daily focus on healthy food choices, appropriate exercises, and medical check-ups is needed to produce the most optimal outcome.

Successful treatment of obesity takes a commitment to focus daily on the program over a period of time. Patients must be willing to stay focused for 6 months on losing weight so that the loss is from fat cells shrinking and not loss of muscle or water. Patients need to know it takes 6 months and not 6 weeks to attain the weight loss goal. Commitment to this amount of time is one of the requirements to be in the program. Once the patient makes the commitment, then I know the chance of long-term success has gone up. If the patient does not embrace this fundamental concept of time, then I tell him or her that maybe now is not the time to begin a weight reduction program.

When patients have Passion they present with the opposite characteristics. They embrace a realistic weight loss goal. A 10% loss over 6 months is not unreasonable to them; though it may not represent their total goal, they know it is a beginning. They take personal responsibility for success or failure. It is their health problem, not someone else's. They are willing to focus daily on implementing the program. They are willing to be accountable to themselves and others for their actions. They possess an inner desire and personal honesty that the patients in the other categories do not have at that moment. In short, patients with passion are realistic about their goal, practical about the time it takes to achieve that goal, and focused daily on attaining their weight loss goal.

This triage system keeps me from becoming discouraged since the majority of obese patients are not and never will be in category four. For those in category four who begin the program, I become excited knowing that if they will stay the

6-month course then success is within their grasp. They will not only be successful but in many instances will teach others how to lose weight with remarkable results. How is this possible without the physician being involved? The program outlined in this book is built around the patient being in control, not the physician, a diet, or a pill. My task is to find as many patients as possible that want control of their disease and then bring them into contact with a medically sound program based on the results of those who have successfully lost weight and maintained their weight loss. At that point my role changes from a catalyst to a coach.

## Physician as Coach

Most physicians probably do not think much about their various roles in treating patients. Physicians unconsciously do whatever needs to be done, like being a counselor for the grieving patient or a strong leader during times of crisis. Effective treatment of obesity depends on neither of these two roles; it requires that the physician first be a catalyst who brings together the right patient with the right program at the right time to ensure the best outcome. Once accomplished, the physician now acts like a coach. The coaching perspective takes the focus for both success and failure for weight loss away from the pill, the program, or the physician.

The coach plays an important role in the patient's success. The coach knows what it takes to finish the program and thoroughly understands the process needed to succeed. Helping the patient achieve a weight loss goal is the coach's responsibility. This is first done in the mind of the coach. Does he or she believe the athlete or obese patient can be successful? If no, then victory is already lost, first in the mind of the coach, then in the mind of the athlete or patient. Next, does the coach believe the program employed by the athlete or patient produces winning results? The answer is either yes or no. If no, then even the most motivated patient will likely fail. The point is that the coach sets the stage for success or failure. Not every physician can help a patient lose weight. Some physicians may struggle with their own weight and feel inadequate to help patients. Others may hold on to their obesity bias and predict failure for the patient from the start. Such physicians should care for their patients by referring them to another physician or to an organization like Weight Watchers rather than ignore the disease.

In the rest of this book you will receive the training necessary to coach your patients to gain control of their weight.

## Summary Points

1. Physicians have a bias against obese patients.
2. Effective primary care obesity treatment is similar to treatment of tobacco, alcohol, and drug addiction.

3. The USPSTF recommends that physicians identify and treat obese patients.
4. Obese patients can be triaged into four categories: Not Interested, Magic Pill, Umbilical Cord, and Personally Responsible.
5. The physician acts as a catalyst; timing and patient readiness to change are key.
6. The patient must make a commitment to change in order to have long-term success.
7. The physician acts as a coach and guides the patient who is ready to change toward a weight loss goal.

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## 3. Dietary Tools

### Low-Carbohydrate Versus Low-Fat Diets

Patients often ask which kind of diet they should follow in order to lose weight: low carbohydrate or low fat? Representing the low-carbohydrate approach are books like *Atkins for Life*, which advocates consumption of animal foods such as meat, bacon, poultry, fish, cheese, butter, and eggs, and severely limits carbohydrates to 20 g per day during the first phase of the diet. Dr Atkins attributed weight gain to consumption of what he called “bad carbohydrates” like rice, potatoes, pasta, or anything made with sugar [1]. His reasoning was that these carbohydrates trigger a hyperinsulin condition that causes excess calories to be stored in fat cells, which in turn makes the person obese.

Until recently, the medical community considered this diet potentially dangerous. The prevailing thought was that a diet high in fats would raise blood cholesterol levels and occlude arteries. This reasoning supported a lawsuit filed in Florida by a man who claimed the diet raised his cholesterol from 146 mg/dl to 230 mg/dl and that he needed angioplasty as a result. Logic would suggest that a high-fat diet would do what the lawsuit claimed. But is this supported by science? What should physicians tell their patients who want to go on a low-carbohydrate diet?

A low-fat diet is promoted by the American Heart Association [2] and by the federal government’s previous Food Guide Pyramid, which places carbohydrates at the base of the pyramid, with 8 to 11 daily servings recommended [3]. The conventional low-calorie, low-fat dietary recommendation is to maximize complex carbohydrates and limit total fat to 30%, of which 10% can be saturated fat. The problem is that America has followed this dietary recommendation for decades and now is in the midst of an obesity epidemic. If the nation is following a low-fat diet, then why are most Americans overweight or obese? Is there scientific evidence that this diet is effective for weight loss? What should a physician tell patients who want to follow a low-fat diet?

As a primary care physician, I need simple, clear, and effective dietary tools that I can share with patients in 10 to 15 minutes. I need to know the scientific evidence behind what I recommend, but I do not have the time to discuss in detail the pros and cons of the various dietary positions for promoting weight loss. This chapter will review the current studies regarding the effectiveness of low-carbohydrate versus low-fat diets, as well as low-glycemic versus high-glycemic diets. The second half of this chapter will present a commonsense dietary approach that will enable the physician to help the patient reduce calories and lose weight, no matter which dietary approach the patient chooses to follow.

When patients ask about the various diets and how one diet compares to another, I draw a line representing a continuum. One end of the line is marked “animal diet” endorsed by Dr Atkins’ book. The other end of the line is marked “plant diet” endorsed by Dr Dean Ornish’s *Eat More, Weigh Less* book, which

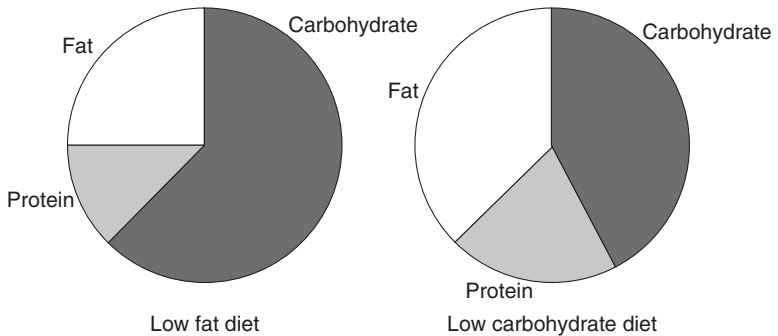


Figure 3.1. Pie charts showing examples of a low-fat diet of 60% carbohydrates, 15% protein, and 25% fat and a low-carbohydrate diet that is 45% carbohydrates, 20% protein, and 35% fat.

promotes a low-fat diet [4]. Then I tell the patient that every reasonable dietary approach to lose weight fits on the line somewhere between these two diets. An example is the Zone diet, which recommends that total caloric intake should be apportioned as carbohydrates 40%, protein 30%, and fat 30% [5]. Then I ask the patient where on this spectrum would they likely find their dietary preference.

Next I draw a pie chart with three sections (Figure 3.1). Each section represents one of the three macronutrients: carbohydrate, protein, and fat. I show the patient that the uniqueness of each diet is determined by how big a particular section of the pie is. I explain that a low-carbohydrate diet by definition means the carbohydrate section of the pie is smaller, thus making the percentage of the diet derived from the other two macronutrients larger. I demonstrate that the opposite applies to a low-fat diet. If less than 30% of the total calories is from fat, an increased percentage is from carbohydrates.

When patients see the pie charts, they understand that any dietary approach recommended by a diet book does not reflect any new or hidden science. The author has simply applied his or her theory for weight loss to a particular way of dividing the macronutrient pie. If cutting the pie represents each author's personal preference on how to lose weight, then what is a patient to do? The various dietary proposals in popular diet books are contradictory, and the low-fat versus low-carbohydrate debate is confusing. What kind of diet should a physician advise for overweight patients?

Consider the possibility that the solution for long-term weight loss is not how the macronutrient pie is cut, but the size of the pie itself. Most overweight or obese people eat too much food, whether that food is animal based or plant based and whether food choices are healthful or unhealthful. When calories ingested exceed calories expended, then weight gain occurs.

As a physician, I do not condemn or defend any of the popular weight loss programs. I need to stay focused on the patient and not on particular food recom-



mentations. Before considering how a patient-centered focus is the dietary answer for long-term weight loss, let's take a closer look at the debate between low-carbohydrate and low-fat diets.

A study of the low-carbohydrate diet at Duke University included 51 overweight or obese subjects who lost an average of 20lb. They were restricted to 10g of carbohydrates per day until they lost 40% of their weight loss goal, then the carbohydrate allowance was increased to 50g per day. At the end of 6 months, most participants had lost 10% of their weight and had decreased their low-density lipoprotein (LDL) cholesterol. Though calorie counting was not required, participants ate an average of 1450 calories per day [6].

The results of the low-carbohydrate diet in this study are not in doubt: people lost weight using this dietary approach. What is unclear is whether the weight loss resulted from carbohydrate restriction leading to ketosis, or was the result of fewer calories consumed by restricting certain foods.

A recent study of 120 overweight, hyperlipidemic volunteers compared a low-carbohydrate diet to a low-fat, low-calorie diet. The low-carbohydrate group initially consumed only 20g per day of carbohydrates and took vitamin supplements. The low-fat, low-calorie group consumed less than 30% of total calories from fat and less than 300 mg of cholesterol per day and ate 500 to 1000 fewer calories per day. Both groups were encouraged to exercise three times per week, keep a food diary, and attend weekly educational meetings. After 24 weeks, the low-carbohydrate group had lost more weight with better improvement of lipids than the low-fat, low-calorie group. Weight loss averaged 12.9% in the low-carbohydrate group compared to 6.7% in the low-fat group. On average, triglycerides were reduced by 72 mg/dl and high-density lipoprotein (HDL) rose by 5.5 mg/dl in the low-carbohydrate subjects compared to a reduction of 27.9 mg/dl in triglycerides and a drop of 1.6 mg/dl in HDL for the low-fat subjects [7].

Limitations of this study include the fact that it involved a relatively healthy population that was followed for only 24 weeks. The long-term weight loss effects in this group are not known, and the effectiveness of this diet for less healthy patients cannot be assumed.

A study at the Philadelphia Veterans Affairs Hospital evaluated weight loss and lipid changes among severely obese (BMI > 35) patients of whom 39% had diabetes and 43% had metabolic syndrome. The 6-month study started with 132 patients. The low-carbohydrate group ( $N = 68$ ) consumed less than 30g of carbohydrates per day, while the low-fat, low-calorie group ( $N = 64$ ) reduced their caloric intake by 500 calories per day with less than 30% of total calories from fat. At 6 months, the results favored a low-carbohydrate diet with a mean weight loss of 5.1 kg compared to a mean loss of 1.9 kg for the reduced calorie, low-fat group. Triglyceride levels fell by 20% and insulin sensitivity improved by 6% for the low-carbohydrate group compared to only a 4% drop in triglyceride levels and a 3% reduction in insulin sensitivity for the low-fat group. An attrition rate of 47% at 6 months was a significant limitation of the study [8].

A 1-year follow-up study of the same population showed no statistically significant weight loss difference between the two groups (5.1 kg for the low-carbohydrate group and 3.1 kg for the low-fat group). However, there remained a favorable difference for the low-carbohydrate group in terms of triglycerides, HDL, and hemoglobin A<sub>1c</sub> [9].

Are these data sufficient to prove a low-carbohydrate diet is more effective than a low-fat diet for weight loss or improving lipids? There is no debate as to whether people lose weight following a low-carbohydrate diet. There is lack of scientific evidence regarding long-term weight loss sustained for more than 1 year by low-carbohydrate dieters. On the other hand, representing the low-calorie, low-fat position are members of the National Weight Control Registry (NWCR), who total over 4200, and report losing an average of 67lb for an average duration of 6 years. According to Dr James Hill, one of the founders of the NWCR, members report that 56% of their calories come from carbohydrates, 19% from protein, and 25% from fat [10].

The NWCR results do not mean the low-fat diet is more effective for weight loss either. A meta-analysis using the Cochrane Library, MEDLINE, EMBASE, and the Science Citation Index in 2001 and 2002 compared low-fat diets with other calorie-restricted diets. Four studies measured follow-up at 6 months, five studies at 12 months, and three at 18 months. The average weight loss at 6 months for the low-fat diet groups was 5kg and for the calorie-restricted groups the average weight loss was 6.5kg; at 1 year the average loss was 2.3kg for the low-fat groups versus 3.4kg for the calorie-restricted groups; and at 18 months the low-fat groups' average loss was 2.3kg versus a weight gain of 0.1 kg in the calorie-restricted groups. At the end of 18 months, the results showed no statistical difference between a low-fat diet and other calorie-restricted diets in terms of weight loss, serum lipids, blood pressure, and fasting plasma glucose [11].

Only one study has compared the four popular diets mentioned: the Atkins low-carbohydrate diet; the Ornish high-carbohydrate, low-fat vegetarian diet; the Weight Watchers low-fat, high-carbohydrate diet [12]; and the Zone 40–30–30 system. This 1-year study included 160 volunteers. At the end of the study, the dropout rate was 50% for both Atkins and Ornish participants and 35% for the Weight Watchers and Zone participants. Weight loss occurred and lipids improved on all the diets. Physical activity was not assessed in the study. Commenting about the study's results, Dr Dansinger said, "The good news about this study is that we demonstrated that all these diets work. That means physicians can work with patients to select the diet that is best suited to the patient" [13]. The fact that weight loss can occur through various dietary approaches supports the hypothesis that each of these diets addresses the same cause of weight gain: the intake of excess calories.

Between 1971 and 2000, the prevalence of obesity in America went from 14.5% to 30.9% [14]. The Centers for Disease Control and Prevention report that during this same time caloric energy intake increased for both men and women. Men consumed an average of 2450 calories per day in 1971 and in 2000 consumed an average of 2618 calories per day, an increase of 168 calories per day. Women consumed an average of 1542 calories per day in 1971 and an average of 1877 calories per day in 2000, an increase of 335 calories per day. For both genders, the increase in calories was from an increase in carbohydrates. For men the percentage of total calories from carbohydrates went from 42.4% to 49% and for women from 45.4% to 51.6% [15]. In 1971, caloric sweeteners accounted for 39% of the carbohydrates consumed, grain products 35%, vegetables 10%, and dairy products and fruits 6% each; grain products and sweeteners together totaled 74% of carbohydrates consumed.

By 1994, grain products and sweeteners together accounted for 78% of all carbohydrates consumed. Protein intake decreased from 16.5% to 15.5% in men and from 16.9% to 15.1% in women. The percentage of total calories from fat decreased from 36.9% to 32.8% for men, and from 36.1% to 32.8% for women, with both genders having a decrease in saturated fat, too [15].

The increase in daily energy per capita is the result of an increase in sweeteners and grain consumption. According to the United States Department of Agriculture (USDA), per capita use of corn sweetener was 19lb in 1970 then rose to 87lb in 1997. Flour and cereal products went from 136lb in 1970 to 200lb in 1997. Consumption of wheat flour increased by 35%, corn flour by 79%, and high-carbohydrate snacks by 200% [16].

## The Low Glycemic Index Diet

A shift in the American consumption of macronutrients toward more carbohydrates with an increase in sweeteners and grains has led some authors to propose that America's obesity epidemic is the result of eating carbohydrates that have a high glycemic index (GI). In 1981, Dr David Jenkins studied the release of insulin by the pancreas in response to the digestion of various types of carbohydrates. He assigned white bread a GI of 100; other researchers assign glucose a value of 100. Whichever standard is used, the absorption of all other carbohydrates is compared to a score of 100. Dr Jenkins studied 62 commonly eaten foods and sugars. Vegetables had the highest rating ( $70 \pm 5\%$ ), followed by breakfast cereals ( $65 \pm 5\%$ ), biscuits ( $60 \pm 3\%$ ), fruit ( $50 \pm 5\%$ ), dairy products ( $35 \pm 1\%$ ), and dried legumes ( $31 \pm 3\%$ ) [17].

Foods with a high GI have a score greater than 70, and foods with a low GI have a score less than 55. The hypothesis is that consumption of high-GI foods results in a rapid release of insulin from the pancreas in order to bring the serum glucose down rapidly to a normal level. If blood glucose level falls too rapidly, the individual will become hungry, provoking the person to eat again. Also, the elevated insulin levels push excess glucose into cells or cause it to be stored as fat, while at the same time inhibiting lipolysis, or the breakdown of triglycerides in fat cells for use as energy. Low-GI foods are absorbed more slowly and do not trigger a hyperinsulin response. This allows the body to use the glucose as energy and not store it as fat. Examples of high-GI foods are potatoes, corn flakes cereal, waffles, and pretzels. Examples of low-GI foods are grapes, chickpeas, raisins, and yogurt [18].

With the American dietary trend towards more carbohydrates, it seems the cause of the obesity epidemic might be consumption of higher-GI foods. If that is the case, then weight loss should result from eating low-GI foods. In a meta-analysis by Raben of 20 long-term (>6 months) studies, weight loss on a low-GI diet occurred in four studies, on a high-GI diet in two studies, and with no difference in weight loss between high- and low-GI diets in 14 studies [19]. These results suggest the GI is neither the cause of nor the answer to the obesity epidemic.

## Weight Loss Support Groups

A component of weight loss treatment not yet evaluated is the social setting. Is weight loss more effective in a support group or a private setting? The implication is important for the primary care physician. Should the physician treat patients in the office or refer patients to organizations like Weight Watchers, Overeaters Anonymous, or medical centers that specialize in obesity treatment that provides support groups? To answer this question, let's look at the world's largest social support group for obese patients, Weight Watchers.

Weight Watchers, Inc. estimates that each week over 1 million people worldwide attend one of thousands of their meetings. The program is based on the Points™ system that helps participants limit the amount of calories consumed. During group meetings, participants receive social support from fellow members, and are taught how to make healthful food choices and behavioral changes and to increase physical activity [12]. Widely accepted throughout the world as a valid method for treating obesity, is a social support approach effective for long-term weight loss? And if it is effective, is it better than an individualized method?

A randomized weight loss study compared a self-help program to a structured commercial program. The subjects were overweight and obese men ( $N = 65$ ) and women ( $N = 358$ ). The self-help group received two 20-minute sessions with a nutritionist, along with self-help resources. The group in the commercial program attended weekly meetings and received assistance with a food plan, an activity plan, and a cognitive restructuring behavior modification plan. The dropout rate in both groups was less than 30%. At 1 year, the commercial group's weight loss was 4.3 kg compared to 1.3 kg in the self-help group, and at 2 years the commercial group's weight loss was 2.9 kg versus 0.2 kg for the self-help group [20].

Despite the results of this 2-year study, not everyone needs a support group in order to lose weight. The NWCR reports that about one half of successful long-term weight loss registrants stated that they used a formal program while the other half lost weight on their own [21]. Of the two major commercial weight loss programs, Weight Watchers provides group support and Jenny Craig offers the customer an individual counselor in person or over the phone [22]. It would appear the physician needs to understand whether the patient would benefit from a one-on-one method, a support group, or both in trying to lose weight.

## Dietary Tools

One explanation for the obesity epidemic developing over the last 30 years is that Americans consume more calories. Consuming extra calories through a gradual but cumulative process inevitably results in weight gain. A patient who eats an extra 100 calories per day for 365 days will gain 10 lb in 1 year. If the root cause of the obesity epidemic is consumption of excess calories, then the physician's answer to this crisis may be simpler than first imagined.

Medical science has not identified a medication or a unique program for weight loss that will be effective with every patient. Any clinical weight loss approach must be patient-centered in dealing with the result of excess consumption of calories. Each patient must create a caloric deficit through a process that the individual can apply for a lifetime. Balancing calories in versus calories out will be a lifelong process. The fat cells can always fill back up again if the caloric seesaw tips in favor of more calories in than out. The patient must understand this simple physiologic fact that makes obesity a chronic but controllable disease.

Any effective weight loss approach must empower the patient to control calorie consumption in any situation. To have universal application, the process must be simple and devoid of the physician's dietary bias. For example, telling all patients to follow either a plant diet or an animal diet is like an Irish American physician telling a Mexican American, an African American, or an Asian American patient to eat the foods that are part of an Irish American's background and culture. Cultural background, work and home environment, and personal food preferences must be considered to help a patient control weight.

## Starting a Food Diary

At the end of the first appointment I tell patients that they need to keep a food diary for 10 days and to keep a count of the calories of the foods they eat as best they can. A calorie-counting book is available at cost for patients to purchase at the front desk. Keeping the food diary does three important things. First, it works as a form of self-selection. Patients who are not willing to track what they eat indicate they are not likely to make the behavior changes necessary to lose weight. Those patients do not return for a second visit. Second, by recording what is eaten, patients commonly adjust their eating pattern and lose weight between the first and second visit. This unintended success is encouraging to them. Third, people routinely prefer to eat certain foods. These foods contain the bulk of the calories in their diet. It is important to understand that even within a single household the children, the teenagers, and the parents all have different items on their list. Therefore, it is from the foods listed in the diary that decisions are made to reduce calories so weight loss can occur. The completeness of the diary varies from highly detailed to minimally detailed; however, the precision of the list is not important. At this point I am not trying to improve the patient's diet but to identify the foods the patient eats because this is where the calories must be reduced if the patient is to lose weight.

During the second visit, I review the food diary with the patient, looking for items they eat on a recurrent basis. While going over the list, I try to get a sense as to how important certain foods are to the patient. For example, some patients have said they will always eat a Snickers candy bar for dessert at work, so suggesting they discontinue eating Snickers is not going to work long-term. Patients are willing to reduce, substitute, or discontinue eating those foods for which the attachment is not as strong. I explain to the patient that it is from their list of foods that decisions on how to reduce calories must be made and that during

this appointment they will be introduced to dietary tools that will empower them to make choices that create a caloric deficit.

## The CAMES Approach

One of these dietary tools is the CAMES approach. I show the patients in the second appointment how to apply this approach to their 10 favorite foods from their food diary.

“CAMES” is a mnemonic device to remember five ways to adjust an individual diet to reduce total calories. C stands for cutting portion sizes. A stands for adding water, fruit, vegetables, and fiber. M stands for moving eating to an earlier time. E stands for eliminating certain foods from the diet. And the S stands for substituting, for making a better choice when possible.

The focus of this approach is to help the patient create a caloric deficit in such a way that the patient chooses permanent modifications to eating behavior. This does not eliminate the need of certain patients for specialized dietary counseling, but it does apply to the vast majority of patients, regardless of age or ethnic background.

### *Cutting Portion Sizes*

Cutting portion sizes is critical for almost everyone who wants to lose weight. Over the past three decades, American males increased their daily calorie consumption by 168 and females by 335 [15]. Consider the increased portion sizes at fast food restaurants. A patient who orders the Valu Pak at McDonald's receives the following: a Super Size order of fries (540 calories), a Big Mac (560 calories), and a large Coca-Cola (starting at 110 calories for 12 ounces) [23].

Or consider a patient going through the checkout line at Echards or WalMart. She notices her favorite candy bar, Snickers. What catches her eye is the price, only 72 cents for a king size bar versus 50 cents for a regular size bar. It seems she is getting a deal with twice the candy for less than twice the cost. The king size bar ends up on the checkout counter. However, before eating the candy bar, if the patient were to read the number of calories for the regular size bar (270) compared to the king size bar (510), she would see that the king size is not a good deal from a weight control perspective.

Weight gain and weight loss both follow a gradual but cumulative process. Eating an extra 100, 200, or 300 calories in one day will not cause the patient to become obese. However, over time the cumulative effect of those extra calories adds up to extra weight. Therefore, an important way for the patient to combat overweight is to consciously and creatively cut portion sizes. It does not mean she can never go to McDonald's with the family or buy a Snickers. It does mean that reducing portion sizes is a critical strategy for controlling calories in a nation where consumer marketing encourages more, not less consumption.

Cutting portion sizes is the most acceptable dietary modification for patients. It allows them to continue eating their favorite foods, yet control calories.

Patients who are adamant that they must have a Snickers every day at work can cut a regular size bar into two halves and spread out consumption of the same candy bar over two days or buy the fun size Snickers bar, which has about 90 calories, as a replacement for the regular size. Portion control is one way patients can still enjoy their favorite foods.

## *Adding Healthful Foods*

Adding healthful foods to the diet is the next step in reducing weight. It is important that patients know the health value of optimizing water, fruits, vegetables, and fiber in their diet. For instance, the Adventist Health Study highlights the importance of drinking at least five glasses of water per day. A 6-year prospective study of over 20,000 adults evaluated the association between fatal coronary heart disease and intake of water and other fluids. The relative risk of dying from coronary disease for men who drank five or more glasses of water per day was 0.46 and for women 0.59 compared to those who drank two or fewer glasses of water per day [24]. Or consider the benefits of fruits and vegetables in the prevention of stroke. The combination of the Nurses' Health Study ( $N = 75,596$ ) with the Health Professionals' Follow-up Study ( $N = 38,683$ ) showed those in the highest quintile (5.1 servings for men and 5.7 servings for women) had a relative risk for ischemic stroke of 0.69 compared to those in the lowest quintile [25].

## *Moving Eating Time*

Moving certain foods to an earlier time may at first seem a bit unusual. However, Americans are heavily marketed to expand their window of time for eating. For example, fast food restaurants used to close at 9 PM. Now they are open until 1 AM. Promotional cups from Wendy's said, "Eat Great, Even Late." Or remember Taco Bell's "It's Late, Eat More" cups? Television viewers sit through numerous food and beverage commercials each evening. Clearly the food industry's marketing departments have done their homework: Americans will consume more food, if encouraged to do so, no matter the time of day.

When going over the patient's food diary I ask if there are certain items he likes to eat at night, like popcorn, candy, or any other dessert? If he says, "Yes, I have popcorn every night," then I encourage the patient to eat the popcorn earlier in the evening and to consider going for a walk when finished. The dietary goal is to lessen the window of time for eating food. Patients can still have their dessert, but they need to consider eating it sooner, not later in the evening. This particular dietary tool is the one least used, unless the patient's job or lifestyle encourages eating just before going to bed.

When patients ask how much to eat at night and how late to do it, I tell them to consider their appetite the next morning. If the next morning they are not at least a little bit hungry and wanting some breakfast, then they are probably eating too much at night just before going to bed.

## *Eliminating Foods*

Eliminating certain foods from a patient's diet can be difficult. Patients will ask what foods they should or should not eat. That is a decision that only the patient can make. Labeling a certain food E will make it a forbidden food to that patient. If the physician makes the decision for the patient, the patient may comply, but only for a certain amount of time.

Typically when listing their top 10 foods, patients identify two or three foods with an E rating. When I point out that this is reasonable, the fear of dietary deprivation is gone. "You mean I can still enjoy most of the foods I like to eat except for a few and still lose weight?" I reply, "Yes. However, from now on you must be in control of the food, not the food in control of you." Patients' sense of ownership and empowerment goes up when they follow a dietary approach to food that reflects their choices.

## *Substituting Foods*

Dr Howard Shapiro has helped many people by pointing out to them how they can substitute certain foods, reduce calories, and lose weight. I like to show people his book, *Picture Perfect Weight Loss*, to show how making dietary substitutions like eating natural fruit desserts rather than canned or frozen ones can save hundreds of calories [26]. Patients understand the concept immediately.

When highlighting this point, I say something like, "So you're at a restaurant and you want to have a sweet dessert. Are you willing to have strawberries with whipped cream instead of the strawberry pie? If you answer yes, then you just saved yourself about 300 to 400 calories and still enjoyed a dessert." Or I bring up the example of buying regular popcorn versus low-fat popcorn. The caloric difference for the same volume of popcorn is about 300 calories. Or consider the caloric difference between Breyer's 94% fat-free ice cream (90 calories per serving) compared to Breyer's regular ice cream (150 calories per serving). When offered a choice, substituting between similar foods can save hundreds of calories.

The CAMES approach is a simple way for each patient to control the calories in the foods he or she already eats. This approach is not about a particular diet. It is about addressing the patient's personal dietary tastes, cultural influences, work situations, and family preferences. Figure 3.2 is a blank form that the patient completes after leaving the office. The patient lists the 10 favorite foods from the food diary and then applies one or more possible CAMES modifications to reduce the calorie consumption for a serving of each food. The ultimate goal is for the patient to apply this mnemonic to all foods, not just to the top 10 identified through the food diary.

Figure 3.3 is an example of the CAMES form filled out by one patient. This patient's favorite food was spaghetti. His normal portion size was two large platefuls. He decided that he would cut his portion size by using a salad plate and adding a fruit or vegetable to the plate before placing the spaghetti on it.



<u>Favorite Foods</u>	<u>C.A.M.E.S. Modifications</u>
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____
6. _____	6. _____
7. _____	7. _____
8. _____	8. _____
9. _____	9. _____
10. _____	10. _____

Figure 3.2. Patient form for the CAMES (cut, add, move, eliminate, substitute) approach (copyright © 2001 Dr Thomas McKnight).

<u>Favorite Foods</u>	<u>C.A.M.E.S. Modifications</u>
1. Spaghetti	1. C & A
2. Nacho chips/Fritos	2. E & S
3. Oatmeal	3. A
4. Candy	4. C or S
5. Meats/Chicken	5. C & A
6. Casseroles	6. C & A
7. Popcorn	7. C & M
8. Pizza	8. C
9. Ice cream	9. C or S
10. Vending machine snacks	10. E

Figure 3.3. CAMES dietary modifications for one patient (copyright © 2001 Dr Thomas McKnight).

## The Dash Diet

The second dietary tool for long-term weight loss used in the clinical setting is the National Heart, Lung, and Blood Institute's DASH diet [25]. This diet abounds in lower-calorie foods, such as fruits and vegetables, though it is not promoted as a weight reduction method. It is clinically proven to help lower patients' blood pressure by maximizing consumption of potassium, calcium, and magnesium. In one study of patients with high normal blood pressure (<139/89) the average systolic blood pressure was reduced by 5.5 mmHg and the diastolic blood pressure by 3.0 mmHg. Those with stage I hypertension (<159/99) at the end of 8 weeks lowered their systolic blood pressure by 11.4 mmHg and their diastolic blood pressure by 5.5 mmHg [27].

Patients frequently ask what kind of foods they should eat. They want specific advice, yet I do not have the time or skill to go into detail discussing the various diets. So unless the patient needs a special dietary program for a particular chronic disease like diabetes, I provide copies of the DASH diet and encourage the patient to incorporate those recommendations into their dietary program as much as possible.

By handing out copies of the diet and recommending that patients search for books on Internet sites like Amazon.com if they want more information or recipes, I avoid endorsing or promoting any particular diet.

## Prepackaged Meals

The third dietary tool recommended to patients for weight reduction and long-term maintenance is the use of healthful prepackaged or frozen meals. For busy patients at the office or home, consuming a Lean Cuisine or Healthy Choice meal a couple times a week has good science to support this behavior as a way to lose weight and to keep it off.

Sixty women with BMIs ranging from 26 to 40 were randomized into two groups. One group of women ate two frozen entrées per day for 8 weeks. The other group ate food they selected themselves from the Food Guide Pyramid. Total caloric intake for both groups was about 1365 calories per day. At the end of the study, the portion-controlled entrée group lost 6.5% of their weight versus 4.2% among the self-selected group [28].

A meta- and pooling analysis of six studies was done regarding weight management using a meal replacement strategy [29]. A partial meal replacement (PMR) group was compared to a reduced calorie diet (RCD) group. At 1 year, the PMR group had lost an average of 7% to 8% of body weight, while the RCD group had lost an average of 3% to 7%. However, the 1-year dropout rate was 47% for the PMR group and 64% for the RCD group.

This analysis shows that prepackaged meals are helpful for losing weight. The use of such meals helps patients with portion control whether or not they keep track of calories. It works very well for busy patients who do not have the time or the desire to engage in food preparation.

## Summary Points

1. The three dietary tools—the CAMES approach, the DASH diet, and prepackaged meals—provide simple, time-efficient, low-cost methods for patients to reduce their caloric intake and lose weight. During the second weight management appointment, I can easily present these three tools within 15 minutes.
2. Some patients choose just to apply the CAMES approach to the foods they already eat. Others employ CAMES plus one or both of the other tools. It is the patient's decision exactly how to use these tools.

3. The goal is calorie reduction so at least 10% of a patient's body weight can be lost over 6 months.
4. As a primary care physician, my goal is to empower patients to have control over calories each time they encounter food.

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## 4. Physical Activity

Americans are not physically active. The 1996 Surgeon General's report on physical activity and health for adults stated that 60% of the American population do not engage in regular physical activity (PA) and that 25% are not physically active at all (Figure 4.1) [1]. In 1990, the number of deaths in America due to inactivity and poor nutrition was reported to be 320,000 per year [2]. With utilization of nationally representative surveys, Flegal reported the number of excess deaths in 2000 was adjusted to 111,909 [3].

To understand the importance of physical activity as a means to reduce overall mortality, control chronic diseases, and especially to impact obesity, this chapter discusses the national recommendations for PA, the evidence-based science that supports encouraging patients to be physically active, and practical suggestions a physician can make to patients to help increase the patient's activity level.

### Physical Activity Recommendations

The national recommendations for physicians to advise patients to be physically active are confusing. On the one hand, the Healthy People 2010 program recommends that by 2010 at least 85% of primary care physicians counsel patients about physical activity [4]. Also, the NHLBI Obesity Guidelines state, "physical activity (PA) contributes to weight loss, both alone and when it is combined with dietary therapy, and that PA in overweight and obese adults increases cardiorespiratory fitness independent of weight loss" [5]. Both statements are category A recommendations, which means that the results of randomized controlled trials support these recommendations [5]. On the other hand, the US Preventive Services Task Force (USPSTF) 2002 recommendation states there is insufficient evidence to recommend for or against behavioral counseling in the primary care setting to promote physical activity [6]. Consequently, primary care physicians must personally decide whether to encourage patients to increase their PA based on the available science. The next section reviews the health benefits of physical activity in terms of its impact on mortality and on various chronic diseases, especially obesity.

### The Impact of Physical Activity on Health

In terms of mortality, in 1996 a study of over 32,000 men and women demonstrated that "fit persons with any combination of smoking, elevated blood pressure, or elevated cholesterol level had lower adjusted death rates than low-fit persons with none of these characteristics" [7]. For men, the adjusted relative

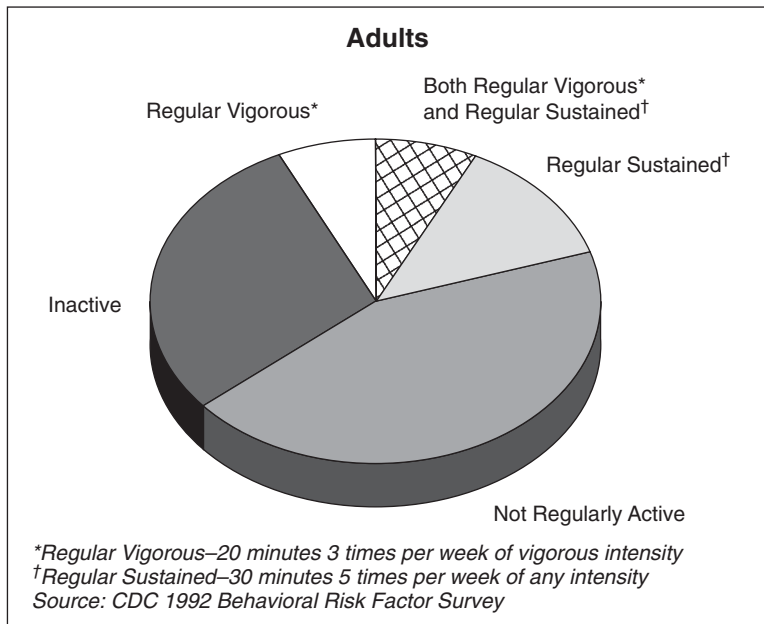


Figure 4.1. According to the 1996 Surgeon General's report, 60% of the American adult population did not engage in regular physical activity and 25% were not physically active at all. (Report of the Surgeon General. Centers for Disease Control and Prevention, <http://www.cdc.gov/nccdphp/sgr/ataglan.htm>. Last accessed: February 23, 2005 [1].)

risk (RR) of all-cause mortality due to low fitness was 1.52, while smoking was 1.65, and for women it was approximately 2.0 for both low fitness and smoking [7].

Another study evaluated the impact of physical activity on mortality among older women. The study consisted of 7753 white women 65 years old and older followed over 5.7 years. The results showed those women who were physically active at both the initial and follow-up visits had a lower all-cause mortality (RR 0.68) and cardiovascular mortality (RR 0.62) compared to sedentary women. These findings were not as strong for women over 75 years old or for those who were already in poor health [8].

Specifically focusing on women, The Women's Health Initiative Observational Study, which includes 73,743 postmenopausal women 50 to 79 years old, reported in 2002 that increasing PA resulted in a reduced relative risk for coronary artery disease. Each increasing quintile of energy expenditure lowered the risk of coronary artery disease from 1.0, 0.73, 0.69, 0.68, and 0.47. These findings were consistent across all races, ages, and BMIs [9].

The Nurses' Health Study consists of 72,488 participants with no cardiovascular disease or cancer in 1986 who complete extensive health questionnaires

on a periodic basis. The data show an inverse relationship between the relative risk of ischemic stroke and physical activity level (Figure 4.2). The lowest quintile of physical activity had a relative risk of 1.0, and the highest had a relative risk of 0.52. Brisk walking (third quintile with 4.7 to 10.4 metabolic equivalents) was associated with an age-adjusted reduced risk of both total number of strokes (0.68) and ischemic stroke (0.69) [10].

With respect to men, the Health Professionals' Follow-up provides important data regarding heart disease and physical activity. This is a cohort study of 44,452 men surveyed every 2 years since 1986. Recent data from this study show that running for 1 hour or more per week conferred a 42% risk reduction of coronary heart disease compared to men who did not run. Weight training for 30 minutes or more per week resulted in a 23% risk reduction, and rowing for 1 hour or more per week resulted in an 18% risk reduction. Intensity of the PA was also associated with a reduced risk, independent of the duration of the activity [11].

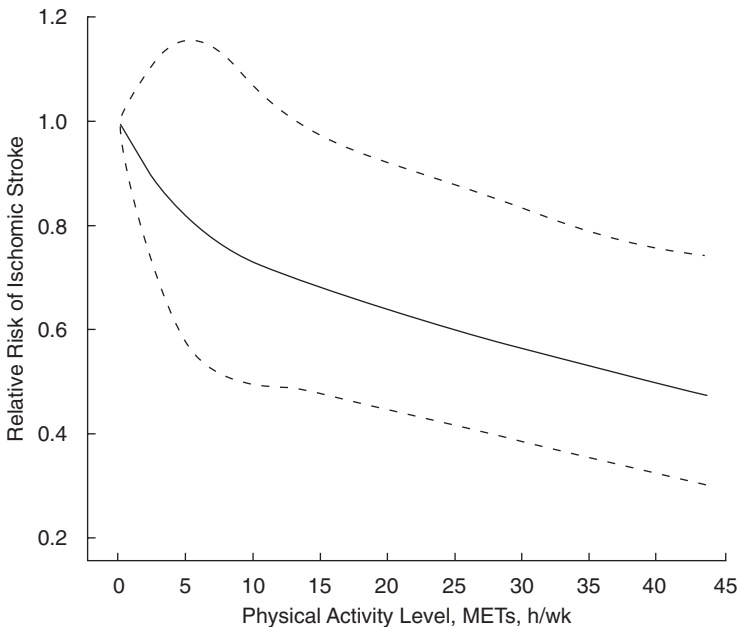


Figure 4.2. Spline regression model of multivariate relative risks of ischemic stroke according to total physical activity level. Total physical activity level is measured by metabolic equivalent tasks (METs) in hours per week. The solid black line represents point estimates; dotted lines represent 95% confidence intervals. (Reprinted with permission from Hu FB, Stamper MJ, Colditz GA, et al. *JAMA* 283:2964 copyright © 2000, American Medical Association. All rights reserved.)

Patients who are physically active have a lower mortality rate and a decrease in the relative risk of cardiovascular disease and stroke. They also experience a reduction in the rate of the metabolic syndrome, which is a risk factor for diabetes and coronary heart disease (CHD) that is found in 23.7% of the US adult population [12]. In 2001, the National Institutes of Health published the Third Report of the National Cholesterol Education Program Expert Panel called the Adult Treatment Panel III (ATP III). This report describes the five components of the metabolic syndrome – elevated blood pressure, low HDL, raised triglycerides, insulin resistance, and abdominal obesity [13]. It lists therapeutic lifestyle change (TLC) as an important treatment modality for the metabolic syndrome and reduction of LDL cholesterol. Increased physical activity is one of the TLC components [13].

The largest study to date evaluating the impact of physical activity on the metabolic syndrome was published in May 2004. The data come from the Aerobics Center Longitudinal Study (ACLS), which includes 7104 women whose cardiorespiratory fitness (CRF) was objectively determined using a treadmill. These data show a metabolic syndrome prevalence of 19% among women in the least fit quartile, and a prevalence of 2.3% among those in the highest quartile of CRF [14]. The study participants were mostly white, educated women and did not represent the US population in terms of ethnicity and socioeconomic background. Also, the prevalence of the metabolic syndrome among this population (19% in the least fit quartile) was less than in the general population (23.7%), which indicates a selection bias in terms of health in this study cohort. Nevertheless, the difference within this population between the least fit and the most fit in terms of the prevalence of the metabolic syndrome is remarkable. A smaller, but more diverse population included African American ( $N = 49$ ), Native American ( $N = 46$ ), and white ( $N = 51$ ) women with the metabolic syndrome. The data showed a trend similar to the ACLS results in terms of a lower rate of metabolic syndrome with a higher level of fitness compared to a lower level of fitness [15].

Physical activity, with or without weight loss, has positive effects on a variety of chronic diseases. These effects include reducing lipoproteins [16] and lowering the risk of glucose intolerance, diabetes [17], and breast cancer [18,19]. Physical activity is possibly as effective as medications in treating older patients with a major depressive disorder [20].

Physical activity has a positive impact on the health of obese patients whether or not weight loss occurs. One study divided premenopausal women into four groups: diet weight loss, exercise weight loss, exercise without weight loss, and control group. After 14 weeks, the data showed women in both the diet weight loss group and the exercise weight loss group lost weight. However, CRF improved only in the two exercise groups, and reduction in both total and abdominal fat occurred only in the exercise weight loss group [21]. Another study has shown a reduction in visceral adipose tissue in both older men and women that was inversely correlated with physical activity [22]. Finally, Ross and Katzmarzyk showed that “high CRF is associated with lower levels of total and abdominal obesity for a given BMI by comparison to those with a low CRF” [23].



## Various Types of Physical Activity

If physical activity is important for reducing the negative health impact of various chronic diseases, then which type of physical activity should a physician recommend to the patient? There are three categories of physical activity to consider: work-related, leisure-time physical activity (LTPA), and lifestyle activity.

The possible answer to helping reduce the prevalence of obesity, according to a study by Gutierrez-Fisac et al., may not be found in the workplace. His study was based on data from the 1993 Spanish National Health Survey, which contained a sample of 12,044 Spanish men and women aged 20 to 60 years. The mean BMI was greater for those who were inactive during their leisure time (BMI 25.9 in men, 24.43 in women) compared to those who participated in vigorous activity (men 24.42, women 22.97). The odds ratio (OR) for obesity decreased with increasing level of leisure-time activity in both men (OR 0.64) and women (OR 0.68). However, neither the mean BMI nor the percentage of obesity varied significantly with respect to the amount of work-related physical activity [24]. It is not clear to what extent how much total caloric intake in relation to the level of work-related physical activity (WRPA) played a role in these results. It might be that the more physically demanding the work, the more calories the individual consumes, which offsets calories utilized as a result of the work.

Leisure-time physical activity is typically defined as total weekly energy expenditure as expressed in metabolic equivalent-hours (MET-h), with 1 MET-h equal to sitting in a chair for 1 hour. Moderate activity (<6 MET-h) includes walking, working outdoors, and weightlifting. Vigorous LTPA (>6 MET-h) includes jogging, biking, swimming laps, racquetball, and rowing [25].

The health benefits of LTPA are clear. As mentioned in the study by Gutierrez-Fisac et al., LTPA had an inverse relationship to BMI. The higher the intensity level of LTPA, the lower the BMI was for both genders [24]. LTPA also has numerous other health benefits, including an inverse relationship with development of atherosclerosis of the carotid arteries [26]; reduction in C-reactive protein, interleukin-6, and tumor necrosis factor; and improved sensitivity to insulin [25].

However, some patients may not have the financial resources for membership in a fitness club; others may not feel comfortable being in the presence of members who are not obese. Still other patients may not live in a neighborhood where it is safe to walk or may not have home fitness equipment. In other words, is structured PA essential for a patient to receive the health benefits of PA?

A randomized study involving 235 participants compared a structured PA intervention to a lifestyle PA intervention over 24 months. The structured PA intervention consisted of a personal trainer at a fitness center up to 5 days per week. The lifestyle PA intervention arm recommended that participants accumulate at least 30 minutes of moderate-intensity PA on 5 days, and preferably all days, of the week. Participants also met in small groups 1 hour a week for the first 16 weeks and learned cognitive and behavioral strategies to increase physical activity. Both groups experienced a comparable increase in CRF from

baseline, a decrease in both systolic and diastolic blood pressures, and a reduction in percentage of body fat [27]. Weight loss was not an outcome measure of the study, and in fact neither group lost weight.

In terms of weight loss, is there a difference between lifestyle activity and a structured PA program? In a small study of 40 obese women, Andersen et al. examined the effects of lifestyle activity versus structured aerobic exercise in obese women (mean BMI 32.9). Both groups followed a low-fat diet. The structured PA group participated in supervised aerobic classes. The lifestyle PA group was encouraged to have 30 minutes of moderate-intensity exercise most days of the week, and to incorporate more physical activity during routines of daily living. Members were given an accelerometer to provide feedback on activity level [28]. The results showed that the mean weight loss between the two groups was similar throughout the study, with a divergence occurring with duration of time (Figure 4.3).

For many obese patients, scheduled exercise is not appealing or possible for a variety of reasons. The results of these two studies suggest that increasing lifestyle physical activity can provide health benefits equal to a structured exercise program. These results should encourage the physician that patients receive important health benefits simply by trying to do some moderate exercise 5 days per week and by increasing the physical activity of their daily living like parking farther away from entrances to stores or taking the stairs instead of the elevator.

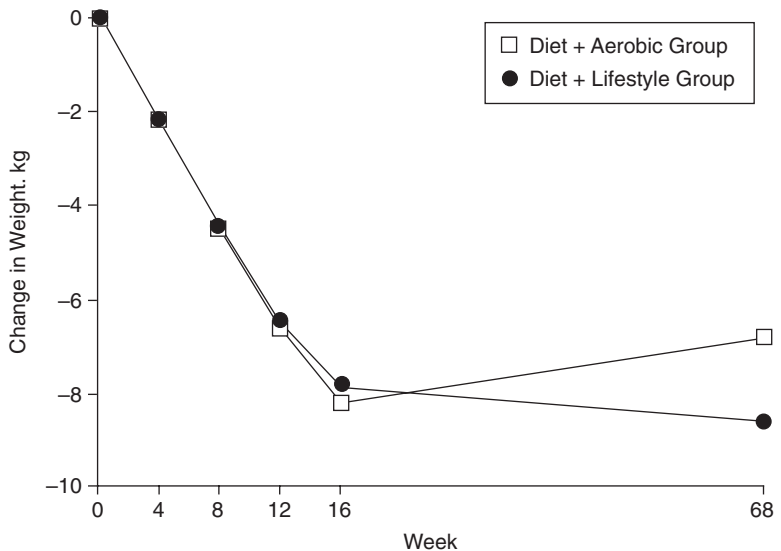


Figure 4.3. Mean changes in body weight for the diet plus lifestyle group and diet plus aerobic group. (Reprinted with permission from Andersen RE, Wadden TA, Bartlett SJ, et al. *JAMA* January 27, 1999, vol. 281 (no. 4): 337. Copyright © 1999, American Medical Association. All rights reserved.)

## Physical Activity for Obese Patients

For people with a normal BMI, the spectrum of PA or scheduled exercise options is almost unlimited and is largely dependent upon interest, skill, time, and financial resources. For the obese patient, another factor that influences participation in PA is the patient's weight and ability to move without injury. It is not uncommon for patients to lose weight through dietary means before increasing their LTPA. When obese patients begin to consider PA as an important component of their obesity treatment program, walking can be a fundamental component of that program for both scientific and practical reasons.

From a scientific perspective, Gregg et al. reported a dose–response rate in the relationship between walking and mortality among US adults. The study involved 2896 adults with diabetes. Weekly duration of walking was the key factor in reducing mortality. Those who walked 2 hours per week had a 39% lower all-cause mortality rate and a 34% lower cardiovascular (CVD) mortality rate. The relative risk for both all-cause and CVD mortality was lower for those who walked 3 to 4 hours per week (56% and 53%). The protective relationship of walking to all-cause mortality and CVD was the same for both genders, all adult ages, race, BMI, duration of diabetes, comorbid conditions, and limitations [29].

Similar positive health benefits from walking were found in postmenopausal women, with a lower risk of hip fractures by 6% for each hourly increase in walking per week [30], and in premenopausal women who maintained weight loss and decreased waist circumference with walking 2 to 3 hours per week [31].

How does walking impact the ability to lose weight or maintain weight loss? Is it a dose–response relationship? In a 12-week study by Jakicic et al., 184 sedentary women were divided into four groups of various physical intensity and duration levels. During follow-up at 12 months, women who reported walking <150 minutes/week maintained a mean weight loss of 4.7%, whereas those who walked for >150 minutes per week had a mean of 9.5% [32]. The majority of participants in the National Weight Control Registry (NWCRC) report they typically exercise 1 hour per day [33] compared to the Surgeon General's recommendations of cumulative moderate-intensity exercise no less than 30 minutes per day, 5 days per week [1]. The International Association for the Study of Obesity in 2003 stated in its consensus statement that to prevent weight gain or regain a person should experience moderately intense activity 45 to 60 minutes per day [34].

However, some data suggest that for some patients PA does not have a dose–response relationship, and that PA is not more effective than diet alone [35]. Though 91% of the NWCRC participants describe exercising on a regular basis, 9% do not exercise yet still maintain their weight loss [33]. For the physically handicapped or those who dislike physical activity, this means the possibility still exists to lose weight and to keep it off, though the probability of weight loss may be less compared to those who are active on a regular basis. Also, for many obese patients, walking is the only safe PA possible until some weight is lost.

## *Clinical Assessment for Physical Activity*

Risk stratification and avoidance of injury are important concerns the physician must address when recommending that a patient become physically active. The physician has access to the patient's medical record and can physically examine the patient. With this information, cardiovascular, respiratory, or musculoskeletal assessment should be made prior to the patient engaging in a physical activity prescription, including walking.

## Tools for Increasing Physical Activity

Tools for increasing physical activity are available for primary care physicians. One tool is the Step Test Exercise Prescription (STEP). In this program, patients are given guidelines for exercising tailored to their interest and ability and have their aerobic capacity assessed as they step up and down on two steps 20 times. In a controlled STEP study by Petrella et al. of 284 healthy elderly (>65 years) patients, at 12 months follow-up the STEP intervention group had a 14%  $VO_2$  increase over baseline  $VO_2$  compared to the control group with 3%  $VO_2$  increase over baseline [36].

Another tool is the Physician-based Assessment and Counseling for Exercise (PACE) program. This intervention is based on the Stages of Change theory of behavior change [37]. Strategies for behavioral counseling for PA are developed using the social cognitive theory, which suggests that a person's behavior is the result of the interaction between personal, social, and environmental conditions. Accomplishment of behavior change is found through goal setting, reducing barriers, strengthening self-efficacy, and developing social support [38]. The PACE program contains a provider's manual, assessment forms, and counseling protocols. This is an interactive program between the patient, the physician, and the nurse in an attempt to optimize the brief appointment time between the physician and patient. The intervention requires 2 to 5 minutes of the physician's time [38].

Both the STEP and the PACE programs require physician training. For those physicians not so inclined, two other tools are available. One is a 20-week-long workbook produced by the Cooper Institute called *Active Living Every Day* [39]. This colorful, interactive manual takes patients through a psychological and physical building process to become more physically active. The physician can obtain copies of the book and sell them at cost to the patient or request that certain local bookstores stock copies.

Finally, the Internet has programs patients can engage in that provide both general information on physical activity and motivational ways to track one's progress. One such program is called America on the Move ([www.americaon-themove.org](http://www.americaon-themove.org)). It has an excellent website that allows participants to log on and keep daily track of their walking progress as it compares to a set mileage goal like walking the Appalachian Trail or retracing Lewis and Clark's expedition across America [40].

## Summary Points

1. Physical inactivity contributes to the death of thousands of Americans.
2. Americans do not incorporate enough physical activity into their daily living.
3. The health benefits of physical activity are proven.
4. Physicians should recommend all patients be physically active.
5. Increase in leisure-time and lifestyle activity can improve health.
6. Some obese patients need to lose weight before becoming physically active.
7. Most obese patients need to be medically evaluated before starting a physical activity program.
8. Tools to increase physical activity are available: STEP, PACE, Active Living, and Internet sites.

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## 5. Childhood and Adolescent Obesity

This chapter addresses the science of childhood and adolescent obesity and the approach to treatment. Although the principles and tools discussed in other chapters are applied to this population, that does not mean that children and adolescents are little adults and do not have unique needs. It does mean that people of all ages physiologically respond in the same way to excess caloric intake. People of all ages also experience the same comorbidities of obesity. The incidence of chronic conditions like hypertension and diabetes has dramatically increased among obese children and adolescents; when present these conditions need to be aggressively treated with the same seriousness in young people as in adults. The long-term health impact for the young obese patient with early onset of these diseases is not known. The potential morbidity and mortality from either hypertension or diabetes after 20 to 30 years may begin to occur during young adulthood. With an early age of onset for these diseases, the young person's life expectancy could be reduced. This premise is consistent with the findings of the Bogalusa Heart Study, which shows that the onset of cardiovascular disease and the effects of hypertension can begin early in life [1].

Children and adolescents are different from adults and from each other. In this chapter a patient is considered to be a child or pre-adolescent up to 13 years of age and an adolescent from age 13 to 18. This age distinction is important in treatment; the physician should present the weight management program differently to the two age groups.

When treating a young overweight or obese patient, the primary care physician must consider the growth and development of both genders at all ages. One way this is done is through use of the body mass index (BMI) charts for children and adolescents produced by the Centers for Disease Control and Prevention (CDC), which are gender specific for ages 2 to 20. These charts, coupled with the principles and tools presented in this book, can guide the physician in helping the patient progress through a healthy weight maintenance or weight reduction program.

Helping children and adolescents in weight maintenance or weight loss in the primary care setting is more complex and challenging than helping adults lose weight. Growth and development variables within the child and external variables outside the child's control, coupled with the lack of an evidence-based clinical practice guideline for the primary care setting, make helping such patients difficult and long-term weight loss success uncertain at best. As a result of these barriers, it is tempting for the physician to refer such patients to a specialty pediatric obesity treatment clinic. Unfortunately, such clinics typically are not located nearby or are not financially feasible, especially for patients with limited income. Another option is for the physician to offer obese patients and families sound-bite type recommendations like "don't make the child clean his or her plate," "simply reduce TV viewing time," or "play outside until it gets dark." Such an approach may or may not be effective with temporary weight loss. However, this process does not involve a logical method of appropriate patient selection, or implementation of sound dietary, behavioral, and physical



activity components of a program tailored to the individual child or adolescent. Finally, the least appealing option for the physician is to ignore the patient's weight condition, hoping the child or youth will hit a growth spurt and grow into their weight. This is not likely to happen when a 9-year-old boy weighs almost 150 lb or a 13-year-old girl tips the scale at 200 lb. Ignoring the patient's obesity or handing the patient or parent an information brochure with bulleted suggestions for weight loss is not a medically sound option.

The final section in this chapter will discuss three case presentations. Sometimes the patient is successful with weight maintenance or weight loss and sometimes not. Whatever the short-term weight management outcome, the physician can gain some professional satisfaction knowing that unlike commercial products or programs that promise quick weight loss or the misinformation shared by the patient's parents or peers, the physician is treating the patient for a chronic disease with the best information available at this time.

## The Definition of Overweight and Obesity

The CDC defines an overweight adult as having a BMI of 25 to 29.9 and an obese adult as having a BMI of  $\geq 30$ . However, the CDC definition of overweight and obese children and adolescents is different from the adult definition. The terminology for an overweight child or adolescent is "at risk for overweight," which is defined as a BMI  $\geq 85$ th percentile for age and gender. The terminology for an obese child or adolescent is "overweight," which is defined as a BMI  $\geq 95$ th percentile for age and gender [2]. The reasons for this difference will be explained later in this chapter when the child and adolescent BMI chart is discussed in greater detail.

For some parents and young patients, using two definitions of overweight to describe someone who is either overweight or obese may be confusing. Consistent with the terminology used for adults, the American Obesity Association (AOA) uses the 85th to the 95th percentile to define "overweight" and the 95th percentile and greater for "obese" [3]. In order not to confuse parents and young patients with "at risk for overweight" when the patient is obviously overweight and "overweight" when the patient is obviously obese, the AOA terminology for overweight and obesity will be used to describe young patients who are in the 85th and 95th percentile by age and gender.

## The Prevalence of Childhood and Adolescent Obesity

The worldwide prevalence of overweight and obesity among children is not evenly distributed. The overall global prevalence of both is 10%, while in Europe it is 20%, and in the Americas 30% [4]. Even in Europe the distribution is not homogeneous but ranges from 10% to 20% for Eastern Bloc nations to 20% to 40% for non-Eastern Bloc Mediterranean nations [5]. In countries where the

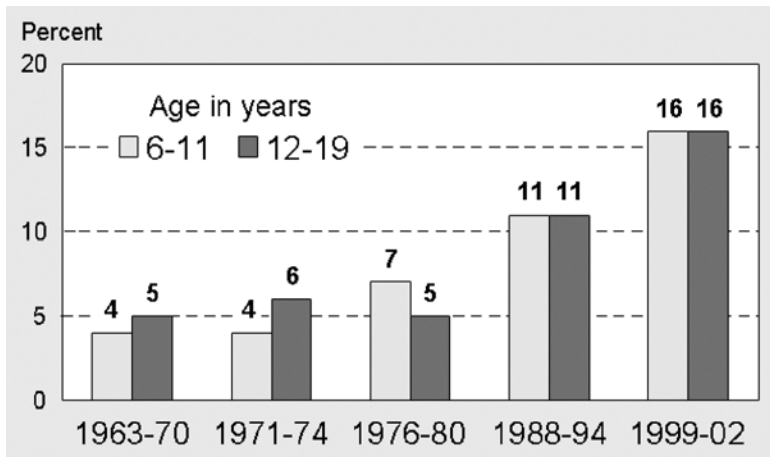


Figure 5.1. Prevalence of overweight among children and adolescents ages 6–19 years from 1963 to 2002. The data exclude pregnant women starting with 1971–1974. Pregnancy status is not available for 1963–1965. Data for 1963–1965 are for children 6–11 years old; data for 1966–1970 are for adolescents 12–17 years old, not 12–19 years old. (Reprinted from the Centers for Disease Control and Prevention website [7].)

current rate is comparatively low, the trend is still not healthy. In Japan the prevalence was 11.1% for boys and 10.2% for girls in 2000, but those statistics represent an 82% increase for boys and a 44% increase for girls compared to Japan's 1976 to 1980 data [6].

In the United States, the prevalence of overweight and obese children and adolescents since 1980 has increased at an alarming rate. In the last 20 years, the prevalence of obese children aged 6 to 11 years more than doubled from 7% to 15.3% and for ages 12 to 19 tripled from 5% to 15.5% (Figure 5.1) [7]. The National Health and Nutrition Examination Survey (NHANES) for 1999 to 2002 reports that 31% of children 6 to 19 years old are either overweight or obese, and 16% are obese, with significant differences among races. The obesity rate for non-Hispanic whites is 13.6%, for non-Hispanic blacks is 20.5%, and for Mexican Americans is 22.2% [8]. The disturbing disparity between the races may be even greater based upon where the child lives, with Hispanic American children who live in inner city neighborhoods having twice the prevalence of overweight and obesity as the national average and 1.7 times the national Mexican American average [9]. The weight disparity between races continues with the relationship of weight and socioeconomic status (SES). Overweight non-Hispanic white, Hispanic, and Asian adolescent girls have an inverse relationship with SES. However, non-Hispanic, black adolescent girls are not less likely to be overweight with increasing SES, which means a low SES does not account for the overweight prevalence among non-Hispanic, black adolescent

girls [10]. Finally, another alarming trend in the obesity epidemic among children and adolescents over the past three decades is the increase in the degree of obesity among those who are obese today compared to obese children and adolescents 30 years ago [11].

## Causes of Overweight and Obesity

The cause of childhood and adolescent obesity is multifactorial and includes genetic, parental, and environmental factors. Concordance rates of BMI were 0.74 for monozygotic twins, 0.32 for dizygotic twins, and 0.24 for siblings, which explains up to 80% of the BMI variance among siblings [12]. This means that if siblings are exposed to an excess amount of calories, they tend to process those calories in a similar way. However, it is not likely there has been in the past 20 years a genetic shift or drift within the population to explain the dramatic increase in obesity during this time. The exact amount of influence genetics plays in the obesity epidemic for children and adolescents is not known, though it may well play a role in the individual's susceptibility to become obese if exposed to an excess amount of calories.

The primary care physician must consider genetic syndromes and endocrine conditions as possible explanations for a child's obesity. Prader-Willi syndrome is characterized by a rapid increase in weight from ages 1 to 6, hypotonia and poor feeding in infancy, hypogonadism, and cognitive delay [13]. The majority of children with Cushing syndrome are obese and short in stature [14], which contrasts with children who are obese from eating excess calories and are commonly taller than their peers. Other medical conditions like hypothyroidism or growth hormone deficiency can cause a child to be obese, which would be suggested by clinical findings like a goiter, short stature, or delayed puberty. After a complete history and physical examination, in the vast majority of obese patients the physician can reassure the parents that their child does not have a genetic disorder or a metabolic syndrome. The one laboratory test all obese patients need is a thyroid-stimulating hormone (TSH) test. Hypothyroidism can present with non-specific findings and may be increasing in its prevalence [15].

## Pre-Adolescent Obesity

If genetic and medical conditions are not the cause of a child's obesity, then family and environmental factors must play an important role. Parents are role models and make decisions that directly impact the types and amount of food eaten by pre-adolescent children [16,17]. Obesigenic family clusters are a risk for young girls to have a higher BMI; parents in such family clusters have a greater intake of dietary fat and are less physically active than parents in non-obesigenic family clusters [18]. Added to the factors just mentioned is the reality that many parents do not recognize that their obese child has a medical condition

that needs professional attention [19] and that in some populations there is now a trend for children to become obese prior to beginning elementary school [20]. A disease condition that begins very early in life, is fueled by the family's lifestyle, and is not recognized by the parents to be serious are difficult barriers for the primary care physician to overcome in order to help identify and treat an overweight or obese child.

The pediatric BMI is the most powerful tool available to help the physician lessen these barriers and to express concern specifically about a child's weight. The physician can use the BMI chart as a visual tool to help the parents understand how their child's weight compares to normal weight children. In this way the physician is trying to nudge the parent from a pre-contemplation stage of change with regard to the child's weight to a contemplation stage of change. Specific examples as to how to use the BMI in this way are provided in the case presentations.

Parents will ask why their child is overweight or obese. If the cause is not the result of a genetic syndrome or hormonal condition then it is related to modifiable behaviors both within the family and the individual. Specific behaviors associated with childhood obesity include a higher dietary fat intake compared to non-obese children [21], watching  $\geq 4$  hours of TV per day [22], eating while watching TV [23], use of electronic games [24], and lower levels of physical activity [25]. During the weight management program, the physician will help the parents identify the variables that contribute to their child's obesity.

## Adolescent Obesity

Obese adolescents are different from both obese children and obese adults. Some obese adolescents developed their obesity during childhood; then they or their parents became concerned about their weight as teenagers. Others were thin during their pre-adolescent years and because of personal choices and environmental conditions became obese. Regardless of when the obesity started, the teenage years provide an opportunity for a patient's obesity to worsen or to be improved with health behavior changes.

More freedom to make personal choices is the hallmark of becoming a teenager. In terms of energy balance, sometimes those choices are not healthy and result in weight gain. Adolescent obesity has the same contributing causes as childhood obesity. In addition, obese adolescents have more frequent exposure to fast foods and have a greater caloric intake than lean counterparts [26], drink excessive amounts of sugar-added beverages [27,28], and, especially true for non-Hispanic white and black girls [29], decrease their levels of physical activity when transitioning from adolescence into adulthood [30]. Each variable can contribute to the development of obesity either by increasing the amount of calories consumed or by decreasing the amount of calories utilized. Fortunately, all the variables that have a negative impact on weight can be reversed or at least modified, resulting in weight loss, if the patient so desires. Before discussing how such a process can be implemented, we shall first examine the health impact of obesity on children and adolescents.

## Health Impact of Obesity

Obesity has a negative impact on a child's nervous system, vascular system, and metabolic condition. In one study obese children appeared to have a depressed sympathetic nervous system (SNS), which lowers the rate of thermogenesis, thus setting the stage for a positive energy balance and increase in weight [31]. Thermogenesis is involved in 70% of the body's caloric expenditure. The actual amount of weight gain attributed to a lowered SNS is not known, but this finding suggests a possible vicious circle where increasing weight negatively impacts the nervous system and a depressed nervous system in turn results in an increase in weight.

An obese child's vascular system can be harmed in a variety of ways. Mild to moderately obese children have arterial endothelial dysfunction and an increased intima-media thickening [32]. Ultrasound studies have shown obese children's carotid arteries are thicker and stiffer than those of non-obese children [33]. Obese children have higher levels of lipoproteins, including the more atherogenic low-density lipoprotein (LDL) [34], which may increase the child's risk for cardiovascular disease at a young age. The presence of the metabolic syndrome in the obese child may play an important role in development of cardiovascular disease; therefore this syndrome deserves particular attention.

A major metabolic impact of obesity is the development of insulin resistance that predisposes the child or adolescent to develop the metabolic syndrome. The components of the syndrome are glucose intolerance, a low HDL, elevated triglycerides, increased abdominal circumference, and elevated blood pressure. By definition, a patient with at least three of these five factors has the metabolic syndrome. Those who have the syndrome have an increased risk of developing diabetes or premature cardiovascular disease.

The presence of metabolic syndrome among adolescents increases dramatically with increasing weight. The National Health and Nutrition Examination Survey III (NHANES) 1984 to 1994 data showed the syndrome was present in 4.2% of all adolescents aged 12 to 19 years, 6.8% of those who were overweight, and 28.7% of those who were obese [35]. In less than a decade, the prevalence of the syndrome worsened. The NHANES 1999 to 2000 data showed an overall prevalence of 6.4%, with 7.1% for those overweight, and 32.1% for the obese [36]. The prevalence of the syndrome increases even more by degree of obesity. A study by Weiss et al. of children between the ages of 4 and 20 years, comprising 439 obese, 31 overweight, and 20 non-obese patients, found that the metabolic syndrome was present in 38.7% of moderately obese and 49.7% of severely obese patients [37]. This study also showed there was an increase in the prevalence of the metabolic syndrome with adolescents who had an increase in insulin resistance ( $P$  for trend,  $<0.001$ ) [36]. Other studies have shown that insulin resistance is highly correlated with an increase in obesity, regardless of ethnicity [38].

The presence of insulin resistance at the receptor cells results in a hyperinsulin condition in an attempt to force glucose out of the serum and into the cells. Once the body's compensatory mechanisms, including the increased release of insulin by the pancreas, begin to fail, then the serum glucose levels rise. When fasting serum glucose levels rise to 126mg/dl on two separate

occasions, or beyond 200mg/dl at 2 hours during a glucose tolerance test, the patient, whether child, adolescent or adult, has now developed the chronic disease of type 2 diabetes mellitus.

Children and adolescents are now suffering from a disease that was previously described as adult-onset diabetes mellitus [39,40]. The CDC reports that about 206,000 children and adolescents had diabetes in 2002. It is not known how many of those children have type 1 or type 2 diabetes [41].

There does not appear to be an overwhelming number of young patients with type 2 diabetes yet, though the actual number is not known. The future holds greater concern. In 1994, less than 5% of newly diagnosed diabetic children were type 2; now that figure is 30% to 50% of newly diagnosed cases of diabetes among all children [42]. With the rapidly rising prevalence of obesity and the metabolic syndrome and their link to the development of type 2 diabetes, the medical community is bracing itself for an epidemic of diabetes among adolescents and young adults. A reported 10-fold increase in the prevalence of type 2 diabetes in the Cincinnati area over previous years is indicative of this trend [43]. This concern is further enhanced by the Narayan et al. study that showed a child born in 2000 had an estimated lifetime risk of becoming a diabetic of 32.8% for males and 38.5% for females. Those with highest lifetime risk are Hispanic males at 45.4% and females at 52.5% [44].

Obesity can negatively impact a young person's health in many ways besides the neurological, cardiovascular, and metabolic effects. The patient is at risk for developing hepatic steatosis, polycystic ovary disease, and orthopedic problems like slipped capital femoral epiphysis, pseudotumor cerebri, and sleep apnea [45]. Finally, the psychosocial trauma of low self-esteem and social isolation can significantly impact the quality of the child's life. Having a chronic disease like obesity, with or without comorbidities, can be traumatic for a pre-adolescent or an adolescent. In one cross-sectional study by Schwimmer et al., 106 severely obese children and adolescents aged 5 to 18 years ranked their health-related quality of life the same as did children and adolescents with cancer [46].

## Treatment Options

Treatment options for the obese child include boarding schools [47], summer camps [48], medical centers with multidisciplinary teams, and commercial programs. All these options serve some patients but are not available to the majority because of limitations like appropriate age for attendance, financial responsibility, or traveling distance. However, one treatment option available to the majority of young obese patients is their primary care physician's office – the setting least utilized in the treatment of obesity though it is where the patient is best known. This does not mean the primary care physician is the best provider of care for all young obese patients. Whether treating heart disease, diabetes, or obesity, a physician must know his or her limitations and always work towards developing a referral system that better serves the patient when those limitations are reached. On the other hand, the primary care physician's office is an excellent location for treating most cases of obesity

because the barriers of appropriate age, finances, and distance are less than with the other options. For many obese patients, the primary care physician's office is the only option available to them.

In 2003, the American Academy of Pediatrics (AAP) issued a pediatric overweight and obesity policy statement [49]. The publication highlights two areas of recommendations: advocacy and health care. Under advocacy, physicians are encouraged to be involved in helping develop and implement policy on various governmental levels to help prevent and control the development of overweight and obesity among children. Involvement in schools, communities, and organizations that provide health coverage to children is encouraged for both prevention and the development of effective treatment [49].

The AAP makes eight recommendations that can be implemented in the primary care physician's office:

1. Identify and track children at risk in terms of family history, SES, birth weight, ethnic, cultural, or environmental factors.
2. Calculate and plot the BMI yearly.
3. Use BMI change to identify excessive weight gain.
4. Encourage, support, and protect breastfeeding.
5. Encourage parents and caregivers to promote healthy eating patterns and food items, plus encourage children to be responsible for self-regulation of food intake.
6. Promote structured and unstructured physical activity.
7. Recommend limiting TV and video time to less than 2 hours per day.
8. Recognize and monitor obesity-associated risk factors for adult disease [49].

The challenge primary care physicians face is to take the National Heart, Lung, and Blood Institute (NHLBI) evidence-based obesity guidelines for treating adults [50] and the AAP recommendations for treating overweight and obese children from a strategic level to a practical approach in the primary care physician's office. The rest of this chapter will focus on applying, as appropriate for children and adolescents, the concepts and tools learned in treating obese adults. First there needs to be discussion regarding the most important tool a physician has for helping to start and guiding the process of weight maintenance and weight loss for children and adolescents: the age- and gender-specific pediatric BMI.

## The Pediatric BMI

The NHLBI Guidelines for adult weight loss of 1 to 2lb per week with a goal of 10% weight loss over 6 months are clear [50]: create a caloric deficit of 300 to 500 calories per day (unless the patient is extremely obese), monitor either weekly or monthly weight loss, and plot the patient's progress towards the 10% goal. In reality, the process is much more difficult. Pediatric treatment for overweight and obese children and adolescents is even more difficult than treating adults. There are no randomized controlled trials to give specific advice regarding total weight

### CDC Growth Charts: United States

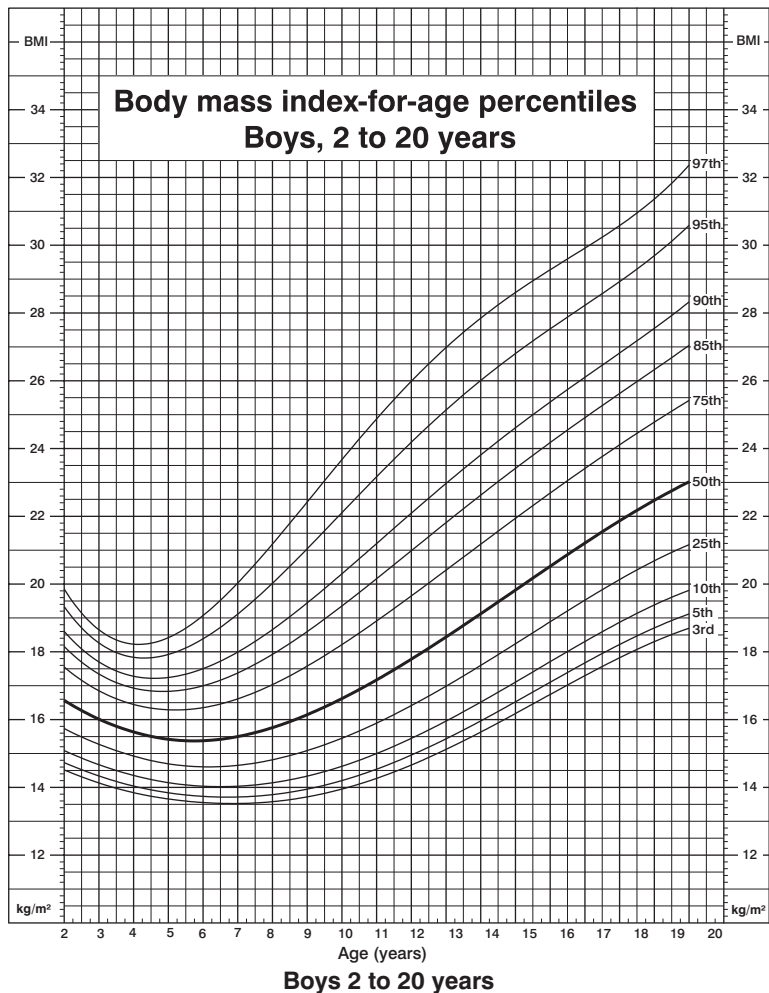


Figure 5.2. Boys' BMI chart. BMI equals weight in kilograms divided by the square of the height in meters, or weight in pounds times 703 and divided by the square of the height in inches. (Reprinted from the Centers for Disease Control and Prevention website [7].)

loss over a period of time or suggestions for a daily caloric deficit or weekly weight loss. Because of the tremendous developmental and growth changes children and adolescents experience, the specific guidance that can apply to almost every adult may never be forthcoming for the pediatric population.



The one obesity tool that does consider the uniqueness of growth and development is the pediatric BMI plotted against gender- and age-specific charts (Figures 5.2 and 5.3). Calculation of pediatric BMI is the same as for adults. Take the patient's weight in pounds divided twice by the height in inches and multiply

### CDC Growth Charts: United States

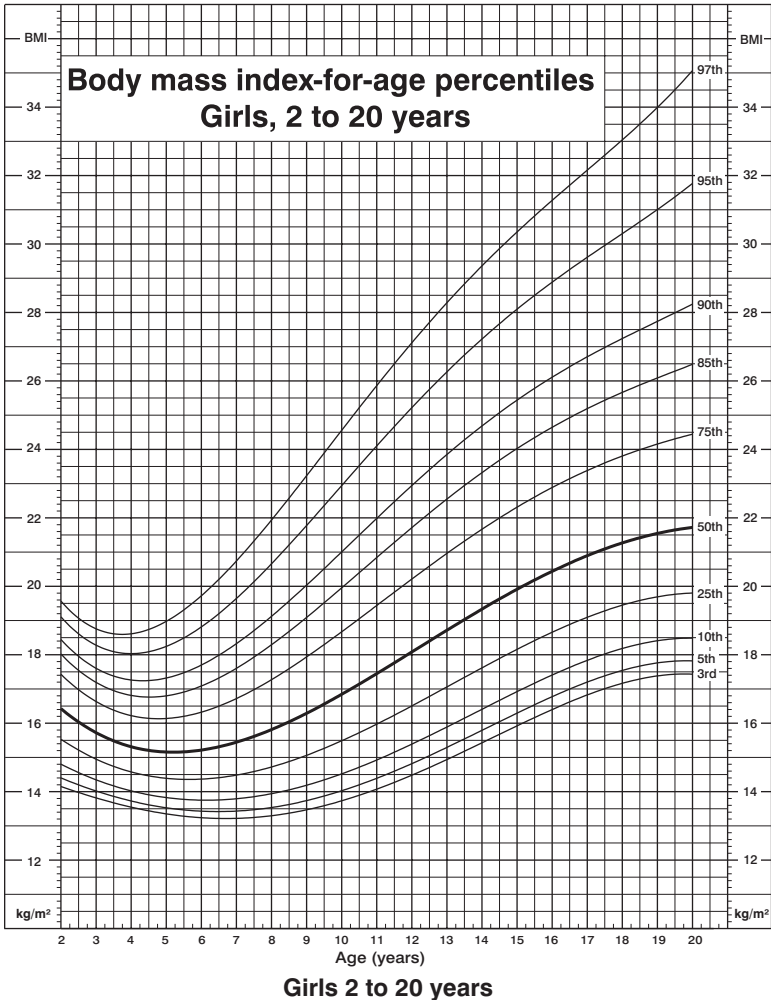


Figure 5.3. Girls' BMI chart. (Reprinted from the Centers for Disease Control and Prevention website [7].)

that value by 703. For adults, *normal*, *overweight*, or *obese* are defined by the BMI. In contrast, for children the weight category is defined by plotting the BMI against the 95th percentile for gender and age. For example, for an adult a BMI of 22 indicates a normal weight. This is not the case for children when plotting a 22 on the pediatric BMI growth chart. For example, an 8-year-old boy with a BMI of 22 is obese. At age 11 with the same BMI he would still be overweight, but at age 15 a BMI of 22 is normal for his age and gender.

Understanding that a child's BMI can remain the same while the child goes from being obese to overweight to normal weight reflects how developing children can grow into their weight over time. Using the BMI chart, the physician can show parents that the goal over time is to maintain the child's current BMI through the different growth spurts. This approach helps to discourage parents who want their child to lose weight at a time in their physical development when they naturally will increase in physical size. This approach is helpful when dealing with overweight pre-adolescent children. The physician should show the parents where their child is on the chart and how their child's weight should be tracking moving into adolescence. During this time the physician can introduce to the parents the AAP recommendations of promoting structured and unstructured physical activity, eating more fruits and vegetables, and limiting sedentary activity. Partnering with the parents, the patient's BMI can be used semiannually as a way for the physician to reinforce positive health behavior changes for both the child and for the parents who are role models who still have significant control over the child's dietary and physical activity choices.

## Treating Overweight Pre-Adolescents

The goal for treating the overweight pre-adolescent is weight maintenance over time, not weight loss. The pediatric BMI chart guides the physician as to a healthy weight and height for a particular age. Plotting the child's BMI on the pediatric BMI chart identifies how serious the child's excess weight condition is compared to peers and provides guidance regarding a healthy weight for the future. An elevated BMI above the 85th percentile should encourage the parents, at the physician's suggestion, to implement health behavior changes within the family to improve everyone's dietary and physical activity choices. The physician can provide handouts and website information to educate parents (Table 5.1). The websites are interactive for both the child and the parents, which makes improving health fun for everyone in the family. The pediatric BMI chart provides guidance and encouragement. The physician monitors the child's progress on a periodic basis when the child is seen in the clinic for other health reasons.

Table 5.1. Websites for children and parents

**Pre-adolescent websites for both children and parents:**

1. “BlubberBusters.com” at [www.blubberbuster.com/index.html](http://www.blubberbuster.com/index.html). Interesting links are Weight Calculator, Food, and School.
2. “FitRec Kids” at [www.fitrec.com/fitreckids/index.cfm](http://www.fitrec.com/fitreckids/index.cfm). Encourage visiting the SnackBar and Playmates links.
3. “Healthfinder Kids” at <http://www.healthfinder.gov/scripts/kids.asp?Keyword=591>. Click on Cool and Uncool Stuff along with nutrition and exercise.

**Adolescent websites for both teens and parents:**

1. “Young Fat Easier to Shed” at [www.cbsnews.com/stories/2003/09/19/earlyshow/contributors/emilysenay/main574135.shtml](http://www.cbsnews.com/stories/2003/09/19/earlyshow/contributors/emilysenay/main574135.shtml). News story on how one young person lost weight. Follow links to other childhood obesity topics, too. Informative for both teens and parents.
2. “TeensHealth – Body Mass Index” at [http://www.kidshealth.org/teen/food\\_fitness/dieting/obesity.html](http://www.kidshealth.org/teen/food_fitness/dieting/obesity.html). Informs the teenager about BMI, why it is important, and how to calculate it.
3. “Kidzworld.com” at [www.kidzworld.com/site/p2851.htm](http://www.kidzworld.com/site/p2851.htm). Offers Exercise and Healthy Eating quiz to test a teenager’s knowledge about what it takes to maintain a healthy lifestyle.

**Websites for parents who want more in-depth knowledge about childhood obesity:**

1. [www.heartcenteronline.com/myheartdr/common/articles.cfm?Artid=440&startpage=1](http://www.heartcenteronline.com/myheartdr/common/articles.cfm?Artid=440&startpage=1). Good overview of the problem.
2. [www.healthology.com/focus\\_article.asp?f=beyond\\_dieting&c=childobesity](http://www.healthology.com/focus_article.asp?f=beyond_dieting&c=childobesity). Another good overview of childhood obesity.
3. [www.aafp.org/afp/990215ap/990215a.html](http://www.aafp.org/afp/990215ap/990215a.html). American Academy of Family Physicians fact sheet on how a child can maintain a healthy weight.
4. [www.cdc.gov/nccdphp/dnpa/obesity/state\\_programs/index.htm](http://www.cdc.gov/nccdphp/dnpa/obesity/state_programs/index.htm). See what your state is doing to promote healthy lifestyles among children.

## Treating Obese Pre-Adolescents

For pre-adolescent children with a BMI beyond the 95th percentile, a more aggressive, intensive program is needed. Their BMI is a serious red flag for current and future health problems that the physician should not ignore. Unlike treating obese adults or adolescents who are the primary focus of the physician’s attention, the parent(s) of the obese pre-adolescent is the physician’s primary patient, not the child. This presumes the physician has ruled out genetic and hormonal causes of obesity and that the child’s obesity is the result of stored excess energy. The parent of the pre-adolescent is the primary filter between the physician and the child through whom the concepts on how to improve eating

habits, make better dietary choices, and increase physical activity must pass. If the parent does not understand his or her vital role in this process and is not willing to assume that responsibility, then the physician will not be successful in helping the child. In severe cases, the physician should consider referral to a dietician and possibly a medical center for a multidisciplinary approach. However, in rural primary care settings, the obese pre-adolescent typically does not have access to such care. The primary care physician must have another option to help such a patient.

The most important person(s) in helping an obese child is the parent, not the multidisciplinary team or the family physician. In most cases of pre-adolescent obesity, one or both parents are obese and need to lose weight. If parents are ready to lose weight by applying the program described in this book, then as they gain control of their obesity, they can assist their child in making healthy dietary and physical activity choices.

Even if the parents are not obese, taking them through the adult program and then assisting them in learning how they can teach those principles to their child puts the responsibility for success on the parent, not the child. For example, parental influence on a 9-year-old regarding food choice is enhanced, not limited, by using the CAMES approach to food explained in Chapter 9. If a certain food is a family favorite, applying the C option (portion control) means the family can have their special food while controlling portion sizes. Another favorite tool when teaching children how to improve their dietary choices in order to reduce calories is the S or substituting option of the CAMES approach. Parents can make going to the grocery store an educational experience to learn about the various choices a person has when selecting specific food items.

It is not reasonable to expect that if a family enjoys popcorn while watching TV that they will all stop eating after a certain time or give up popcorn and serve everyone an apple or a carrot. Families enjoy social rituals that include certain foods. On the other hand, if while in the store and planning for the family's meals and desserts, the parent shows the child the caloric difference between a regular bag of microwave popcorn (510 calories) and the same size bag of low-fat popcorn (210 calories), then the child is learning how to make sensible caloric choices and still enjoy important family rituals like having popcorn at night while watching TV. This process applies to cereals, candy, cookies, ice cream, soda drinks, and many other items. A word of caution to the parent that substituting for lower calorie options is not a license to increase the amount of food consumed. A parent can teach a child the CAMES approach while grocery shopping, going to the movies, eating fast food, or attending social activities where food is present. This can help the child avoid consuming excess calories without feeling bored or deprived.

The same is true for physical activity. The parent who goes through the weight loss program learns that staying in motion includes more than participating in structured activities. The most convenient way to stay in motion is through walking. The entire family can increase this activity by using a pedometer. Each family member can keep records, setting weekly goals for number of miles walked, or participating in walking races as a way to encourage each other.

Informal ways to stay in motion can apply to all family members such as parking the car at a distance from a mall entrance or encouraging each member to take stairs rather than an elevator. Historically, parents would say to their

children, “Go outside and play.” Today parents say, “Go play” which can mean go outside or go play with electronic games or computers. In other words, the opportunity for a child to be entertained and not be physically active is greater today than ever before. This trend towards mental activity without physical activity is going to continue. Therefore, parents must creatively use both structured and non-structured opportunities for themselves and their children to be physically active as a way to consume calories.

## Treating Overweight Adolescents

There is a fundamental difference between treating overweight or obese adolescents and treating pre-adolescents. In most situations, the teenager decides what particular food will be eaten and how much of it will be consumed. Parents are not the primary decision-makers in terms of what food and how much food a teenager eats. Parents may influence the teenager as role models and by the kinds of foods purchased for the house, but that is where their influence ends. Parents cannot plead, cajole, or threaten their teenager to eat certain foods. The adolescent’s personal preferences, peers, school and work schedule, and extra-curricular activities strongly influence the teenager’s dietary habits. However, both parents and the physician can provide information on healthful eating and physical activity if the teenager asks; otherwise, they must stand by and let the adolescent make his or her own choices, whether good or bad.

Treating overweight adolescents is difficult. The physician can show both the patient and the parent where the adolescent’s BMI falls on the pediatric BMI chart and express concern about possible future weight gain. However, this may have little meaning to the patient or parent, especially if the teenager is participating in sports or if the parents are waiting for the adolescent to experience a growth spurt. In this sense at best, the patient is in the contemplation stage of change.

Another issue regarding treatment of overweight adolescents is that there is no reimbursement. Unless the teenager meets the criteria for metabolic syndrome, third party payers do not cover clinic appointments for weight management, so payment is not provided for any treatment. Therefore, all the physician may be able to do to help the overweight adolescent is to encourage awareness of the weight trend and offer informational material and website addresses.

## Treating Obese Adolescents

Obese adolescents have a serious chronic medical condition. Treating such patients is challenging for the primary care physician. However, not to offer treatment is to ignore the chance to help some patients gain control of a condition that if untreated could shorten their lifespan and is painful for a variety of reasons. At a minimum, the physician should provide patients with an understanding of their BMI on the growth chart and offer information about websites.

In most cases, obese adolescents need to go through the same weight reduction program offered to adults. This includes using the same triage process

to see if the patients understand they have a chronic disease and asking if they want control of that disease. Though there are no national guidelines as to how much weight an obese teenager should lose, the physician must consider whether to advise patients to strive for weight maintenance, minimal weight loss, or the same amount of weight loss as prescribed for adults, which is 1 to 2 lb per week. This clinical decision is based on the patient's age, degree of obesity, and growth status. For example, an 18-year-old girl whose growth is complete and has a BMI of 34 with no comorbidities needs the same clinical intervention as an adult, including the possibility of pharmacotherapy. In contrast, a 13-year-old with a BMI of 29 and no comorbidities would qualify for the weight management program but not use of medication or surgery. This is a clinical decision left to the judgment of the physician, the patient, and parents.

Like adults, some adolescents would like a fat-burning pill to take each day that would obviate the need to make health behavior changes like reducing calories and increasing physical activity. However, there is no magic pill, and the treatment options are more restrictive for an adolescent than for an adult. Though sibutramine plus behavioral therapy was more effective than behavioral therapy alone [51], and orlistat received Federal Drug Commission approval for use with patients aged 12 to 16 [52], the long-term positive and negative impact of such therapy is not known. Therefore, pharmacotherapy should be used with great caution. Finally, bariatric surgery is an option in rare situations (see Chapter 7). It is recommended that such candidates be severely obese (BMI  $\geq 40$ ), have attained their skeletal maturity ( $\geq 13$  for girls;  $\geq 15$  for boys), and have comorbidities related to the obesity that will be improved with weight loss [53].

## Case Presentation 5.1

Cindy is a non-Hispanic white 14-year-old who is 5 feet 4 inches tall and weighs 174 lb. Her BMI is 30, which is greater than the 97th percentile for her age and gender. Her mother brings her to the appointment and is with her in the examination room. Cindy's mother does most of the talking and wonders if there is an appetite suppressant pill the physician can give her daughter in order to lose weight. Her mother has been obese (BMI 42) since giving birth to her three children and has tried multiple diets and pills without success. She is concerned that her daughter is unattractive because of her weight and worries about her social future. Cindy is bothered by her weight; she feels lonely and has two friends she is with all the time. Dating does not interest her at this time. Cindy and her two friends enjoy going to the movies each week and buying a large container of buttered popcorn and a diet Coke. She has no other medical symptoms or signs to suggest a comorbidity with her obesity. Her TSH, lipids, and fasting glucose are normal.

Cindy is not athletic and dislikes the idea of exercising. She sits passively on the examination table and offers few words when asked her thoughts about her weight. The idea of writing down what she eats is unpleasant to her. The dialogue between the patient and physician improves only minimally even after

her mother is asked to leave the room. It is clear to the physician that the patient's mother is more concerned about her daughter's weight than is the patient.

**Assessment:** The patient is medically obese and would benefit from outpatient treatment. The patient's mother is more concerned about Cindy's weight than is Cindy.

**Plan:** The physician has two options: (1) take the appointment time to explain the program to Cindy and her mother using the requirement of a 10-day food diary as a way for Cindy to decide if she wants to continue in the weight management program. She will select one way or the other. After leaving the office this approach keeps the door open for Cindy to go forward in the program, though at the present time the physician is not hopeful. (2) The physician triages the patient's readiness to change as pre-contemplation and determines the patient is not interested at this time. The doctor can tell both the patient and her mother that now may not be the best time to undertake the behavior changes necessary to cause weight loss. Rather than let the patient struggle with the food diary and experience some degree of failure, the appointment time can be spent redirecting the patient's attention to some simple behavior changes she can make in order to reduce caloric intake. Plus, she can receive a handout listing various websites for her or her mother to visit. Before leaving, the physician can let the patient know that the program is always available should she be interested at some future time.

## Case Presentation 5.2

Gomez is a 7-year-old Hispanic American boy whose mother and father are obese. He is in the clinic because of an ear infection. After the examination and explanation of his condition to his mother, the physician tells his mother that Gomez's BMI over the past 3 years has continued to go higher, and now is 22. Gomez is medically obese. The physician expresses concern for both the patient and his parents regarding the health impact of obesity, and the possible long-term complications from the disease. For the first time Gomez's mother expresses concern for the health of everyone in her family, especially Gomez.

**Assessment:** Everyone in the family is obese. The child's mother seems interested in wanting to reverse this trend within the family. Gomez has no comorbidities or other predisposing factors to cause him to be obese.

**Plan:** The physician explains to Gomez's mother that she can learn and apply the principles necessary for her to lose an appropriate amount of weight and can teach her son those same principles in a way he will understand. There is no set amount of weight that Gomez needs to lose. If he lives a healthy, active lifestyle and his parents do the same, then his weight will likely take care of itself. The physician encourages Gomez's mother to invite her husband to return to the clinic with her so he can present the weight management program to both of them.

## Case Presentation 5.3

Aletha is a 16-year-old African American who weighs 217lb, is 5 feet 7 inches, and has a BMI of 33. She came to the doctor's office because of poor school performance and feelings of depression. She is not suicidal and does not participate in high-risk behavior. She expressed feelings of loneliness and isolation. She wants to be outgoing with both girls and boys her age but is self-conscious about her weight and how she looks in clothes. Eating sweets is comforting to her. She avoids school physical education activities but likes to walk. Most of the women in her family are obese. Her mother wants her thyroid checked as a possible cause of her obesity.

**Assessment:** Aletha's TSH is normal. Her depression is directly related to her obesity. On the intake survey, Aletha circled an 8 in terms of her ability to keep a food diary for 10 days. She is open to the possibility of losing 10% of her weight over 6 months and reflects being in the preparation stage of change. Her mother is supportive but not interested in losing weight herself. She is willing to cover the cost of the office visit as long as Aletha is interested in the program.

**Plan:** If Aletha returns to the clinic in 2 weeks with her food diary, then that strongly indicates a willingness to embrace behavior change in order to lose weight in a reasonable way. She needs to lose weight at the rate of 1 lb per week, which is doable over the next 26 weeks. The physician should delay treating her depression to see how she responds to focusing on her weight reduction program, especially the walking component part of it. The physician can encourage the patient to enlist the support of her mother in terms of kinds of food purchased and the possibility of asking her Mom to walk with her as a way of providing support for Aletha. This strategy will benefit both the patient and her mother. The patient may lose 40 to 50lb over 12 to 18 months by continuing to follow her workbook after completing the program in 6 months. Prescribing medication is not appropriate, and surgery not required in Aletha's case.

## Summary Points

1. The prevalence of childhood and adolescent obesity has doubled and tripled in the past 20 years as the result of excess caloric intake.
2. Obese children are experiencing the comorbidities of hypertension, hyperlipidemia, and diabetes at an alarming rate. Physicians must screen obese patients for these diseases.
3. The pediatric BMI chart is the physician's best tool to identify obesity in children and guide the progress of treatment.
4. The physician primarily treats the parent of the obese pre-adolescent, who in turn treats the child. The same approach is used to treat the adolescents as adults.
5. Pharmacotherapy and surgery can be used in extreme cases.
6. Understanding the Stages of Change is helpful in treating both the patient and the family.



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## 6. Pharmacotherapy

Patients with chronic diseases like diabetes, hypertension, or hyperlipidemia typically require one or more medications to control the disease. Before starting medication, physicians will commonly encourage patients to make therapeutic lifestyle changes, such as increasing physical activity, improving nutrition, and losing weight, that in some cases result in a delay in initiation of medication or allow a lower dose of medication. Unfortunately, most patients eventually require daily medication in order to control the disease. As a chronic disease, long-term treatment for obesity may include medication, too. This chapter will discuss the indications for pharmacotherapy, effectiveness and limitations of therapy, the medications approved by the Food and Drug Administration (FDA), and the clinical setting for use of medication for both weight loss and weight maintenance.

### Indications for Pharmacotherapy

The National Heart, Lung, and Blood Institute (NHLBI) Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults state that as an adjunct to diet and physical activity, FDA-approved weight loss medications may be prescribed. Obese patients with a BMI of 30 or more with no concomitant obesity-related risk factor or disease, or overweight patients with a BMI of 27 or more with concomitant risk factors or disease qualify for consideration of the use of medication [1].

Unfortunately, most primary care physicians are not trained and do not have a program for presenting an evidence-based approach to diet, physical activity, and behavior therapy for treating obesity in their clinic in a simple, time-efficient manner. Physician advice to encourage patients to eat less and exercise more is not likely to be an effective approach for long-term weight loss. If that approach does not work, the physician's next step is either to prescribe medication or refer the patient to a commercial weight loss program, a bariatric physician, or a bariatric surgeon.

FDA-approved medication has a place in the primary care physician's protocol for treating obesity as an adjunct to an effective dietary, physical activity, and behavioral program. If the program for long-term weight loss is primarily based on the use of medication, however, then both the patient's and the physician's weight loss expectations are not likely to be met. Long-term maintenance of weight is more about how the patient lives his or her life than it is about the power of a pill to decrease appetite or to block absorption of fat.

## Effectiveness of Pharmacotherapy

Multiple randomized controlled trials (RCT) of sibutramine and orlistat used as adjuncts to a therapeutic lifestyle change (TLC) have shown them to increase the amount of weight loss or to be effective for long-term weight maintenance treatment. The most recent summary of the RCT studies regarding this effectiveness was published by the US Preventive Services Task Force (USPSTF) called "Summary of the Evidence: Screening and Interventions for Obesity in Adults" [2]. This report was published in late 2003. As part of the report there is a summary of the RCTs on obesity pharmacotherapy published in 2001 by Arterburn and Noel [3]. Therefore, before looking at the 2003 report, here is a brief review of the 2001 data.

The Arterburn and Noel report classifies medications used to treat obesity into three categories: a trade-off between benefits and harms, unknown effectiveness, or likely to be ineffective or harmful. Medications in the category of trade-off between benefits and harms include sibutramine, phentermine, mazindol, and orlistat. Medications in the unknown effectiveness category are dietlypropion and fluoxetine. The likely to be ineffective or harmful group of medications includes dexfenfluramine, fenfluramine, fenfluramine plus phentermine, and phenylpropanolamine [3]. It is strongly suggested physicians not prescribe medications in the second or third category for weight loss until there is clinical evidence that supports the benefit of using medications in either of these two groups. This chapter will focus on medications in the first category to help the physician make the best clinical decision between benefits and harms when prescribing medication for weight loss.

Before discussing the effectiveness of each medication listed in Arterburn and Noel's first category, it is helpful to understand the pharmacokinetics of sibutramine, orlistat, and phentermine. First, sibutramine and its active metabolites, M1 and M2, act in the brain as a reuptake inhibitor of norepinephrine, serotonin, and dopamine. Sibutramine does not actively release monoamines [4], rather it inhibits the monoamine's degradation which causes central nervous system (CNS) suppression of appetite. In addition to the anorectic effect of sibutramine, it may also create a thermogenic effect of consuming calories by activating the beta3-system in brown adipose tissue [5].

The benefit of using sibutramine has been studied for up to 2 years. The 2003 USPSTF summary of the Arterburn and Noel report states that sibutramine is more effective than placebo in promoting modest weight loss (range 6.2 to 9.2lb in seven RCTs over 5 to 24 months) in healthy adults with controlled hypertension. Once the medication was stopped, weight regain occurred [2]. This might suggest that to maintain weight loss attributed to the use of the medication the patient must remain on the medication indefinitely. From management of a chronic disease perspective, daily use of a medication in order to help control the disease is acceptable. How many patients with diabetes, hypertension, or hyperlipidemia start medication and then at some point in time are able to stop taking the medication completely? It may occur in rare situations where the patient makes a dramatic change in lifestyle, but for most patients with a chronic disease, once on a medication, always on a medication. This may be true for long-term obesity treatment as well.

Orlistat is a gastric and pancreatic lipase inhibitor. The blockage of the lipase enzymes leads to the inhibition of digesting triglycerides and cholesterol. This results in preventing the absorption of about 30% of a patient's dietary fat [5]. For example, a patient who consumes 2000 calories per day, of which 30% or a total of 600 calories is from fat, will reduce caloric intake by 200 calories per day by taking the medication. Over time this gradual but cumulative reduction in calories results in weight loss.

The USPSTF report summarizing Arterburn and Noel's review of the orlistat studies states there was a modest weight loss compared to placebo while using the medication (average of 7.7-lb loss in 10 RCTs). However, the actual report summarizes results from the 10 studies in one sentence. It is difficult to understand the effectiveness of the medication compared to the control. For instance, meta-analysis of 5 of the 10 RCTs compared a group using orlistat combined with a low-calorie diet (LCD), which at one year showed a weight loss of 13.4lb, to the placebo plus LCD group, which averaged a loss of 5.7lb [3].

Phentermine resembles amphetamine with a noradrenergic effect that decreases appetite [5]. It does not impact dopamine levels, is a Drug Enforcement Agency (DEA) schedule IV medication, and has little addictive potential. For years physicians have prescribed phentermine with minimal serious adverse reactions reported [3]. Like phentermine, mazindol is a sympathomimetic amine that stimulates the CNS to decrease appetite. Arterburn and Noel's analysis found only one case report of pulmonary hypertension diagnosed one year after stopping the medication [3]. Mazindol is a DEA schedule IV medication.

Arterburn and Noel found only one RCT study for phentermine and one for mazindol. In each study, the use of medication appeared to be more effective than placebo. The phentermine study involved only 108 patients. Both the intervention and placebo groups were placed on an LCD of 1000 calories per day. After 9 months, the phentermine group lost 27.5lb whereas the placebo group lost 10.5lb, with an average difference between the two groups of 16lb. In the mazindol study, a total of 65 people who were more than 15% overweight were followed for 3 months. The intervention group lost an average of 8.4lb more than the placebo group. When treatment ended, weight regain occurred [3].

Though both phentermine and mazindol have been prescribed for years, both medications have serious scientific limitations when considered for treating a chronic disease. Neither has any other RCT studies to justify its use other than the one just discussed. Neither medication is FDA-approved for long-term treatment, nor has long-term safety been determined. Anecdotal results coupled with the absence of published serious side effects do not justify the cost and potential risk to the patient. More RCT studies are needed to determine effectiveness and safety before a physician can confidently prescribe either medication for long-term weight control.

The 2003 USPSTF found 13 RCTs that met their criteria from studies published since 1996 and not reviewed by Arterburn and Noel. Six studies evaluated sibutramine, six reviewed orlistat, and one covered metformin. The analysis considered the duration of the study, the difference in weight loss compared to placebo, and percentage of patients who lost 5% and 10% of their weight, which can have a meaningful impact on the presence of other chronic diseases, as shown by the Diabetes Prevention Program [6].

Of the six sibutramine studies for weight loss, five spanned 6 to 12 months. Patients treated with sibutramine experienced a range of 6.2lb to 10.5lb more weight loss than patients in the placebo group. Four studies compared what percentage of the sibutramine-treated group lost 5% or 10% of body weight compared to the placebo group. The sibutramine-treated group lost 5% of their weight in 19% to 57% more patients compared to the placebo group, and 5% to 27% of the sibutramine-treated patients lost 10% of their weight compared to placebo. Results depended on dosage of the medication [2].

James et al. published a weight maintenance study called the sibutramine trial of obesity reduction and maintenance (STORM). A total of 605 obese participants received sibutramine 10 mg per day along with an LCD for 6 months during the weight loss phase of the study. Patients with greater than 5% weight loss were randomized to continue receiving sibutramine 10 mg per day compared to the placebo group for 18 months. At the end of the study, 43% of the intervention group maintained at least 80% of their weight loss compared to 16% in the control group [7].

Of the six orlistat studies reviewed by the USPSTF, five covered 6 to 12 months' duration. Orlistat recipients lost an average of 6.1 lb to 9.9lb more than the placebo group. The frequency of response was recorded in only two trials. A 10% weight loss occurred in up to 38% of the orlistat-treated patients, and in 9% to 19% more orlistat-treated patients than the control group [2].

Two RCTs focused on use of orlistat for weight loss maintenance. The study by Hill et al. enrolled patients who lost 8% or more over 6 months on a conventional weight loss program without pharmacotherapy. Participants were randomly assigned to receive a placebo, orlistat 30 mg, 60 mg, or 120 mg three times per day for one year. At the end of the study, 47.5% of the group taking orlistat 120mg regained less than one-quarter of the lost weight compared to 29.9% of the placebo group [8].

In a 2-year weight maintenance study from Finland, which started with 96 obese patients and finishing with 72 participants, patients received orlistat for 2 years, placebo for 2 years, or 1 year of orlistat followed by 1 year of placebo. Patients treated with orlistat for both years sustained greater weight loss than those who had placebo both years or orlistat the first year and placebo the second [9].

In another weight maintenance study with 796 obese patients involving 17 primary care centers in the United States, 1-year weight loss was greater with orlistat 60mg three times per day (15.4lb) and orlistat 120mg three times per day (17.5lb) compared to placebo (9.1 lb). The positive effect of orlistat compared to placebo was sustained through the 24 months of the study. At the end of the 2 years, 34% of the orlistat group maintained a 5% or greater weight loss compared to 24% of the placebo group [10].

## Limitations of Pharmacotherapy

The primary benefit of treating obese patients with pharmacotherapy is to maximize weight loss and avoid weight regain. The two FDA-approved medications for long-term weight loss and weight maintenance, sibutramine and orlistat,

have been shown in randomized controlled studies to be effective. However, as the physician considers the potential benefit of prescribing a medication, it is important to consider the potential harm or limitation of pharmaceutical treatment. Those limitations are complications of the medication, cost and lack of third party payment for pharmacotherapy, and whether weight loss medication enhances the patient's ability to make behavior change to maximize weight loss and minimize the need for long-term use of medication.

The USPSTF report states that weight regain occurs when patients stop taking medication [2]. Is it possible too much focus in the primary care physician's office for controlling obesity is placed on the impact of the medication and not lifestyle changes? If this is the case, then pharmacotherapy is no longer an adjunct to a TLC but replaces it as the primary mode of treatment.

First, when considering treatment with medications, the physician must review the potential harm certain weight loss medications may cause the patient. The USPSTF meta-analysis of the RCTs regarding sibutramine and orlistat suggests that on a large scale serious adverse events are rare. For instance, sibutramine increases systolic and diastolic blood pressure (average 1 to 3 mmHg) and heart rate (average 4 to 5 beats per minute) [2]. However, the Meridia (sibutramine) patient information insert package describes a significant dose-response curve for increase in blood pressure or pulse that the physician must monitor.

Physicians must be selective when prescribing sibutramine and must monitor patients who are taking the medication. Because of the adverse effect on blood pressure and pulse, the Meridia package insert advises not prescribing Meridia (sibutramine) for patients who have a history of coronary artery disease, congestive heart failure, arrhythmias, or stroke. Sibutramine is contraindicated for patients using monoamine oxidase inhibitors (MAOI). The medication can be prescribed with caution for patients with glaucoma and a history of seizures. It is category C for pregnancy and is not recommended for use by pregnant or nursing mothers. The medication has not been studied in children younger than 16 years and is not FDA-approved for use in pediatrics [11].

Potential drug-to-drug interactions are a concern. Concomitant use of sibutramine with CNS drugs, especially serotonergic agents, has not been studied. Caution is advised when simultaneously prescribing sibutramine with serotonin selective reuptake inhibitors (SSRI). Also, use of sibutramine and migraine headache medication like sumatriptan succinate (Imitrex), as well as other common migraine headache medications like dihydroergotamine, fentanyl, lithium, tryptophan or meperidine, must be approached with caution. Combining these medications with sibutramine may precipitate a potentially fatal serotonin syndrome reaction [11].

The package insert lists numerous adverse reactions as occurring in >1% in placebo-controlled obesity studies. The list in this chapter includes only those adverse reactions that are two times more frequent than experienced by the placebo group. The adverse reactions are: tachycardia, vasodilatation, increase in blood pressure, palpitation, anorexia, increased appetite, rectal disorder, edema, tenosynovitis, joint disorder, dry mouth, insomnia, dizziness, paresthesia, CNS stimulation, emotional lability, sweating, taste perversion, dysmenorrhea, vaginal moniliasis, and elevated liver transaminases. The most frequent adverse reactions, regardless of the comparison with the placebo-controlled arm,



included anorexia, constipation, dry mouth, and insomnia [11]. The USPSTF report adds to the list of common adverse reactions the following: nausea, hypertension, dizziness, and confusion [2].

Orlistat is not absorbed into the body. The medication's adverse reactions are limited to the gastrointestinal tract. Arterburn and Noel reported oily spotting, flatulence, and fecal urgency in 22% to 27% of the intervention groups compared to 1% to 7% of the placebo-controlled groups. Also, they reported in four RCTs that fat-soluble vitamins are recommended if one uses orlistat [3]. The USPSTF 2003 report of recent RCTs presents similar statistics, with 14% to 37% more orlistat participants than placebo participants experiencing flatus, abdominal pain, and fecal urgency [2].

The orlistat package insert lists as a precaution low vitamin A, D, E, and beta-carotene values in some patients who use the medication; the manufacturer recommends patients take a fat-soluble multivitamin daily. Contraindications for use of orlistat are malabsorption syndrome, cholestasis, and hypersensitivity to components within the pill. Minimal drug-to-drug interactions occur though interaction with pravastatin resulted in a 30% increase in the efficacy/uptake of pravastatin. Orlistat is category B (okay to use during pregnancy), but has not been studied in nursing women; therefore orlistat is not recommended for nursing mothers [12]. In December 2003, orlistat was approved by the FDA for use in adolescents between the ages of 12 to 16 [13]. However, the long-term impact of the medication on an adolescent's health is not known, especially the possibility of a vitamin deficiency.

The second limitation of pharmacotherapy is the cost of treatment and lack of payment coverage by third party payers. Unlike funded studies where affordability of medication is not a barrier, medications for obesity treatment are not typically covered by either governmental or private insurance. Therefore, patients who are willing to take medication are faced with covering the monthly expense for the medication. For example, phentermine is used for short-term obesity treatment and costs \$22.99 for 1 month of 15 mg tablets. For long-term treatment of obesity, patients must either use sibutramine (Meridia) 10 mg, which costs \$85.99 for 30 days, or orlistat, sold as Xenical, which costs \$129.99 for 90 tablets [14]. For those who use orlistat, cost can be slightly reduced by not taking medication when the meal to be eaten has little or no fat in it. For example, a patient who eats dry cereal with skim milk for breakfast, along with a piece of fruit, can choose not to take orlistat for that meal and save on medication.

To be fair to the third party payers for obesity medication, the cost-benefit of taking medication should be known. Dr Glazer published in the Archives of Internal Medicine a comparative cost efficacy of phentermine, sibutramine, and orlistat. He suggests "percentage weight loss may be a better estimate of comparative efficacy than absolute weight loss because heavier patients tend to lose more weight than lighter patients" [15]. His analysis showed that the cost of losing 1% of a patient's body weight was \$89 for phentermine, \$268 for sibutramine, and \$433 for orlistat [15]. Seen in this way, the financial investment by either the patient or a third party payer is expensive, especially when weight regain is likely to occur if the medication is stopped. If prior authorization by a third party payer is rejected, then it is unlikely the patient will be either willing or able to afford the treatment, regardless of its effectiveness in losing or keeping off lost weight.

The third limitation of pharmacotherapy for treating obesity is the lack of scientific evidence demonstrating patient use of the medication as only an adjunct to dietary improvement, behavior change, and increase in physical activity. All medications have a cost and potential side effects that can have both short-term and long-term negative impact. After stopping medication, most patients regain their lost weight. This would imply that the adjunct part of obesity treatment, i.e. pharmacotherapy, is more central to weight loss and maintenance than diet, behavior change, and physical activity. One explanation of that possibility is that primary care physicians do not have in place an effective, evidence-based program to assist patients in making better dietary choices, to help patients learn simple behavioral skills, and to become physically active without injury. If eating less and exercising more does not result in weight loss, then the primary care physician can only assist obese patients with pharmacotherapy or referral.

The RCTs demonstrate that medication has a supportive place in the treatment of obesity. However, not every obese patient is able to benefit from the use of medication. Unacceptable adverse reactions, lack of third party coverage of cost, or inadequate personal financial resources can keep medication from the reach of a medically qualified patient.

However, not every patient needs medication in order to lose weight and keep it off long-term. The National Weight Control Registry (NWCR) reports that 19 out of 20 people in its registry did not use medication to achieve significant weight loss. The average person in the NWCR lost 60lb and kept the weight off over 5 years. These statistics far exceed the pharmacological studies in both length of time and magnitude of lost weight [16].

## Clinical Setting for Using Pharmacotherapy

The possibility of pharmacotherapy must be introduced at the right time. Prescribing medication during the first weight reduction appointment is premature. During the first appointment, the patient needs to understand the fundamental components of a comprehensive approach to weight reduction. The physician must help the patient decide if he or she is willing to make health behavior changes needed to create a caloric deficit and to commit to a weight reduction program that lasts 6 months in order to lose 10% of his or her weight. The second visit is focused on introducing simple dietary tools so the patient can reduce calories without creating a condition of deprivation or boredom, both of which might lead to short-term weight loss at best. There is no time during these two 15-minute appointments to adequately discuss medications to address potential benefits, risks, and cost. The third appointment is dedicated to introducing physical activity and behavioral changes, both of which are vital to losing weight.

Pharmacotherapy is discussed with patients during the fourth visit when the physician can be certain the patient understands and is applying the fundamental components for losing weight. Many patients will decline use of medication if they are successful in losing their desired amount of weight each month as it is tracked on the 6-month weight loss graph. For patients who are struggling to

lose weight, after barriers to weight loss have been reviewed, the physician may discuss with the patient pharmacotherapy as an adjunct to what the patient is already doing in order to lose weight. It is in this clinical context that patients can use medication in a proper and effective way.

The other setting in which pharmacotherapy is helpful is for weight maintenance. Commonly patients attain their weight loss goal but as their physician sees the patient later for other healthcare reasons, he or she can quickly observe through the medical record that the patient has either stopped losing weight or has regained lost weight. After reviewing barriers to the patient's weight loss program, the physician can suggest the use of pharmacotherapy, if appropriate, as a way to help jump start the patient's efforts. In this way medication is appropriately used as an adjunct either intermittently or continuously as needed.

Finally, to assist physicians when providing informed consent while prescribing phentermine, sibutramine, or orlistat, the American Medical Association developed a specific handout for each medication [17]. The physician can make copies of each handout to give patients with the prescription for that particular medication. The phentermine and sibutramine handouts are especially helpful in providing a way for the patient to track both blood pressure and pulse.

## Summary Points

1. Obesity pharmacotherapy is indicated as an adjunct for patients with a BMI  $\geq 30$  or a BMI of  $\geq 27$  with a comorbidity such as hypertension or hyperlipidemia.
2. Sibutramine and orlistat have up to 2-year randomized controlled trials demonstrating effectiveness for both weight loss and weight maintenance.
3. Limitations to the use of pharmacotherapy include adverse reactions, lack of third party payer coverage, and personal financial cost.
4. Phentermine is indicated for short-term use only and has one RCT to demonstrate its effectiveness.
5. The clinical setting for introducing weight loss medication should occur after the patient has established a weight loss program that utilizes dietary, behavioral, and physical activity components.

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## 7. Bariatric Surgery

Patients with a BMI of  $>40$  or  $\geq 35$  with comorbidities medically qualify for surgical intervention as treatment for their obesity [1]. However, a patient has several challenges before, during, and after the surgery. The primary care physician plays an important role as part of a multidisciplinary team to help minimize or remove those challenges so the patient can experience long-term weight loss success. Three such challenges are appropriate patient self-selection for long-term weight loss, based on knowledge of the physical and emotional effects of the operation and determination to make healthful behavioral changes; need for social support after the surgery; and management of the financial cost of the surgery. Before discussing these three challenges in detail, we will review the most common bariatric operations available to patients.

### Surgical Procedures

Surgeons in various locations in Europe and America began performing jejunio-ileal bypass surgery on obese patients in the 1950s. Then in the 1960s, jejunio-colic bypass surgery was performed, but unacceptable side effects of frequent diarrhea, dehydration, and electrolyte imbalance, resulted in discontinuance of the procedure. Late in the 1960s, Dr Edward Mason of the University of Iowa developed the Roux-en-Y gastric bypass procedure, and in the early 1980s Dr Mason pioneered the vertical banded gastroplasty procedure [2]. Today the gastric bypass and variations of the vertical banded gastroplasty are used in the majority of bariatric operations. A less commonly used and more surgically complicated procedure is the biliopancreatic diversion (BPD).

Bariatric surgeries are categorized as either restrictive or restrictive malabsorptive operations. A restrictive bariatric operation reduces the size of the stomach, which restricts the amount of food consumed at one time. It does not cause malabsorption of nutrients. A restrictive malabsorptive operation incorporates both a reduction in the size of the stomach and a surgical bypass of certain parts of the small intestine involved in absorption of some nutrients. The vertical banded gastroplasty (VBG) is an example of a restrictive operation. The procedure involves creating a vertical partition with staples starting at the top of the stomach. This creates a 30ml gastric pouch along the lesser curvature of the stomach. The outlet diameter is 10 to 12mm and is supported on the outside with a Marlex mesh or a Gore-Tex strip so the inner diameter does not expand when a large volume of food is consumed. In order to place the band below the vertical line, the front and back walls of the stomach are stapled together in a circular fashion with gastric tissue removed to create a window so the band can be placed through the stomach and below the staple line. This keeps the band in a stable position (Figure 7.1). The procedure is performed either through a traditional abdominal incision or by laparoscopy [3]. The VBG does not result in anemia or micronutrient deficiencies because all food that enters the stomach is passed

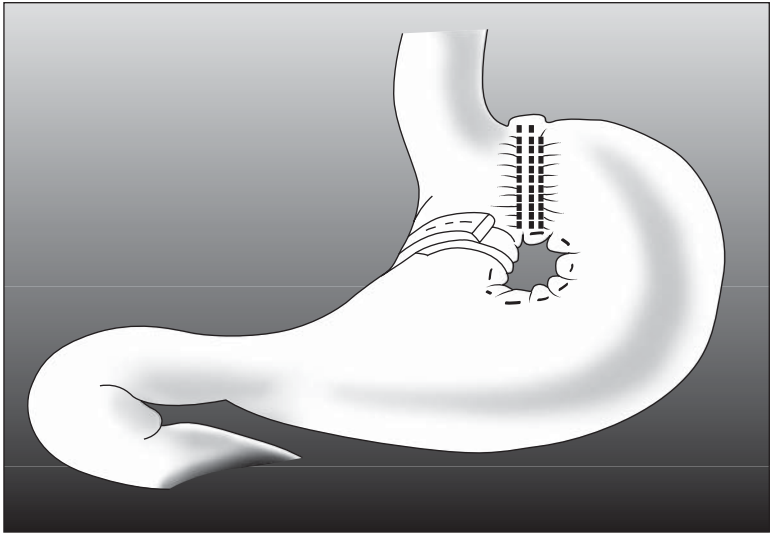


Figure 7.1. Vertical banding gastroplasty. (Redrawn from illustration in the ASBS website: <http://www.asbs.org/html/story/chapter3.html> with permission from the American Society of Bariatric Surgery.)

through the digestive system. Because the stomach size is surgically reduced, patients experience satiety with less food, which results in weight loss.

Another restrictive approach commonly promoted through the Internet is the laparoscopic adjustable silicone gastric banding, known as the LAP-BAND® [4]. After the vertical partitioning of the stomach is completed, a hollow silicone band is placed around the lesser curvature and the distal end of the partitioned part of the stomach. Inflation of the band occurs when saline is passed through an access port under the skin. This controls the size of the gastric outlet opening (Figure 7.2) [5].

The Roux-en-Y gastric bypass is the most common restrictive malabsorptive gastric bypass procedure performed for treatment of obesity [3]. This operation creates a 10 to 30 ml gastric pouch in the proximal portion of the stomach. The gastric pouch is created by surgically resecting or stapling across the gastric fundus or along the lesser curvature of the stomach to create the pouch. The result is to make a gastrojejunostomy with the distal end of the jejunum anastomosed 50 to 150 ml below the gastrojejunostomy, thus creating a Y-shaped jejunum (Figure 7.3).

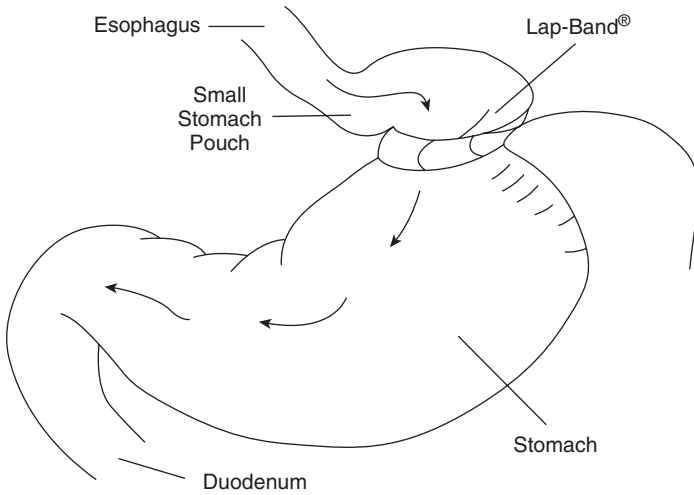


Figure 7.2. Laparoscopic adjustable silicone gastric banding. (Redrawn from illustration in the ASBS website: <http://www.asbs.org/html/story/chapter3.html> with permission from the American Society of Bariatric Surgery.)

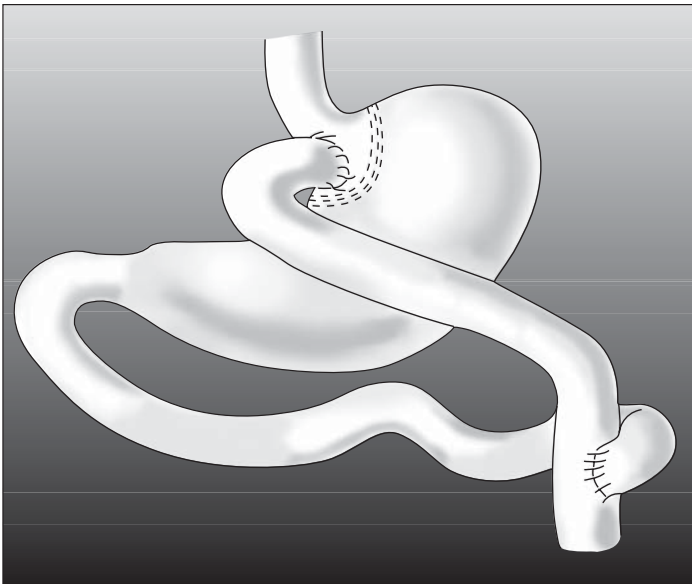


Figure 7.3. Roux-en-Y gastric bypass surgery. (Redrawn from illustration in the ASBS website: <http://www.asbs.org/html/story/chapter3.html> with permission from the American Society of Bariatric Surgery.)

## Surgical Complications

All the bariatric surgeries have the potential to cause death. The USPSTF summary of 12 cohort studies involving VBG found a mortality rate from 0% to 1.5%, with 3 deaths in 1165 patients. The adjustable gastric banding mortality rate is between 0% and 1.6%. Nine cohort studies of gastric bypass surgeries produced a mortality of 0% to 1.5% with 10 deaths in 1397 patients [6].

The VBG procedure is associated with various complications that include a reoperation rate of 20% to 25% over 3 to 5 years and a wound infection rate of 8% to 32% in three studies. Complications that occur in less than 6% of patients include pouch dilatations, stomal stenosis, and gastric leaks [6].

The LAP-BAND® was FDA-approved in June 2001 [7]. A study published the same month as the FDA approval suggested complications from the procedure were a concern. Thirty-six patients were followed after surgery for almost 4 years. Five patients were lost to follow-up (14%). The device was removed in 41% of participants, with the most common reason for removal being inadequate weight loss. Only four patients achieved a BMI of <35 or had a 50% weight loss, which reflected an 11% weight loss success rate. Other complications related to the procedure were infection, leakage, and band slippage [8].

However, a retrospective study of 543 patients followed for preoperative and postoperative complications, with a 7-year follow-up on weight loss, reported a much lower complication rate with a mean reduction in BMI from 44 to 33 [9]. For patients who scan the Internet there are physicians who advertise performing the LAP-BAND® procedure and who report a much lower short- and long-term complication rate [10] than in the study published by Demaria et al. [8]. It is not known if these data have been published in a peer-reviewed journal.

The International Bariatric Society Registry of 17,676 patients who had bariatric surgery from 1986 to 2002 reported a 30-day complication rate of 10.9% with 3.1% a major complication and 7.8% a minor complication [2]. Short-term complications included wound infection, dehiscence, leaks from staple breakdown, deep venous thrombosis with or without pulmonary emboli, and stomal stenosis. The 30-day mortality rate was 0.25%, with pulmonary embolism the most common cause of death [2].

Long-term complications of gastric bypass surgery are primarily the result of malabsorption of nutrients that bypass the fundus, body and antrum of the stomach, the duodenum, and a part of the jejunum. The dumping syndrome is one such long-term complication and may result in uncontrollable diarrhea, abdominal cramps, and nausea as the result of ingestion of simple sugars [3]. Potentially serious nutritional complications include iron deficiency anemia from lack of absorption of iron as the result of iron-containing food not passing through the stomach. Also, vitamin B<sub>12</sub> deficiency can develop when food does not come in contact with gastric intrinsic factor, and vitamin D and calcium deficiency from lack of exposure to the duodenum and proximal jejunum, where absorption takes place [2].

As a result of the malabsorption effect of bypassing parts of the stomach and small intestine, patients who undergo gastric bypass surgery must take



certain supplements for the rest of their life. The following recommendations are suggested to avoid nutritional deficiencies: 350 mg per day vitamin B<sub>12</sub> or monthly injections, a daily total calcium intake between 1200 and 1500 mg by divided doses [3], and iron with folic acid. Menstruating women should take iron with folic acid daily in a prenatal tablet.

## Challenges to Overcome for Long-Term Success

Obese patients who qualify for bariatric surgery have major challenges to conquer to achieve long-term weight loss success. Not every patient who initially wants the surgery should have it. Patients must address a lot of issues before the surgery and a number of changes after the surgery. Prior to surgery, patients must evaluate their perceptions as to how dramatic weight loss will impact their life. The physician should frankly discuss whether a patient is capable of handling the experience of losing 50% or more of weight. If a patient has always been obese, how will that individual adjust emotionally to being in literally a new body? Operative risk stratification is always important, and patients must understand the potential for both complications and death as a result of the surgery. With a low mortality rate for all the bariatric procedures, selecting appropriate candidates for bariatric surgery is more about how the patient intends to live after the operation than it is about the operation itself. Just like outpatients treated successfully for obesity, successful surgical patients must have the determination to adopt more healthful behavior. They must be realistic about their weight loss goal and daily focus on a gradual but cumulative process that leads to that goal. As one bariatric surgeon states regarding patient selection, "We are looking for only a few good patients."

This criterion is met by those patients who passionately want to gain control of their obesity and are determined to use dietary, behavioral, and surgical means to do so. For patients who do not want to change their eating patterns, are apprehensive about seeing themselves as physically different, or find unacceptable the potential surgical complications, this form of treatment for obesity is not an appropriate option.

The second challenge for an obese patient is the need to obtain social support or at least to understand how lack of social support can hamper the patient's weight loss success. How will significant persons in the patient's life respond to a thinner, typically more energetic, and frequently more attractive individual in place of the person who was obese, especially if the significant other person is obese as well? It is not unusual for an obese spouse or key family member to become jealous or envious of the person who lost a large amount of weight. The significant person may be threatened by the patient's increase in self-esteem or the way others respond to that person as they lose weight. Either consciously or unconsciously, an individual may try to sabotage the patient's weight loss efforts. Statements like, "I loved you just the way you were," or buying the patient foods high in calories as an expression of caring might be sending a message that change is threatening to the key support person. Family conflict or jealousy including marital discord and divorce can occur if the patient's family and friends

are not supportive of the patient losing a dramatic amount of weight. This challenge must be addressed prior to surgery and reassessed by the primary care physician following the operation for at least 1 to 2 years.

The third challenge severely obese patients face when they consider surgery is payment for the procedure. For many patients this challenge is insurmountable. Severely obese patients motivated to make permanent behavior changes, who understand and accept the risks of the surgery, and have a positive support system still may not qualify for the operation. In situations where third party payment is not covered, the patient's primary care physician can be an advocate to appeal the patient's case. To be an effective advocate, the physician needs to understand the complexity of payment for bariatric surgery.

The rationale for reimbursement for bariatric surgery may appear straightforward to both the patient and the primary care physician in terms of both the amount of weight lost by the majority of patients and improvement in comorbid conditions. A meta-analysis by Buchwald et al. involving 22,094 postoperative obese patients highlights this point. Their study reported a mean postoperative weight loss of 61.2% for all patients. For specific procedures, gastric banding had a mean weight loss of 47.5%, gastric bypass 61.6%, gastroplasty 68.2%, and biliopancreatic diversion 70.1% [11].

The majority of morbidly obese patients who lose 25% to 50% of their weight frequently experience a remarkable improvement in other chronic disease conditions. Buchwald et al. also reported that postoperatively diabetes completely resolved or improved in 86.0% of the patients, hyperlipidemia improved in 70%, hypertension in 61.7%, and sleep apnea in 83.6% [11]. These data are consistent with the findings from the Swedish Obese Subjects (SOS) prospective study showing that at 2 years after operation, patients maintained a mean weight loss of 61.6lb compared to the control group who lost 1lb [12]. Postsurgical patients experienced improvement in hypertension, diabetes, hyperinsulinemia, hypercholesterolemia, hypertriglyceridemia and low HDL cholesterol compared to controls [12].

At a time when the public is becoming aware of the individual benefits bariatric surgery can produce, major insurance companies are eliminating financial coverage for such procedures. For instance, in early 2004, Blue Cross Blue Shield in Florida and Nebraska announced they no longer provide coverage for gastric bypass surgery, and CIGNA Corporation will eliminate this benefit in certain states as their contract expires [13].

Some insurance companies use a medical benefit Medicare provides as a guideline to determine their policy coverage. A lot of interest was generated on July 15, 2004 when Health and Human Services Secretary Tommy Thompson and Medicare administrator Mark McClellan announced Medicare's new policy on obesity. This policy change was the removal of the statement, "obesity is not considered an illness" from the Coverage Issues Manual (CMI) [14], which determines what care and services Medicare will pay. The Medicare National Coverage Determination on Obesity tracking notes state, "because CMI is intended to address the coverage of particular care and services, rather than the definition of illness, we do not believe it is appropriate for the manual to address this issue" [13]. Now the Coverage Issues Manual states in sections 35–26, "Services in connection with the treatment of obesity are covered services when such services are an integral and necessary part of a course of treatment." The

only change in the CMI is deletion of the sentence stating obesity is not an illness. This is not a major policy change but a correction regarding the purpose of the CMI.

Discussion by the Medicare Coverage Advisory Committee regarding payment for certain types of bariatric surgery for obesity without covered comorbidities is scheduled to occur in November 2004. Until a decision is determined, non-coverage for obesity without comorbidities is the policy, whether surgical or non-surgical. (For a specific answer to an obesity reimbursement question, it is possible to call Medicare's obesity lead analyst directly at 1-410-786-9252.)

Added to the fact that Medicare denies coverage for surgical treatment of obesity without comorbidities is the lack of data regarding the long-term economic benefits of bariatric surgery. In order to understand the medical benefit, The National Institutes of Health's National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) established the Longitudinal Assessment of Bariatric Surgery (LABS) consortium to collect data on clinical, epidemiological, and behavioral outcomes of bariatric surgery [15]. The LABS data, coupled with publications like that of Buchwald et al. [11] and the Swedish Obese Subjects study, will provide the outcome data needed to economically determine the value of a surgical intervention as part of the treatment for this chronic disease condition.

Further complicating the decision by third party payers is the cost of bariatric surgery, which ranges from \$15,000 to over \$25,000 with operative complications extending the cost to over \$100,000 in certain situations [16]. With more people becoming severely obese, the demand by Americans for bariatric surgery is rapidly growing from 16,000 operations in the early 1990s to 103,000 in 2003 [17], with an estimated 140,000 operations projected in 2004, a 36% increase from 2003. This means the estimated cost of bariatric surgery in 2004 is between \$250 million and \$300 million. These figures do not account for the cost of both short- and long-term surgical complications, and long-term monitoring to make certain the patient does not develop certain deficiencies. Payers for the procedure want to see a comparable savings compared to the expenditures in healthcare costs in order to justify the procedure. With conclusive data still lacking that demonstrate the economic savings for third party payers, it is not difficult to understand the reluctance of third party payers to cover bariatric surgery operations.

Finally, the greatest risk a patient assumes by having the surgery is death. If there is an average mortality rate of 0% to 1.5%, possibly hundreds of patients will die in 2004 from either short-term or long-term surgical complications. The meta-analysis by Buchwald et al. demonstrated a 30-day mortality rate of 0.1% for restrictive procedures, 0.5% for gastric bypass, and 1.1% for biliopancreatic diversion or duodenal switch [11]. On the other hand, not all operative complications are experienced within 30 days of the procedure. Patients who present with possibly a greater risk of death are women of childbearing age, which reflects the highest proportion of patients who qualify for bariatric surgery. This risk was highlighted in an editorial case presentation where a morbidly obese patient who had had her bypass surgery 18 months previously presented at 31 weeks gestation with abdominal pain. Both the patient and her infant died as the result of gangrene that involved much of her small intestines that herniated through a tear in an adjacent membrane, a complication involving the intestines during gastric

bypass surgery. Therefore, delaying pregnancy for a significant period of time after bypass surgery is recommended [18].

## The Primary Care Physician as a Member of the Bariatric Team

Typically, prior to surgery, the psychologist on the bariatric team is involved in assessing the patient's self-esteem and social support. The primary care physician can adequately handle this role either alone or in partnership with the psychologist. As a member of the bariatric team, the primary care physician is in a position to help some patients avoid surgery when success is not likely to occur. For patients who do have surgery, the primary care physician can provide postoperative medical and psychological care for months to years after the patient is discharged from the care of the surgeon.

The primary care physician trained in treating obesity as a chronic disease offers the morbidly obese patient who is not a good surgical candidate or does not have financial coverage for the surgery an alternative program for weight loss. The program presented in this book presents an initial modest goal of 10% weight loss over 6 months, with the possibility that more than 10% weight loss can be achieved over time. In fact, surgical patients should participate in a primary care program either before or after surgery as a way to maximize their weight loss efforts and to have a program in place that helps to control their obesity long-term.

Patients need to understand that surgery changes the stomach but does not change the mind. Eating behaviors, attitude towards food, perceptions as to how much food should be eaten at one setting must change. Bariatric surgery does not provide the patient with an automatic long-term weight reduction guarantee. Even after dramatic weight loss, weight regain through engaging in old eating behaviors can occur if emotional, mental, and social issues are not addressed before and after surgery. At present, psychologists, dieticians, and the surgeon address the patient's mental, emotional, and medical needs. As a member of the bariatric team, the primary care physician can continue this care indefinitely because of the long-term relationship with the patient. For instance, patients who have had bariatric surgery, especially those with restrictive-malabsorptive procedures, have special medical needs for the rest of their lives. Patients must be vigilant in preventing iron deficiencies, B<sub>12</sub> deficiencies, and osteoporosis that can occur as a result of bypassing portions of the stomach and small intestine. If patients do not attend to these health needs, then avoidable illnesses may develop. Emotionally, after the surgery, relationship problems may develop that can possibly be traced back to the patient's many changes as a result of the surgery. It is important for the primary care physician to discuss this possibility with the patient; this concern can be addressed as a brief intervention during other scheduled appointments over the years following surgery.

For one reason or another, the majority of patients who medically qualify for bariatric surgery will never have the operation. Though the absolute number

of patients having the operation is over 100,000 per year, this represents a small proportion of the total number of patients who meet the medical criteria for the surgery. The majority of patients either do not have coverage for the procedure, do not mentally or emotionally qualify as likely to be successful long-term, or simply do not want to address their obesity this way. In this situation, their best alternative is to have a knowledgeable primary care physician who can encourage and guide the patient to lose whatever amount of weight they are willing to try to lose.

## Summary Points

1. The Roux-en-Y gastric bypass and various vertical banding gastroplasty procedures are the most common bariatric surgeries performed.
2. Patients who medically qualify for bariatric surgery have three major challenges to meet in order to have a successful long-term weight loss operation. They are self-selection, social support, and cost.
3. Self-selection deals with the patient's passion to make health behavior changes as the primary tool to keep weight off. Bariatric surgery is a major step in that process.
4. Negative social support can undermine the patient's weight loss efforts.
5. Payment for the surgery must be determined early in the process.
6. To date it is not known if bariatric surgery is cost effective.
7. Hundreds of patients will possibly die as a complication of bariatric surgery in 2004.
8. Most severely obese patients will never have bariatric surgery for a variety of reasons, so the primary care physician is their main resource for reasonable weight loss.

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# 8. The First Appointment: Explaining the Process

## The Clinical Process

The rest of this book describes the clinical process appointment-by-appointment that primary care physicians can use to help patients to lose weight and keep it off long-term. This chapter describes the first appointment in that process. The process begins when patients self-select themselves based on their motivation to lose weight and make the first appointment for weight management.

## Self-Selection

With the majority of Americans overweight or obese, more than half of the patients a physician sees are overweight or obese. Exactly what percentage of patients a physician sees during a typical clinic day who are overweight or obese is not known. However, it is no less than two-thirds of all patients and possibly higher since obesity is highly correlated with other diseases like diabetes, hypertension, or osteoarthritis that physicians see on a regular basis. Therefore, imagine during one week that a physician sees 50 patients who have a BMI >30. The physician knows not all of the 50 obese patients seen during the week are interested in losing weight. The physician cannot ask all obese patients how serious they are about losing weight and whether they will commit to changing behaviors as needed to control obesity. Therefore, the following process helps patients decide how serious they are about losing weight. This process draws on Prochaska's Stages of Change model, which describes the following stages: pre-contemplation, contemplation, preparation, action, and maintenance [1].

The first step in the self-selection process is for you to make the BMI a vital sign. Armed with this number, either verbally or using a brochure like the one produced by the American Academy of Family Physicians [2], you can let the patient know what the BMI is and that you are concerned about the patient's weight and its impact on health. At that point, you hand the patient a brochure that explains the meaning of BMI and tell the patient that if interested in losing weight after reading the brochure, he or she should make a weight management appointment and arrive 15 minutes early to complete paperwork. The time spent sharing concern for the patient's health as it relates to obesity and handing the patient an informational brochure is 10 seconds or less.

For patients not interested in addressing their obesity, the brochure probably goes into the trashcan as they leave the office. In terms of Prochaska's model of human behavior, these patients are in the pre-contemplation stage. Just as you would mention to smokers that medication and support programs are available to assist them to stop smoking, you mention to obese patients that the clinic has an effective weight management program should they desire to lose weight.

Patients who take the brochure home and read it may express concern about their weight. However, now may not be the time to focus on losing weight. There may be employment, family, or health issues that require the patient's current attention. Mentioning that they read and thought about the brochure tells you that they are in the contemplation stage of behavior change. They are considering what is required to lose weight. Again, the physician can reassure these patients that the clinic has a weight management program should they desire to address this issue.

Of the original 50 obese patients, 60% or more fall into the first two categories. These patients are not likely to lose weight in the near future. Sadly, they are the majority of those afflicted with the disease. The physician's job is not to judge but to care for the patient, though the impact of obesity makes all other health conditions worse.

Of the remaining of patients to whom the physician expressed concern about their obesity, those who make and keep an appointment have selected themselves as likely candidates for successfully losing weight. However, not every patient will return for a second weight management appointment. Each patient comes to the first appointment with expectations for how long they think it will take to accomplish their weight loss goal. If there is a mismatch between the patient's expectations and the length of the program, then the patient is not likely to return. Some patients do not want to lose just 10% of their weight in 6 months. They want to lose a lot more weight in a shorter period of time. Some patients do not return when they understand the financial side of the agreement and that they might be accountable for some or all of the cost of the treatment.

Patients who come for the first appointment are in the preparation stage of change. They need more information before they commit to action regarding their obesity. With information received during the first appointment, they may choose not to act on the clinic's program and not to return for a second appointment.

Upon learning the details of the weight management program, some patients go home and begin to complete the 10-day food diary that is required before the second appointment. Patients enter the action stage of change when they start recording their food and drink over the next 10 days. Patients who return to the clinic for their second appointment with their food diaries are only approximately 25% to 30% of the original clinic population of obese patients who originally received a brochure or who heard about the clinic's program and made their own initial appointment. This self-selected population has a high likelihood of losing 10% or more of their weight over the next 6 months because internal motivation is in balance with external possibilities.

## The First Appointment

When patients arrive at the front desk, for a minimal charge they receive a patient workbook that contains all the handouts for the entire program from the intake questionnaire for the first appointment to the materials on weight maintenance for the last appointment. The patient workbook is the centerpiece of the weight management program. It contains information for each appointment, including homework assignments for the patient to complete after each office



**Purpose of this letter:**

- Clarify the potential costs of your weight reduction program.

**Issue:**

- Most individuals who want to lose weight must personally pay a commercial program or special obesity doctors.
- This Clinic is one of the few family practice clinics in the state that offers a weight management program.
- Unfortunately, some insurance companies will not pay for any or all of your weight management office visits.
- If your insurance company paid for the initial visit or two, then it was probably based on other medical conditions that are addressed during your appointment. As one's weight goes down frequently insured medical conditions improve and are not filed on the insurance claim. Therefore, the insurance company may or may not pay for the follow-up visits after paying for initial visits.
- Until claims are filed for the visit, the Clinic has no way of knowing if the visit was or was not covered by your insurance company.
- You will be asked to pay for the office visit, if your insurance company does not cover the cost of the visit.
- Bottom line – the Clinic's sincere desire is to help improve your health by helping you lose weight, and hoped this letter helps explain the complexity of the payment process for weight loss visits.

Figure 8.1. Explanation of payment for the weight management program.

visit. This approach is time efficient for the provider, who guides the patient through the handouts for that particular visit, and is simple for the patient, who has all the materials conveniently organized in the workbook for past, present, and future visits. During each visit, the physician can either quickly review information previously presented or move on to the material scheduled for that particular visit. This flexibility enhances the learning experience for the patient. Unlike programs that are provider-centered, the patient workbook enables the patient to see a variety of providers over time, if necessary, with little impact on continuity of care. In this way, the workbook makes the program patient-centered. Copies of the patient workbook are available at [www.shapedbyhim.com](http://www.shapedbyhim.com). The workbook material is also presented as the figures in this book.

The first appointment handout includes two papers. One explains the payment for the program (Figure 8.1), and the other is the patient waiver payment form (Figure 8.2). Both ethically and legally, it is important for patients to understand at the beginning how payment for obesity treatment is covered. The payment plan letter describes that fact that in almost every setting, whether commercial or medical, the cost of obesity care is typically not covered by insurance. When patients see bariatric physicians or go to commercial programs, they expect to pay for their care. However, this is not their expectation when seeing their

I understand my insurance may not pay for my weight management program. I will be responsible for the balance if the insurance company does not pay.

\_\_\_\_\_ Date: \_\_\_\_\_

Figure 8.2. Patient waiver form.

primary care physician because cost of care for other diseases is usually covered. Also, patients need to know that certain initial visits may be covered while later visits are not. This is because initially the physician may be working through a differential diagnosis as to the cause of the patient's obesity, actively treating other conditions along with treating the obesity, or actively managing other conditions that improve with weight loss.

The second form is a simple waiver that the patient either does or does not sign. Upon entering the room the physician can ask if there are any questions regarding payment. If there are any questions, the physician needs to clarify this issue before proceeding with the appointment. Rarely is this an issue, because the patient has been informed about the cost by the handout given when they first arrive.

If there is concern expressed about paying for the program, then the physician can share with the patient that the cost of obesity treatment anywhere else is not likely to be covered by insurance and that the cost is kept to a minimum by the primary care physician. Most patients appreciate receiving information from the beginning about the cost and do not let the financial obligation stop them from returning.

## The Patient Intake Questionnaire

To gather information about a patient's past obesity-related history, patients are requested to come for the appointment 15 minutes early to complete paperwork. This is similar to what is asked for new patient appointments, well baby examinations, or women's annual examinations.

The value of the intake survey is threefold. First, it contains a tremendous amount of patient information related to the patient's weight loss expectations, review of comorbidities, previous weight loss attempts, family obesity history, dietary lifestyle, self-efficacy assessment, and the possibility of eating disorders (Figure 8.3). Second, the wide array of data the survey contains helps validate coding for the visit. Third, the survey reflects a serious effort on the physician's part to understand the patient's obesity condition as a potential medical-legal

**Please Answer the Following Questions**

1. How much weight do you want to lose? \_\_\_\_\_
2. What is the heaviest you've ever weighed? \_\_\_\_\_ At what age? \_\_\_\_\_
3. What is the most amount of weight you've ever lost during one attempt? \_\_\_\_\_
4. What diet plan or plans have you tried? \_\_\_\_\_, \_\_\_\_\_
5. How long did it take to lose the weight? \_\_\_\_\_
6. How much weight did you lose while on the diet plans? \_\_\_\_\_ lbs.
7. What is the lowest weight you have maintained for 1 year as an adult over age 21? \_\_\_\_\_ lbs.
8. Have you taken over-the-counter weight loss medications? Y/N  
– If yes, please list them: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
9. Have you taken prescription weight loss medications? Y/N  
– If yes, please list them: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
10. Do you currently or have you had problems with any of the following:
  - a. Gallbladder Y/N
  - b. Stomach Reflux Y/N
  - c. Diabetes or High Blood Sugar Y/N
  - d. Heart disease Y/N
  - e. Joint pain Y/N
  - f. Back pain Y/N
  - g. High Blood Pressure Y/N
  - h. High cholesterol Y/N
  - i. Depression Y/N
  - j. Sleep Apnea or snoring Y/N
  - k. Relationships with other Y/N
11. Do you like to exercise? Y/N  
– If yes, what do you do? \_\_\_\_\_ How many times per week? \_\_\_\_\_
12. Have you ever hurt yourself while exercising? Y/N  
– If yes, what happened? \_\_\_\_\_ How long ago? \_\_\_\_\_
13. Please list medical problems you have (ex. diabetes, high blood pressure)  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
14. Is anyone in your household overweight? Y/N  
– If yes, who are they? \_\_\_\_\_
15. Who does the grocery shopping for you? \_\_\_\_\_
16. How many meals per week do you eat at home? \_\_\_\_\_
17. Do you eat breakfast during the week? Y/N  
– If yes, what do you eat? \_\_\_\_\_
18. Do you eat lunch during the week? Y/N  
– If yes, where do you eat? \_\_\_\_\_  
What is your favorite food(s) for lunch?

Figure 8.3. Obesity questionnaire.

19. Typically what time of day do you eat dinner? \_\_\_\_\_  
 – During the week, is it the same time of the day? Y/N  
 – How many dinner meals do you eat out of the home each week? \_\_\_\_\_
20. Do you have a favorite evening or night time snack(s)? Y/N  
 – If yes, what is it? \_\_\_\_\_
21. Do you eat more food on weekends? Y/N  
 – Are there any ‘special’ foods or drinks you wait until the weekend to enjoy?  
 (ex. ice cream, beer, snacks) Y/N If yes, what are they? \_\_\_\_\_
22. How confident are you that you can complete a daily food log where you write down the calories from every thing you eat for 10 days? (circle number below)
- |                      |   |   |   |            |           |   |   |   |   |                |
|----------------------|---|---|---|------------|-----------|---|---|---|---|----------------|
| 0                    | 1 | 2 | 3 | 4          | 5         | 6 | 7 | 8 | 9 | 10             |
| Not at all confident |   |   |   | Moderately | Confident |   |   |   |   | Very confident |
23. Binge eating is consuming large quantities of food in a short period of time, even when no longer hungry or already feeling ‘full.’ Some people say they just cannot stop eating, even though they are not hungry.
- a. Are there times when you binge eat? Yes No (If no, then stop here.)
  - b. If yes, how many times per week does it occur? \_\_\_\_\_
  - c. Does it occur just at particular times, like weekends or evenings? Yes No
  - d. Does it occur when you are emotional (sad, lonely, depressed)? Yes No
  - e. Do you think you need help with your binge eating? Yes No

Figure 8.3. *Continued*

defense in case the patient or someone else should file suit against the physician for not treating the patient’s obesity. With those points in mind, let’s look at some of the key questions in the survey.

Question 1 asks the most obvious question in the physician’s mind: How much weight does the patient want to lose? The patient’s expectation for the program is tied to this question. For those who want to lose over 100lb, then the next question has to do with time. How long does the patient think it will take to lose the 100lb? If the response is unreasonable or unhealthful, then the physician may try to spread out the patient’s timeframe to 1 or 2 years. If the patient insists on a lot of weight loss over a short period of time, then the physician can direct the conversation towards helping the patient understand that the amount of weight loss in the time desired is unhealthy. If this is the case, then the physician can tell the patient that now may not be the time to participate in a weight loss program because failure is likely to occur with such a high expectation over such a short period of time.

Question 3 asks what is the most amount of weight the patient has ever lost during any one attempt. Like the first question, this is a red flag. If the answer is none, yet the patient has tried a number of different programs, then the physician needs to explore with the patient why this time might be different. The physician need not lose heart with those who failed in the past because most patients try to lose weight a number of times before becoming successful. Persistence is an important characteristic of success with long-term weight loss.

A number of patients will have lost a considerable amount of weight in the past. It is not uncommon for patients to say they lost 60 to 100lb in the past. The problem is the weight came back, which means the patient did not have a weight maintenance program in place to keep the weight off, or an overwhelming obstacle like divorce, loss of employment, or illness came into the patient's life, and they regained the weight. For patients who have lost a considerable amount of weight in the past, the physician can use this fact to quickly explore how they did it and encourage them that this is a good sign with regard to their ability to stay focused on their weight loss goal.

Question 10 is a quick review of obesity-associated illnesses. A quick review of the yes responses enables the physician to see the impact of obesity on the patient's health. If any particular comorbidity, like depression, is not being adequately treated, then the physician can shift the appointment to addressing that particular concern. Certain comorbidities, if not properly treated, will hamper the patient's ability to lose weight.

Question 11 asks if the patient likes to exercise. Not surprisingly, many patients who say "no" don't mind walking. Patients recall unpleasant memories of high school physical education or times when they tried to go to fitness gyms. Therefore, the physician might consider using the term *physical activity* instead of exercise to avoid the negative associations many patients have with exercise.

According to the Surgeon General's report on physical activity, about 25% of the American population do not like to exercise [1]. The heavier the patient, the more likely he or she does not exercise. Some obese patients need to lose weight before they can safely participate in any exercise program. The disabled who are obese may not be able to participate in an exercise program. What does the physician say to these patients?

When discussing this question, the physician can reassure patients that exercise is not critical for losing weight, though it is statistically important for keeping the weight off. For instance, though 91% of the members of the National Weight Control Registry (NWCR) exercise regularly, that still leaves 9% who lost weight and kept it off who claim not to exercise [2]. Clearly it is harder to lose weight and keep it off without exercising, but it is not impossible. Caloric reduction is more critical than increasing one's physical activity level. Patients can always consume more calories through eating than they can burn through physical activity. Caloric reduction is the key to weight loss for the majority of obese patients, not more exercise. The patient's answer to this question helps the physician direct the conversation regarding exercise.

Questions 13 through 21 provide patient-specific information that tells the physician about the patient's eating style. The physician should not make value judgments concerning particular foods people choose to eat or try to correct an imbalanced approach to food. An opportunity to help improve the patient's dietary choices comes with the second appointment.

Question 22 asks the patient how confident he or she is of being able to keep a 10-day food diary. Those who circle a number below 4 are not very confident they can record their food intake for 10 days. Lack of confidence in recording a food diary is a strong predictor of not being able to successfully commit to a 6-month weight reduction program. Patients who circle 1 or 2 should probably

consider not trying to lose weight at this time. Avoidance of failure at trying to lose weight is an important concern for the physician. Obese patients are in the physician’s office because they tried at least once to lose weight and failed. Experiencing failure again should be avoided if at all possible. A low number for this question is an opportunity for the physician to discuss this concern with the patient.

Question 23 is important in helping identify a possible binge eating disorder. The prevalence of binge eating disorder (BED) is not known. Earlier studies by Spitzer et al. suggested 29% of people seeking obesity treatment have a BED [3]. More recent studies suggest the prevalence is between 8.9% and 18.8% [4,5]. Whatever the actual percentage, the reality is that many patients who want obesity treatment in the primary care physician’s office have a BED.

A physician has three options to help possible BED patients. First, if qualified, treat the patient. Second, make available self-help books like Peter Miller’s *Binge Breaker* [6]. Third, refer to a psychologist who treats eating disorders. Whichever approach is used, it is critical to address the possibility of eating disorders during the first visit. This section of the intake survey makes certain this occurs and sets the stage for a possible intervention in helping the patient deal with this behavior.

Reviewing the intake survey with the patient takes about 5 minutes. If there are any serious concerns, like untreated depression or a possible eating disorder, then the physician can refocus the discussion towards that concern. If there are no major concerns, then the discussion between the physician and patient turns to the form called the Battle in the Mind (Figure 8.4).

<b>Motivators</b>							
1. <u>Look better in clothes</u>	1	2	3	4	5	6	⑦
2. <u>Improve self-confidence</u>	1	2	3	4	⑤	6	7
3. <u>Be able to play with kids</u>	1	2	3	4	5	6	⑦
4. <u>Health concerns</u>	1	2	3	4	⑤	6	7
5. <u>Improve adult relationship</u>	1	2	3	4	5	6	⑦
6. _____	1	2	3	4	5	6	7

<b>Barriers</b>							
1. <u>TV (snacking)</u>	1	2	3	4	⑤	6	7
2. <u>Time management problems</u>	1	2	3	4	⑤	6	7
3. <u>Fast food consumption</u>	1	2	3	4	5	6	⑦
4. <u>Impulsive eating</u>	1	2	3	4	5	6	⑦
5. <u>Foods family likes</u>	1	2	3	4	5	⑥	7
6. <u>Working third shift</u>	1	2	3	4	5	6	⑦

Figure 8.4. An example of the Battle in the Mind for one patient (Copyright © 2001 Dr Thomas McKnight).

## The Battle in the Mind

Patients trying to lose weight daily face an inner battle as to why they want to lose weight and what stops them from accomplishing that goal. The Battle in the Mind form helps the patient clarify the reasons for their obesity and inability to lose weight. Also, this form is helpful for future visits as a way to immediately focus the appointment time on the patient's obesity. It reduces the temptation to try to meet other medical needs during the same visit. Because the appointment is only 15 minutes, the physician should immediately refer to the Battle in the Mind page upon entering the examination room and ask the patient if anything on either the motivators or barriers list has changed.

First, let's look at what motivates patients to want to lose weight. The reasons that motivate patients are very important. The more specific the reason, such as the desire to be able to play on the floor with the kids or to walk with one's spouse at night without becoming short of breath, the more likely it is the patient will lose weight and accomplish that particular goal. The vaguer the comment, like the desire for better health, the less likely it is that the patient will stay focused on accomplishing the goal. As the patient verbalizes one or two motivators in the office, the physician should record it on the Battle in the Mind page. Next you should explain that not each reason for wanting to lose weight is equally powerful as a motivator and ask the patient just how powerful is each particular motivation based on a scale of 1 to 7 with the highest number being most powerful. Then ask the patient to circle the chosen number. Next tell the patient to complete this list of motivators immediately when he or she gets home.

Second, the barriers that stop patients from accomplishing their goal to lose weight must be specifically identified and described in terms of how powerful they are in the patient's life. Once a barrier is identified, the goal is for the patient to find a way to eliminate, reduce, go around, or simply acknowledge the barrier's presence. The Likert scale helps the patient quantify the power of a particular barrier.

Common barriers patients describe range from external forces like working third shift in a factory, family members, and a hectic home environment to internal forces like eating as a response to stress, lack of will power, and emotional eating. Whatever the barrier, ask the patient how they want to deal with it. For example, when discussing barriers, you can write on the Battle in the Mind one or two barriers mentioned by the patient and then circle how powerful the patient says that particular barrier is in his or her life. Then strongly encourage the patient to record any other barriers they can recall immediately upon arriving home.

A powerful therapeutic technique used by psychologists to help patients release their inner motivation to overcome ambivalence in trying to make behavior change is called motivational interviewing by Miller and Rollnick [7]. The Battle in the Mind is an excellent motivational interviewing tool that has patients list both reasons for wanting to lose weight and reasons why behavior change is difficult. Having the patient determine how powerful each motivator or barrier item is to them creates the opportunity for the physician to encourage the patient to creatively enhance the motivator items or minimize the barrier ones. For example, when a patient says better health is a 5 on the Likert scale as a reason for wanting to lose weight, the physician can ask if there is anything the patient

can do to make it a 6 or 7? Some motivators start out as a 7 and remain a 7. By mentioning to the patient that a particular motivator has remained a 7, the physician is reinforcing the importance of that item to the patient as a way to encourage the patient.

The same is true for barriers. When a patient mentions that stress, lack of will power, or family members are a 6 or 7, the physician can ask what it would take to make that particular barrier a 5 or a 4 and ask the patient to write down his or her response on the form. The physician's goal is to help the patient creatively find ways to minimize, remove, or go around barriers that the patient believes will prevent successful weight loss.

Some barriers can become motivators. While focusing on trying to lose weight and using creative thinking to deal with particular barriers, it is not uncommon for patients to become encouraged when they see barriers lessen in intensity by going from a higher number to a lower number. However, sometimes when situations or attitudes change, certain barriers may become motivators. For instance, family members who once were doubters or even saboteurs of the patient's desire to lose weight can have a change of heart when they see the patient focused on the goal and actually accomplish some weight loss.

Every patient learns that the battle in the mind never ends. Obesity is a chronic, recurrent disease. Americans live in a toxic weight environment, and once a patient has been obese and lost weight, the possibility for weight regain is always present. Each day, each buffet dinner, each holiday, each birthday and anniversary cause the patient an inner struggle between reasons to keep the weight off and barriers that prevent that. One man's comments reflect this truth. He lost 130lb over a healthy period of time without surgery or medication. Asked if the weight could ever come back, he said, "I know I am always 6 months away from being 40lb heavier." Though he looks very healthy at 180lb today, his insight into his obesity is that it will never go away. When entering the examination room, always ask the patient to look at the Battle in the Mind form. If the patient lost weight over the past month, observe that some motivators must be getting stronger and ask which ones those might be. On the other hand, if weight gain has occurred, ask which barriers have become more powerful or what new barrier has entered the patient's life. If the patient does not understand why weight gain occurred over the past month and has not decided how to deal with it, then proceeding to the next step in the weight loss program would be to ignore the prospect of failure for the patient's attempt to lose weight.

## Weight Loss Graph

The NHLBI Obesity Guidelines state that a healthy weight loss goal is 10% of the patient's weight over 6 months [8]. Though most patients state on their intake survey they want to lose 50 to 100lb, which is more than 10% of a patient's weight, the physician should not negotiate beyond the 10% rule. This weight loss goal for the patient over the next 6 months has evidence-based science behind it. Therefore, the challenge is to see if the patient understands and will accept a 10% weight loss goal over 6 months as the goal. The physician can mention two things to help the patient understand the 10% goal and to not



be discouraged. First, the patient may lose more than 10% over 6 months. One patient lost over 80lb during the 6 months, which equated to over 20% of his original weight. Not uncommonly, patients will lose more than 10% of their weight, but the physician should never encourage this expectation. Stand by the 10% rule. Second, patients may continue to lose weight after 6 months and over 1 to 2 years easily attain their goal of losing 50 to 100 lb.

Finally, when patients stand on a scale, the number they see represents their total weight in terms of bone, muscle, water, and fat. Patients who just want the scale to go down and do not consider that water and muscle weight loss are only temporary and unhealthy, will experience the frustration of yo-yo dieting with possible health impairment. The primary care weight management program's goal is for the patient to have a healthful weight loss and to understand how to keep the weight off long-term.

The weight loss graph (Figure 8.5) is a tool that reinforces the goal of 10% weight loss over 6 months. On the first visit you mark at the 6-month point on the graph the amount that represents 10% of the patient's weight. At the beginning of each visit, you list in the left hand column the patient's weight for that day, then you mark on the graph the amount of weight loss or gain their present weight represents compared to the weight loss goal.

This graph is helpful for three reasons. First, some patients become discouraged when they lose only 2 to 3 lb over a month, yet on the graph they see progress towards their goal and that any weight loss is cumulative towards that goal. Second, some patients are fast starters, who lose 10 to 12 lb in one month and imagine they can continue this pace for the remainder of their program. You should advise these patients that at some point weight loss is likely to slow down, but they should not be discouraged when they see slower progress towards their goal. Likewise, some patients are slow starters who are discouraged to lose only

### My Weight Loss Progress

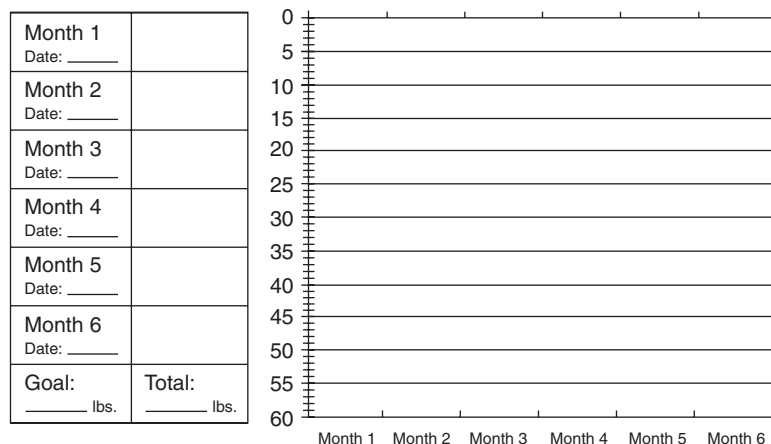


Figure 8.5. Weight loss graph for charting progress.

1 to 2lb in a particular month. After reviewing barriers and compliance with other aspects of the program, you should encourage the patient not to give up but to stay the course for the entire 6 months. It is not uncommon for some patients to accelerate weight loss after a few months of seeing very little weight reduction. Consistency and persistence are critical for success, and this graph helps reinforce those two principles. Finally, the graph visually shows the patient that long-term weight loss is typically not linear. Life events, which include holidays, anniversaries, vacations, and birthdays, will disrupt or briefly derail a patient's ability to focus on the weight loss program. When patients see the trend of the graph is toward weight loss, even if the line reflects a period of weight gain, it helps them stay the course.

After showing the patient the goal of the program and how long it takes to accomplish the weight loss goal, the next topic presented during the first appointment is to show how much of a caloric deficit is needed to lose 10% of body weight.

## Daily Caloric Deficit

Weight gain, which for most is the result of consuming excess calories, is a gradual but cumulative process. Patients do not become obese in one day of excessive eating no matter how many calories are consumed. Eating 6000 calories in one day may lead to a net weight gain of about 2lb that day, but it does not take a patient from a healthy weight to obesity. It is the consumption of an extra 100 to 300 calories per day on a regular basis that results in an extra weight gain of 10lb in one year, which turns into 20 or 30lb of weight gain over two or three decades. Likewise, a healthy weight loss does not occur in a few weeks. It, too, is a gradual but cumulative process of caloric reduction over time.

To help patients understand the amount of daily caloric reduction needed to lose 10% of their weight over the next 6 months, the patient is presented with a daily caloric deficit worksheet that has two examples. One is of a 250-lb male, which means his weight loss goal over 6 months is 25lb. To achieve this goal, he must create a daily average deficit of 481 calories per day. Here is the process: it takes a deficit of 3500 calories that are stored as triglycerides (TGs) in adipocytes to equal 1lb of weight loss. If the goal is a 25-lb weight loss, then  $25 \times 3500 = 87,500$  caloric deficit must be created over 6 months. There are 182 days in 6 months, so dividing 87,500 calories by 182 days equals 481 calories per day. A woman who weighs 175lb whose 6-month weight loss goal is 17.5lb needs to create a daily caloric deficit of 337 calories. The patient is then shown the daily caloric deficit needed to lose 10% over 6 months (Figure 8.6). Most patients must create a daily caloric deficit between 300 and 500 calories, which is consistent with the NHLBI Obesity Guidelines, Category A evidence [8].

This mathematical exercise helps patients who like to count calories know exactly how many calories per day they must eliminate from their present consumption of food in order to lose weight. On the other hand, many patients are not interested in counting calories. Patients who are not interested in counting

## EXAMPLES:

1. 250-lb male's maximal weight loss is 25 lbs over 6 months.

Formula:

$$25 \text{ lbs} \times 3,500 \text{ calories per pound} = 87,500 \text{ calories}$$

$$6 \text{ months} = 182 \text{ days, so } 87,500/182 = 481 \text{ cal. deficit/day}$$

$$\text{Reduce daily calories by } 481/\text{day} \times 6 \text{ months} = 25 \text{ lbs lost}$$

2. 175-lb female's maximal weight loss is 17.5 lbs in 6 months.

Formula:

$$17.5 \text{ lbs} \times 3,500 \text{ cal. per pound} = 61,250 \text{ calories}$$

$$6 \text{ months} = 182 \text{ days, so } 61,250/182 = 337 \text{ calories per day}$$

$$\text{Reduce diet by } 337 \text{ calories/day} \times 6 \text{ months} = 17.5 \text{ lbs lost}$$

3. Your present weight is \_\_\_\_\_ lbs.

Maximal weight loss over 6 months is \_\_\_\_\_ lbs.

$$\text{_____} \times 3,500 \text{ calories/pound} = \text{_____} \text{ total calories}$$

$$\text{_____} \text{ calories}/182 \text{ days} = \text{_____} \text{ calories/day}$$

$$\text{Reduce diet by } \text{_____} \text{ calories/day} \times 6 \text{ months} = \text{_____} \text{ lbs}$$

Figure 8.6. Daily caloric deficit needed to lose 10% of total body weight in 6 months.

calories are reassured that they will not need to compulsively count calories. How this happens is explained during the next appointment.

## The Source of Calories

Weight loss entails consciously creating a caloric deficit compared to unconsciously creating caloric excess. The source of the calories that caused the weight gain is unique to each person. No two people eat exactly the same foods in exactly the same quantity or volume. The food preferences that are unique to each individual are involved in both weight gain and weight loss. To establish a weight loss program, both the patient and the physician need to know what foods the individual likes to eat. In order to do this the patient must keep a food diary for 10 days between the first and the second weight reduction appointment.

In the first appointment, I explain to patients that the body does not care where the calories that a person consumed came from. The individual could have just eaten a whole box of Oreo cookies or consumed a second serving of a four-course meal. Neither the stomach nor the adipocytes care about the composition of the calories that come from either the cookies or the four-course meal. I explain that if the total sum of calories consumed is greater than the total sum of calories used, then excess caloric intake is stored in adipocytes.

Before leaving the office, patients are asked to keep a 10-day food diary and to bring the material with them when they return for the next appointment. To

remind patients to record as accurately as possible the foods and drinks in their diary, I say, "If it goes in the mouth, it goes on paper." This expression eliminates the patient's need to guess what should be recorded.

## Summary Points

1. The weight management program is evidence-based; the goal is a 10% weight reduction over a 6-month period.
2. Patients who are likely to be successful select themselves based on the Stages of Change model.
3. The intake survey provides comprehensive data regarding the patient's obesity history. The Battle in the Mind form helps patients understand the ongoing struggle between their own particular motivators and barriers. The weight loss graph tracks the patient's progress and provides an opportunity for discussion if progress is not occurring.
4. The Caloric Deficit page shows the daily reduction in calories needed to lose 10% of body weight in 6 months. Patients must understand that the source of calories does not matter and that they must create a caloric deficit for successful weight loss.

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# 9. The Second Appointment: Dietary Intervention

## Case Presentation 9.1

Mr and Mrs Crane were seen 2 weeks ago for their initial weight management appointment. Both returned to the clinic today with their 10-day food diaries. Mr Crane, age 58, takes both insulin and Actos (pioglitazone) for his diabetes; both medications can cause weight gain. He had a heart attack 3 years ago and has both renal and ophthalmologic problems as the result of the diabetes. He weighs 276 lb and has a BMI of 42. His last hemoglobin A<sub>1C</sub> was 7.2. He tried unsuccessfully to lose weight in the past by skipping meals and has not tried weight reduction medication. He hates the thought of counting calories. He does not want to change his eating habits. He is very concerned about the impact of diabetes on his health and knows that weight loss will improve his blood sugar levels. His 10-day food diary is a list of foods he ate during the past week that he wrote down the night before coming to the doctor's office.

Mrs Crane, age 55, takes medication for hyperlipidemia, osteoarthritis, and depression. Her BMI is 41, and she weighs 185 lb. Mrs Crane tries to follow a healthful diet as a way to encourage her husband to eat better. However, when depressed she eats sweets for emotional comfort. She tried numerous commercial weight loss products and programs with no success. She hates to exercise because her knees hurt when she walks. Though she would like to lose 50 lb, she sees the value of losing 10% of her weight over the next 6 months as a beginning towards accomplishing that goal. Her 10-day food diary has listed almost all the foods she ate over the past 10 days. About half the food items have calories listed beside them; for the other foods, such as casseroles, she does not know the caloric content. Mrs Crane is motivated to lose weight as a means to improve her own health as well as her husband's. She is hopeful that both of them can lose some weight and is anxious to get started. The Cranes have private insurance. It is not clear whether the insurance company will pay for the weight loss appointments. In spite of the cost, the Cranes decided they wanted to proceed with the program.

## Importance of the Second Appointment

When a patient returns for the second weight management appointment, the physician should be optimistic about the patient's prospects for losing weight. The possibility for long-term weight loss success is high for such a patient for a couple of reasons. First, by returning for the second appointment, the patient has agreed to the goal of the program: 10% weight loss over 6 months. Patients with an unreasonable expectation for weight loss do not accept this goal. They want the scales to show immediate loss of a large amount of weight and are not

willing to develop a process that utilizes the triglycerides stored in adipocytes as the way to reduce their weight. Patients with such unrealistic expectations do not return for another appointment. By returning for their second appointment, the Cranes showed that they accepted a 10% weight loss over 6 months as a reasonable goal.

The second reason for the physician's optimism is that payment for the program is not a barrier to the patient's desire to lose weight and willingness to be treated by the physician. The cost of the program over the next 6 months is not unreasonably expensive, but it is not free. The Center for Medicare and Medicaid Services (CMS) in July 2004 announced that obesity is a disease and that a review of policy covering treatment for the disease is under way [1]. Unfortunately, at the present time most patients are personally responsible for payment of their weight management program, whether they attend Weight Watchers, see a bariatric physician, or visit their primary care physician. During the first visit, when discussing the cost of the program, it is helpful to mention this fact: at the present time most patients pay for their obesity treatment, not third party insurers.

The Cranes' presence for the second appointment indicates their acceptance of the financial responsibility for the treatment. Discussion of payment does not need to be mentioned again: the expectations for the program and financial coverage for treatment are clear. This allows both parties to focus on the program.

The third reason for the physician to be enthusiastic is because the self-selection process is working to identify patients who are likely to be successful with long-term weight loss. The 10-day food diary is a hurdle that some patients do not cross for a variety of reasons. Some patients want to lose weight quickly by using a special diet or a pill. Their preconceived idea is that the physician will prescribe such a plan during the first appointment. These patients are not interested in keeping a food diary over 10 days. When their expectations are not met during the first visit, many of these patients will search elsewhere until they find someone who will do what they want.

Described in terms of the Stages of Change, the patient who does not return for a second appointment is either in the contemplation stage (information gathering) or the preparation stage (close to action) but is not in the action stage of willingness to make behavior changes. However, it is not unusual for some patients to make a second appointment months later when something in their life has encouraged them to move forward in trying to lose weight. Maybe the patient's social, family, or work situation has changed so that dealing with behavior changes that lead to weight loss now moves to an immediate concern in the patient's life.

Often a new health problem, like diabetes, will cause a patient concern and inspire the willingness to make health behavior changes. This is consistent with the Health Belief model of behavior change when a patient perceives a significant threat to health. The individual is aware that behavior changes can reduce or eliminate the threat and is willing to make the changes necessary to avoid a negative outcome [2]. The patient's awareness of the clinic's weight loss program provides an option to reduce the threat posed by obesity.

When the patient returns for the second visit, especially if months after the first appointment, the physician does not have to start from the beginning. The initial intake survey is already in the chart, the patient already knows the goal of the program is to lose 10% of the patient's body weight over 6 months and

that completion of a 10-day food diary is required before the second appointment. The physician should review with the patient the Battle in the Mind page and ask what barrier(s) kept the patient from returning. This approach helps the physician quickly focus on motivators and barriers to weight loss and what particular barrier kept the patient from returning that has now lessened or even moved to the motivator column.

## Review of the First Visit

Upon entering the examination room, you should have the patient look at the Battle in the Mind form (Figure 8.4). The physician should review the patient's list of motivators and barriers for completeness from the first visit and ask if there has been any change or movement on the Likert scale in either category. Remind the patient that the battle between the pros and the cons in terms of weight loss and weight control never goes away, even after successful weight loss. At times the patient's reasons for wanting to lose weight or to keep it off will be powerful, and the patient's self-confidence will be high.

On the other hand, weight regain is a constant threat, and the possibility never goes away. A patient's weight loss progress can be derailed by illness, family crisis, vacations, work struggles, or whatever internal or external event disrupts the patient's focus to live a healthier life. If at this or a subsequent visit, the patient has gained weight, the first comment you should make upon entering the examination room is to acknowledge the weight gain with the patient. Then you should ask the patient what new barriers have been encountered or what old barrier has become more powerful. This approach quickly identifies problems the patient faces in losing weight or in keeping the weight off. If increase in weight has not occurred and the patient says nothing has changed in either the motivator or barrier list, then the physician can move to the material for the second appointment.

## Ten-Day Food Diary

The patient comes to the second appointment with a food diary, which is a record of all foods and drinks consumed for 10 days. The patient is encouraged but not required to count calories. Sometimes a patient is not certain which calorie counting book to buy. The physician can make available at cost a useful book called *The Doctor's Pocket Calorie, Fat, and Carbohydrate Counter* [3]. This eliminates a barrier for patients who do not have a calorie-counting book, do not know which one to buy, or do not have a bookstore nearby to purchase a book.

What is most important about keeping the food diary is for both the patient and the physician to learn the particular foods the patient likes to eat or drink. The caloric density of the foods and drinks the patient prefers is the cause of the patient's obesity. An exact count of calories per food or drink item would be helpful but is not always possible and certainly is not required for the patient to lose weight. Calorie counting is simple when quantities of a particular food are mea-

sured such as a Snickers candy bar, which contains 270 calories. However, commercial buffet restaurants offer unlimited access to food during one setting. Accurately keeping track of portion sizes and converting each portion into calories is not possible. On the other hand, it is possible to recall what food items the individual has eaten during such a meal and to record those items in a food diary.

When a patient presents the 10-day food diary, the precision in recording calories consumed is a reflection of the personality of the patient. The more compulsive patient likes to keep track of calories. On the other end of the spectrum is the patient who finds the idea of recording calories distasteful. Mrs Crane is similar to the first patient and Mr Crane to the second patient. Both types of obese patients need help to lose weight. A program that empowers one personality type but not the other is limited in helping patients gain control of their disease. To be effective for all obese patients, a weight management program must be tailored to each patient's personality. The beginning point of such a tailored process is the 10-day food diary.

When the Cranes returned for their second appointment, both patients were determined to proceed with the program. It was encouraging to see them both show up. A strength they bring to the weight reduction program is the positive social support they offer each other. The physician should acknowledge this fact to both patients. A similar support system can be found between a parent and a child, between two friends or two relatives. Unfortunately, often a spouse or family member is not supportive and is listed on the patient's barrier, rather than the motivator column.

Though married many years, Mr and Mrs Crane each have unique food preferences, and they differ in the amount consumed of particular foods. For instance, Mr Crane's food diary lists eating popcorn and drinking a six-pack of beer on weekends, while Mrs Crane consumes Coca-Cola with her popcorn. Both enjoy meat and potato meals a couple of nights per week, but Mr Crane typically has second helpings of meat, and Mrs Crane eats little meat but creates a deluxe potato with lots of sour cream, butter, and bacon bits. Each person is unique in terms of food preferences and the percentage of total calories consumed that come from those particular food and drink choices. The physician must help each patient identify both the quality and the quantity of particular foods if each patient is to reduce caloric intake and lose weight.

As mentioned earlier, Mr Crane scribbled down a list of the foods he recalls eating just prior to the second appointment. He remembers groups of foods like chips, beer, candy, pizza, and meat and potato meals. He especially enjoys restaurant buffets where he can eat a lot of food at a fixed price. Mrs Crane is detailed in her list. She receives a sense of gratification by following exact numbers. Though it might seem Mrs Crane is more likely to be successful than her husband at losing weight, the fact is both can be equally successful. The first step to begin that process is found in the items listed on each patient's food diary. Mathematical precision in terms of caloric intake is helpful for some patients but not required and not possible in all situations.

The physician should not try to improve the patient's diet based on the list brought to the office. Dietary improvement is time-consuming and should not be addressed at this time. The physician is simply trying to get the patient to list the foods eaten on a routine basis as a way to understand the source of calories that are causing the patient to be obese. Opportunities to advise the patient on



a healthier diet will occur when the physician introduces the behavior modification component of the weight management program.

## The CAMES Approach

The scientific basis for the CAMES approach has already been described. As a brief review, the C stands for cutting the amount of food a person eats. Portion control is central to any weight reduction program. The A represents adding healthy items to a patient's diet. Encouraging patients to eat more fruit, vegetables, fiber, or drinking more water improves the patient's health and reduces the amount of calories ingested from unhealthful foods like *trans*-fats. The M stands for moving the patient's window of eating to an earlier time zone. TV advertising encourages food consumption at all hours whether or not the viewer is hungry. If a patient is going to have popcorn every night, suggest reducing certain other foods during dinnertime and eating the popcorn earlier in the evening, not just before going to bed. The E stands for eliminating certain foods from an individual's diet. The decision to stop eating certain foods must be the patient's, not the physician's. The S represents substituting certain foods for other foods. A patient who chooses to eat strawberries with whipped topping instead of strawberry pie for dessert is significantly reducing caloric intake. The goal of this approach is to help the patient create a caloric deficit so the body will use stored triglycerides as energy. This process occurs either through a reduction of caloric intake, an increase in caloric expenditure, or both.

Upon review of Mr Crane's list of foods and drinks, a physician can be frustrated in terms of giving specific dietary advice. Counseling Mr Crane to increase vegetables, decrease meats, or change to lower-calorie beer is likely to be met with resistance either in the office or when the patient goes home. If the advice by the physician is something the patient is willing to tolerate for a period of time, then some weight loss might occur as long as the patient is motivated to do what the physician told him to do. For such a patient, weight regain is likely to follow when the motivation to follow someone else's dietary choices wanes.

Mrs Crane presents a different challenge. She has a detailed list of the foods and drinks from the past 10 days. Her recorded caloric intake is close to the amount of recommended calories suggested in order for her to lose weight. Her frustration is that when looking at what she eats and how much she eats, she does not understand why she cannot lose weight. At first review of her list, the physician might think there is little advice to offer such a patient. However, given no undiagnosed metabolic disorder like hypothyroid disease, the patient's obesity is the result of excess calories. Even compulsive patients, unless they always use a calorie counter, measure portions, and cook all their own food, are probably underreporting their caloric intake.

## Creating a Caloric Deficit

A reasonable weight loss goal for patients with a BMI between 27 and 35 is  $\frac{1}{2}$  to 1 lb per week, which requires a caloric deficit of 300 to 500 calories per day. For patients with a BMI >35, a deficit of 500 to 1000 calories per day is needed,

which will result in a 1 to 2lb weight loss per week [4]. One way a patient can create such a deficit is to stop eating particular foods that contain a definite amount of calories. The patient's food diary is an excellent tool to identify foods or drinks routinely consumed. The food diary will show that some patients eat donuts every morning while driving to work. Other patients eat a candy bar every afternoon, and some cannot watch TV each evening without eating ice cream or popcorn. The patient's decision to remove a particular food that is high in calories is a sound way to create a caloric deficit and can result in weight loss.

The other approach to create a caloric deficit recommended by the NHLBI is to limit total daily caloric intake. For average size women, a healthy caloric range is from 1000 to 1200 calories per day. For average size men, the range is 1200 to 1500 calories per day [4]. This approach requires that the patient reduce caloric intake in a number of food and drink items, not eliminate just one particular food or drink. A patient who unsystematically decreases food or drink portions may experience weight loss. The challenge for this patient is to be consistent over the long term so that weight regain does not occur. Without a clear program on how to do this, long-term success is unlikely.

Both these approaches to creating a caloric deficit are scientifically sound. However, what has not been available to the patient in the past is a simple plan to apply to all foods, in all settings, regardless of whether the patient counts calories or simply reduces intake of certain macronutrients. Both Mr and Mrs Crane need a process that helps create a caloric deficit without making precision in counting calories the centerpiece of that process.

## CAMES Approach to Caloric Deficit

After reviewing the Battle in the Mind and the patient's food diary, the physician introduces the CAMES approach to creating a caloric deficit. The physician guides the patient through the concept by showing the example provided (Figure 9.1). The physician explains what each letter means, with special emphasis on the letters C and E. The example in the workbook shows the letter C is applied to 7 out of 10 items, which means the individual can continue to eat most foods eaten in the past but in smaller quantities. This does not mean the physician is blessing the patient's food selections as nutritionally sound. Personal preference for certain foods is a complex dynamic that involves personal likes, family preference, work situation, and cultural tradition. The physician is saying that portion control of whatever foods and drinks the patient consumes is the most important way to create a caloric deficit and lose weight without radically changing the diet.

Just as portion control is the most commonly used approach to creating a caloric deficit, elimination of certain foods is one of the least used approaches for a very important reason. The example in the workbook shows that E was applied to only two items, chips and vending machine snacks. Determination to stop eating or drinking a particular item is difficult and creates a sense of deprivation if it is applied to too many items. Patients who subscribe to radically altered approaches to food selection from what is normal for them will lose

TOP TEN FOODS/MENUS IN MY DIET  
(Determined by dietary log or from memory)

LIST OF FOODS	C.A.M.E.S.
1. Spaghetti	1. C & A
2. Nachos chips/Fritos	2. E & S
3. Oatmeal	3. A
4. Candy	4. C or S
5. Meats/Chicken	5. C & A
6. Casseroles	6. C & A
7. Popcorn	7. C & M
8. Pizza	8. C
9. Ice Cream	9. C or S
10. Vending Machines	10. E

Figure 9.1. Example of one patient's use of the CAMES approach to create a caloric deficit (Copyright © 2001 Dr Thomas McKnight).

weight if their sense of desperation to lose weight is greater than their feelings of deprivation in changing their eating habits. Once the feeling of deprivation becomes greater than their desperation to lose weight, patients will revert to previous eating habits and typically will regain the lost weight. The decision to eliminate a particular food or drink item can only be made by the patient. This creates a sense of ownership for the decision and imparts the self-confidence regarding control over certain foods.

The CAMES approach balances the primary dietary method for weight loss, namely portion control, with other choices the patient can use to create a caloric deficit. The patient does not need to radically change his or her food preferences nor experience a diet of deprivation. Finally, this method avoids one of the pitfalls of many diets that leads to failure or regaining lost weight—boredom. If one macronutrient (carbohydrates, protein, fat) is either increased or restricted compared to what the patient normally eats, eventually the patient will become bored with eating an unbalanced selection of macronutrients. Variety of dietary choices is an important part of the enjoyment of food. For long-term weight control, the patient must be empowered to make such choices. The CAMES approach gives the patient the freedom and the responsibility for such choices. It avoids creating a diet of either deprivation or boredom, both of which are doomed to eventual failure.

You should spend only a few minutes explaining to the patient the CAMES approach. Any further refinement of the patient's diet, for example for a patient with renal failure or diabetes, should be referred to someone else. Your focus for weight loss is the creation of a caloric deficit. If you want to give more dietary advice, providing handouts of the dietary approach to stop hypertension (DASH) diet, and recommending patients eat prepared meals, like Healthy Choice or Lean Cuisine, at times throughout the week as a way to make healthy choices and limit calories are excellent adjuncts to the CAMES approach.

## Monitoring Caloric Intake and Physical Activity

After informing the patient of the amount of calories needed to create a caloric deficit and introducing the CAMES approach to create that deficit, you next introduce the caloric and physical activity log (Figure 9.2). I give each patient a workbook that has 2 weeks listed on each log page and 13 pages in the workbook. This equals 26 weeks or 6 months, which is the length of the program. The log has many important purposes, including daily goal setting, monitoring progress, performance improvement, and relapse prevention.

Figure 9.3 is an example of a patient's dietary and physical activity log. This patient chose to reduce her weight by using a total daily calorie limit approach. Each day for the next 6 months she wrote in her logbook under planned calories the number 1200. Having all 26 weeks available to plan the total caloric intake for the next 6 months helps the patient focus daily on the weight reduction program.

Monitoring progress is critical for accomplishing the goal of 10% weight loss over 6 months. Next to the daily planned caloric intake square, the patient records how many calories were consumed on that particular day. This way the patient can compare side-by-side the number of calories eaten compared to the number of calories planned for that day. Either the comparison is encouraging or is feedback that the patient is drifting from the original goal for that day. If the patient is not losing weight or is gaining weight, then you can turn to this page to show the patient the caloric trend. Because this feedback is available on a daily basis and the physician can quickly review it at the next appointment, the diet and physical activity log is a powerful tool to help the patient focus daily on the weight loss program and for the physician to identify positive or negative caloric trends.

Performance improvement using the dietary and physical activity log occurs in two ways. First, the dietary log helps the patient improve consistency in terms of matching daily calories consumed with the caloric goal for that day. Second, the physical activity component of the log helps the patient safely increase the number of steps walked over time. The details of this part of the log will be discussed in Chapter 10.

Finally, the caloric and physical activity log is a powerful relapse prevention tool. Almost every obese patient who comes to the physician's office for help in losing weight has lost weight at some time in the past. Patients describe losing 20 lb of their 50-lb goal when something happened so that they regained 12 of the 20 lost pounds and became discouraged by the weight regain. The experience of weight loss followed by weight regain erodes the patient's self-confidence. When this happens the patient becomes discouraged.

Analysis of the situation shows that for a period of time the patient had a process that enabled a focus on reducing calories, increasing physical activity, or both. Then the unpredictable occurred—illness, work turmoil, or a family crisis. In these situations the patient's focus and energy is redirected toward a new issue. It is understandable that weight gain can occur during these times if the patient is unable to remain engaged in the weight loss process. How to control this situation is the main topic of Chapter 11.

Unanticipated situations can throw a patient off balance when it comes to commitment to a weight loss program. At the same time, regaining lost weight

*Remember: Plan for anniversaries, holidays, birthdays, vacations, and other special events*

Date: _____	Calories		Physical Activity		Date: _____	Calories		Physical Activity	
	Planned	Actual	Planned	Actual		Planned	Actual	Planned	Actual
Date: _____					Date: _____				
Date: _____					Date: _____				
Date: _____					Date: _____				
Date: _____					Date: _____				
Date: _____					Date: _____				
Date: _____					Date: _____				
Date: _____					Date: _____				

Figure 9.2. The calorie and physical activity log.

Date: _____	Calories		Physical Activity		Date: _____	Calories		Physical Activity	
	Planned	Actual	Planned	Actual		Planned	Actual	Planned	Actual
Date: 9-14 _____	1200	1300	walking 2 miles	$\frac{1}{2}$ mile	Date: 9-21 _____	1200	1350	walking 2 miles	2 miles
Date: 9-15 _____	1200	1210	walking 2 miles	$\frac{1}{2}$ mile	Date: 9-22 _____	1200	1600	walking 2 miles	$1\frac{1}{2}$ mile
Date: 9-16 _____	B Day 1600	1500	walking 2 miles	$1\frac{1}{2}$ mile	Date: 9-23 _____	1200	1675	walking 2 miles	1 mile
Date: 9-17 _____	1200	1500	walking 2 miles	$1\frac{1}{2}$ mile	Date: 9-24 _____	1200	1250	walking 2 miles	1 mile
Date: 9-18 _____	1200	1250	walking 2 miles	$1\frac{1}{2}$ mile	Date: 9-25 _____	1200	1325	walking 2 miles	steps 4921
Date: 9-19 _____	1200	1200	walking 2 miles	$1\frac{1}{2}$ mile	Date: 9-26 _____	1200	1500	walking 2 miles	7000 steps
Date: 9-20 _____	1200	1600	walking 2 miles	$1\frac{1}{2}$ mile	Date: 9-27 _____	1200	1385	walking 2 miles	10,958

*Remember to plan for anniversaries, holidays, birthdays, vacations, and other special events*

Figure 9.3. Example of one patient's calorie and physical activity log. This patient chose to reduce her weight by planning a total daily limit of 1200 calories. She remembered to plan for greater caloric intake on her birthday.

frequently occurs when the patient knows he or she will have difficulty maintaining the weight loss routine. I call this a landmine, which is a situation that predictably results in weight gain. A patient is doing well with the weight loss program when suddenly he or she looks at the scale and cannot believe how much weight has been regained. Common landmines are vacations, anniversaries, birthdays, and holidays. Imagine going on a weeklong cruise with food available night and day. It doesn't take long before lounging during the day coupled with gourmet food available all the time begins to add pounds to the scales. The process is not sudden and dramatic like an illness or family crisis. It is gradual but cumulative. It happens because the trend of the patient's lifestyle changed from caloric deficit to caloric excess. Once the pattern of consuming excess calories resumes, the patient becomes discouraged, eats more and finds the experience of weight loss to be a distant memory.

Fortunately, a landmine can be disarmed. The caloric and physical activity log helps prevent weight regain by helping patients identify ahead of time the dates they will be around landmines during the next 6 months. To disarm landmines, patients are instructed when completing the 6-month calendar to identify special dates or times when their routine lifestyle will be disrupted and to preplan how to avoid reversing their caloric deficit trend.

The two best approaches to these situations is either to go through the event expecting to increase calories during that particular time or to neutralize the disruption of the event by preplanning the dietary menu. An example of the first approach is to acknowledge there will be special dates or times during the next 6 months when a person will naturally increase caloric intake. The most obvious event is a person's birthday (Figure 9.3). On this special day, the patient should enjoy his or her birthday cake, favorite ice cream, or special meal. The patient marks this date on the log and increases the amount of calories to be eaten on that particular day. However, the next day is not the patient's birthday, so that date should reflect a return to a deficit amount of calories. This way the patient can both enjoy his or her birthday, anniversary, or holiday yet not interrupt the trend of consuming fewer calories during the weight loss program. A second consideration for dealing with certain landmines is to eat fewer calories 24 to 48 hours prior to the event so the increase on the special day averages to the amount set for losing weight. A third approach is to disarm a landmine by maintaining a caloric deficit in the diet by using the CAMES approach.

You should spend 15 minutes with the patient during the second appointment. The first couple of minutes are to review the Battle in the Mind form and the patient's food diary. The next 5 to 7 minutes are spent introducing the CAMES approach to creating a caloric deficit. The remaining 3 to 5 minutes are allotted to presenting the caloric and physical activity log. As the physician leaves the examination room, the final comment is to tell the patient to plan a weight loss goal of 1 to 2lb per week over the next 4 weeks.

## Summary Points

1. Begin the second appointment by reviewing the Battle in the Mind form and ask the patient if anything on the page has changed.

2. The 10-day food diary identifies the foods and drinks in the patient's normal diet.
3. The patient's personality is reflected in the completeness of the food diary.
4. The CAMES approach is a dietary tool that is applied to the patient's normal food preferences (revealed in the food diary) to create a caloric deficit.
5. Other dietary advice includes providing handouts of the DASH diet and advising patients to eat prepared meals a couple of times a week.
6. The caloric and physical activity log helps the patient with goal setting, monitoring progress, performance improvement, and relapse prevention.

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# 10. The Third Appointment: Behavior Modification and Physical Activity

## Case Presentation 10.1

Dave is 52 years old and has a BMI of 39. He has type 2 diabetes that is treated with oral medication and has poorly controlled hypertension. He has no known coronary heart disease. He suffers from venous stasis with weeping lower leg ulcers. Dave can walk only 25 yards before his ankles begin to hurt. He started the weight reduction program 6 weeks ago and has lost 8lb by using portion control as a means to create a caloric deficit.

Thus far Dave lost weight by monitoring what he ate and applying the CAMES approach to his dietary choices. Now he comes to the office for his third weight reduction appointment to learn what specific behavior changes he should make with regard to eating, to learn about physical activity, and to discuss the possibility of using medication.

## When Weight Loss Is Not Happening

Before entering the examination room, the physician should check the medical record to see if the patient's weight has decreased, stayed the same, or increased. The first comment the patient expects to hear from the physician is about his current weight. If the patient has lost weight since the last visit, no matter how little, then the patient is expecting the physician to make a positive comment. This is an excellent opportunity to encourage the patient that the items on the motivator list are more powerful than those on the barrier list. Referring to the list enables the physician to be specific in terms of praise and to avoid vague generalizations.

If the patient did not lose weight or gained weight, then the physician needs to acknowledge this fact upon entering the room. The next comment should be to ask the patient to turn to the Battle in the Mind page (Figure 8.4) in the workbook and ask if anything has changed, especially in terms of barriers. Lack of success in losing weight is not because items on the motivator list have become less important but because either a previously identified barrier has intensified or a new barrier has come into the patient's life. Lack of weight loss or weight gain is a red flag that a barrier must be addressed before going any further in the program. Failure to do so means the patient will stop coming to the clinic for weight reduction. If the current weight is not addressed at the beginning of each appointment, especially if the patient is not losing weight, the end result is that the individual will fail in long-term weight loss.

Flexibility is critical at each visit. You must be willing to postpone introducing more material in order to help the patient identify and mitigate a barrier. Possible barriers include an increase in family stress, a change in work

conditions, or acknowledgment by the patient that he or she is depressed. Unlike other specialists, such as behavioral psychologists or dietitians, whose primary focus with the patient is weight loss, the primary care physician's focus is the patient. If the patient is struggling with issues or concerns that keep weight loss from occurring, then the physician should immediately change course and address that particular issue. The weight reduction program slides to a secondary position for the time being.

An advantage of this approach is the opportunity provided for the patient to not continue with the weight reduction program. Sometimes the patient needs to focus on a particular barrier that is not only blocking the ability to lose weight but may be causing other problems. For instance, a depressed patient may need to disengage from the weight loss program for a number of months until experiencing a healthy response to therapy for the depression. One patient might need time to adjust to a separation or divorce; another might need time to deal with a change in dietary habits because he or she now works a different shift at the plant. Whatever the barrier or distraction, a patient has a limited amount of energy to focus on making healthful behavior changes. When that energy is not available, the ability to create a caloric deficit is greatly reduced. Using the *Battle in the Mind* page, the physician is able to help the patient identify and focus on a specific barrier and thus avoid trying to lose weight when the outcome is not likely to be successful.

Finally, emotions stabilize, situations improve, and patients adjust their lifestyles to new settings over time. Once this happens, the primary care physician's office offers the perfect setting for a patient to re-engage in the weight loss program. All the patient has to do is return with the workbook and start the program at the point where the barrier interrupted progress. Through this process, powerful barriers are identified in a timely manner; the patient does not continue to be unsuccessful in losing weight and can now move forward to lose weight again. Experiencing a barrier helps the patient understand that control of obesity is a lifelong process that has both ups and downs and that the physician is always ready to help the patient be successful with weight reduction.

## Behavioral Approach to Weight Loss

Both the NHLBI Clinical Guidelines [1] and the USPSTF statement on obesity [2] state that an effective weight management program incorporates three components – diet, behavior, and physical activity. The dietary component is essential for the patient to learn how to create a caloric deficit without experiencing boredom or deprivation. The CAMES approach encourages the patient to reduce calories by making healthy choices regarding favorite foods; the DASH diet encourages patients to eat fruits, vegetables, and low-fat meals in place of more calorically dense, less healthy foods. And meal replacements using prepackaged meals offer reduced calories and portion control with a healthy balance of macronutrients. The physician can suggest to the obese patient one, two, or all three dietary recommendations as a way to lower caloric intake for the long term.

The second component to long-term weight loss is the behavioral changes made by the patient as a means to control the balance of calories. A brief review of behavior change theories is described in the American Medical Association's

“Assessment and management of adult obesity” [3]. This publication is free to physicians and worth reading. One of the 10 booklets in the publication describes the Health Belief model, social cognitive theory, and the Stages of Change as a way for the physician to understand how or why a person is willing to change behavior with regard to health. Physicians need to understand such theories; however, the patient is not interested in knowing what stage of change he or she is in. This information is not immediately helpful in a practical way for the patient; therefore it has little utility during the clinical appointment in helping the patient with specific behavior changes.

Other physicians may address the issue of providing behavioral advice by using concepts or phrases like stimulus control, contingency management, or cognitive restructuring. Again, from the patient’s point of view, he or she simply wants to lose weight, and wants the physician to spell out the behavioral changes that are needed to accomplish that goal. To be meaningful to the patient and time-efficient for the physician, the behavioral advice provided must be simple, clear, and easy to act on. The patient must ultimately make the decision on behavioral changes. The challenge in the primary care setting is to do this in less than 10 minutes. In other words, the physician must be able to provide behavioral advice in a brief period of time without being a behavioral psychologist.

## The PASS Behavioral Prescription

Patients want practical, commonsense behavioral advice that fits their lifestyle to help lose weight and to keep it off long-term. Suggestions like drinking an 8 oz glass of water before each meal as a way to fill up the stomach may work for some patients some of the time but will not work for every patient all of the time. Other suggestions like chewing food 10 times before swallowing or putting the fork or spoon down between each bite will only work for some patients. In making suggestions like these, the entire appointment time could quickly pass with little accomplished.

On the other hand, the physician could allow the patient to decide on which behaviors to implement and move on to the next topic. The PASS behavioral prescription is such an approach. The goal is to create a tailored behavioral prescription for each patient that would elicit behavioral lifestyle changes the patient is willing to commit to doing the rest of his or her life.

The PASS behavioral prescription is a two-page form containing four behavioral categories that deal with eating. The categories are portion size (P), adding healthy foods (A), substituting certain foods (S), and stopping certain eating behaviors (S) (Figure 10.1). Within each category are multiple, simple behavioral suggestions that may or may not apply to a particular patient. The form asks a question in each category. For example, “Is it possible to stop certain eating behaviors or particular foods?” If the patient answers “Yes” to the question, then the patient is asked to consider certain behavioral suggestions from a list in each section. The patient is asked to put a check beside those behaviors that he or she is committed to doing.

Next, below each list of suggestions are blank spaces for the patient to list personalized behaviors in each of the four categories that they are willing to do.

The P.A.S.S. Dietary Prescription stands for Portion, Add, Substitute, Stop. Before eating food, ask yourself the four simple questions stated below. Then put an "X" beside each recommendation that applies to you.

1. Is the Portion size of food about to be eaten too much?

- If "Yes," then consider the following:
1. Use a smaller plate
  2. Share your meal with someone
  3. Ask for a box to go before you eat
  4. Pre-plan NOT to purchase the ValuPak
  5. If fast food, order a kids meal
  6. Eat regular size candy bar, not King size

List 3 other ideas you have to reduce portion size: 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

2. Is it possible to Add something healthy to your meal before starting to eat?

- If "Yes," then try to add the following:
1. Water (6–8 glasses/day)
  2. Fresh fruit (4–6 servings/day)
  3. Colorful vegetables (4–6 servings/day)
  4. Foods with fiber (25 to 30 grams/day)

List 3 foods you should add to improve your diet: 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

3. Is it possible to Substitute certain foods in order to improve what you eat?

- If "Yes," then try to substitute the following:
1. Diet sodas or water for regular sodas
  2. Low fat or skim milk for regular milk
  3. Lean meats for processed meats
  4. Natural desserts for frozen/pre-packaged desserts
  5. Low fat or no fat ice cream for regular ice cream
  6. Fish and lean meats for hamburgers or fried meats
  7. Complex carbohydrates (whole grains like wheat, rye, pumpernickel breads) for simple carbohydrates (white rice or pasta, white bread, dinner rolls, mashed potatoes)
  8. Nuts (walnuts, almonds, roasted peanuts) or fresh fruits for cookies, candy bars, pies, cakes, pretzels, chips, processed snacks, or anything in vending machines
  9. Low fat popcorn for regular 'buttered' popcorn
  10. Benecol, Smart Balance, or Take Control for margarine or butter (if cholesterol is a concern)

List 3 foods or behaviors you should substitute: 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

Figure 10.1. The PASS behavioral prescription (Copyright © 2001 Dr Thomas McKnight).

**4. Is it possible to stop certain eating behaviors or particular foods?**

If “Yes,” then try to **stop** the following:

1. Eating when comfortable, not when full
2. Eating more than one serving or double portions
3. Eating while working, reading, or watching TV
4. Eating processed foods
5. Eating after 8 PM
6. Eating the whole box or bag
7. Eating from vending machines
8. Eating foods made from trans-fats (label says made with partially or fully hydrogenated oils)
9. Skipping breakfast
10. Grocery shopping when hungry
11. Ordering Supersize or Valupak fast food meals
12. Drinking more than one alcoholic beverage per day
13. Eating high calorie foods (steaks, regular ice cream, candy bars, especially King size bars)

List 5 foods or eating behaviors you should stop:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Figure 10.1. *Continued*

Typically, in each category a patient will put a check by two or three of the suggested items and complete the list by filling in the blank spaces after returning home and thinking about each category. In the end, most patients decide on making three to five behavioral changes in each category. During the next visit the physician quickly scans the two pages for completeness and asks how particular behaviors listed by the patient are helping with the weight loss program.

Patients are reminded that portion control is the most powerful way to reduce calories and still eat what they want. The patient identifies specific portion control suggestions from the list and then adds personalized suggestions in the blank spaces. Portion control behavior is further reinforced through the “C” in the CAMES approach. The combined effect of both the “P” and the “C” make it clear to the patient that reduction in calories is the most powerful way to lose weight.

Once the portion category of the PASS prescription was explained to Dave, he saw the connection between his earlier CAMES choice to cut consumption of candy, ice cream, and meats and his decision now to use a smaller plate, share an entrée at a restaurant, and order a to-go box when eating a meal alone at a restaurant. He added in the blank space below the list to drink from a smaller glass, eat only one helping of food per meal, and to buy individually wrapped bags of chips. All the foods mentioned in the “P” list of the PASS prescription, or as “C” in the CAMES approach, result in a reduction in the amount of calories eaten, without eliminating that particular food from the patient’s diet.

Adding water, fruit, vegetables, and fiber to the diet can make the patient healthier. However, some patients are adamant in not liking to eat certain fruits

or vegetables. Other patients drink a lot of sodas, coffee, or tea but rarely consume a glass of water. Finally, the average American diet contains about half the amount of fiber needed for good health. It is important for Dave to know, as explained in an earlier chapter, the health benefit of maximizing consumption of fruits and vegetables. Such a program can also help with weight loss, too. For instance, the Mayo Clinic Healthy Weight Food Pyramid base encourages an unlimited consumption of fruits and vegetables as a foundation of the clinic's weight loss program [4]. Both health and weight loss are tied to increasing the proportion of fruits, vegetables, water, and fiber in a person's diet.

Substitution of one food for another to reduce calories is a win-win decision for the patient. The numerous suggestions in this category of the PASS behavioral prescription are meant to spark Dave's creativity in thinking about reducing calories through substitution. He saw this idea before but not tied to a particular food or drink. Examples from Dr Howard Shapiro's book *Picture Perfect Weight Loss* [5] show that making better choices between two items can save a lot of calories. Choosing to eat strawberries with low-fat whipped cream in place of strawberry pie need not be a difficult decision to make if the patient understands the caloric benefit. In both choices, the patient's desire for a sweet dessert can be met. However, in choosing the strawberries with low-fat whipped cream, the patient reduces intake by hundreds of calories. Over time, modest reductions of this nature can add up to significant weight reduction.

The Stop category is the fourth behavioral area where patients are asked to make a decision. Obesity is the result of doing too much of certain behaviors. Obese patients eat too much. They may eat too late or may eat too often. In an obese person's life, certain behaviors need to stop if the individual is to gain control over his calorie consumption. The multiple suggestions in this category are meant to prime Dave's creativity in identifying bad habits that he needs to shake. For example, he put a check beside the suggestions that he needs to stop eating when comfortable, not when full; to stop eating after 8 PM; to stop skipping breakfast; to stop grocery shopping when hungry; and to stop eating an entire box or bag once it is opened. In the blank spaces he lists needing to stop having second helpings at dinner; to stop drinking so many glasses of sweet iced tea; and to stop having donuts at work late in the morning.

Like a medication prescription, the PASS behavioral prescription becomes an individually tailored set of dietary behaviors that the patient selects. Thus far, through both the CAMES approach and the PASS prescription, Dave has developed an approach to food that fits his personal likes, while considering his family's preferences, work situation, and cultural traditions. Now Dave is ready to be in control of the calories he eats.

## Physical Activity

In the remaining appointment time, the physician needs to talk to Dave about the importance of physical activity for weight control. Given Dave's difficulty in walking, what is the best way for him to safely increase his level of physical activity? Going back to the Diabetes Prevention Program study, the primary method to increase activity among the participants was to walk, with a goal of

walking an average of 150 minutes per week [6]. At this point he is far from walking 150 minutes per week, though he is able to walk short distances.

Until now the weight reduction equation focused on how the patient can reduce the amount of calories consumed. Whether a marathon runner or someone who walks only 25 yards at a time, a person can always consume more calories than he or she can expend with physical activity. Therefore, learning to decrease caloric intake is more critical than increasing physical activity as a method to lose weight. Also, some obese patients need to lose weight before they can become physically active, or have physical disabilities that limit or prohibit physical activity.

To discuss physical activity, the physician asks Dave to look in his patient workbook at the form called “You were made for motion!” (Figure 10.2). Dave learns that both the activity itself and the body’s increase in metabolism for hours after the activity result in expenditure of calories. The patient is told that being physically active is helpful for weight reduction but essential for weight loss maintenance.

The most convenient and safest physical activity for Dave is walking. He is encouraged to purchase a pedometer or step-counter, which is sold at cost at the clinic front desk. The availability of both a calorie counter book and a pedometer in the clinic eliminates the barrier of trying to obtain these items. Dave is instructed in the use of the pedometer and advised to record daily the number of steps he walks. One mile for a man is 2000 steps and for a woman is 2500

Walking is the #1 physical activity people use to keep weight off. It is safe, easy, and requires little special equipment.

(Males: 2000 steps = one mile; Females: 2500 steps = one mile)

How to increase your physical activity through walking:

1. Wear your pedometer for 2–3 days and get an average number of steps you walk per day.  
Example: Average 3200 steps per day.
2. Increase your number of steps walked each day by 10% over the next two weeks.  
Example:  $3200 + 320 = 3520$  steps per day.
3. Continue to increase your number of steps by 10% every 2–4 weeks until you reach a goal set by you and your doctor.
4. Daily record in your manual your number of planned and completed steps.

**Lifting** light weights on a frequent basis (2–3 times per week) helps maintain your muscle tone, physical strength, and to keep you from regaining the lost weight.

Discuss with your doctor the kinds of light weight exercises that are best and safest for you.

Remember: one pound of fat burns 2 calories in 24 hours. Yet a pound of muscle burns 20 calories in 24 hours. Therefore, maintaining your muscles helps burn calories!

Figure 10.2. The “You were made for motion!” form.

steps. After a couple of days, Dave takes an average of the number of steps walked per day as his baseline. The goal is either to increase his average by 10% every 2 to 4 weeks so that over the next 6 months his daily average number of steps is 5000 to 10,000, or to increase his weekly total time walked to eventually total 150 minutes per week. In the calorie and physical activity log, Dave writes at appropriate intervals what his average number of steps should be at that time. Then he daily records the actual number of steps walked and compares that number to his goal for that particular day. The process is to use the gradual but cumulative approach so that, over time, Dave becomes more physically active with a minimal risk of injury.

The second topic listed on the “You were made for motion!” page is lifting light weights. On any given day, an obese patient who weighs the same as Arnold Schwarzenegger and eats the same number of calories might gain weight in terms of unused calories stored as fatty tissue while Arnold Schwarzenegger’s weight stays the same. The difference between the two individuals is that the body weight of the obese patient is mostly composed of filled adipocytes, which utilize about 2 calories per pound of fat in 24 hours. On the other hand, a pound of muscle metabolically consumes about 20 calories per pound in 24 hours. Mr Schwarzenegger’s muscular development metabolically enables him to consume more calories without gaining weight. Therefore, if physically able, Dave is encouraged to use light weights or go to a gym and receive personal instruction on how to exercise large muscle groups as a way to increase metabolism and to lose weight.

The few minutes the physician has to introduce physical activity to the patient does not allow enough time for showing the patient specific exercises for weightlifting and stretching. Referral to local resources such as the YMCA, a public gym, or private facility is helpful in taking the patient beyond the level of walking as a way to increase physical activity. If the patient is able to do the minimum amount of activity, such as daily walking, then as weight loss occurs the patient can further diversify participation in other physical activities.

For most patients, a program that safely increases walking, sets a 6-month goal for an average number of steps walked per day, and has a method to monitor that progress is of great assistance in helping the patient monitor caloric consumption. Dave’s initial average number of steps per day was 1850. If he increases that number by 10% every 2 weeks, then by the end of the 6-month period he will average 5800 steps per day. This is very attainable, especially as he continues to lose weight and feels more energetic.

## Weight Reduction Medication

The evidence-based studies regarding the indications and effectiveness of medication for weight reduction were described in an earlier chapter. During the third appointment, the physician might discuss the potential use of medication. However, in view of the 1997 complications with Redux, like primary pulmonary hypertension and valvular heart disease, there are two important considerations to discuss before prescribing weight loss medication. One is that, since obesity is a chronic, recurrent disease, it is likely that duration of medication use will



be indefinite or weight regain will likely occur [2]. Second, according to the USPSTF report on obesity, long-term studies have not gone beyond 2 years, so the physician is unable at this time to tell the patient if adverse side effects are likely to result from long-term use of any weight reduction medication [2].

Dave is not strongly in favor of using medication but is open to the possibility if his physician recommends its use. His poorly controlled hypertension disqualifies him from taking Meridia. He does not know if his insurance company will cover the cost of Xenical. After a brief discussion of the subject, Dave prefers to move forward with the program without use of the medication at this time. The majority of patients have this response. However, the use of medication can still be discussed during the weight maintenance phase of the program.

## Summary Points

1. If the patient is not losing weight by the third appointment, then the physician needs to help the patient identify the barrier that is stopping weight loss from occurring.
2. Focusing on the barrier may mean putting the weight reduction program on hold.
3. The PASS behavioral prescription helps identify specific lifestyle behavior changes the individual is willing to make.
4. In terms of weight loss, expenditure of calories through physical activity can be safely accomplished for most patients by walking.
5. The caloric and physical activity log helps the patient track improvement in terms of distance walked.
6. Medications have been shown to be effective compared to placebo, but the safety and effectiveness of long-term use is not known.

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# 11. Monthly Monitoring and Long-Term Maintenance

## Case Presentation 11.1

Andrea is 18 years old. She began the weight reduction program weighing 212 lb and has lost 11 lb in the past 2 months. She especially likes to eat fast food, candy, and sodas, which is different from what her family eats. Andrea presently walks an average of 5500 steps per day and has no physical limitations. Her biggest barrier is learning to control impulsive eating; when she sees food she is automatically cued to thinking she should eat whatever she sees whether she is hungry or not. She likes the CAMES and the PASS approaches to caloric reduction, which are unlike any approach to weight reduction she has tried in the past, including use of over-the-counter medications. These approaches allow her to eat the kinds of foods she and her friends like to eat. She does not have the interest, time, or money to try to follow a special diet in order to lose weight. She returned to the clinic today for her first monthly follow-up appointment. She had lost 3 lb in the past month and is a bit discouraged not to have lost more weight since the last appointment.

## Monthly Monitoring

Changing health behavior is difficult. Most patients know what they should or should not do to enjoy good health, but do not do it. Most obese patients know they need to eat less food and exercise more if they are to lose weight. The painful truth is that knowledge alone is unlikely to result in behavior change. Knowledge must be integrated with an individual's attitudes about a particular health issue before a person is willing to change a behavior. If the individual believes there is more of a benefit or less of a threat in changing behavior, then the patient may be willing to stop a harmful behavior or start a healthy one. For instance, patients who smoke probably do not have a knowledge deficit regarding the negative effect smoking has on health. However, many patients justify continuation of the smoking habit. They do so in part because their attitude is that though smoking may hurt other people it will not harm them.

Patients change a behavior when their attitude changes with respect to that particular issue. Andrea's attitude changed when she decided to stop trying to find a quick solution to weight loss. To embrace the fundamentals of her physician's weight reduction program required willingness on Andrea's part to accept obesity as a chronic disease and to learn how to control that disease.

Andrea's physician presented to her the basic components for long-term weight loss during the three initial appointments. She learned during the first appointment that the 6-month goal of the program is a 10% weight loss, which would be 21 lb in her case. She also learned that she had to keep a food diary. In the second appointment she was introduced to a dietary approach that allowed

her to eat most of the foods she wanted to eat and still create a caloric deficit. At the third appointment, Andrea identified particular behaviors she could use to reduce her caloric intake no matter what kind of food was before her. She also learned during the third appointment how to increase her physical activity and metabolism by walking and lifting light weights.

For the remaining 4 months, each appointment is focused on helping to reinforce the patient's attitude change and new lifestyle behaviors with respect to food and physical activity. Figure 11.1 provides questions about attitudes and behaviors to help the physician with this process. The goal is that at the end of the 6 months the patient will live a healthier lifestyle, reduce excess weight, and learn how to keep the weight off long-term.

Before entering the examination room, the physician checks the medical record to see if the patient has lost weight since the last visit. If weight loss has occurred, the patient should be congratulated and then instructed to turn to the Battle in the Mind form (Figure 8.4) to ask the patient if anything on that page has changed since the last visit. If the answer is "No," then turn to the "Top Ten Review Questions" (Figure 11.1) and start with the third question. If the answer is "Yes," then the patient needs to clarify how important the barrier is in blocking his or her ability to lose weight. If this barrier is serious enough to stop the patient's weight loss progress, then the rest of the appointment time needs to be spent focusing on this barrier.

The questions in Figure 11.1 review what was learned during previous appointments. When going through the questions, some patients will say not every question applies to them. For example, a patient who does not like to walk or is not able to walk will say that question 6 does not apply. The goal is not that each patient can or should employ all aspects of the program but that they are doing the best they can with what they are able and interested in doing. Reviewing the list each month with the patient enables the physician to provide motivation and encouragement in a specific, focused way.

#### TOP TEN REVIEW QUESTIONS

1. How is your Battle in the Mind in terms of motivators versus barriers to weight control? Good/Not So Good
2. Has anything changed on either list? Yes No
3. Are you applying the C.A.M.E.S. Approach to ALL the foods you eat?  
Yes No
4. If not, then why not?
5. Is your P.A.S.S. Prescription completed and used?
6. What are you average number of steps per day?
7. Is this increasing or decreasing?
8. Do you regularly exercise using "light" weights?
9. Do you have "social" support (friends, family, co-workers) for your program?
10. What are you most proud of accomplishing this past month?

Figure 11.1. Review questions for monthly monitoring appointments (Copyright © 2001 Dr Thomas McKnight).

Andrea returned for her third appointment disappointed she did not lose 1 to 2lb per week over the previous month. Her physician asked about her lists of motivators and barriers and if anything on either list had changed since the last appointment. On her list of barriers, she had originally mentioned impulsive eating. During this visit she recalled that during the Thanksgiving weekend she was surrounded by food everywhere she went. At home, friends' houses, and social gatherings there was always an abundance of food. Before she could stop herself, her plate was filled with food, her fingers were picking up sweets, or she was having multiple sodas over the course of an evening. She had difficulty keeping her mind focused on monitoring her caloric intake.

Andrea's physician mentioned to her that it was remarkable she lost 3lb from early November to early December. To lose any weight during the holiday season is an accomplishment that shows strength in applying some aspects of the program. The weight monitoring appointments do not introduce new information; rather they help reinforce positive attitudes and behaviors. The time is spent helping the patient explore ways to minimize barriers. In Andrea's case, her tendency toward impulsive eating coupled with the abundance of food during the holiday season presented a difficult situation for her to manage. Because she lost weight, it meant her program was working. Her problem was that she was in the midst of the holiday season and did not know how to deal with all of the opportunities to overeat.

From the week before Thanksgiving until about January 3, an overabundance of food is available for 6 continuous weeks. Patients are constantly exposed to an excess of high-calorie foods and drinks, not just at social events but also in the home and office. The food cues, coupled with a tendency to eat impulsively, set the stage for most people to gain weight during the holiday season. Andrea's weight loss reflects her commitment to losing weight during the most difficult period of time to decrease caloric intake and increase physical activity. Most patients experience an increase in caloric intake and a decrease in physical activity during the holiday season.

To safely navigate the holidays, a patient must be willing to do two things. First comes pre-planning both meals and activity. Patients should apply the CAMES approach and the PASS prescription to limit caloric intake and schedule more time to be physically active, especially on days of high caloric intake. For instance, advise the patient to go for a longer walk on Thanksgiving morning rather than not walking at all. Or encourage the patient to commit to going for a walk soon after the large meal of the day as a time to socialize with guests or family. Advise the patient ahead of time to write this goal in the caloric and physical activity log, tell someone about the plan for the day, and to ask for help in fulfilling the commitment. With pre-planning and social support, the patient can enjoy the holidays with less concern about being at the mercy of all the high-calorie food available.

Second, advise the patient to simply take one day at a time. There are too many parties, social events, and foods that must be navigated during that time to plan for the entire season. The best Andrea can do is continue focusing on her plan each day, one day at a time, realizing that the holiday season will end sometime in early January.

For many patients, the majority of their annual weight gain occurs during the holiday season. For others, weight gain is spread out over the entire year. For some

patients just getting through the fog of food with little or no weight gain is success. With a 3-lb weight loss, Andrea has been successful in getting through the first part of the holiday season. She needs to be encouraged that pre-planning and taking one day at a time are strategies that will ensure her continued weight loss success.

The final question in Figure 11.1 asks, “What are you most proud of accomplishing this past month?” Finishing the appointment on a positive note motivates patients whether they lost or gained weight over the past 30 days. Patients who did not lose weight or gained weight over the past month need encouragement. This question enables the physician to be specific in his or her encouragement. It also enables the physician to conclude the appointment on a positive note with the final statement that the goal for the patient is to lose 1 to 2 lb per week.

## The Five Principles of Long-Term Weight Control

During the first monthly monitoring appointment, after reviewing the top ten questions in Figure 11.1, the physician presents the five principles of long-term weight control (Figure 11.2). These principles are meant to help the patient remember the key steps of the program. Ultimately, the patient’s long-term success is based on internalizing the evidence-based science in a way that the patient can use in any social or private situation. This goal is accomplished by teaching the patient the five principles.

**1. Preference versus Passion.** The first principle, Preference versus Passion, defines how serious the patient is in wanting to lose weight. Patients who exhibit wishful thinking, who expect someone or something else to be responsible for weight loss success, or who are not willing to focus daily on trying to achieve success will not lose weight long-term. On the other hand, patients who demonstrate passion for wanting to lose weight accept a realistic weight loss goal, hold themselves accountable for either success or failure, and are committed to focusing on developing health behavior changes over time. Patients who come to the clinic for their fourth appointment have shown they have passion and are to be encouraged for this. When this principle is described, patients typically comment on how in the past their efforts were half-hearted but that this time is different. They are determined to control their weight.

It is common after a weight loss of 10% or more for a patient to have friends or family members ask how the patient was able to lose weight. With workbook in hand, the patient can show the process step-by-step. A common result of this encounter is for some of the patient’s acquaintances to lose weight, too. The physician should tell the patient that such encounters are likely to occur and that the friend or a family member will exhibit either a passion or a preference for losing weight. Telling the patient this ahead of time helps the patient to understand the difference between the two and to not be discouraged when others do not share the same desire.

**2. Planning for Success.** Patients choose their desired amount of weight loss based on many reasons. Even when a patient writes on the intake survey he or she want to lose over 100lb, the physician should not say it cannot be done. Determined patients have accomplished amazing amounts of weight loss. How long it will take to lose that amount of weight is the key question for the patient.

1. **Passion versus Preference** – Do you have the staying power to make a health behavior change?
  - Preference:** Wishful Thinking  
(Ex. 20lbs in 20 days)  
External Responsibility  
(Someone else in control of my success)  
Not Focused  
(Not able to establish a reasonable goal and follow a plan)
  - Passion:** Realistic Goal  
(Understand 10% / 6 months as reasonable)  
Internal Responsibility  
(Accountable to self for success or failure)  
Daily Focus  
(Daily commitment to a plan)
2. **Planning For Success** – Put-On and Take-Off Weight Gradually
  - A. Goal of 10% weight loss over 6 months
  - B. Self-monitoring – Complete a daily log for calories and physical activity
  - C. Preplanning disarms ‘landmines to weight loss’ – anniversaries, holidays, birthday, and vacations
3. **Perfect Fit** – The most important practical principle for long-term success.
  - A. The C.A.M.E.S. Approach empowers the individual **to improve** their dietary choices without deprivation.
  - B. The P.A.S.S. Behavioral Prescription creates a personalized behavioral approach to food.
4. **Physical Activity** – You were made for motion
  - A. To last a lifetime, the individual must “enjoy” the activity.
  - B. Pedometers provide feedback with regards to physical activity, and provide a safe way to increase that activity.
  - C. If approved by your physician, using light weights 2–3 times per week helps maintain muscle mass and increases your metabolism, which burns calories.
5. **Personal Control** – Regaining lost weight is always possible.
  - A. Obesity is a chronic disease. Either the individual controls the disease or the disease controls the individual. This is similar to what both asthma and diabetic patients daily face?
  - B. The asthma model (green-yellow-red) to control the disease provides a plan for timely intervention.
  - C. The individual develops a strategic plan for intervention called the Zones.

Figure 11.2. The five principles of long-term weight control (copyright © 2001 Dr Thomas McKnight).

Using the approach presented to Andrea, a large amount can be lost over 1 to 2 years. Losing 10% of a patient’s weight over 6 months improves a patient’s health and sets the stage for losing more weight over a longer period of time. All the patient has to do is to continue to follow the program.

Planning for success involves three steps. The first is to identify a goal that is attainable. The science says 10% in 6 months is an attainable goal. The second step is self-monitoring. If the patient does not know if his or her weight is staying the same, going up, or going down, then how can any adjustment in behavior occur in order to control weight? Pre-planning is the final, critical step if the patient is to avoid the barriers to weight loss. Both self-monitoring and pre-planning are accomplished using the calorie and physical activity log.

**3. Perfect Fit.** The CAMES. approach and PASS prescription empower the patient to enjoy eating the foods he or she likes to eat and at the same time reasonably reduce calories so weight loss can occur. Like most patients, Andrea was surprised to learn she only had to eliminate a few foods or drinks from her diet and could still lose weight. She made these choices, not the physician or a dietician. This does not mean she chooses the most healthful foods or drinks. It does mean she can be around her friends and not feel frustrated because she is on a special diet and is trying to lose weight. Her long-term success with weight loss is far more likely if she learns how to control the caloric intake of her preferred foods than if she tries to adhere to a diet that is unnatural for her.

**4. Physical Activity.** For many patients the word *exercise* has negative connotations. But describing how to increase physical activity in a natural way with a plan to safely increase that activity is appealing to most patients. If Andrea initially tried to do much more than increase her walking, it is likely she would injure herself. This does not mean that at some point in the program she cannot expand into other areas her desire to be physically active. It does mean she needs to build up to a condition where this can be done with minimal risk of harm to herself.

**5. Personal Control.** By this time in the program, Andrea has heard several times that her obesity is a chronic disease that never goes away. Even after losing weight, her obesity can easily return through the gradual but cumulative process of ingesting more calories per day than her body needs. It is the trend of patients' eating habits that leads to obesity. Thoroughly understanding and embracing this principle empowers Andrea to apply the other four principles no matter where she is.

Finally, in each of the two remaining weight monitoring visits, the physician can quickly review all the basic components of the weight reduction program by using the questions in Figure 11.1 and reviewing the five principles in Figure 11.2. This process allows the primary care physician years later to make brief interventions that can have a powerful impact. For instance, a year from now if Andrea has gained weight, her physician can quickly ask about her barriers and if anything has changed. She may choose to focus on the barrier or ignore it, but at least her physician understands why she is regaining weight and can offer assistance in a way that will be most effective for the patient.

## Weight Maintenance Program

### Case Presentation 11.2

Angelina is 35 years old. She completed the 6-month weight reduction part of the program. Her goal was to lose 19lb, but she lost a total of 26lb (Figure 11.3). She walks during her lunch hour, brings prepackaged meals to work, and



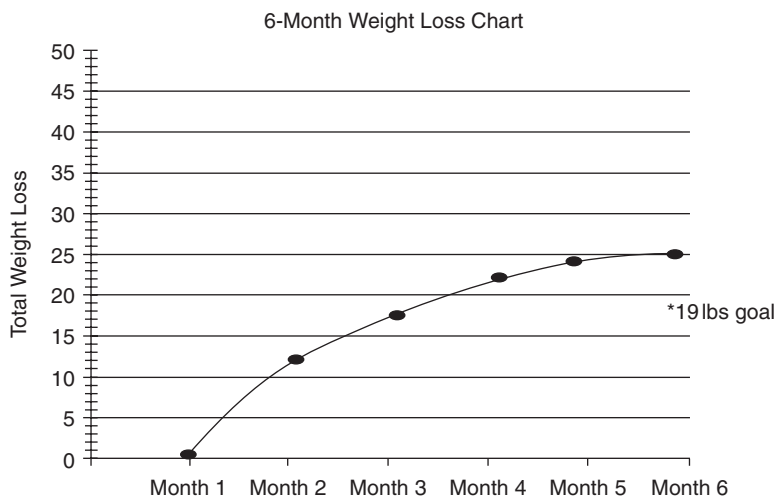


Figure 11.3. Weight loss chart for 6 months.

closely watches portion sizes. She has a friend who asked her how she lost her weight. By sharing her workbook with her friend, she reports that her friend began following the program and has lost weight, too. Angelina comes to the clinic for her final weight reduction appointment to learn how to keep the weight off long-term.

## *Review Weight Loss Concepts*

By now the patient knows the routine. When you enter the room, your first comment is with respect to how much weight the patient has either lost or gained. You should always have the patient immediately turn to the list of barriers and motivators on the Battle in the Mind page. If nothing has changed, quickly ask how the CAMES approach and PASS prescription are working for the patient. If there are no major concerns, then review of the calorie and physical activity log (Figure 11.4) can quickly validate how much the patient is either eating or walking. Angelina understood this concept and was using the log to monitor her progress. She commented that celebrating her birthday was pleasurable but did not lead to overeating on successive days. This final review of the basic weight-reducing concepts is to identify any weaknesses in the patient's program and to reinforce the patient's internalization of the program. The review takes less than 5 minutes. Now Angelina turns to Figure 11.5.

Patient identifies birthday	Calories		Physical Activity	
	Planned	Actual	Planned	Actual
Date: <u>9-14</u>	1200	1300	walking 2 miles	$\frac{1}{2}$ mile
Date: <u>9-15</u>	1200	1210	walking 2 miles	$\frac{1}{2}$ mile
Date: <u>9-16</u>	B Day 1600	1500	walking 2 miles	$1\frac{1}{2}$ mile
Date: <u>9-17</u>	1200	1500	walking 2 miles	$1\frac{1}{2}$ mile
Date: <u>9-18</u>	1200	1250	walking 2 miles	$1\frac{1}{2}$ mile
Date: <u>9-19</u>	1200	1200	walking 2 miles	$1\frac{1}{2}$ mile
Date: <u>9-20</u>	1200	1600	walking 2 miles	$1\frac{1}{2}$ mile

*Remember to plan for anniversaries, holidays, birthdays, vacations, and other special events*

Figure 11.4. Angelina's calorie and physical activity log.

(Controlling the Crisis before the Crisis Controls You)

Zones for timely intervention before weight is regained.

1. Green Zone: Minimal monitoring
2. Yellow Zone: Must adjust *either* eating behavior or physical activity.
3. Red Zone: Must adjust *both* eating behavior and physical activity.

For instance, a 200 lbs. man loses 20 lbs. over 6 months and enters the weight maintenance phase.

- a. Green Zone: 180 to 184 lbs. (Minimal Intervention)
- b. Yellow Zone: 184 to 187 lbs. (Evaluates both eating behavior and physical activity, and adjusts one or the other until weight goes into green zone)
- c. Red Zone: >187 lbs. (Evaluates and adjusts BOTH his eating behavior and physical activity until weight goes into the green zone again)

Figure 11.5. Weight maintenance using green, yellow, and red zones to identify appropriate intervention.

## *Weight Maintenance Zones*

The ultimate asthma crisis is for the patient to be in the ICU in status asthmaticus. To prevent this medical crisis, patients with asthma are taught a system of green–yellow–red zones, graded by severity, to help them monitor their pulmonary condition and to have an intervention plan for controlling the disease depending on the particular zone.

Not regaining lost weight is a challenge for all formerly obese patients. Patients must understand that they are faced with a chronic disease that will easily manifest itself through weight regain. Identifying this gradual but cumulative process and making an early intervention is the key to long-term weight loss. A simple but effective approach to teach patients to monitor their condition and to have an intervention plan for controlling the disease uses the same model of green–yellow–red zones that is used by patients with asthma.

Figure 11.5 explains the zones and gives an example of how one person established his weight zones. The patient decides the weight range for each zone, not the physician. It is impossible for another person to tell an individual what his or her weight range should be. Ownership of the decision for each weight zone belongs to the patient.

The physician explains to the patient that the green zone is the range of weight the patient hopes to maintain long-term. The patient must consider personal weight fluctuation when determining each zone. The way to live in the green zone is to live the principles learned over the previous 6 months and to monitor weight on a regular basis. The formerly obese patient must utilize a weight scale just as the asthmatic uses a peak flow meter, the diabetic a glucometer, or the patient with hypertension a home blood pressure kit. Frequent self-monitoring is the most important step for any patient to control a chronic disease. It must become habitual.

When weight increases to the yellow zone, it is time for the patient to review both physical activity and dietary behavior. When in this zone, the patient needs to make an adjustment in activity or diet. It is always easier to intervene when the weight regain is 5 lb of a 20-lb weight loss program rather than when the patient has regained 10 to 15 lb of a 20-lb weight loss. Just as an asthma patient in the ICU is in a crisis, regaining 15 of 20 lost pounds is a crisis for the formerly obese patient. Therefore, the goal is to have a process in place that identifies the trend of weight regain earlier when the potential for successfully losing the weight again is greater.

When weight enters the red zone, the patient is in a crisis. It would be helpful for the patient in such a position to call the primary care physician. A variety of events could have occurred to cause the patient to increase eating, decrease physical activity, or both. Examples of such common events include moving to a new location, divorce, or death of someone close to the patient. To lose the regained weight, the patient is likely to need a review of all the program components of both physical activity and dietary behavior. If weight regain has occurred and the patient has not addressed what has happened, during the next clinic appointment the physician can quickly focus the discussion back to the beginning of the program. Asking the patient about personal barriers does this.

1. Green Zone Weight: 160 to 165  
(Minimal Intervention)
2. Yellow Zone Weight: 165 to 167  
(Adjust: Eating or Activity)
3. Red Zone Weight: >167  
(Adjust BOTH Eating and Activity)

Figure 11.6. One patient's personal green, yellow, and red zones.

#### REMEMBER:

1. If you take in more calories than you burn or use, the fat cells will fill up again, and you will regain your weight.
2. Self-monitoring and social support are the two pillars for longterm success in controlling weight.
  - a. How will you monitor your weight and calories?
  - b. What support system do you have?
3. Being physically active with a personal program of aerobic activity (walking, jogging, swimming, biking, dancing, etc.) most days of the week, and maintaining muscle tone with light weights at least 2x per week, are critical for keeping fat cells empty, i.e. weight off.
4. Establish weight "zones" you can live with the rest of your life.
5. If you enter your yellow or red weight zone, become proactive – find out what is wrong and correct it!
6. REMINDER: *Either you control the obesity or the obesity will control you!!*

Figure 11.7. Rules for lifelong control of obesity.

Angelina's final appointment was to establish her weight control zones. She went through the quick review of all the basic components of the weight reduction program. She wrote down her weight range for each zone (Figure 11.6). The final comments by her physician were to walk her through the six points in Figure 11.7 to remember how to maintain long-term weight loss. The last statement in the figure sums up the challenge of any chronic disease. It says: "Either you control the obesity or the obesity will control you."

## Summary Points

1. Review of the basic principles of the program during each weight monitoring visit is critical to help the patient establish health behavior change.
2. The monthly appointments provide an opportunity to identify barriers that threaten the patient's chances for long-term success.
3. Successful navigation of the holiday season requires pre-planning and a daily focus.

4. The five principles of long-term weight control are a simple way for patients to remember the scientific principles to control their weight.
5. Defining green–yellow–red weight control zones helps the patient make timely interventions when weight regain starts to occur.
6. Obesity is like all other chronic diseases: either the patient controls the disease through appropriate behavioral choices or the disease controls the patient.

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