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Clinical Essentials for Obesity

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Clinical Essentials for Obesity

by

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A project submitted in partial satisfaction of
the requirements for the degree
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Each person whose signature appears below certifies that this Doctoral Project in his/her opinion is adequate, in scope and quality, as a Doctoral Project for the degree Doctor of Psychology.

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ABBREVIATIONS

APA	American Psychological Association
ASEX	Arizona Sexual Experience Scale
BAI	Beck Anxiety Inventory
BDI-II	Beck Depression Inventory-II
BES	Binge Eating Scale
BEQ	Binge Eating Questionnaire
BIBS	Boston Interview of Bariatric Surgery
BMI	Body Mass Index
BPI	Basic Personality Inventory
CBT	Cognitive Behavioral Therapy
CCBRS	Cleveland Clinic Behavioral Rating System
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
EDI-2	Eating Disorder Inventory - 2
EDI-SC	Eating Disorder Symptom Checklist
EI	Eating Inventory
GAD-7	Generalized Anxiety Disorder 7-Item Scale
IWQOL	Impact of Weight on Quality of Life
IWQOL-Kids	Impact of Weight on Quality of Life-Kids
IWQOL-Lite	Impact of Weight on Quality of Life

M-A QoLQ	Moorehead-Ardelt Quality of life Questionnaire
M-A QoLQ II	Moorehead-Ardelt Quality of life Questionnaire II
MBMD	Millon Behavioral Medicine Diagnostic
MMPI-2	Minnesota Multiphasic Personality Inventory-2
NAASO	North American Association for the Study of Obesity
NCP	Veteran's Administration National Center for Health Promotion and Disease Prevention
NHLBI	National Heart Lung and Blood Institute
NICHQ	National Institute for Children's Health Quality
PAI	Personality Assessment Inventory
PHQ-9	Patient Health Questionnaire-9
QEWP-R	Questionnaire on Eating and Weight Patterns-Revised
QLQ	Quality of Life Questionnaire
QOLI	Quality of Life Inventory
RSES	Rosenberg Self-Esteem Scale
SCID-I:CV	Structured Clinical Interview for DSM-IV – Axis I, Clinical Version
SCL-90-R	Symptom Checklist 90 –R
SF-36	OMS 36-item Short Form Health Survey
TFEQ	Three- Factor Eating Questionnaire
WALI	Weight and Lifestyle Inventory

ABSTRACT

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by

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In order for health psychologists to be prepared to address obesity, foundational information on obesity is required. Psychologists have the potential to assist with lifestyle and behavioral modifications, especially when weight problems are tied to mental health conditions. Furthermore, clinicians can focus on triggers for unhealthy choices, in addition to unhealthy beliefs about eating and weight. The purpose of this research project is to provide health psychologists with essential information on the scope, associated risks, and evidence-based interventions for obesity so that they will be better prepared to deliver effective treatments.

CHAPTER 1

CLINICAL ESSENTIALS FOR OBESITY

Obesity has become an area of serious concern for healthcare providers in the present day, which has intensified since the formal call to action by the Surgeon General to prevent and decrease overweight and obesity in 2001. Recent scientific literature states that more than 2 in 3 adults are overweight or obese, more than 1 in 3 adults are obese, and 1 in 20 adults have extreme obesity in the United States (Flegal, Carroll, Kit, & Ogden, 2012). Furthermore, approximately one-third of children and adolescents from ages 6 to 19 are overweight or obese, and more than 1 in 6 children and adolescents from ages 6 to 19 are obese in the United States (Ogden, Carroll, Kit, & Flegal, 2012). The annual economic impact of obesity-related illness is estimated at $190.2 billion or approximately 21% of annual medical spending in the United States (Cawley & Meyerhoefer, 2012). Furthermore, childhood obesity contributes to $14 billion in direct medical costs (Marder & Chang, 2006). Medical costs related to obesity are expected to continue to increase significantly, since children that are currently obese are likely to become obese adults (Marder & Chang, 2006; Wang, Chyen, Lee, & Lowry, 2008). It is estimated that one-third of boys and two-fifths of girls born in the United States in 2000 will develop Type 2 Diabetes in their lifetime (Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003). Unfortunately, if the obesity epidemic is not reversed, American children are in danger of becoming the first generation to live sicker and die younger than their parents' generation (Olshansky et al., 2005). If the rate of obesity was to stay at the level of 2010, the projected savings for medical expenditures over the next two decades would be $549.5 billion (Finkelstein et al., 2012). Obesity also leads to high costs for

disability and unemployment benefits. For example, obesity-related job absenteeism costs businesses in the United States $4.3 billion every year (Witters, Harter, Bell, & Ray, 2011). Psychologists are able to play an important role in preventing and decreasing obesity, thus potentially saving significant amounts of money in healthcare costs. Excess weight gain is becoming an epidemic, and obesity is heavily associated with health issues. Therefore, it is beneficial to public health to prevent and decrease obesity. Informed clinicians can assist people in balancing regular physical activity with healthy eating so that they can maintain a healthy body weight. Furthermore, health psychologist clinicians are charged with finding culturally appropriate and effective interventions for obesity. Clinicians should also encourage behavior changes, environmental changes, and enhance various partnerships to help combat excess weight gain. However, in order for health psychologists to be prepared to address this issue, foundational information on obesity is required.

The American Psychological Association (APA) has recognized the significance of obesity by dedicating an expert guideline development panel to create a clinical treatment guideline for obesity across the lifespan. The expert panel was approved in December of 2012 and consists of Jamy Darone Ard, MD; Gary Bennett, PhD; Phillip Brantley, PhD; Leonard Epstein, PhD; Barbara Fiese, PhD; Jane Gray, PhD; Caroline Jhingory, MSW, Maria Llabre, PhD (Chair), Michelle Polfuss, PhD, RN, CPNP-AC/PC; Hollie Raynor, PhD, RD, LDN; Delia Smith West, PhD; and Denise Wilfley, PhD (Kurtzman & Bufka, 2012). This panel will create a guideline for obesity treatment based on systematic reviews of literature research and will explore areas including weight loss, eating behavior, physical activity, diet, health behavior change, and medical management

of obesity (American Psychological Association, 2012). The tentative goal is for the guidelines to be completed by the end of 2015 (American Psychological Association, 2013). The purpose of the following research project is to provide health psychologists with essential information on obesity so that they will be better prepared to effectively treat obesity and provide a background for the implementation of future guidelines.

The first item that health psychologists need to know about obesity is the harm that it causes across multiple domains. Researchers back up this assertion by highlighting the premature death, healthcare costs, disability, social stigma, and loss of productivity associated with obesity. The Surgeon General has weighed in on this issue by stating that the risk of death rises with increasing weight (US Department of Health Human Services, 2001). Additionally, being overweight is presumed not to be caused by eating alone, but through a mixture of metabolic, environmental, behavioral, genetic, socio economic, and cultural influences. However, a large majority of individuals become overweight and obese from lack of physical activity and excess consumption of calories. In fact, approximately 300,000 deaths each year are attributable to unhealthy eating and sedentary lifestyles (Allison, Fontaine, Manson, Stevens, & VanItallie, 1999). Furthermore, only three percent of Americans meet the daily requirements for consuming the recommended amount of four out of the five food groups (United States Department of Agriculture, 1998), and less than one-third of adults meet the recommendations for physical activity (US Department of Health Human Services, 2010). This means that the vast majority of Americans are falling behind with respect to exercise and healthy eating. Accordingly, behavioral and environmental interventions are recommended to foster the maintenance of physical activity and a healthy diet.

In order for clinicians to be able to differentiate between healthy weight, overweight, and obese clients, the common measure of body mass must first be understood. Weight alone is not sufficient, since it does not account for differences in body types with respect to height. The Body Mass Index (BMI) alleviates this problem by measuring weight with respect to height. It is calculated as weight (pounds) divided by the square of the height (inches), multiplied by 703. The theory is that the BMI is practical for measuring obesity since it only requires height and weight, yet is more precise than weight alone. However, it can be argued that the BMI lacks the specificity to accurately assess body fat in the elderly or those that are very muscular. Furthermore, within the BMI there are set dividing lines that were established to distinguish a person as "healthy weight," "overweight," or "obese." Two important theories are that a BMI between 25 kg/m^2 and 29.9 kg/m^2 denotes overweight, and a BMI of 30 kg/m^2 or more denotes obesity. The Surgeon General substantiates these thresholds by pointing to studies that show significant correlations with total body fat content and BMI, along with evidence that health risks are greater at the 25 kg/m^2 and 30 kg/m^2 range (US Department of Health Human Services, 2001). With regard to children, the body mass index remains the most common measure of weight status, and is considered reliable for this population. Accordingly, the definition of an overweight child is a person between the ages of 2 and 20 with a BMI greater than the 95^{th} percentile for their age and sex. Furthermore, children between the 85^{th} and 95^{th} percentile are classified as 'at-risk for overweight' (Centers for Disease Control Prevention, 2011). Clinicians should also be aware that childhood obesity has more than doubled in children and quadrupled in adolescents over the last 30 years (National Center for Health Statistics, 2012). Physicians are recommended to

routinely calculate children's BMI and plot it on a pediatric growth chart in order to track for significant changes over time for all children between the ages of two and 18 years (American Academy of Pediatrics Committee on Nutrition). Growth charts can be located easily online with the Center for Disease Control at http://www.cdc.gov/growthcharts/clinical_charts.htm. The rate of childhood obesity is rising at a rapid pace. One in every 24 children between the age of six and 11 years old was overweight in the year 1960. However, the increase in sedentary lifestyles and widespread availability of energy-dense foods has led to a staggering increase in childhood obesity. As a result, the percentage of overweight children over the last 30 years has more than tripled (National Center for Health Statistics, 2002). As of 2006, an estimated 19% of children between the age of six and 11 were classified as overweight in the United States (Ogden et al., 2006). Although childhood obesity affects children of all ages and sexes, African American, Mexican American, and Native American children are particularly at risk (Dietz, 2004).

Significant health problems are associated with childhood obesity, which is an early risk factor for both child and adult morbidity and early mortality. Overweight and inactive children are more likely to have abnormal lipid profiles, abnormal cholesterol and insulin concentrations, and high blood pressure. These changes raise the risk of early disability and death from kidney disease, heart disease, and other organ damage (Young-Hyman, Schlundt, Herman, De Luca, & Counts, 2001). In addition, the children may experience important complications such as sleep apnea, asthma, joint and skeletal problems, gastrointestinal complications, liver disease, and increased risk of coronary heart disease in adulthood (Baker, Olsen, & Sørensen, 2007). Clinicians should also be

aware of the potential psychological comorbidities of childhood obesity. Social stigmatization can create significant psychological stress on children. Potential results of psychological stress stemming from obesity may include body image disturbances, social isolation, poor self-esteem, depression, poor academic achievement, and difficulty with peer relationships (Ebbeling, Pawlak, & Ludwig, 2002).

Clinicians should be prepared to explain the causes of obesity, especially in order to dispel common myths that patients may endorse. The first idea to keep in mind is that obesity is not simply a matter of overeating. Certain people may have a predisposition to obesity due to genetic factors that control the regulation of body weight through storage, energy intake, and expenditure (Perri & Corsica, 2003). The first genetic defects linked to obesity were the ob gene and its protein product leptin. Leptin is a hormone that is produced by fat cells that influences the hypothalamic regulation of caloric consumption and the expenditure of energy (Perri & Corsica, 2003). However, very few obese people have leptin deficiencies, and trials using leptin as a treatment for obesity have not been well-supported by research. Out of the several other single-gene defects that have been found to contribute to obesity in animals, only mutations on the melanocortin-4 receptor seems to contribute to human obesity and it only affects fewer than 4% of morbidly obese individuals (Perri & Corsica, 2003). Furthermore, genetic factors alone cannot account for the recent rise in obesity prevalence. Environmental factors that foster physical inactivity and energy dense diets comprise the major causes of the current spread of obesity (Perri & Corsica, 2003). In industrialized countries such as the United States, people are immersed in an environment that promotes the consumption of foods that are high in energy and low in nutrients. These foods are generally low in cost, high in

calories, tasty, and widely available in accessible venues such as supermarkets, vending machines, and fast-food restaurants. Large portion sizes and value meals are also responsible for incentivizing overeating. Researchers have found that more people are eating outside the home more often, which means they are typically eating larger portions. Fast-food is also associated with higher fat intake, and eating away from home is a significant contributor to the increase in obesity (Perri & Corsica, 2003). However, the overconsumption of unhealthy foods is not the only explanation for increased rates of obesity. Sedentary lifestyle is also a significant contributor to weight gain. Daily energy expenditure has been reduced by labor-saving equipment such as escalators, cars, elevators, and remote controls. Additionally, physical activity has decreased as people spend more time performing sedentary activities like using the internet and watching television. This notion is supported by the US Centers for Disease Control, which notes that nearly 29% of the American population is totally sedentary, and fewer than one in four adults engage in the recommended amounts of physical activity (Centers for Disease Control Prevention, 2001). Speculation has also occurred around whether the current obesity epidemic is indicative of a "disease of civilization" where a discord exists between the modern lifestyle and the lifestyles for which humans evolved over thousands of years (Perri & Corsica, 2003). In other words, the evolution of the human body has not caught up with the decrease in activity and increase of fatty foods that are becoming the norm in modern times.

Well-informed clinicians should be able to articulate the various health risks of obesity to their clients. Furthermore, knowledge of these risks can also serve as motivation for patients to begin living healthier lifestyles. One particularly attention-

grabbing statistic is that the risk of premature death for obese individuals from all causes was 50 to 100% higher than those with a BMI of 20 to 25 (National Heart Lung and Blood Insitute (NHLBI), 1998). Furthermore, approximately 300,000 deaths each year may be attributable to obesity. Researchers assert that there are numerous risks that accompany obesity, as shown in the table below.

Table 1
Health risks associated with obesity

Relative co-morbidity risks related to being overweight or obese:	
• **Type II Diabetes**	• Hypertension
• **Coronary Artery Disease**	• Congestive Heart Failure
• **Pulmonary Embolism**	• Stroke
• **Asthma**	• Gallbladder Disease
• **Osteoarthritis (degeneration of cartilage and bone in joints)**	• Chronic Back Pain
• **Cancer (postmenopausal breast, colorectal, endometrial, esophageal, kidney, ovarian, pancreatic, and prostate)**	

(Guh et al., 2009)

Health psychologists are a particularly good investment in the fight against obesity because the continuation of this condition translates into substantial economic costs. Furthermore, the cost of obesity can be both direct and indirect. The direct effect can be found in diagnostic, treatment, and preventative services. Whereas the indirect costs consist of earnings lost from premature death, or wages lost from disability related to weight gain. The cost associated with disability, chronic disease, and death due to obesity-related illness is estimated to cost $190.2 billion every year (Institute of Medicine of the National Academies, 2012). The main source of cost related to weight gain occurs through coronary heart disease, hypertension, and type 2 diabetes.

Professionals should be aware that obesity is not equally distributed. Excessive weight gain follows certain racial and ethnic patterns more than others. For example, the prevalence of both overweight and obesity is higher in women of ethnic minorities than in white women. Additionally, Mexican American men have a greater prevalence of overweight and obesity compared to Whites and Blacks (Eberhardt, Ingram, & Makuc, 2001). Obesity also occurs at different rates with regard to socioeconomic status. Research has discovered that women of lower socioeconomic status from all racial and ethnic groups combined are 50% more likely to be obese than people of higher socioeconomic status, whereas men are equally likely to be overweight or obese regardless of socioeconomic group. As a result, the services of health psychologists may face higher demands in different communities.

The treatment of obesity has come into focus largely because researchers continue to discover various health benefits of weight loss. As it currently stands, obesity increases the risk of disease and death, while weight loss reduces the risk factors for illnesses such as cardiovascular disease. Additionally, weight loss also results in lower blood sugar, decreased blood pressure, and improved lipid levels (NHLBI, 1998). As a result, researchers assert that weight loss reduces coronary risk factors, which reduces the number of deaths from stroke and heart disease.

The impact of obesity goes beyond physical issues, since psychological issues often accompany weight gain. The social stigmatization and psychological stress that is imposed on obese children has the potential to be damaging to emotional health. Comorbid psychological conditions include low self-esteem, depression, body image issues, social isolation, poor grades, and difficulty with peer relationships (Moore &

Drews, 2009). According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), obesity is not a mental disorder (American Psychiatric Association, 2013). A range of physiological, genetic, behavioral, and environmental factors that differ across individuals contribute to the development of obesity. However, there are strong associations between obesity and several mental disorders such as binge-eating disorder, schizophrenia, depressive disorders, and bipolar disorders. Side effects of some psychotropic medications contribute significantly to the development of obesity, and obesity may be a risk factor for the development of some mental disorders, such as depressive disorders (American Psychiatric Association, 2013). The diagnosis of binge-the eating disorder is reliably associated with overweight and obesity in patients seeking treatment, however this disorder occurs in normal-weight, and obese individuals. Furthermore, most obese individuals do not participate in recurrent binge eating. In comparison with weight-matched obese individuals without binge-eating disorder, patients with the disorder consume more calories in laboratory studies and have a lower quality of life, greater functional impairment, greater psychiatric comorbidity, and more subjective distress (American Psychiatric Association, 2013). Thus, psychologists not only have a crucial role in terms of behavioral intervention, but also as interventionists with comorbid psychological issues. Clinicians should be prepared to screen for these common problems and address them as needed.

The American Psychological Association (APA) emphasizes that psychologists can play an important role in the fight against obesity. The APA highlights the expertise of psychologists in assisting with lifestyle and behavioral modification, including when weight problems are tied to chronic illness, eating disorders, or mental health conditions.

Psychologists can also focus on triggers for unhealthy choices, and common unhealthy beliefs about eating and weight. Specifically, psychologists can facilitate clients in monitoring their behaviors, tracking their activity levels, encouraging the consumption of regular meals, promoting the practice of mindful eating, understanding the things that patients associate with food, identify emotions around eating, and assist in modifying unhealthy thoughts and behaviors (Walters & Ashton, 2015).

In order for health psychologists to be a valuable asset in the fight against obesity, effective treatments must be used and understood. One particularly useful treatment follows the transtheoretical model. First of all, this theory holds that motivation for health behavior change fluctuates in an individual over time. In other words, people can be more willing to change at different points in their lives. Accordingly, motivation is a state that will change, rather than a static trait. Additionally, certain behaviors are hypothesized to facilitate positive outcomes. These behaviors include expressing empathy, being friendly and courteous, appropriately using humor, discussing effects of treatment, nodding the head, and leaning forward towards the patient (Beck, Daughtridge, & Sloane, 2002). Clinicians must be open to the idea that certain behaviors which seem relatively unrelated to treatment are actually associated with better outcomes. The transtheoretical model of behavior change asserts that individuals can move through 5 stages of change, which are precontemplation, contemplation, preparation, action, and maintenance (M. M. Clark & K. S. Vickers, 2004). Precontemplation consists of when the patient has no consideration for changing, which would mean that she has no intention of reducing her weight in the next 6 months. Contemplation represents limited motivation to change, such as considering change in the next 6 months without currently being prepared to lose the

weight. Preparation involves making small changes, which could take the form of planning to lose weight in the next 30 days but not being sure of what weight-loss program to use. The action stage is comprised of the first 6 months of change, including dietary and exercise interventions. Lastly, maintenance is the period after the initial 6 months of change, which consists of working on preventing relapses into inactivity along with consolidating gains from the exercise and dietary interventions. It should be noted that patients do not necessarily experience a systematic progression from one stage to the next; rather change is viewed as cyclic. It is expected that some patients will remain stationary, some will slip backward to a lower level, and some will advance their state of change (M. Clark & K. Vickers, 2004). Knowledge of all stages is integral to the transtheoretical conceptualization of obesity treatment. For instance, it would do the clinician little good to begin obesity treatment on an individual in the precontemplation stage, because she does not yet have any consideration for change. Otherwise, the health psychologist may encounter patient resistance to an action-focused approach, and the patient may feel pessimistic and overwhelmed about their potential for successful change. Accordingly, it is essential that the clinician match her intervention to the patient's current level of readiness for change. Clinicians should also consider the idea of decisional balance, which refers to the perceived gains and perceived losses of behavior change. When patients focus on the benefits and advantages of weight loss, such as improved health, increased energy, or improved body image, their motivation may rise. Conversely, when individuals focus on costs and barriers of weight loss, such as discomfort with exercise, consuming unappealing diet foods, and difficulty coordinating meals with family members, their motivation may lessen (Velicer, DiClemente,

Prochaska, & Brandenburg, 1985). The objective for counseling in behavioral health change may be to simply offer support or enhance patient awareness of the problem. In order to be a competent interventionist under this theory, clinicians must accept and anticipate mistakes along with changes in performance from patients.

Motivational interviewing represents another major theoretical approach that has proven useful in tackling the problem of obesity. This style operates under the assumption that confronting patients about their need to lose weight is an unhelpful approach. Instead, motivational interviewing holds that psychologists will be much more effective if they facilitate a discussion wherein the patient argues for changing her own behavior. This model goes against the traditional setup where the patient argues against change while responding to pressure from the clinician. Accordingly, motivational interviewing advocates for a directive, client-centered approach that fosters progress by helping clients resolve their own ambivalence (M. Clark & K. Vickers, 2004). Specific techniques involve expressing empathy, developing discrepancy, rolling with the patient's resistance, and supporting self-efficacy. Motivational interviewing approaches treatment by first accepting the patient's perspectives and feelings. This occurs through reflective listening, empathy, and understanding that ambivalence towards weight loss is normal. The next theoretical step would be for the psychologist to portray the discrepancy between the patient's current behavior and her broader values and goals with regard to obesity. This step underlies the motivation towards change, and leads to the patient arguing towards that change. Afterwards, the psychologist goes along with the patient's resistance instead of arguing or trying to force this change. The assumption is that resistance is a sign to try a different approach, rather than to cease the intervention.

Lastly, the psychologist should support the self-efficacy of the patient by having confidence in her ability to successfully maintain a change in her eating and exercise habits.

In accordance with the psychological treatment approaches above, cognitive behavioral therapy (CBT) represents another theory used to treat obesity. In children, CBT is used to help identify triggers for unhealthy eating or lack of exercise. Accordingly, having the television constantly turned on in the home could serve as a trigger for sedentary behavior. Behavioral techniques are often woven into CBT in order to target the maladaptive patterns that lie beneath unhealthy behaviors. In terms of obesity, treatment may address dysfunctional cognitions regarding eating behaviors. Psychologists may also teach participants how to implement a more regular and healthy eating pattern in their lives. Cognitive interventions displayed effectiveness in reducing concerns about weight along with increasing restraint and self-esteem. On the other hand, behavioral techniques were more effective with initially reducing weight, but most participants in this group regained the weight after six months. However, there were no differences between cognitive treatments and behavioral treatments after 1 year (Luzier, Berlin, & Weeks, 2010). This result underscores the notion that the successful treatment of obesity is not a simple issue. Even though the results of weight loss maintenance following CBT fall short, this mode of therapy can build self-efficacy when clients experience short-term success.

One manner in which clinicians can propagate further success is nutrition education. Teaching people how to eat right functions as a strong asset in behavioral modification programs. Consultations can take place with a dietician or a psychologist

with a strong knowledge base regarding nutrition. Accordingly, a health psychologist that can provide behavioral intervention in addition to nutrition education serves as an integral component of obesity treatment. This education can be so useful that some behavioral programs provide nutrition education instead of a rigid diet. The Dietary Guidelines for Americans released in 2010 places an emphasis on maintaining calorie balance over time to achieve and sustain a healthy weight in addition to consuming nutrient-dense foods and beverages (Dietary Guidelines Advisory Committee, 2010). Calorie balance refers to only eating enough calories required to meet their needs and by being physically active. Nutrient-dense foods are low in sodium, added sugars, solid fats, and refined grains, and include foods such as fruits, vegetables, whole grains, seafood, lean poultry and meats, beans, eggs, peas, seeds, nuts, and low-fat or fat-free milk products (Dietary Guidelines Advisory Committee, 2010). Additional recommendations from the dietary guidelines includes:

- Include foods from all food groups over the day: vegetables, whole grains, fruits, low-fat dairy products, and lean protein foods.
- Make half of your plate fruits and vegetables.
- Make at least half of your grains from whole grains.
- Switch to skim or 1% milk.
- Vary your protein food choices.
- Cut back on sodium and empty calories from solid fats and added sugars.
- Children and adolescents should be physically active for 60 minutes or more per day.

- Adults should engage in physical activity that requires moderate effort, such as brisk walking, for 150 minutes per week.

(Dietary Guidelines Advisory Committee, 2010)

Women that are trying to lose weight typically limit their daily calories to 1,200 kcal, while men aim for 1,500 kcal. In order to meet their caloric goals, clients often need to consume less than the 6 to 8 daily-recommended servings of bread. Contrary to popular belief, patients are not forbidden from eating foods they enjoy that are high in fat and sugar. Rather patients are encouraged to consume foods that they enjoy, but to develop a plan to eat smaller portion sizes in moderation. Accordingly, clients do not feel deprived, and thus they are less prone to overeat when they consume unhealthy foods (Sarwer, Allison, & Berkowitz, 2004). Health psychologists may also recommend medically supervised diets that fall into the low-calorie (1,000 kcal/day) or very low-calorie (800 kcal/day) range. These types of diets typically include meal replacement products that aid in reducing calories in a manner that is safe and nutritious. The lower calorie diets usually run for 12 to 16 weeks, at which point the client is changed onto a 1,500 kcal/day diet. Clients often appreciate the rapid initial weight loss that results from this dieting program. However, patients typically regain weight faster in diets with dramatic calorie restrictions (Sarwer et al., 2004). Therefore, intense diets should always be used in conjunction with thorough nutritional and medical monitoring.

When it comes to weight loss, the most common strategies that people use are self-managed efforts to alter their eating and activity patterns. Clinicians should be aware of these strategies so that they can help clients work through struggles that they encounter. The most cost-effective methods of self-management weight loss include

computer-assisted interventions, bibliotherapy, and self-help groups (Perri & Corsica, 2003). People that successfully maintain weight loss have 3 strategies in common. The first is consuming a diet that is low in calories on a daily basis (i.e. less than 1,400 kcal/day, that is less than 25 percent fat, and greater than 55% carbohydrates) (Perri & Corsica, 2003). Secondly, these people participate in high levels of physical activity for approximately one hour each day. Lastly, they check their body weight on a regular basis in order to gauge their progress. Clinicians should be aware that obese people who seek professional treatment have a tendency to exhibit more pathological eating patterns and higher levels of distress than obese people in the general population.

Health psychologists should make special adaptations in order to allow for smooth integration with primary care. Once excess weight is classified as a health concern for the client, it is crucial to ask if the patient is willing to talk about their weight and history. From that point, the clinician can identify the client's pattern of weight gain and loss. Furthermore, the health psychologist may be able to build upon skills that the individual has successfully implemented in the past. Clinicians should be sure to inquire about the most and least a patient has ever weighed, along with their weight pattern over the last year (Hunter, Goodie, Oordt, & Dobmeyer, 2009). It will also be useful for health psychologists to assess the patient's thoughts that are associated with weight loss in order to determine the person's level of self-efficacy and motivation to change. Assessing eating habits can also be helpful in ascertaining good starting points for intervention. Additionally, health psychologists are positioned to play another important role by ruling out eating disorders and symptoms related to negative moods such as depression or anxiety. If the clinician discovers binging and purging behaviors, the client will need to

be screened for associated complications such as damage to the throat and teeth or electrolyte imbalances (Hunter et al., 2009). Thorough proactive assessments are essential to treatment development. Health psychologists are able to make a significant contribution in this area by applying their diagnostic skills in order to rule out differential diagnoses that can confound treatment.

Behavioral modification treatment is one of the main areas where a health psychologist can make significant contributions to the treatment of obesity. This approach provides the foundation for weight loss lifestyle interventions. Clinicians should understand that the basic philosophy behind behavioral treatment focuses on a negative energy balance. In other words, the client should be eating fewer calories than they are burning off. This strategy is accomplished through the modification of eating and exercise habits. Key goals in behavioral interventions include:

a. Monitoring daily exercising and eating along with setting goals.
b. Nutritional training designed to create a balanced low calorie diet that results in about one pound of weight loss each week (typically 1,000-1,500 kcal/day).
c. Increasing physical activity that occurs by increasing lifestyle activities or a developing a walking program.
d. Arranging environmental cues and reinforcers so that changes in exercise and eating are supported.
e. Clinicians can use cognitive restructuring techniques in order to uncover and alter negative cognitions and feelings that interfere with weight-reduction programs.
f. Training clients in relapse prevention or problem-solving procedures in order to enhance the client's ability to cope with obstacles and setbacks.

(Perri & Corsica, 2003)

Research has demonstrated that behavioral obesity treatment is both effective and safe (NHLBI, 1998). The treatment is typically delivered in 15 to 26 weekly sessions in a group format, with approximately a 9 percent reduction in body weight. Attrition at six months averaged less than 20 percent, and negative side effects were rare. Participants experienced improvements in glucose tolerance, blood pressure, and depressive symptoms, making this treatment a first line intervention for the management of obesity (NHLBI, 1998). However, the long-term effectiveness of behavioral treatment follows a different trend. Participants typically regain 30 to 40 percent of their lost weight during the year following behavioral treatment, with gradual weight regain in the following years (Perri & Corsica, 2003). On the other hand, small weight loss in the long run is a preferable outcome compared to the trends of untreated obesity, which involves a steady weight gain of approximately one pound per year.

Maintenance of weight loss presents clinicians with a particularly challenging problem. Except for surgery, nearly all obesity treatments demonstrate limited long-term effectiveness. Multiple factors play into this problem, including reduced metabolic rate and environmental exposure to high-calorie foods. Furthermore, reduced motivation presents a difficult challenge for long-term success. From a psychological perspective, patients are reinforced by weight loss, and this loss generally slows or stops long before most people reach their goals. This situation leads to a high behavioral cost of continuing weight control at the same time the patient is seeing reduced progress with regard to additional weight loss (Perri & Corsica, 2003). Clinicians should be aware that regaining weight frequently results in negative attributions regarding personal ineffectiveness,

which can trigger hopelessness, negative emotions, and the cessation of weight-loss efforts. Accordingly, health psychologists should be prepared to treat the inaccurate cognitions that arise during struggles in the client's weight loss program.

Bariatric surgery is a significant tool in the midst of an obesity epidemic with two-thirds of adults now classified as overweight or obese. This issue is particularly relevant for minority Americans such as Latinos and African-Americans (Ogden, Carroll, & Flegal, 2003). There has also been growth in research documentation indicating that most interventions for obesity result in modest and often short-term benefits (Bray, 2003). Although general guidelines indicate bariatric surgery for those with a BMI greater than 40 kg/m^2, such procedures are now being used for patients with a minimum BMI of 35 kg/m^2 with comorbidities such as diabetes, hypercholesterolemia, sleep apnea, and hypertension (Pories, Dohm, & Mansfield, 2010).

Scientific literature has shown numerous benefits of bariatric surgery. The Swedish Obesity Study was an essential study in demonstrating a decrease in mortality following bariatric surgery (Sjöström et al., 2007). Gastric bypass and gastric banding have been indicated as cost-effective methods of reducing the morbidity and mortality in adults with severe obesity and diabetes (Hoerger et al., 2010). Furthermore, bariatric surgery has also been associated with reductions in overall health costs and the use of medications in patients with Type II diabetes (Makary et al., 2010). Bariatric surgery is also increasingly being utilized as an option for severely obese adolescents (Garcia, Langford, & Inge, 2003). The benefits of bariatric surgery are significant, including decrease in rates of hypertension, improves cardiac functioning, improvement or elimination of sleep apnea, lowering of pro-inflammatory cytokines, and improvement or

elimination of diabetes mellitus (Deitel, 2002; Gami, Caples, & Somers, 2003). Bariatric surgery has also received attention for improvement in reproduction and sexual functioning. A high proportion of sexual dysfunction in women was resolved after bariatric surgery (Bond et al., 2011). As a result, pregnancy it is not uncommon following bariatric surgery. Post surgical Roux-en-Y gastric bypass patients have demonstrated somewhat reduced birth weight in infants compared to a normal BMI control group, which suggests a possible role of nutritional growth restriction in pregnancy (Santulli et al., 2010). However, pregnancy appears to be safe after bariatric surgery and has fewer complications then pregnancy in morbidly obese women (Bebber et al., 2011).

Bariatric surgery is not without risk for complications, which are specific to particular procedures depending on whether they are restrictive or malabsorptive, and the extent to which they are malabsorptive. The complications that can occur during the intraoperative period include difficulties related to anesthesia, trauma to other internal organs, and bleeding (Byrne, 2001). Short-term complications include bowel obstruction, infection, persistent nausea and vomiting, pulmonary embolus, and the possibility of intestinal leaks between the connections linking the intestine to the stomach (Wadden & Stunkard, 2002). Later complications include internal hernias, gallbladder disease, vitamin mineral deficiencies (e.g. Vitamin B 12, calcium, magnesium, and iron), reactive hypoglycemia, and dumping syndrome (Wadden & Stunkard, 2002). Dumping syndrome, also known as rapid gastric emptying, is when the undigested contents of the stomach move too quickly into the small bowel. Symptoms include nausea, abdominal cramps, and diarrhea, and are typically experienced soon after eating. However, some may experience symptoms one to three hours after a meal. Dumping syndrome is managed by

avoiding foods with excessive amounts of sugar and making dietary adjustments according to post surgical recommendations (Tack, Arts, Caenepeel, De Wulf, & Bisschops, 2009). The presence of a greater change in BMI, dumping syndrome, and advanced age can help identify patients that are at a higher risk for nutritional deficiencies (Naghshineh et al., 2010). It should be stated that for many severely obese patients, the benefits outweigh the risks, however patients need to be educated about both categories.

The rapid weight loss brought about by bariatric surgery is likely to result in significant changes in the patients body image, daily functioning, social relationships, medical status, and overall emotional well-being (Bocchieri, Meana, & Fisher, 2002). Furthermore, the patient's psychosocial functioning can affect adjustments before and after surgery. Accordingly, psychological evaluation for weight loss surgery is strongly recommended. These evaluations are currently required by over 80% of weight loss programs in United States and by the majority of third-party payers (A. Bauchowitz, Azarbad, Day, & Gonder-Frederick, 2007). It should also be noted that pre-surgical psychosocial evaluations can operate as a clinical intervention in of itself by providing opportunities for preparation and education (Sogg & Mori, 2009). A study of bariatric psychological evaluators in the United States revealed that 85% utilized more than a clinical interview, a majority gave the Minnesota Multiphasic Personality Inventory-2 MMPI-2), and others used instruments designed to measure eating disorders (Walfish, Vance, & Fabricatore, 2007). Furthermore, another survey found that 98.5% of clinicians utilize a clinical interview in their assessment process (Fabricatore, Crerand, Wadden, Sarwer, & Krasucki, 2006). The purpose of a pre-surgical weight-loss evaluation is not to

hunt for factors that contraindicate surgery. The clinician should start with the idea that the surgery is medically necessary for the patient. Accordingly, the primary goal is to develop a set of recommendations that will aid in the safe outcome of weight loss surgery, both medically and psychologically. Information acquired during the pre-surgical psychological evaluation should assist in the formulation of an individualized treatment plan, with recommendations that incorporate the strengths of the patient and potential barriers to success (Sogg & Mori, 2008). In terms of the evaluating clinician, there are a few recommendations regarding experiential or educational background for clinicians conducting pre-surgical psychosocial evaluations. Although no formal guidelines are in place, the vast majority of a sample of American Society for Metabolic and Bariatric Surgery members believed that clinicians should have experience and background knowledge in areas such as weight loss surgery, obesity, and nonsurgical treatments for obesity (West-Smith & Sogg, 2010). Currently, there is no widely agreed upon model for bariatric pre-surgical psychological evaluations. One reason for this lack of standardization is that very few empirical studies have successfully pinpointed specific psychosocial factors that reliably predict the various domains of weight loss surgery outcome (A. U. Bauchowitz et al., 2005). There are some guidelines regarding the evaluation of weight loss surgery candidates (Greenberg, Sogg, & Perna, 2009; LeMont, Moorehead, Parish, Reto, & Ritz, 2004), however they give a more general overview. There are some standardized comprehensive assessment protocols present in the literature. The Weight and Lifestyle Inventory (WALI) was the first instrument to be published as a standardized assessment protocol regarding obesity (Wadden & Foster, 2006). This measure was built as a self-report questionnaire about obesity rather than

being tailored for weight loss surgery. However, the WALI provides an excellent structure for the weight loss surgery interview due to the coverage of domains such as eating habits and pathology, weight history, outcome expectations, physical activity, medical history, and general psychological domains. The Boston Interview of Bariatric Surgery (BIBS) is a semistructured interview protocol that was designed especially for use in the pre-weight loss surgery assessment process (Sogg & Mori, 2008). This protocol is based on empirical literature regarding weight loss surgery and obesity, covers a variety of domains particular to weight-loss surgery, and provides a general assessment of psychological history as well as functioning. Lastly, the Cleveland Clinic Behavioral Rating System (CCBRS) is an algorithm to guide the decision-making process based on data that the psychologist gathers, in whatever format is preferred, in nine domains specific to weight loss surgery and an overall impression score (Heinberg, Ashton, & Windover, 2010).

The decision to begin treatment for weight loss should be based on assessment of the patient's need to lose weight, BMI, risk of health complications, and the person's behavioral readiness for weight loss (Wadden & Osei, 2002). These factors come together to suggest which interventions are most appropriate for each client. A thorough review of the efficacy and safety of obesity treatments was conducted by an expert panel formed by the National Heart, Lung, and Blood Institute (NHLBI, 1998). This report was then distilled into the *Practical guide to the identification, evaluation, and treatment of overweight and obesity in adults* which provides additional guidelines and tools for primary care practitioners treating overweight and obesity (NHLBI & North American Association for the Study of Obesity [NAASO], 2002). Patients with a BMI of 25.0 to

29.9 kg/m^2 with two or more risk factors are generally recommended to increase their physical activity (eventually resulting in 30 minutes of exercise on most days of the week), modify eating habits, and eat a balanced low-calorie diet. However, the recommendation is shifted to prevention of further weight gain for people in the same BMI range that are not motivated to reduce their weight or have less than two risk factors. Pharmacotherapy is another option for patients that have failed to reduce their weight with more conservative measures and have a BMI $\geq$ 30 kg/m^2 or a BMI $\geq$ 27 kg/m^2 in the presence of comorbidities. Bariatric surgery is saved for patients with a BMI $\geq$ 40 kg/m^2 or a BMI $\geq$ 35 kg/m^2 with significant comorbidities (NHLBI & NAAS, 2000). Another stepped-care approach increased the number of treatment options and includes stronger encouragement for patients with a BMI of 27 to 29 kg/m^2 to lose weight (Wadden, Brownell, & Foster, 2002). Accordingly, a BMI <27 kg/m^2 would be treated with self-directed diet and exercise or physician counseling. A patient with a BMI from 27 to 29 kg/m^2 would utilize a self-help program, commercial weight loss program, or a behavioral program. Individuals with a BMI in the range of 30 to 39 kg/m^2 would be recommended to engage in a portion-controlled, low-calorie diet (900 to 1200 kcal/day) or pharmacotherapy. Similarly to the other stepped-care approach, patients with a BMI $\geq$ 40 kg/m^2 would be encouraged to pursue bariatric surgery (Wadden et al., 2002). Treatment selection should also be guided by the patient's prior history of weight loss efforts. For example, an obese patient that is eligible for pharmacotherapy but has never attempted to lose weight through a traditional program of physical activity and diet would be encouraged to first try the intervention associated with fewer risks of health complications. Patient should have attempted less intensive treatment options once or

twice before progressing into more aggressive therapy. Treatment options should be chosen after consideration is given to their efficacy, safety, and cost. Lastly, the individual preferences of the patient should also be considered when selecting an intervention since weight management with require active participation on the part of the patient (Wadden & Osei, 2002).

Summary

The problem of obesity has received increased attention as the number of overweight or obese people increases to more than two-thirds of adults and one third of children in America. The significance of this problem continues to grow in terms of medical costs that rise to nearly $200 billion dollars and over 20% of annual medical spending. The economic impact extends even into obesity-related job absenteeism which costs over $4 billion every year. The problem of obesity also brings the risk of American children becoming the first generation to live sicker and die younger than their parent's generation. Health psychologists bring their expertise in behavioral modification, lifestyle changes, and psychological processes that drive weight gain. The American Psychological Association has recognized the potential for psychologists to affect the fight against obesity by dedicating its second clinical treatment guideline to tackle the problem of obesity. An expert panel is expected to deliver its report by the end of 2015 on how psychologists can assist in the domains of weight loss, eating behavior, physical activity, diet, health behavior change, and medical management of obesity.

Health psychologists should be aware of the significant health problems associated with obesity. Overweight and inactive children are likely to have abnormal lipid profiles, abnormal cholesterol and insulin concentrations, and high blood pressure.

Therefore, these children are at risk of early disability and death from kidney disease, heart disease, and other organ damage, in addition to complications such as sleep apnea, asthma, joint and skeletal problems, gastrointestinal complications, liver disease, and increased risk of coronary heart disease in adulthood. Comorbidity risks related to being an overweight or obese adult include type II diabetes, hypertension, coronary artery disease, congestive heart failure, pulmonary embolism, stroke, asthma, gallbladder disease, osteoarthritis, chronic back pain, and cancer (e.g. postmenopausal breast, colorectal, endometrial, esophageal, kidney, ovarian, pancreatic, and prostate cancer).

Psychologists are able to make unique contributions to the fight against obesity by focusing on triggers for unhealthy choices and common unhealthy beliefs about weight and eating. Clinicians can facilitate tracking activity levels, monitoring behaviors, promoting the practice of mindful eating, encouraging the consumption of regular meals, promoting awareness of things that patients associate with food, assisting in modifying unhealthy thoughts, and identifying emotions that contribute to eating behavior. Psychologists can boost their effectiveness in treating obesity by utilizing the trans-theoretical model in conjunction with motivational interviewing techniques. Cognitive behavioral therapy is a useful tool for identifying triggers for unhealthy eating or inactivity. These methods can be combined with nutritional education to provide patients with the information necessary to make new healthier choices. Furthermore clinicians should be prepared to recommend relevant bibliotherapy, computer-assisted interventions, and self-health groups that are relevant to the patient's area of difficulty. Behavioral modification is another area where psychologists can make significant contributions to overcoming obesity. Clinicians can help patients to set goals, arrange

reinforcers, monitor their progress, and provide relapse prevention education. Psychologists are able to identify barriers and make effective suggestions for patients that wish to undergo bariatric surgery. Clinicians are well-suited to assess for contraindications, uncover psychological processes that contribute to dysfunctional eating, and provide recommendations that can facilitate successful maintenance of weight loss after surgery. Accordingly, health psychologists are uniquely situated to contribute to the fight against obesity. Clinicians can arm themselves with numerous tools that will facilitate the success of their patients and bolster outcomes.

In conclusion, the modern health psychologist can serve as a valuable resource in the treatment of obesity. However, clinicians must first equip themselves with sufficient knowledge of the prevalence rates, causes, health risks, comorbidities, costs, assessments, psychological impacts, and treatments of obesity. Success begins with a clinician that attunes to the client's needs by conducting a thorough assessment in order to develop a comprehensive treatment plan that takes all of the client's history and characteristics into account. Through proactive assessment and evidence-based treatment design, clinicians become a vital line of defense in the fight against obesity by catching obstacles to treatment, processing struggles, and making referrals as necessary.

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Appendix A

Example of Pre-Surgical Assessment of Bariatric Surgery Candidates

PRE-SURGICAL PSYCHOLOGICAL ASSESSMENT FOR WEIGHT LOSS SURGERY

This report is held confidential by federal and state law (e.g., W&I Code 5328). A breach of confidentiality may be held as both a criminal action and professional negligence. The appropriate authorities may file criminal, civil, and/or professional complaints. The following psychosocial history information is summarized from the provided documentation and from an interview with the patient. There can be no guarantee that the information provided here is any more credible or reliable than are the sources from which it was derived. Assessment adapted from the American Society for Metabolic and Bariatric Surgery Pre-Surgical Psychological Guidelines (LeMont et al., 2004) and the Boston Interview for Gastric Bypass, (Sogg & Mori, 2008).

Patient's Name:
Date of Interview:
Referring Physician:
Evaluated By:
Place of Evaluation:
Supervisor:

DEMOGRAPHIC, EDUCATIONAL, EMPLOYMENT, FAMILY INFORMATION

Age:
Sex:
Ethnicity:
Current living arrangement:
Education (highest attained):
Occupation and Length of Employment:
Current religious/spiritual affiliation:
Marital Status: Duration of Relationship:
Duration of previous long-term relationship(s):
Children (include ages):
Current stressors:
Significant stressors in past year:
Anticipated stressors in upcoming year:
Current level of activity/inactivity:

1) WEIGHT/DIET/NUTRITION HISTORY

Current height: **Current weight:**
Lowest adult weight: **Highest adult weight:**
Goal weight:

How long have you had a problem with your weight: (e.g., onset of obesity):

How has your weight changed over the course of your life? (e.g., progression and course of obesity, childhood, adulthood, etc.):

What were the circumstances that contributed to times when you lost and/or regained weight? (e.g., emotional factors, behavioral factors, medical conditions, discharge from military, life stressors, etc.):

Have you had any medical problems associated with your obesity?

What methods have you previously used to lose weight? (e.g., diets, exercise programs, diet pills):

What factors interfered with your ability to be successful during past weight loss attempts?

What factors helped you when/if you were successful with past weight loss attempts?

2) EATING BEHAVIORS

Bingeing and Bulimia	***Yes/no***
Have you ever had an episode when you have had a "binge," a time when you've eaten a lot of food at one time, more food than most people would eat at a time?	
Did you feel out of control while you were eating this way?	
How did you feel afterward?	
(Occurs at least 2 days per week on average for 6 months) << MEETS BINGE CRITERIA? >>	
After you have had a binge, do you ever try to "get rid of" what you've eaten in any of the following ways	
Self-induced vomiting	
Misuse of laxatives	
Diuretics	
Fasting	
Excessive exercise	
Other	

If patient meets criteria for binge/purging, assess the following:
Frequency of episodes:
Durations of episodes:
Date of last episode:
Triggering factors:
Additional Comments:

Binge Eating Scale results: Patient's score on the Binge Eating Scale indicated _____ binge eating.

Night Eating Syndrome	**Yes/No**
Have you ever had an episode when you were regularly skipping breakfast, at least 3 times per week?	
During these times, were you consuming more than half of your daily calories after 7 PM?	
During these times, would you have difficulty sleeping or falling asleep at least 4 nights/week?	
<< MEET CRITERIA? >>	

If patient meets criteria for night eating syndrome, assess the following:
Frequency of episodes:
Duration of episodes:
Date of last episode:
Triggering factors:
Additional Comments:

Other Eating Behaviors

For frequency, 0 = N/A or never. 1 = less than once a month; 2 = approximately once a month; 3 = approximately once a week; 4 = several times a week; 5 = daily

Problematic Eating Behaviors	**Yes/No**	**Frequency**
Mindless Eating		
Mindless eating, grazing		
Eating very quickly (more quickly than most other people eat)		
Emotional Eating		
Eating when you are not physically hungry		
Eating after you are full		
Feeling out of control while eating		
Using food as a source of pleasure or reward		
Feeling ashamed of eating		
Overeating during holidays/special occasions		
Using food as comfort during stress or emotional distress (e.g., sadness, loneliness)		

3) HEALTH-RELATED RISK TAKING BEHAVIORS

For frequency, 0 = N/A or never. 1 = less than once a month; 2 = approximately once a month; 3 = approximately once a week; 4 = several times a week; 5 = daily

Impulsivity	**Yes/No**	**Frequency**
Acting hastily with little forethought for consequences		
Engaging in risky behavior with little thought of consequences		
Starting something and then having difficulty stopping or controlling myself		
Compulsivity		
Spending excessive time on a behavior or with an item, not as a hobby but because of feeling like I have to		
Engaging in repetitive behaviors to reduce anxiety or obsessive thoughts		
Habit-forming		
Engaging in automatic behaviors with little thought		
Engaging in persistent patterns of unregulated eating		
Non-compliance		
Not following through with treatment recommendations for physical or mental health conditions		
Difficulty complying with dietary restrictions, and taking medications as directed		
Not timely with regular physicals/dental exams, etc.		
Not keeping appointments as scheduled		

4) LEGAL HISTORY

Legal history (e.g., civil, criminal):
Circumstances surrounding arrests, incarcerations, detainment, etc.:
Any current involvement in legal system:

5) MEDICAL HISTORY

Notes on medical history and responsibility for knowledge of medication:

6) PATIENT UNDERSTANDING OF SURGICAL PROCEDURES, RISKS, ETC.

Enter:
No, if patient is unaware of risks
Yes, patient demonstrates an understanding of risks

Do you know what happens during _____ procedure? *(i.e. Does patient understand the operation itself?)*
What do you know about the risks of any major surgery or use of general anesthesia? *(e.g. Pain, infection, bleeding, scarring, hernias, formation of blood clots, complications requiring further procedures, and death)*
What do you know about the risks and side-effects associated with _____ procedure? *(e.g. Gastric leak, sepsis, adhesions, internal hernias, bowel obstruction, nutrition depletion, and nutrition deficiency)*
Does patient need more education?

Additional comments:

Care requirements

How much do you know about what will happen right after the surgery?
No, if patient is unaware of risks
Yes, patient demonstrates an understanding of risks

Duration of postoperative hospital stay? (e.g. Band: same day, Sleeve: 1-2 days, Bypass: 2-3 days)
Heavy household/work chores (e.g. 2-6 weeks)
Return to work/daily activities (e.g. 2-6 weeks)
Does patient need more education?

Additional comments:

How much do you know about what to expect after the surgery in terms of weight loss?

What will your diet be like for the first 3-4 months? *(e.g. 2 weeks of liquids, then 2 weeks of pureed foods, then 2 weeks of soft foods, and then small portions of regular food.)*
When you begin to eat solid foods, which ones can you eat? *(e.g. Foods that are high in protein, low in simple sugars, and low in carbohydrates.)*
Which foods must you avoid or limit? *(e.g. Pasta, bread, rice, noodles, carbonated beverages, and foods that are high in sugar. No red meat for 6 months, no caffeine for 6 weeks. Raw vegetables may be initially difficult and require caution.)*
What would your optimal eating habits be? *(e.g. 5 small, frequent meals per day that are high in protein, low in carbohydrates, and low in sugar.)*

How much weight do you expect to lose after the surgery? *(e.g. Sleeve: 60-80% of excess weight, Bypass: 80% of excess weight)*

How long will it take for maximum weight loss? *(e.g. 1 year)*

Does patient need more education?

Additional comments:

7) MOTIVATION AND OUTCOME EXPECTATIONS

How long have you been thinking about getting weight-loss surgery?

Which type of surgery would you like to get?

What is your reason for picking this type of surgery?

What kind of research and preparation have you done for this surgery?

What else are you hoping to accomplish by having surgery besides weight loss?

Motivation

On a scale of 1-5, how important is each one to your desire to have this surgery?

1 = Not At All
2 = Slightly
3 = Moderately
4 = Considerably
5 = Extremely
None: Not Applicable

a. Increased day-to-day mobility…….....….....___
b. Feeling more comfortable when socializing with others…___
c. Enhanced occupational functioning…….....…___
d. Improved health…….....…...…..___
e. Improved appearance…….....….....…___
f. Improved sex life…….....___
g. Improved relationship with your partner or spouse.....___
h. Other (describe: _____)….....___
Comments:

How would you rate your current motivation to have surgery on a scale of 1 to 100 with 100 being the highest? _____

Ability to adhere to post-surgical regimen

How will it be for you to limit your food intake so severely?
Do you have concerns that you will not be able to restrict yourself?

If you have had trouble limiting your eating in the past, why will this be different if you have the surgery?
Will you be able to obtain and prepare the foods that you need?
Will your living environment help or hinder your attempts to control your eating?

8) RELATIONSHIPS / SUPPORT SYSTEM
If you are successful in losing weight, how might this affect your relationships? (spouse or partner, family, friends, co-workers, others):
Is there anyone who might feel unhappy or uncomfortable with your weight loss?
Who do you identify as your support system (e.g., family, spiritual community)?
Who will take care of you after surgery?

9) SUBSTANCE USE

How often do you use the following :	**Frequency**	**When use began**	**Problems associated with use? (e.g., physical complications associated with use, difficulty quitting, becoming dependent, affecting quality of life)**
Nicotine			
Alcohol			
Caffeine			
Cannabis			
Other illicit substances			
Medications			
Supplements			

If problems are indicated above, assess patient's:
(a) **judgment and self-management behavior** (e.g., does patient recognize problematic behavior as harmful? Has patient tried to quit? How much effort has patient put in to changing behavior?):

(b) **coping style**, (e.g., how does patient generally cope? Was substance use a coping mechanism?):

(c) **addiction proneness**, (e.g., does patient tend to be impulsive? Become quickly addicted to things? See themselves as having an addictive personality?):

(d) **compulsive tendencies**, (e.g., does patient tend to spend excessive time on a behavior or with an item, not as a hobby but because they feel like they have to?):

(e**) need to self-medicate** (e.g., does patient use substances in an effort to manage depression, anxiety, insomnia, and/or pain):

(f) Does patient understand risks associated with substance use and weight loss surgery? (e.g., alcohol more rapidly absorbed after surgery, carbonated beverages may negatively affect pouch integrity, nicotine may slow healing and cause ulcers, certain medication may damage pouch):

10) PAST AND CURRENT PSYCHIATRIC FUNCTIONING

1. How would you describe your current psychological health?

2. Tell me about growing up:

3. Tell me about school:

3. ***Do you have a history of***:

	Onset	**Course**	**Treatment**	**Treatment Efficacy**
Depression				
Anxiety				
Panic attacks				
PTSD				
Psychosis				
Eating disorder				
Substance abuse				
Self-harm				
Other (specify)				

Depression and Anxiety Screening Results: Patient's scores on the Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder 7-Item Scale (GAD-7) indicated _____ depression and _____ anxiety.

Sexual Dysfunction Screening Results: Patient's scores on the Arizona Sexual Experience Scale (ASEX) screener indicated _____ sexual dysfunction.

4. Trauma History

- Natural disaster:
- Physical abuse or attack:
- Domestic violence:
- Vehicle accident:
- Physical neglect:
- Verbal abuse:
- Sexual abuse:
- Other:

5. Suicidal/Homicidal History:

Patient disclosed _____ history of suicidal _____
Patient disclosed _____ history of homicidal _____

6. Is patient currently taking psychotropic medications:
Length of stability since being on medications:
Frequency of follow-up visits:
7. Psychotropic medications taken in past:
8. Family history of psychiatric illness:
9. Family history of disordered eating:
10. Psychiatric Hospitalization(s) (Dates/ Diagnoses/Symptoms):
11. Outpatient Psychotherapy (Dates/ Diagnoses/Symptoms):
12. What would you say your personal strengths are:
13. How do you usually cope with stress:

- ***How do you cope with negative stressors (uncertainty, frustration, deadlines, depressed mood, anger, anxiety or tension, or boredom):***
- ***How do you handle disappointment or failures:***
- ***How do you handle positive stressors (a raise, a promotion, a party, or vacation):***

14. What kind of things might make it difficult for you to maintain weight loss after surgery:
15. What will help you be successful after weight loss surgery:

Mental Status and Observations:
Patient is a ____ year-old, _____, _____ who was referred for pre-surgical psychological assessment of bariatric surgery.

MENTAL STATUS EXAM
Patient presented:
Oriented to:
Appearance:
Attention:
Memory:
Speech:
Mood:
Affect:
Thought processes:
Thought content:
Suicidality:
Potential for harm to others:
Perceptual abnormalities:
Insight:
Judgment:

Considerations in ability to give consent or fully participate in treatment (psychiatric interference, age, maturity, learning disabilities, cognitive dysfunction, sensory impairments): **Intact? _____**

Summary and Recommendations:

Patient seen on __/__/____ for approximately ___ minutes, from __:__ to __:__. Patient was informed that this writer is a psychology intern under the supervision of a licensed clinical psychologist, _____ . Supervisor's name and contact information was provided to the patient. Patient was also informed of the nature and limits of confidentiality. Patient gave verbal consent to discuss relevant treatment information with referring medical provider in the service of achieving behavioral health goals related to medical treatment.

Patient is a ____ year-old, _____, _____ who was referred for a pre-surgical psychological assessment for weight loss surgery. Patient reported obesity onset _____. Patient demonstrated _____ insight as to contributing factors to obesity as evidenced by _____. Patient demonstrated _____ judgment in terms of consideration of weight loss surgery, as evidenced by _____. Patient demonstrated _____ knowledge of surgical and post-surgery procedures in _____ domains. Patient would benefit from additional education in the area of_____. In terms of current and recent stressors, patient identified _____. Patient's identified support system consists of _____. Patient's primary motivations to pursue weight loss surgery are_____.

Risk Factors

Protective Factors

Recommendations

Final Recommendation

___Cleared ___Cleared with recommendations:
___Denied ___Deferred until the following concerns are addressed:

Appendix B

Resources

Clinician guides for obesity management:

- "The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults" by the North American Association for the Study of Obesity (NAASO) and the National Heart, Lung, and Blood Institute (NHLBI) – Key recommendations from an expert panel for the assessment and treatment of obese patients.

http://www.nhlbi.nih.gov/files/docs/guidelines/prctgd_c.pdf

- "Guideline for the Management of Overweight and Obesity in Adults" by the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society – Guidelines that urge healthcare providers to actively assist patients in maintaining a healthy body weight and develop individualized plans based on behavior change.

http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437739.71477.ee

Tools for patients:

- "Healthy Care for Healthy Kids Obesity Toolkit" by the National Institute for Children's Health Quality (NICHQ) – Resources for preventing childhood obesity and enhancing care for children who are overweight.

http://obesity.nichq.org/resources/healthy-care-for-healthy-kids-obesity-toolkit

- Move! Weight Management Program by the United States Department of Veterans Affairs – A national weight management program created by the

Veteran's Administration National Center for Health Promotion and Disease Prevention (NCP).

http://www.move.va.gov/ReferenceTools.asp

- Daily Food Plan – A website that allows you to enter your personal information and receive a free customized daily food plan based on amounts of each food group.

http://www.choosemyplate.gov/myplate/index.aspx

Bibliotherapy:

- Brownell, K. D. (2000). LEARN program for weight management 2000. Dallas, TX, American Health Publishing Company.
- Cash, T. F. (1997). The body image workbook: An 8-step program for learning to like your looks, New Harbinger Publications, Inc.
- Craighead, L. W. (2006). The appetite awareness workbook: How to listen to your body and overcome bingeing, overeating, and obsession with food, New Harbinger Publications.
- Fairburn, C. G. (1995). Overcoming binge eating. New York, NY, Guilford Press.

Tools for clinicians:

- BMI Calculator by the Centers for Disease Control and Prevention

http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html

- Body Mass Index Table by the National Heart, Lung, and Blood Institute

http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmi_tbl.htm

- Apple, R. F., et al. (2006). Preparing for weight loss surgery: Therapist guide,

Oxford University Press.

- Cooper, Z. and C. G. Fairburn (2002). "Cognitive-behavioral treatment of obesity." Handbook of obesity treatment: 465-479.
- Epstein, L. H. and S. Squires (1989). The Spotlight Diet for Children: An Eight-week Program for Parents and Children, Triformation, for the Library of Congress.

Guidelines regarding weight-loss surgery evaluation:

- LeMont, D., et al. (2004). "Suggestions for the pre-surgical psychological assessment of bariatric surgery candidates." American Society for Bariatric Surgery: 1-29.
- Greenberg, I., et al. (2009). "Behavioral and psychological care in weight loss surgery: best practice update." Obesity **17**(5): 880-884.

Examples of bariatric pre-surgical evaluations:

- Heinberg, L. J., et al. (2010). "Moving beyond dichotomous psychological evaluation: the Cleveland Clinic Behavioral Rating System for weight loss surgery." Surgery for Obesity and Related Diseases **6**(2): 185-190.
- Sogg, S. and D. L. Mori (2008). "Revising the Boston Interview: incorporating new knowledge and experience." Surgery for Obesity and Related Diseases **4**(3): 455-463. e420.

Appendix C

Assessment tools and measures for weight loss surgery candidates

Eating attitudes and behaviors assessments for bariatric surgery candidates

Name	Description	Availability
Binge Eating Scale (BES): Gormally J., Black, S., Datson, S. & Rardin	Designed to assess binge eating in obese subjects	Gormally J., Black, S., Datson, S. et al. (1982). The assessment of binge eating severity among obese persons. *Additictive Behaviors*. 7: 47-55. Pergamon Press.
Binge Eating Questionnaire (BEQ): Halmi, Falk, and Schwartz	Assessment of bulimic behaviors.	Halmi (1985).
Three- Factor Eating Questionnaire (TFEQ): Stunkard & Messick	Measure the psychological constructs of eating.	Public Domain. Stunkard A, & Messick, S. (1985). The three-factor eating questionnaire to measure dietary restraint, disinhibition and hunger. Journal of Psychosomatic Research (29:1) 71-83. Pergamon Press.
Eating Inventory (EI): Stunkard, A. & Messick, S.	Clinical tool developed to recognize and treat eating disturbances and disorders.	PsychCorp
Questionnaire on Eating and Weight Patterns-Revised (QEWP-R): Spitzer, R., Yanovski, S., & Marcus, M.	Provides information that allows diagnosing of Binge Eating Disorder, Bulimia nervosa, and related eating disorders.	Available from the Health and Psychosocial Instruments (HAPI) database
Eating Disorder Examination-Questionnaire (EDE-Q): Fairburn & Beglin	Self-report questionnaire adapted from the Eating Disorder Examination (EDE Fairburn & Cooper) that measures the frequencies of eating disorder behaviors and identifies different forms of overeating.	Appendix in Fairburn C.B. **Cognitive Behavior Therapy and Eating Disorders**. Guilford Press, New York, 2008.
Eating Disorder Inventory - 2 (EDI-2): Garner, D.	Used extensively in Eating Disorder research. Useful as screening instrument in non-patient populations.	Published by PAR

Eating Disorder Symptom Checklist (EDI-SC): Garner, D.	Structured, self-report form regarding frequency of eating disorder symptoms as well as demographic information.	Published by PAR
Weight and Lifestyle inventory (WALI): Wadden, T. & Foster, G.	A multidimensional, multi format questionnaire designed to obtain very specific information about weight history, past weight loss attempts, weight loss goals, historical eating habits and associated patterns of behavior, physical activity, self-perceptions, psychological/emotional status and medical history.	Copyright: Thomas A. Wadden, PhD and Gary D. Foster, PhD. (2001). Printed in: Wadden, T. A. & Stunkard, A. J. (Eds.). (2002). *Handbook of obesity treatment.* New York: Guilford Press.

Adapted from (LeMont et al., 2004)

Personality and psychopathology assessments for bariatric surgery candidates

Name	Description	Availability
Basic Personality Inventory (BPI): Jackson, D.	Personality inventory for use with both clinical and normal populations.	Published by WPS and Sigma Assessment Systems
Personality Assessment Inventory (PAI): Morey, L.	Inventory of adult personality and psychopathological syndromes. Useful for diagnosis, treatment planning, and screening.	Published by PsychCorp. Published by PAR
Structured Clinical Interview for DSM-IV – Axis I, Clinical Version (SCID-I:CV): First, M, Spitzer, R., Gibbon, M, &Williams, J.	Designated Structured clinical interview for Axis I disorders.	Published by MHS
Beck Depression Inventory-II (BDI-II): Beck, A, Steer, R., Brown, G.	Assesses the level of clinical depression in normal patients in keeping with DSM- IV criteria.	Published by PsychCorp
Beck Anxiety Inventory (BAI): Beck, A.	Assesses the level of and severity of client anxiety.	Published by PsychCorp
Minnesota Multiphasic Personality Inventory - 2	Used to assess major symptoms of social and personal maladjustment.	Published by Pearson Assessments

(MMPI-2): Hathaway, S. & McKinley, J.C.		
Millon Behavioral Medicine Diagnostic (MBMD): Millon, T., Antoni, M., Millon, C., Meagher, S., & Grossman, S.	Assessment of psychosocial factors that may support or interfere with a chronically ill patient's course of medical treatment.	Published by Pearson Assessments
Rosenberg Self-Esteem Scale (RSES): Rosenberg, M.	Global and one-dimensional measure of self-esteem.	Public Domain. Author's family would like to be kept informed of its use.
Symptom Checklist 90 -R (SCL-90-R): Derogatis, L.	Self report inventory designed for the psychological assessment of symptoms of psychopathology.	Published by Pearson Assessments

Adapted from (LeMont et al., 2004)

Health Related Quality Of Life assessments for bariatric surgery candidates

Name	Description	Availability
Quality of Life Questionnaire (QLQ): Evans, D, & Cope, W.	Measures the relationship between the client's quality of life and behaviors such as substance use, psychological health, and physical health.	Published by MHS
Quality of Life Inventory (QOLI): Frish, M.	Measure of life satisfaction that can be used to measure outcomes and establishing efficacy of treatments or services.	Published by Pearson Assessments
Impact of Weight on Quality of Life (IWQOL): Kolotkin, R., Crisby, R., Kosloski, K, & Williams, R.	Quality of life measure designed specifically for an obese population.	Copyright owned by Duke University Medical Center
Impact of Weight on Quality of Life (IWQOL-Lite):	Brief measure to assess the impact of weight on quality of life	Copyright owned by Duke University Medical Center

Kolotkin, R. & Hamilton, M.	specifically for obese populations.	
Impact of Weight on Quality of Life-Kids (IWQOL-Kids): Kolotkin, R.	A validated self-report measure of weight-related quality of life for youth ages 11-19.	Contact Ronette Kolotkin, PhD, at rkolotkin@qualityoflifeconsulting.com or 919-681-7580
OMS 36-item Short Form Health Survey (SF-36): Ware, J.	Generic measure of health related quality of life used to evaluate health status in medical outcome studies.	Requires licensing agreement. Quality Metric or www.sf-36.com
Moorehead-Ardelt Quality of life Questionnaire (M-A QoLQ)	Developed as a disease specific instrument to measure postoperative, self- perceived, quality of life in people undergoing medical/surgical intervention for obesity and severe obesity.	Copyright owned by: M.K. Moorehead, Elisabeth Ardelt
Moorehead-Ardelt Quality of life Questionnaire II (M-A QoLQ II): Moorehead, M.K. & Ardelt, E.	Developed as a disease specific instrument, the improved M-A QoLQ II is a valid and reliable tool developed to measure both pre and post medical/surgical intervention of self-perceived quality of life in 6 key areas, i.e. self-esteem, physical well being, social relationships, work, sexuality, and eating behavior.	Copyright owned by: M.K. Moorehead, Elisabeth Ardelt. For permission to use contact Dr. Moorehead

Adapted from (LeMont et al., 2004)

Appendix D

Quick Reference Guide

- Overweight: refers to an excess amount of body weight that may come from muscles, bone, fat, and water (NHLBI Obesity Education Initiative Expert Panel, 1998).
- Obesity: refers to an excess amount of body fat (NHLBI Obesity Education Initiative Expert Panel, 1998).
- Body Mass Index (BMI): the most commonly used tool to estimate overweight and obesity in both adults and children. This measure of weight status is calculated by dividing the pounds of weight by the height in inches squared, and multiplying that number by 703.

  Equation: weight (lb) / [height (in)]^2 x 703

  (e.g. Weight = 160 lbs, Height = 5'8" (68")

  Calculation: [160 ÷ $(68)^2$] x 703 = 24.33)

- Online BMI Calculator: http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html (Centers for Disease Control, 2008)
- BMI Table: https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmi_tbl.pdf

BMI of Adults Age 20 and Older

Weight Status	BMI
Underweight	<18.5
Normal	18.5 to 24.9
Overweight	25.0 to 29.9
Obese	≥ 30.0

Extreme Obesity	≥ 40.0

(Weight-control Information Network, 2012)

BMI of Children and Adolescents Ages 2 to 19

Weight Status	BMI
Overweight or Obese	At or above the 85th percentile
Obese	At or above the 95th percentile

(Weight-control Information Network, 2012)

Obesity Facts in the United States

- More than two-thirds (68.8%) of adults are overweight or obese.
- More then one-third (35.7%) of adults are obese.
- More than one in 20 (6.3%) adults have extreme obesity (BMI 40.0 ≥).
- Approximately one in three (31.8%) young people ages 2 to 19 are overweight or obese.
- Among young people ages 2 to 19, 16.9% are considered to be obese.

(Flegal et al., 2012; Ogden et al., 2012)

Obesity Facts in the United States for Adults in Different Racial and Ethnic Groups

- Overweight and obesity affect more than 3 in 4 Hispanics (78.8 percent) and blacks (76.7 percent).
- About 2 in 3 whites (66.7 percent) are considered to be overweight or obese.
- About half of blacks (49.5 percent), and more than 1 in 3 Hispanics (39.1 percent) and whites (34.3 percent) are considered to be obese.
- Extreme obesity affects more than 1 in 10 blacks (13.1 percent), and about 1 in 20 whites (5.7 percent) and Hispanics (5 percent).
- 39.9% of American Indian and Alaska Natives are obese.
- 43.5% of Native Hawaiians or Other Pacific Islanders are obese.

- Asian Americans have a much lower rate of obesity compared to other racial and ethnic groups at 11.6%.

(Weight-control Information Network, 2012)

Causes of Overweight and Obesity

- Excess weight results from an energy imbalance. The body requires a certain amount of energy (calories) from consuming food in order to maintain basic life functions. Body weights tends to remain stable when the number of calories each and is equal to the number of calories the body uses. When people consume more calories than they burn, the energy balance tips towards weight gain. For children, energy balance occurs when the amount of energy consumed and the energy being used by the body support natural growth without promoting excess weight gain. Many factors can lead to energy and balance and weight gain, including eating habits, attitudes, emotions, how and where people live, genes, income, and life habits (NHLBI Obesity Education Initiative Expert Panel, 1998).

Health risks associated with obesity

Relative co-morbidity risks related to being overweight or obese:	
• **Type II Diabetes**	• Hypertension
• **Coronary Artery Disease**	• Congestive Heart Failure
• **Pulmonary Embolism**	• Stroke
• **Asthma**	• Gallbladder Disease
• **Osteoarthritis (degeneration of cartilage and bone in joints)**	• Chronic Back Pain
• **Cancer (postmenopausal breast, colorectal, endometrial, esophageal, kidney, ovarian, pancreatic, and prostate)**	

(Guh et al., 2009)

Changes in Obesity Over Time

- The prevalence rates of obesity among American adults has more than doubled since the early 1960s, increasing from 13.4% to 35.7% (Flegal et al., 2012).
- The prevalence rate of obesity has remained mostly stable from 1999 to 2010, but has increased slightly in a statistically significant manner among all men, black women, and Mexican American women (Flegal et al., 2012).
- The prevalence rate of obesity among children and adolescents has increased in the 1980s and 1990s but is now mostly stable at approximately 17% (Ogden et al., 2012).

Physical Activity

- Government guidelines recommend that healthy adults engage in at least 150 minutes of moderately intense aerobic activity or 75 minutes of vigorously intense aerobic activity per week. Adults are also recommended to do muscle-strengthening activities, such as push ups or weight training, at least twice per week. Children and adolescents are recommended to get at least 60 minutes of physical activity every day (US Department of Health Human Services, 2008).
- More than 80% of adults do not meet the recommended guidelines for both muscle-strengthening and aerobic activities. Furthermore, more than 80% of adolescents do not get enough physical activity to meet the youth guidelines (US Department of Health Human Services, 2011).
- Only one-third of adults get the recommended amount of physical activity each week (US Department of Health Human Services, 2000) and less than 5% of adults participate in 30 minutes of daily physical activity (Dietary Guidelines Advisory Committee, 2010).

- Only one-third of children are physically active everyday (National Association for Sport and Physical Education, 1999).
- A study conducted using a tool that measured physical activity found that in children age 6 to 11, nearly half of boys (49%) and approximately one-third of girls (35%) get their recommended amounts of physical activity. The study also found that physical activity declines with age. Although 42% of children ages 6 to 11 got 60 minutes of daily physical activity, only 8% of adolescents ages 12 to 15 met the same goal (Troiano et al., 2008).

Costs of Obesity

- The annual economic impact of obesity-related illness is estimated at $190.2 billion or approximately 21% of annual medical spending in the United States (Cawley & Meyerhoefer, 2012).
- Obesity-related job absenteeism costs businesses in the United States $4.3 billion every year (Witters et al., 2011).
- If the rate of obesity was to stay at the level of 2010, the projected savings for medical expenditures over the next two decades would be $549.5 billion (Finkelstein et al., 2012).

Treatments for Obesity

- The decision to begin weight loss should be based on assessment of the patient's need to lose weight, BMI, and the person's behavioral readiness for weight loss. These factors come together to suggest which interventions are most appropriate for each client.

Classification Decision	Stepped-Care Decision
Level 1 BMI < 27 kg/m^2	Self-directed diet and exercise Physician counseling
Level 2 BMI from 27 to 29 kg/m^2	Self-help program Commercial weight loss program Behavioral program
Level 3 BMI 30 to 39 kg/m^2	Portion-controlled, low-calorie diet (900 to 1200 kcal/day) Pharmacotherapy
Level 4 BMI ≥ 40 kg/m^2	Bariatric surgery

(Wadden & Osei, 2002)