

# **A Dietitian's Guide to Obesity (#099773)**

(Florida CE Provider #: 50-8625)

## **Vantage Professional Education**

P.O. Box 172835  
Tampa, FL 33672  
(813) 463-1918

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### **Dietitians – 8 CPE Credits \$72 (\$9 per Credit)**

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## About the Authors:

**Carole S. Mackey, MS, RD, LD.** Carole is a Registered Dietitian in the Tampa Bay area. She provides consultation to Home Care Companies and Educational Agencies and teaches the weight loss program “Chose to Lose”. Carole developed the Nutrition Component to the AIDS Program at Bronx-Lebanon Hospital Center, a teaching facility and recipient of local, state, and federal funding as a provider of health care to HIV infected individuals in South Bronx, New York. She is a member of the American Dietetic Association, the American Society for Parenteral and Enteral Nutrition, and is the former President of the Tampa Dietetic Association.

**Kathryn A. Allen, RD, LDN** is a Registered Dietitian at the H. Lee Moffitt Cancer Center in Tampa, Florida. She is currently working as the project manager of an NCI funded research study, which involves soy supplementation and breast cancer prevention. Kathryn is also the clinical dietitian for the Senior Adult Oncology Program and the Comprehensive Breast Cancer Program at the Cancer Center. She has practiced in the field of dietetics for 15 years and has extensive experience in wellness and health maintenance as well as medical nutrition therapy. Prior to her work at the Cancer Center, Kathryn provided nutrition education at the Diabetes Treatment Center as a Certified Diabetes Educator and implemented the “Chose to Lose” weight management program at University Community Hospital where she taught weight control classes for several years. She has also done private consulting and has had several publications in the area of body weight and cancer risk. Kathryn is state licensed, a registered member of the American Dietetic Association and is currently enrolled in the Master of Adult Education program at the University of South Florida. She received a BS in Dietetics from Indiana University of Pennsylvania in 1982.

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<b>Section I: Course Objectives</b>	<b>Page</b>
Introduction	1
Course Objectives	1
<b>Section II. Obesity Definitions and Measurements</b>	
Obesity Definitions	2
Overweight Definitions	2
Obesity Grade I	3
Obesity Grade II	3
Obesity Grade III	3
Body Mass Index	4
Body Mass Index (BMI) Prime	5
Body Fat Distribution: "Pears" vs. "Apples"	5
Calorie Count	5
<b>Section III. U.S. Obesity Prevalence and Cost</b>	
CDC Age-Adjusted Estimates	6
Adult Overweight and Obesity Prevalence	6
Children and Adolescents Overweight and Obesity Prevalence	7
Ranking States by Obesity Rates	9
Obesity Financial Cost	9
Culture versus Genes	11
Personal Costs and Discrimination	12
Legal Issues	12
<b>Section IV. Global Obesity Epidemic</b>	
World-Wide Issue	13
World Health Organization Response	13
<b>Section V. Obesity Health Hazards</b>	
Obesity Health Risks	13
Obesity Related Diseases Complications	14
Life Expectancy and Obesity	14
Academy of Nutrition and Dietetics (AND) Pregnancy Recommendations	15
American Cancer Association Links Body Weight to Cancer Risk	16
Cancer Survivors Dietary Treatment and Guidelines	17
Obesity Increases Risk of Strokes	18
Obesity and Psychological Distress	19
<b>Section VI. Obesity and Calorie Consumption</b>	
Energy Balanced Diet	19
Unhealthy Eating Patterns	20
Calorie Consumption	20
Portion Size: Then vs. Now	20
Physical Activity and Calories Used	22
Environment and Community Decisions	23

Diseases and Drugs	24
--------------------	----

## **Section VII. Weight Loss and Nutrition Plans**

Weight Loss Profile	24
Weight Loss Benefits	24
CDC Weight Loss Recommendations	24
Academy of Nutrition and Dietetics (AND) Recommendations	25
Types of Diets	26
Choosing a Weight Loss Program	27
Good Nutrition Plans	28
Fad Diets	29
The "Mediterranean" Diet	29

## **Section VIII. CDC Weight Management Recommendations**

Weight Management Research to Practice Series	33
Energy Density	33
Portion Size	35

## **Section IX. Bariatric Surgery**

Surgery to Control Obesity	36
Patient Selection	36
Bariatric Surgery for Weight Loss	37
Surgical Options	38
Surgery Complications	39
Open and Laparoscopic Bariatric Surgery	39
Bariatric Surgery for Adolescents	40
Medical Costs	40
Selecting Bariatric Surgery	40
Childbearing	41
Preoperative Psychological Testing and Patient Assessment	41
Physical Activity and Inactivity	42
Coping Skills and Emotional Modulation	42
Current Life Situation	43
Motivation and Expectations	43

## **Section X. Guide to Behavioral Change**

Behavioral Changes to Maintain and Reduce Weight	43
Set the Right Goals	44
Diet Readiness Test	44
Behavioral Technique	44
Success and Rewards	45
Self-monitoring	45
Avoid Cues for Unplanned Eating	45
Feel Fuller	45
Exercise & Dieting Limitations	46
Social Network	46
Social-Ecological Model	47

**Section XI. Obesity and Binge Eating Disorder**

Obesity and Binge Eating Disorder	48
Binge Eating Disorder Causes	49
Health Complications	49
Weight Loss Recommendation	50
Treatments	50

**Section XII. Healthy People 2020**

Healthy People 2020 Initiative	50
Nutrition and Weight Status Objectives	51
Summary	52

**Section XIII. Bibliography of Additional Information Sources** 52

**Section XIV. Continuing Education Answer Sheet & Test Questions** 55

**Section XV. Endnotes**

## Section I: Course Objectives

### Introduction

Obesity is spreading – and eating away at America’s economy and health. Obesity has risen at an epidemic rate during the past 30 years. The rapid rise in the prevalence of overweight and obesity among all segments of the U.S. population is of grave concern as the health and quality of life of those afflicted plummets and health care costs and societal burdens continue to increase. Obesity is a serious condition that affects people of all ages and socioeconomic groups.

The U.S. Center of Disease Control and Prevention reports that American society has become 'obesogenic,' characterized by environments that promote increased food intake, nonhealthful foods, and physical inactivity. The CDC’s Division of Nutrition, Physical Activity, and Obesity (DNPAO) is working to reduce obesity and obesity-related conditions through state programs, technical assistance and training, leadership, surveillance and research, intervention development and evaluation, translation of practice-based evidence and research findings, and partnership development. Policy and environmental change initiatives that make healthy choices in nutrition and physical activity available, affordable, and easy may likely prove most effective in combating obesity.<sup>1</sup>

### Course Objectives

At the conclusion of this program the dietetics professional will be able to:

1. Identify obesity definitions and measurements
2. Identify the prevalence and cost of overweight and obesity in the US
3. Identify the health hazards of obesity
4. Identify the factors contributing to overweight and obesity
5. Describe the six types of diets to consider in the development of a nutritional plan
6. Describe the benefits of the “Mediterranean” diet
7. Describe the CDC Weight Management Strategies
8. Describe the four types of Bariatric Surgery
9. Identify behavioral changes that affect obesity and overweight
10. Describes the goals of Health People 2020

## Section II. Obesity Definitions and Measurements

### Obesity Definitions

To most people, the term "obesity" means to be very overweight. The Institute of Health definitions are:<sup>2</sup>

- **"Overweight" as an excess amount of body weight that includes muscle, bone, fat, and water.**
- **"Obesity" specifically refers to an excess amount of body fat.** Some people, such as bodybuilders or other athletes with a lot of muscle, can be overweight without being obese.

It should be noted that the statistics about overweight and obesity may differ depending upon the source. However, when comparing all the available studies and research regarding overweight and obesity, the combination of the data tends to show the same trends and supports the same conclusions. The National Institute of Diabetes and Digestive Kidney Diseases (NIDDKD) reports that definitions or measurement characteristics for overweight and obesity have varied over time, from study to study, and from one part of the world to another. The varied definitions affect prevalence statistics and make it difficult to compare data from different studies.<sup>3</sup>

Prevalence refers to the total number of existing cases of a disease or condition in a given population at a given time. Some overweight and obesity related prevalence rates are presented as crude or unadjusted estimates, while others are age-adjusted estimates. Unadjusted prevalence estimates are used to present cross-sectional data for population groups at a given point or time period. For age-adjusted rates, statistical procedures are used to remove the effect of age differences in populations that are being compared over different time periods. Unadjusted estimates and age-adjusted estimates will yield slightly different values.<sup>4</sup>

The National Institute for Health and Clinical Excellence (NICE) in the United Kingdom and National Heart, Lung, and Blood Institute (NHLBI) of the United States of America no longer defines obesity in terms of severely obese and morbidly obese, but prefers to classify obesity based on BMI, waist circumference and associated disease risk as:<sup>5</sup>

- Overweight
- Obesity Grade I
- Obesity Grade II
- Extreme Obesity or Obesity Grade III

### Overweight Definitions

In the definition of obesity, with overweight being in that spectrum as mentioned above, a person is considered medically or scientifically overweight if:

1. BMI is anywhere between 25 to 29.9 and or if
2. Waist circumference is more than 40 inches (102cm) in men and over 35 inches (88cm) in women.

The following BMI example is for an adult that is 5'9":

Height	Weight Range	BMI	Considered
5' 9"	124 lbs or less	Below 18.5	Underweight
	125 lbs to 168 lbs	18.5 to 24.9	Healthy weight
	169 lbs to 202 lbs	25.0 to 29.9	Overweight
	203 lbs or more	30 or higher	Obese

### Obesity Grade I

Grade I obesity used to be termed simply as being obese in the old definition of obesity. Grade I obesity is defined as:

- BMI is between 30 - 34.9

The risk of developing diabetes at this level dramatically increases from 5 to 9 fold. So too is the risk of developing high blood pressure, high blood cholesterol, heart attack, stroke, and snoring at night, and not enjoying sleep leading to feeling sleepy during the day.

Moderate to high intensity exercise, obesity diets, and lifestyle modifications as well as the introduction of weight loss pills is advocated to overcome obesity at this level.

### Obesity Grade II

Grade II obesity is what used to be referred to as severe obesity in the old definition of obesity. Grade two obesity is defined as:

- BMI is anywhere between 35 - 39.9

At this level of obesity, it is most likely that the health risks of obesity have started to develop. If not major ones like diabetes, disruptive and painful complications like joint pain, snoring at night, low energy levels, low self esteem and depression may be witnessed. Low to moderate intensity exercises, dieting and the use of prescription pills for obesity is required, along with compulsory lifestyle modifications.

Where any major co-morbidity or complications of being overweight like diabetes is noted, bariatric surgery like gastric banding is needed alongside the above measures (lifestyle modifications, diet, exercise programs).

### Obesity Grade III

Grade III obesity used to be referred to as morbid obesity. The term morbid obesity was dropped by the NHLBI, as it is seen as a prejudging definition of obesity at this level. While it is true that many people with this grade of obesity would have complications, it is better to see these individuals and assess them on a personal basis if they really have developed a morbidity or complication.

- Grade III obesity is defined by a BMI of 40 or above

The risk of developing type 2 diabetes increases by up to 50 times at this stage of obesity.

Measuring the exact amount of a person's body fat is not easy. The most accurate measures are to weigh a person underwater or to use an X-ray test called Dual Energy X-ray Absorptiometry (DEXA). These

methods are not practical for the average person, and are done only in research centers with special equipment.

There are simpler methods to estimate body fat. One is to measure the thickness of the layer of fat just under the skin in several parts of the body. Another involves sending a harmless amount of electricity through a person's body. Both methods are used at health clubs and commercial weight loss programs. Results from these methods, however, can be inaccurate if done by an inexperienced person or on someone with severe obesity.

Because measuring a person's body fat is difficult, health care providers often rely on other means to diagnose obesity. Weight-for-height tables, which have been used for decades, usually have a range of acceptable weights for a person of a given height. One problem with these tables is that there are many versions, all with different weight ranges. Another problem is that they do not distinguish between excess fat and muscle. A very muscular person may appear obese, according to the tables, when he or she is not.

### **Body Mass Index**

In recent years, body mass index (BMI) has become the medical standard used to measure overweight and obesity. BMI uses a mathematical formula based on a person's height and weight. BMI equals weight in kilograms divided by height in meters squared ( $BMI = \text{kg}/\text{m}^2$ ).

Like the weight-to-height table, BMI does not show the difference between excess fat and muscle. BMI, however, is closely associated with measures of body fat. It also predicts the development of health problems related to excess weight. For these reasons, BMI is widely used by health care providers.

While the formula previously called the Quetelet Index for BMI dates to the 19th century, the new term "body mass index" for the ratio and its popularity date to a paper published in the July edition of 1972 in the *Journal of Chronic Diseases* by Ancel Keys, which found the BMI to be the best proxy for body fat percentage among ratios of weight and height; the interest in measuring body fat being due to obesity becoming a discernible issue in prosperous Western societies. BMI was explicitly cited by Keys as being appropriate for *population* studies, and inappropriate for individual diagnosis. Nevertheless, due to its simplicity, it came to be widely used for individual diagnosis, despite its inappropriateness.<sup>6</sup>

BMI provided a simple numeric measure of a person's "fatness" or "thinness", allowing health professionals to discuss over- and under-weight problems more objectively with their patients. However, BMI has become controversial because many people, including physicians, have come to rely on its apparent numerical authority for medical diagnosis, but that was never the BMI's purpose; it is meant to be used as a simple means of classifying sedentary (physically inactive) individuals with an average body composition. For these individuals, the current value settings are as follows: a BMI of 20 to 25 may indicate optimal weight; a BMI lower than 20 suggests the person is underweight while a number above 25 may indicate the person is overweight; a person may have a BMI below 20 due to disease; a number above 30 suggests the person is obese (AI C) (over 40, morbidly obese).

For a given height, BMI is proportional to weight. However, for a given weight, BMI is inversely proportional to the *square* of the height. So, if all body dimensions double, and weight scales naturally with the cube of the height, then BMI doubles instead of remaining the same. This results in taller people having a reported BMI that is uncharacteristically high compared to their actual body fat levels. In comparison, the Ponderal index is based on this natural scaling of weight with the third power of the height. However, many taller people are not just "scaled up" short people, but tend to have narrower frames in proportion to their height. It has been suggested that instead of squaring the body height (as the

BMI does) or cubing the body height (as the Ponderal index does), it would be more appropriate to use an exponent of between 2.3 and 2.7.<sup>7</sup>

**Body Mass Index (BMI) Prime**

BMI Prime, a simple modification of the BMI system, is the ratio of actual BMI to upper limit BMI (currently defined at BMI 25). As defined, BMI Prime is also the ratio of body weight to upper body weight limit, calculated at BMI 25. Since it is the ratio of two separate BMI values, BMI Prime is a dimensionless number, without associated units. Individuals with BMI Prime < 0.74 are underweight; those between 0.74 and 0.99 have optimal weight; and those at 1.00 or greater are overweight. BMI Prime is useful clinically because individuals can tell, at a glance, by what percentage they deviate from their upper weight limits. For instance, a person with BMI 34 has a BMI Prime of 34/25 = 1.36, and is 36% over his or her upper mass limit. In Asian populations, BMI Prime should be calculated using an upper limit BMI of 23 in the denominator instead of 25. Nonetheless, BMI Prime allows easy comparison between populations whose upper limit BMI values differ.

A frequent use of the BMI is to assess how much an individual's body weight departs from what is normal or desirable for a person of his or her height. The World Health Organization regards a BMI of less than 18.5 as underweight and may indicate malnutrition, an eating disorder, or other health problems, while a BMI greater than 25 is considered overweight and above 30 is considered obese. These ranges of BMI values are valid only as statistical categories when applied to adults, and do not predict health.

Category	BMI range – kg/m <sup>2</sup>	BMI Prime	Mass (weight) of a 1.8 metres (5 ft 11 in) person with this BMI
Severely underweight	less than 16.0	less than 0.66	less than 53.5 kilograms (8.42 st; 118 lb)
Underweight	from 16.0 to 18.5	from 0.66 to 0.73	between 53.5 and 59.9 kilograms (8.42 and 9.43 st; 118 and 132 lb)
Normal	from 18.5 to 25	from 0.74 to 0.99	between 60 and 80.9 kilograms (9.4 and 12.74 st; 130 and 178 lb)
Overweight	from 25 to 30	from 1.0 to 1.19	between 81 and 96.9 kilograms (12.8 and 15.26 st; 180 and 214 lb)
Obese Class I	from 30 to 35	from 1.2 to 1.39	between 97 and 112.9 kilograms (15.3 and 17.78 st; 210 and 249 lb)
Obese Class II	from 35 to 40	from 1.4 to 1.59	between 113 and 129.9 kilograms (17.8 and 20.46 st; 250 and 286 lb)
Obese Class III	over 40	over 1.6	from 130 kilograms (20 st; 290 lb)

**Body Fat Distribution: "Pears" vs. "Apples"**

Health care providers are concerned not only with how much fat a person has, but also where the fat is located on the body. Women typically collect fat in their hips and buttocks, giving them a "pear" shape. Men usually build up fat around their bellies, giving them more of an "apple" shape.

Of course some men are pear-shaped and some women become apple-shaped, especially after menopause. If you carry fat mainly around your waist, you are more likely to develop obesity-related health problems. Women with a waist measurement of more than 35 inches or men with a waist measurement of more than 40 inches have a higher health risk because of their fat distribution.

**Calorie Count**

One problem in losing weight is the calorie count. Once a person starts losing weight they become a smaller person and smaller people need fewer calories to maintain body function so the starting point of the individual's diet has changed. A person with a caloric (or energy) requirement of 2,000 calories can lose weight on a 1,500-calorie diet. But once they've lost 10 pounds their resting metabolic rate may fall

to 1,900 calories so they need to move to 1,400 calories a day to get the same 500-calorie-a-day deficit. This is the reason that once one starts to lose weight it becomes harder and harder.<sup>8</sup>

However, if the person is dieting then it doesn't matter if they consume fat calories or carbohydrate calories or protein calories as long as the person is in caloric deficit. In theory the body sheds one pound for every 3,500 calories cut from the diet.

## **Section III. U.S. Obesity Prevalence and Cost**

### **CDC Age-Adjusted Estimates**

*The estimates on overweight and obesity are taken from the Centers for Disease Control and Prevention (CDC). Data are based on the CDC's National Health and Nutrition Examination Survey (NHANES) from 2003–2006 and 2007–2008.<sup>9</sup>*

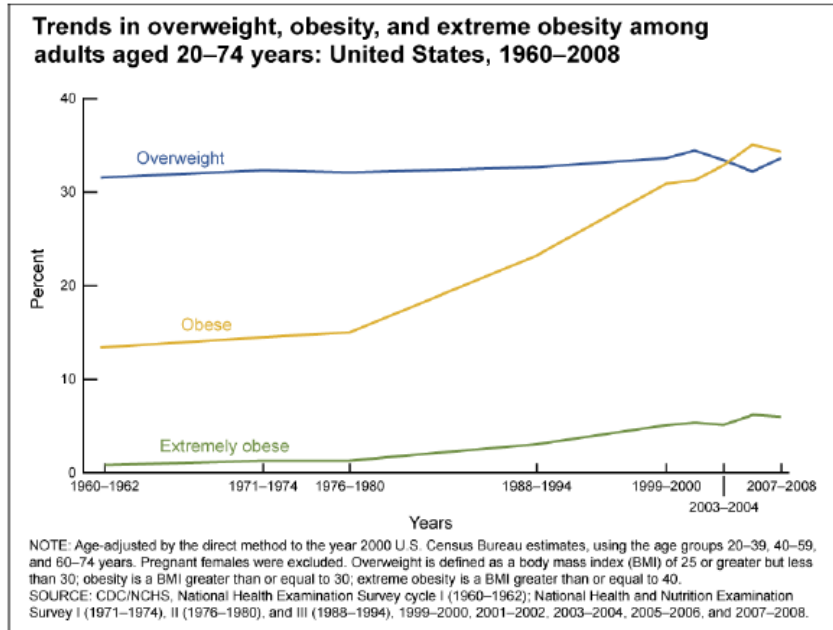
Some of the overweight- and obesity-related prevalence rates are presented as crude or unadjusted estimates, while others are age-adjusted estimates. Unadjusted prevalence estimates are used to present cross-sectional data for population groups at a given point or time period, without accounting for the effect of different age distributions among groups. For age-adjusted rates, statistical procedures are used to remove the effect of age differences when comparing two or more populations at one point in time, or one population at two or more points in time. Unadjusted estimates and age-adjusted estimates will yield slightly different values.

Unless otherwise specified, the CDC's statistics represent age-adjusted estimates. Age-adjusted estimates are used in order to account for age variations among the groups being compared.

### **Adult Overweight and Obesity Prevalence**

The prevalence of overweight and obesity in adults has steadily increased among both genders, all ages, all racial/ethnic groups, all educational levels, and all smoking levels. From 1960–2 to 2005–6, the prevalence of obesity increased from 13.4 to 35.1 percent in U.S. adults age 20 to 74. Since 2004, while the prevalence of overweight is still high among men and women, there are no significant differences in prevalence rates documented from 2003 to 2004, 2005 to 2006, and 2007 to 2008. In fact, among women, there has been no change in obesity prevalence between 1999 and 2008.<sup>10</sup>

Although the prevalence of obesity among adults aged 20–74 more than doubled between 1976–1980 and 2007–2008, the prevalence of overweight remained stable during the same period.



(Source: National Health and Nutrition Examination Survey (NHANES), June 2010)

Over two-thirds of U.S. adults are overweight or obese.

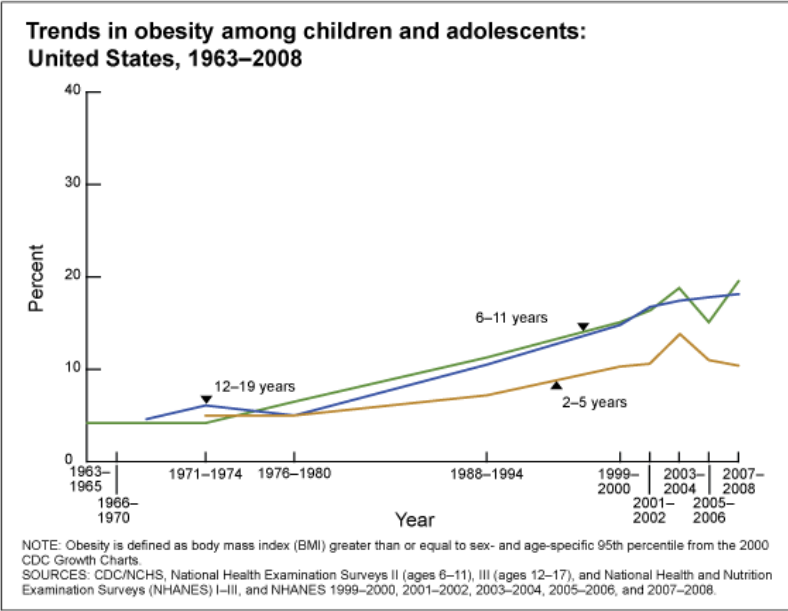
- All adults: 68 percent
- Women: 64.1 percent
- Men: 72.3 percent

The CDC found that there are racial and ethnic disparities in obesity prevalence among U.S. adults and adolescents.

- Among women in 2007–2008, 22.9% of non-Hispanic white women, 38.3% of non-Hispanic black women, and 35.3% of Mexican-American women were obese.
- In 2007–2008 and 1988–1994, there were no significant differences between racial and ethnic groups in the prevalence of obesity among men.

### Children and Adolescents Overweight and Obesity Prevalence

Childhood obesity has more than tripled in the past 30 years. The prevalence of obesity among children aged 6 to 11 years increased from 6.5% in 1980 to 19.6% in 2008. The prevalence of obesity among adolescents aged 12 to 19 years increased from 5.0% to 18.1%.<sup>11</sup>



(Source: Centers for Disease Control and Prevention)

There are significant racial and ethnic disparities in obesity prevalence among U.S. children and adolescents.

- In 2007-2008, the prevalence of obesity was significantly higher among Mexican-American adolescent boys (26.8%) than among non-Hispanic white adolescent boys (16.7%). In NHANES III (1988-1994) there was no significant difference in prevalence between Mexican-American and non-Hispanic white adolescent boys.
- Among girls in the period 2007-2008, non-Hispanic black adolescents (29.2%) were significantly more likely to be obese compared with non-Hispanic white adolescents (14.5%). Similarly, non-Hispanic black adolescent girls (16.3%) were more likely to be obese compared with non-Hispanic white adolescent girls (8.9%) in the period 1988-1994.

### Childhood Obesity Health Impacts

Obesity is the result of caloric imbalance and is mediated by genetic, behavioral, and environmental factors. Childhood obesity has both immediate and long-term health impacts:<sup>12</sup>

- Obese youth are more likely to have risk factors for cardiovascular disease, such as high cholesterol or high blood pressure. In a population-based sample of 5- to 17-year-olds, 70% of obese youth had at least one risk factor for cardiovascular disease.
- Children and adolescents who are obese are at greater risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem.
- Obese youth are more likely than youth of normal weight to become overweight or obese adults, and therefore more at risk for associated adult health problems, including heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis.

Healthy lifestyle habits, including healthy eating and physical activity, can lower the risk of becoming obese and developing related diseases.

## Ranking States by Obesity Rates

Ten years ago, 28 states had obesity rates below 20 percent of their adult population. No state had an obesity rate above 30 percent in 2000, whereas nine states are above the threshold today. Those states are Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, and West Virginia.

Colorado has the lowest rate of obese adults and Mississippi has the highest. The CDC found that 18.6 percent of adults age 18 and over were obese in 2009, making it the only state, along with Washington, D.C., with an obesity rate below 20%. By contrast, 34.4 percent of adults in Mississippi were obese.<sup>13</sup>

2009 State Obesity Rates							
State	%	State	%	State	%	State	%
Alabama	31.0	Illinois	26.5	Montana	23.2	Rhode Island	24.6
Alaska	24.8	Indiana	29.5	Nebraska	27.2	South Carolina	29.4
Arizona	25.5	Iowa	27.9	Nevada	25.8	South Dakota	29.6
Arkansas	30.5	Kansas	28.1	New Hampshire	25.7	Tennessee	32.3
California	24.8	Kentucky	31.5	New Jersey	23.3	Texas	28.7
Colorado	18.6	Louisiana	33.0	New Mexico	25.1	Utah	23.5
Connecticut	20.6	Maine	25.8	New York	24.2	Vermont	22.8
Delaware	27.0	Maryland	26.2	North Carolina	29.3	Virginia	25.0
Washington DC	19.7	Massachusetts	21.4	North Dakota	27.9	Washington	26.4
Florida	25.2	Michigan	29.6	Ohio	28.8	West Virginia	31.1
Georgia	27.2	Minnesota	24.6	Oklahoma	31.4	Wisconsin	28.7
Hawaii	22.3	Mississippi	34.4	Oregon	23.0	Wyoming	24.6
Idaho	24.5	Missouri	30.0	Pennsylvania	27.4		

(Source: CDC Behavioral Risk Factor Surveillance System (BRFSS))

The CDC stated that the obesity rate today is probably much higher: the study relied on telephone surveys with about 400,000 adults who were asked to self-report their height and weight. Information that people often misrepresent!

## Obesity Financial Cost

The financial implications of a severely overweight nation are emerging in both obvious and subtle ways. Obesity isn't simply a personal medical issue it also affects the workplace and has significant and concrete economic price tag.<sup>14</sup>

Recent calculations peg the price tag of the obesity epidemic at \$140 billion a year in extra medical costs. The President's Council on Physical Fitness and sports notes that physical inactivity, excess weight and obesity are responsible for an estimated 27 percent of national health care changes.<sup>15</sup>

Companies are beginning to see that employees' bulging waistlines are affecting their bottom line as well. For example, a Duke University Medical Center study found that very obese workers filed twice the number of workers comp claims as non-obese workers, while missing 13 times more days after getting sick or being injured on the job. Using the health records of 11,728 members of its own employees, Duke found the average medical claims cost relating to work injuries per 100 workers was \$51,019 for the obese and \$7,503 for the non-obese – a seven-fold difference.

The problem affected all types of jobs, but was most pronounced in positions that required the most physical exertion. One of the worst rates was for nurses. In a sense overweight nurses were hit by obesity twice as they were overweight themselves and lifting patients who were overweight. Research determined that obese workers were more likely to slip and fall, with the most common injuries being to the lower extremity, wrists or hand, or back.

A 2009 study uncovered some of the subtle impact of the obesity epidemic. The productivity of 341 employees at eight small manufacturing companies in Kentucky was studied. Thirty-six percent of the employees were obese and 42 percent were overweight, but not obese- meaning three out of every four workers were above normal body weight.

Even though managers saw the employees every day, they were shocked to find out that more than three-quarters were overweight. They were so used to seeing overweight people that they didn't know what normal weight is anymore.

While many studies have linked obesity to absenteeism, this research probed "presenteeism" – when employees clock in, but are not fully engaged because of personal-health or life-issue distractions (other conditions like depression, can also cause presenteeism).

Workers with moderate or severe obesity required more time to complete tasks and had difficulty with physical demands. The most obese workers had difficulty with lifting boxes, reaching for things and even walking. Their limitations in productivity may have been due to difficulty in moving because of increased body size, or because of pain due to other conditions such as arthritis which is often aggravated by increased weight.

For obese workers, the health-related losses in productivity averaged 4.2 percent – more than twice as much as other employees. Based on an average hourly wage of \$21, presenteeism cost employers \$1,800 per obese worker each year, more than three times the average employee.

While such figures are significant researchers believe that a substantial cost of obesity has yet to be accounted for, stemming from stigma and discrimination related to the condition.

In a survey of 2,000 overweight women, half believed their co-workers stigmatized them and 43 percent said their employers stigmatized them because of their weight. These women said they were not hired, lost out on promotions or were teased or harassed at work because of their weight.

Other studies have determined that obese men and women make 1 to 6 percent less than their non-obese counterparts and that obesity makes it difficult to climb the corporate ladder. Only 5 percent of CEO's are obese, about one-seventh the rate of the entire U.S. population.

Economists are just beginning to ponder the cost of stigmatization terms of a hostile work environment, higher turnover, and companies missing out on the talents of people, who are not hired or denied promotion based on weight.

The fiscal consequences of obesity for the U.S. has increased with the passage of the health reform bill. Obesity is disproportionately concentrated among those previously uninsured, who will now presumably have access to more care, possibly including expensive bariatric surgery. Obesity is associated with many expensive diseases that health care costs of treating the impoverished obese are likely to be enormous. Since treatment is unlikely by itself to make this sector of the population more employable or productive there is a huge economic cost with an economic benefit.<sup>16</sup>

## Culture versus Genes

The cultural meaning of obesity has changed. For most of human history, fatness has been a sign of prosperity, of having risen, socially and economically, above the day-to-day struggle to obtain enough to eat. But now, in Western societies, obesity is concentrated among the poorest and least educated. In the U.S., blacks are 50 percent more likely to be obese than whites, and Hispanics 20 percent more likely.<sup>17</sup>

Dr. Anthony Daniels witnessed the change in cultural meaning of body size while practicing in Zululand South Africa. The woman who still lived in the traditional way, in mud huts, wanted to be fattened up for their menfolk, who saw in a fat wife a sign of their own success and prestige. These women would ask for medicine to become even fatter than they were already. By contrast, the young women who attended university wanted medicine to make them thinner than they already were.

Dr. Daniels recently observed in Bangkok, Thailand children, obviously of the elite, emerging from a school. They were fat and seemed unable to progress further than a few yards without refreshing themselves with sweetened drinks and fatty foods. They were being collected by chauffeurs or parents to be spared the minimal exercise of walking. But, in Thailand the poor cannot afford to be fat, but Dr. Daniels predicts that in time the great reversal will occur: The elite will abandon its fattening habits, and take seriously the advice of the late Duchess of Windsor, that one can neither be too rich nor too thin.

With the average American consuming 250 more calories a day more than two to three decades ago, researchers are characterizing obesity as a problem with multiple causes. They cite a mosaic of biological vulnerabilities, family upbringing, psychology (e.g. using food for comfort) and the environment.<sup>18</sup>

Genetics studies show that weights of adopted children more closely resemble those of their biological rather than adoptive parents, raising the possibility that genes trump the environment. A recent international research consortium led by Children's Hospital Boston identified 18 new genes sites linked to obesity and 13 others associated with how fat is distributed in the body.<sup>19</sup>

Their research showed that weight gain generally results when people burn fewer calories than they consume. Genes, personal choices and an environment that encourages fast food and discourages exercise all play roles. But many people keep weight off without close attention to diet and exercise, while others put on pounds despite healthy eating habits. The study concluded genetic differences may explain some of this variation.

The studies identify specific areas of the human genome—not actual genes. More research is needed to determine what genes are involved, and, in many cases, to figure out their function before work might begin on new therapies. Moreover, combining the effects of all 32 variants explained only a small fraction of the differences in BMI.

Most of the genes previously linked to obesity are involved in appetite regulation and energy balance. The new study indicates that much of the biology underlying obesity is uncharacterized. The 32 gene sites related to overall obesity indicate that people could have up to 64 genetic variants (one from each parent) affecting their risk. The study found that people with more than 38 variants associated with increasing body mass index were 15 to 20 pounds heavier than those who had fewer than 22 such variants. But, a score accounting for all of an individual's variants was little better than a flip of a coin in predicting a person's risk of becoming obese.

The study found that women were much more likely than men to have genetic variants predicting developments of fat in the hips and thighs as opposed to the abdomen. Abdominal fat is associated with a

higher risk of diabetes and heart disease. Studies show that fat around the hips and thighs may provide protection against such diseases.

Research from the Mayo Clinic, Rochester, Minn. reports that asking people whether their parents were obese or not, is a better plan to predict where a person is going to be obese or not. The Clinic believes that the new study might help in finding new drug targets for obesity, but measuring the variability in DNA doesn't explain obesity.

### **Personal Costs and Discrimination**

According to the American Obesity Association, the social consequences of being overweight and obese are serious and pervasive. Overweight and obese individuals are often targets of bias and stigma, and they are vulnerable to negative attitudes in multiple domains of living including places of employment, educational institutions, medical facilities, the mass media, and interpersonal relationships.

#### Weight Stigma

Stigma and bias generally refer to negative attitudes that affect interpersonal interactions and activities in a detrimental way. Stigma may come in several forms, including verbal types of bias (such as ridicule, teasing, insults, stereotypes, derogatory names, or pejorative language), physical stigma (such as touching, grabbing, or other aggressive behaviors), or other barriers and obstacles due to weight (such as medical equipment that is too small for obese patients, chairs or seats in public venues which do not accommodate obese persons, or stores which do not carry clothing in large sizes). In an extreme form, stigma can result in both subtle and overt forms of discrimination, such as employment discrimination where an obese employee is denied a position or promotion due to his or her appearance, despite being appropriately qualified.

Weight stigma occurs in multiple settings by a range of individuals. For example, in employment settings, overweight people may face bias from several sources. Experimental studies have found that when a resume is accompanied by a picture or video of an overweight person (compared to an "average" weight person), the overweight applicant is rated more negatively and is less likely to be hired. Other research shows that overweight employees are ascribed multiple negative stereotypes including being lazy, sloppy, less competent, lacking in self-discipline, disagreeable, less conscientious, and poor role models. In addition, overweight employees may suffer wage penalties, as they tend to be paid less for the same jobs, are more likely to have lower paying jobs, and are less likely to get promoted than thin people with the same qualifications.

#### Wages and Benefits

Several studies have found that women with obesity earned less than non-obese women. In a study by Rothblum and colleagues, of persons who were 50 percent or more above their ideal weight, 26 percent reported they were denied benefits such as health insurance because of their weight and 17 percent reported being pressured to resign or fired because of their weight.

### **Legal Issues**

The U.S. Equal Employment Opportunity Commission (EEOC) **now claims obesity is a disability under Americans with Disabilities Act Amendments Act (ADAAA).**

On September 25, 2008, President Obama signed the Americans with Disabilities Act Amendments Act of 2008. The Act emphasizes that the definition of disability should be construed in favor of broad

coverage of individuals to the maximum extent permitted by the terms of the AND and generally shall not require extensive analysis.<sup>20</sup>

## Section IV. Global Obesity Epidemic

### World-Wide Issue

On every continent on the globe, even including where malnutrition is rife, the number of people who are either overweight or obese is rising at an alarming rate. The same combination of high-calorie diets and sedentary behavior fuels the obesity epidemic in the US and internationally.

The International Obesity Task Force, analysis in 2010 estimates that:<sup>21</sup>

- Worldwide obesity has more than doubled since 1980.
- 1.5 billion adults, 20 and older, were overweight. Of these over 200 million men and nearly 300 million women were obese.
- 65% of the world's population lives in countries where overweight and obesity kills more people than underweight.
- Nearly 43 million children under the age of five were overweight in 2010.

### World Health Organization Response

Adopted by the World Health Assembly in 2004, the World Health Organization (WHO) Global Strategy on Diet, Physical Activity and Health describes the actions needed to support healthy diets and regular physical activity. The Strategy calls upon all stakeholders to take action at global, regional and local levels to improve diets and physical activity patterns at the population level.

WHO has developed the 2008-2013 *Action plan for the global strategy for the prevention and control of noncommunicable diseases* to help the millions who are already affected cope with these lifelong illnesses and prevent secondary complications. This action plan aims to build on, the WHO Framework Convention on Tobacco Control and the WHO Global Strategy on Diet, Physical Activity and Health.

## Section V. Obesity Health Hazards

### Obesity Health Risks

Obesity is more than a cosmetic problem; it is a health hazard. In testimony before the Senate Health, Education, Labor and Pensions Committee, The *Academy of Nutrition and Dietetics* urged that obesity be designated a disease by federal agencies and institutions with all of the attendant ramifications that such a designation implies -- including sanctioned insurance coverage for obesity treatment. Coverage will facilitate the timely provision of health services to treat obesity and its attendant comorbidities such as hypertension, lipid abnormalities, and diabetes mellitus.

*The Dietary Guidelines for Americans 2010* found that one of the major causes of morbidity and mortality in the United States are related to poor diet and a sedentary lifestyle. A new study by researchers at the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) published in *JAMA* concludes that obesity kills 112,000 Americans each year.<sup>22</sup>

The study indicates that being overweight, as opposed to obese, actually saves 86,000 lives. When the authors add their obesity and overweight deaths, they write: "Thus, for overweight and obesity combined, our estimate was 25,814 excess deaths."

Several serious medical conditions have been linked to obesity, including type 2 diabetes, heart disease, high blood pressure, and stroke. Obesity is also linked to higher rates of certain types of cancer. Obese men are more likely than non-obese men to die from cancer of the colon, rectum, or prostate. Obese women are more likely than non-obese women to die from cancer of the gallbladder, breast, uterus, cervix, or ovaries.

Health care providers generally agree that the more obese a person is the more likely he or she is to develop health problems.

### **Obesity Related Diseases Complications**

Through the use of BMI and waist circumference measurements, the degree to which an individual is overweight or obese can be assessed and the potential complications of obesity can be identified. While the most obvious impacts of obesity are appearance (increased body size), and, if sleep apnea has developed, breathing/snoring changes, overweight and obese people are at increased risk for many serious medical problems that often require specialized and/or long-term care.

Overweight and obese people are at an increased risk for developing the following conditions.

- Heart disease, including coronary artery disease, heart attack, heart failure, angina, and an abnormal heartbeat.
- High blood pressure. High blood pressure in obese men may in turn increase the risk of kidney cancer
- High levels of cholesterol and triglycerides in the blood, as well as lower levels of "good" HDL cholesterol
- Stroke

### **Life Expectancy and Obesity**

Severe obesity can have a significant impact on reduced life expectancy, but being overweight or moderately obese appears to have little, if any, effect, according to a new study by researchers at RTI International.<sup>23</sup>

The study, looked at effects of overweight and three categories of obesity on life expectancy across sex, race and smoking strata, based on life expectancy tables and National Health Interview Survey data linked to death certificates.

The results showed that life expectancy for those who are overweight (body mass index 25-30) or moderately obese (BMI 30-35) was similar to that of normal weight adults. However, life expectancy was greatly reduced for those with a BMI over 35, and even more so for those with a BMI over 40.

The results showed that for 18 year olds with a BMI above 35, life expectancy was reduced by five to 12 years depending on race, sex, and whether or not the person smoked. The largest reduction in life expectancy occurred for white male smokers.

"An 18-year-old white male who is normal weight and does not smoke can expect to live to age 81," said Derek Brown, Ph.D., a research health economist at RTI and the study's co-author. "However, were he to

smoke and have a BMI above 40, his life expectancy would be only 60, a difference of 21 years." In aggregate, excess weight is responsible for roughly 95 million years of life lost.

"The prevalence of severe obesity has been increasing at an alarming rate," Brown said. "Unless something is done to reverse this trend, it's going to have an impact on the life expectancy of U.S. adults."

The results suggest that the impact of obesity on mortality may be greater for men than for women and greater for whites than for blacks.

### **Academy of Nutrition and Dietetics (AND) Pregnancy Recommendations**

Given the detrimental influence of maternal overweight and obesity on reproductive and pregnancy outcomes for the mother and child, it is the position of the Academy of Nutrition and Dietetics and the American Society for Nutrition that all overweight and obese women of reproductive age should receive counseling on the roles of diet and physical activity in reproductive health prior to pregnancy, during pregnancy, and in the interconceptional period, in order to ameliorate these adverse outcomes. The effect of maternal nutritional status prior to pregnancy on reproduction and pregnancy outcomes is of great public health importance.<sup>24</sup>

Diet and nutrition counseling for virtually all overweight and obese women of childbearing age can reduce health risks associated with excess weight for mothers and children alike, according to a newly released position paper from the Academy of Nutrition and Dietetics and the American Society of Nutrition.

The position paper, published in the Journal of the Academy of Nutrition and Dietetics, represents the associations' official stance on obesity, reproduction and pregnancy outcomes:

This position paper has two objectives:

1. to help nutrition professionals become aware of the risks and possible complications of overweight and/or obesity for fertility, the course of pregnancy, birth outcomes, and short- and long-term maternal and child health outcomes; and
2. related to the Academy of Nutrition and Dietetics's and the American Society for Nutrition's commitment to research, to identify the gaps in research to improve our knowledge of the risk and complications associated with being overweight and obese prior to and during pregnancy.

Given the detrimental influence of maternal overweight and obesity on reproductive and pregnancy outcomes for the mother and child, it is the position of the Academy of Nutrition and Dietetics and the American Society for Nutrition that all overweight and obese women of reproductive age should receive counseling prior to pregnancy, during pregnancy and in the interconceptional period on the roles of diet and physical activity in reproductive health, in order to ameliorate these adverse outcomes.

An estimated 33 percent of U.S. women are obese, according to the authors, who write that a long-term goal of health professionals must be to reduce the number of women who become pregnant while obese. The effect of a woman's nutritional status prior to pregnancy is an issue of great public health importance.

Among obese women, who already have aberrations in glucose and lipid metabolism, the further adjustments induced by hormonal changes in pregnancy create a metabolic milieu that enhances the risk for metabolic disorders such as gestational diabetes mellitus and preeclampsia.

Infants born to obese mothers have “a higher prevalence of congenital anomalies than do offspring of normal-weight women, suggesting that maternal (obesity) alters development in the sensitive embryonic period.” The authors note neural tube defects such as spina bifida and anencephaly are about twice as common among children of obese women. “Other birth defects more frequent in offspring of obese women include oral clefts, heart anomalies, hydrocephaly and abdominal wall abnormalities.

Objectives of the new AND/ASN position are to provide guidance to nutrition professionals in becoming aware of risks and possible complications of excess weight and obesity for fertility, course of pregnancy, birth outcomes and short and long-term maternal and child health; and to commit AND and ASN to identifying gaps in scientific research needed to improve knowledge of risks and complications and develop effective strategies “that can be implemented before and during pregnancy as well as during the interconceptional period.

### **American Cancer Association Links Body Weight to Cancer Risk**

An American Cancer Association estimate is that 1 out of every 3 cancers in the United States is linked to excess body weight, poor nutrition, or physical inactivity. While these factors are all related and may all contribute to cancer risk, body weight seems to have the strongest evidence linking it to cancer. Excess body weight contributes to 14% to 20% of all cancer-related deaths.<sup>25</sup>

Obesity is especially important as a cancer risk factor because it's so common. Carrying around too many pounds has long been known to raise the risk of heart disease and diabetes, but there's less awareness of its cancer hazard. Being overweight or obese is clearly linked with an increased risk of many cancers, including cancer of the breast (in women past menopause), colon, endometrium (uterus), esophagus, and kidney. Obesity has also been linked with an increased risk of cancers of the pancreas, gallbladder, thyroid, ovary, and cervix, as well as multiple myeloma, Hodgkin lymphoma, and aggressive prostate cancer.

But the links between body weight and cancer are complex and are not yet fully understood. For example, studies have found that excess weight is linked with an increased risk of breast cancer in women after menopause, but not before menopause. The reasons for this are not clear.

The timing of weight gain might also affect cancer risk. Being overweight during childhood and young adulthood might be more of a risk factor than gaining weight later in life for some cancers. For example, some research suggests that women who are overweight as teenagers (but not those who gain weight as adults) may be at higher risk for developing ovarian cancer before menopause.

### Body Weight Affects Cancer Risk

Excess body weight may affect cancer risk through a number of mechanisms, some of which may be specific to particular cancer types. Excess body fat may affect:

- How the body processes fats and sugars
- Immune system function
- Levels of certain hormones, such as insulin and estrogen
- Factors that regulate cell division, such as insulin-like growth factor-1 (IGF-1)
- Proteins that influence how the body uses certain hormones, such as sex hormone-binding globulin

### Losing Weight Reduces Cancer Risk

There has been limited research on how losing weight might lower the risk of developing cancer. Still, there is growing evidence that weight loss may reduce the risk of certain cancers, such as breast cancer and more aggressive forms of prostate cancer.

Some changes in the body that occur as a result of weight loss suggest it may reduce cancer risk. For example, overweight or obese people who intentionally lose weight have reduced levels of certain hormones that are related to cancer risk, such as insulin, estrogens, and androgens.

Although what we know about the link between weight loss and cancer risk is incomplete, people who are overweight or obese should be encouraged and supported in their efforts to lose weight. Aside from possibly reducing cancer risk, losing weight can have many other health benefits, such as lowering the risk of other chronic diseases like heart disease and diabetes.

As an example of how Americans are eating themselves to death, a landmark study concludes that one of every five cancer deaths in women and one of every seven in men are due to excess pounds. The study, by the American Cancer Society, is by far the largest on the subject and the first to quantify the risk for all forms of cancer.

The study found that overall, fat was more of a cancer hazard for women than men. Extra pounds mean extra hormones, estrogen and insulin, which are produced in fatty tissue and which spur cell growth, setting the stage for the overgrowth that is typical of tumors.

Overall, while the mechanisms underlying the obesity-carcinogenesis relationship are not fully understood, sufficient evidence exists to support recommendations that adults and children maintain reasonable weight for their height and ages for multiple health benefits, including decreasing their risk of cancer.

### **Cancer Survivors Dietary Treatment and Guidelines**

Increasing evidence suggests that being overweight raises the risk of cancer recurrence and may lower the chances of survival for many cancers. Both during and after cancer treatment, the American Cancer Society recommends people should strive to achieve and maintain a healthy weight whenever possible.<sup>26</sup>

Some cancer survivors can be malnourished and underweight at diagnosis or as a result of cancer treatment. These people may need help gaining or maintaining their weight. But many people are overweight or obese at the time of a cancer diagnosis. These people may want to talk with their doctor about trying to lose modest amounts of weight during treatment, as long as it is monitored closely and does not interfere with treatment. Safe weight loss should be achieved through a well-balanced diet and increased physical activity tailored to the specific needs of the person being treated.

After cancer treatment, weight should be managed with a combination of dietary and physical activity strategies. One way to help achieve healthy weight control is by reducing calories in the diet. This can be done by eating lower-calorie foods (such as vegetables, fruits, and soups, and cooked whole grains), limiting intake of fat and sugars, and limiting portion sizes of high-calorie foods. Increased physical activity is also important in promoting weight loss, and in keeping weight off in patients who are overweight or obese. Even if an ideal weight is not achieved, it is likely that any weight loss will still have significant health benefits.

The healthiest way to reduce calorie intake is to limit the intake of added sugars, saturated and trans fats, and alcohol, which all contain many calories but few or no essential nutrients. Calorie intake can be reduced by decreasing the size of food portions and limiting the intake of foods and beverages that are

high in calories, fat, and/or refined sugars, and which provide few nutrients (such as fried foods, cookies, cakes, candy, ice cream, and soft drinks). Such foods and beverages should be replaced with choices like vegetables and fruits, whole grains, beans, and lower-calorie beverages.

*The American Cancer Society* recommends that adults get at least 30 minutes (preferably 45 to 60 minutes) of moderate to vigorous physical activity, above usual activities, on 5 or more days of the week. Children and adolescents should get at least 60 minutes per day of moderate to vigorous physical activity at least 5 days per week. Up to 60 minutes of moderate to vigorous intensity physical activity per day may be needed to prevent weight gain, but as much as 60 to 90 minutes of moderate intensity physical activity per day may help to sustain weight loss for previously overweight people.

### **Obesity Increases Risk of Strokes**

The higher a person's degree of obesity, the higher their risk of stroke — regardless of race, gender and how obesity is measured, according to a study published in "Stroke: Journal of the American Heart Association".<sup>27</sup>

"It has not been clear whether overweight and obesity are risk factors for stroke, especially among blacks," said Hiroshi Yatsuya, M.D., Ph.D., study lead author and visiting associate professor at the University of Minnesota in Minneapolis. "There are also questions about which measure of excess weight (body mass index [BMI], waist circumference or waist-to-hip ratio) is most closely associated with disease risk."

Analyzing the ARIC Study database in which subjects' BMI, waist circumference and waist-to-hip ratio were measured at the study's start, Yatsuya and colleagues followed 13,549 middle-aged black and white men and women in four U.S. communities from 1987 through 2005. Participants started the study free of cancer and cardiovascular disease.

They found that incidence rates differed substantially between whites and blacks. "Black women had about three times higher incidence of stroke than white women in the lowest as well as in the highest BMI categories," Yatsuya said. "But the correlation between increasing stroke incidence and increasing degree of obesity was apparent in both races and genders."

For example, the stroke rate in the lowest BMI category was 1.2 per 1,000 person-years for white women and 4.3 per 1,000 person-years for black women. The rate in the highest BMI category was 2.2 for white women and 8.0 for black men.

"Since individuals with higher degrees of obesity tended to have higher blood pressure levels or higher diabetes prevalence, we further examined the relationship between the degree of obesity and ischemic stroke incidence by statistically adjusting for difference in blood pressure or diabetes status attributed to the degree of obesity," Yatsuya said. "That significantly weakened the associations, suggesting these major risk factors explain much of the obesity-stroke association."

The study results re-emphasize the need to prevent obesity in general, Yatsuya said. But, he said, clinical trials would be needed to determine whether obesity prevention or control would actually decrease stroke incidence.

Women's waistlines are nearly two inches bigger than they were a decade earlier, and that bulge corresponds with the increase in strokes. No other traditional risk factors such as smoking, heart disease or diabetes changed enough to account for the increase in strokes.<sup>28</sup>

## **Obesity and Psychological Distress**

Emotional suffering may be one of the most painful parts of obesity. American society emphasizes physical appearance and often equates attractiveness with slimness, especially for women. Such messages make overweight people feel unattractive.

Many people think that obese individuals are gluttonous, lazy, or both, even though this is not true. As a result, obese people often face prejudice or discrimination in the job market, at school, and in social situations. Feelings of rejection or depression are common.

The nature of the relationship between obesity and psychological distress continues to be debated by researchers and clinicians alike. Studies of nonclinical samples of obese persons have consistently shown that obese individuals do not differ from their nonobese counterparts in psychological symptoms, psychopathology, or personality overall. However, studies do indicate that subgroups within the obese population, such as obese individuals presenting for clinical weight-loss treatment and obese binge-eaters, show elevated psychopathology. Individuals seeking treatment for weight loss have consistently demonstrated a higher prevalence of distress than their nontreatment--seeking counterparts.

A Duke University study explored the hypothesis that the relationship between degree of obesity and depression/global self-esteem is mediated by body-image evaluation in obese individuals seeking weight-loss treatment. There were four major findings of the study:

1. Body-image evaluation was related to both depression and self-esteem
2. Degree of obesity was correlated with body-image evaluation
3. Degree of obesity was associated with depression and self-esteem
4. The relationship between weight and depression/self-esteem was partially mediated by body image. Consistent with the findings of others, body-image evaluation was significantly and moderately correlated with both depression and self-esteem.

This study demonstrates that body-image dissatisfaction not only partially mediates the relationship between degree of obesity and psychological distress in treatment-seeking individuals, but also is directly related to negative affect and low-self esteem. The researchers propose that body-image dissatisfaction may be a factor that should be evaluated with obese patients seeking residential weight-loss treatment, and when evident, should become one target of intervention efforts.

## **Section VI. Obesity and Calorie Consumption**

### **Energy Balanced Diet**

Good health and optimal functionality across the life span are achievable goals but require a lifestyle approach including a total diet that is energy balanced and nutrient dense.<sup>29</sup>

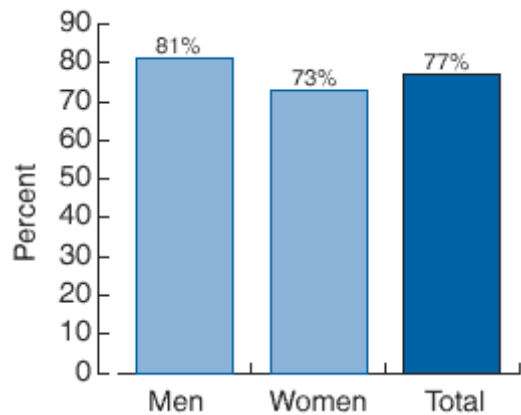
Energy balance refers to the balance between calories consumed through eating and drinking and those calories expended through physical activity and metabolic processes. Energy consumed must equal energy expended for a person to remain at the same body weight. Overweight and obesity will result from excess calorie intake and/or inadequate physical activity. Weight loss will occur when a calorie deficit exists, which can be achieved by eating less, being more physically active, or a combination of the two. Recommendations for calorie intake to maintain weight will vary depending on a person's age, sex, size, and level of physical activity.

Recommendations for energy intake include consideration of the physical activity level of each individual, and strong evidence indicates that the current level of calorie intake is too high, given physical activity levels in the United States.

### Unhealthy Eating Patterns

Although Americans are slowly adopting healthier diets, a large gap remains between recommended dietary patterns and what Americans actually eat. According to the CDC only about one-fourth of U.S. adults eat the recommended five or more servings of fruits and vegetables each day.

Poor eating habits are often established during childhood. More than 60% of young people eat too much fat, and less than 20% eat the recommended five or more servings of fruits and vegetables each day. The following chart developed by the CDC summarizes the percentage of adults who reported eating fewer than five servings of fruits and vegetables a day, by sex.



(Source: CDC, Behavioral Risk Factor Surveillance System)

### Calorie Consumption

In the U.S., a changing environment has broadened food options and eating habits. Grocery stores stock their shelves with a greater selection of products. Pre-packaged foods, fast food restaurants, and soft drinks are also more accessible. While such foods are fast and convenient they also tend to be high in fat, sugar, and calories. Choosing many foods from these areas may contribute to an excessive calorie intake. Some foods are marketed as healthy, low fat, or fat-free, but may contain more calories than the fat containing food they are designed to replace. It is important to read food labels for nutritional information and to eat in moderation.

Portion size has also increased. People may be eating more during a meal or snack because of larger portion sizes. This results in increased calorie consumption. If the body does not burn off the extra calories consumed from larger portions, fast food, or soft drinks, weight gain can occur.

### Portion Size: Then vs. Now

Over the past few decades, portion sizes of everything from muffins to sandwiches have grown considerably. Unfortunately, America's waistbands have reacted accordingly. In the 1970s, around 47

percent of Americans were overweight or obese; now 66 percent of us are. In addition, the number of just obese people has doubled, from 15 percent of our population to 30 percent.

While increased sizes haven't been the sole contributor to our obesity epidemic, large quantities of cheap food have distorted our perceptions of what a typical meal is supposed to look like. These portion comparisons, adapted from the National Heart, Lung, and Blood Institute's (NHLBI) Portion Distortion Quiz, give a visual representation of what sizes used to be compared to what they are today.<sup>30</sup>

When our parents ordered a coffee two decades ago, they weren't given as many size options—a standard cup of joe was eight ounces, the size of a small coffee cup. Nowadays, most of us feel like we don't get our money's worth unless the cup is at least twelve ounces; it's not unusual to see thirty-two ounce coffee cups, four times the size they used to be. When made into a mocha, the morning coffee has as many calories as a full meal.

Because portions are now so large, it's hard to understand what a "serving size" is supposed to be. Today's bagel counts for three servings of bread, but many of us would consider it one serving. Larger sizes at restaurants have also contributed to larger sizes when eating at home. A study comparing eating habits today with twenty years ago found that participants poured themselves about 20 percent more cornflakes and 30 percent more milk than twenty years ago.

### Bagel

20 Years Ago



3-inch diameter  
140 calories

Today



350 calories

According to a paper published in the *Journal of Public Health Policy*, portion sizes offered by fast food chains are two to five times larger than when first introduced. When McDonald's first started in 1955, its only hamburger weighed around 1.6 ounces; now, the largest hamburger patty weighs 8 ounces, an increase of 500 percent. And while a Big Mac used to be considered big, it's on the smaller side of many burger options. At Burger King, you can get the Triple Whopper; at Ruby Tuesday's there's the Colossal Burger; and Carl's Junior has the Western Bacon Six Dollar Burger.

### Cheeseburger

20 Years Ago



333 calories

Today



590 calories

While the 12-ounce can used to be the most common soda option, many stores now carry only the 20-ounce plastic bottle, which contains 2.5 servings of soda. When presented with these larger sizes, humans have a hard time regulating our intake or figuring out what a serving size is supposed to be. A 2004 study, published in *Appetite*, gave people potato chips packaged in bags that looked the same, but increased in size. As package size increased, so did consumption; subjects ate up to 37 percent more with the bigger bags. Furthermore, when they ate dinner later that day, they did not reduce their food consumption to compensate for increased snack calories—a recipe for weight gain.

It's not just food portions that have increased; plate, bowl, and cup sizes have as well. In the early 1990s, the standard size of a dinner plate increased from 10 to 12 inches; cup and bowl sizes also increased. Larger eating containers can influence how much people eat. A study published in the *American Journal of Preventive Medicine* found that when people were given larger bowls and spoons they served themselves larger portions of ice cream and tended to eat the whole portion.

Value pricing, which gets the consumer a lot more food or drink for just a little increase in price, makes sense from an economic standpoint, but is sabotage from a health standpoint. A study published in the *Journal of the American Medical Association* found that Americans consume around 10 percent more calories than they did in the 1970s. Given no change in physical activity, this equates to around 200 extra calories per day, or 20 pounds a year.

### Physical Activity and Calories Used

Our bodies need calories for daily functions such as breathing, digestion, and daily activities. Weight gain occurs when calories consumed exceed this need. Physical activity plays a key role in energy balance because it uses up calories consumed.

Physical activity is any bodily movement produced by skeletal muscles that result in an expenditure of energy with a range of activities such as:

- **Occupational work** - Carpentry, construction work, waiting tables, farming
- **Household chores** - Washing floors or windows, gardening or yard work
- **Leisure time activities** - Walking, skating, biking, swimming, playing Frisbee, dancing. Structured sports or exercise. Softball, tennis, football, aerobics

Regular physical activity is good for overall health. Physical activity decreases the risk for colon cancer, diabetes, and high blood pressure. It also helps to control weight, contributes to healthy bones, muscles, and joints; reduces falls among the elderly; and helps to relieve the pain of arthritis. Physical activity does not have to be strenuous to be beneficial. Moderate physical activity, such as 30 minutes of brisk walking five or more times a week, can have health benefits.

*The Dietary Guidelines for Americans 2010* reports that regular physical activity and physical fitness make important contributions to one's health, sense of well-being, and maintenance of a healthy body weight. **Physical activity is defined as any bodily movement produced by skeletal muscles resulting in energy.** In contrast, **physical fitness is a multi-component trait related to the ability to perform physical activity.** Maintenance of good physical fitness enables one to meet the physical demands of work and leisure comfortably. People with higher levels of physical fitness are also at lower risk of developing chronic disease. Conversely, a sedentary lifestyle increases risk for over weight and obesity and many chronic diseases, including coronary artery disease, hypertension, type 2 diabetes, osteoporosis, and certain types of cancer. Overall, mortality rates from all causes of death are lower in physically active people than in sedentary people. Also, physical activity can aid in managing mild to moderate depression and anxiety.

Despite all the benefits of being physically active, most Americans are sedentary. Technology has created many time and labor saving products. Some examples include cars, elevators, computers, dishwashers, and televisions. Cars are used to run short distance errands instead of people walking or riding a bicycle. As a result, these recent lifestyle changes have reduced the overall amount of energy expended in our daily lives.

The belief that physical activity is limited to exercise or sports, may keep people from being active. Another myth is that physical activity must be vigorous to achieve health benefits. Physical activity is any bodily movement that results in an expenditure of energy. Moderate-intensity activities such as household chores, gardening, and walking can also provide health benefits. Confidence in one's ability to be active will help people make choices to adopt a physically active lifestyle.

### Environment and Community Decisions

People may make decisions based on their environment or community. For example, a person may choose not to walk to the store or work because of a lack of sidewalks. Communities, homes, and workplaces each shape health decisions. With fewer options for physical activity and healthy eating, it becomes more difficult for people to make good choices. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* identified action steps to prevent and decrease obesity and overweight. The following table lists the steps related to possible environmental factors.

Location	Environmental Factors	Potential Impact on Energy Balance
Home	<ul style="list-style-type: none"> <li>Reduce time spent watching television and in other sedentary behaviors</li> <li>Build physical activity into regular routines</li> </ul>	<ul style="list-style-type: none"> <li>Increases daily and leisure time physical activity</li> <li>Increases calories used</li> </ul>
Schools	<ul style="list-style-type: none"> <li>Ensure that the school breakfast and lunch programs meet nutrition standards</li> <li>Provide food options that are low in fat, calories, and added sugars</li> <li>Provide all children, from prekindergarten through grade 12, with quality daily physical education</li> </ul>	<ul style="list-style-type: none"> <li>Decreases excessive calorie consumption</li> <li>Increases daily physical activity</li> </ul>
Work	<ul style="list-style-type: none"> <li>Create more opportunities for physical activity at work sites</li> </ul>	<ul style="list-style-type: none"> <li>Increases daily physical activity</li> <li>Increases calories used</li> </ul>
Community	<ul style="list-style-type: none"> <li>Promote healthier choices including at least 5 servings of fruits and vegetables a day, and reasonable portion sizes</li> <li>Encourage the food industry to provide reasonable food and beverage portion sizes</li> <li>Encourage food outlets to increase the availability of low-calorie, nutritious food items</li> </ul>	<ul style="list-style-type: none"> <li>Decreases in excessive calorie consumption</li> <li>Increases leisure time physical activity</li> </ul>

- |  |   |  |
|--|---|--|
|  | <ul style="list-style-type: none"><li>• Create opportunities for physical activity in communities</li></ul> |  |
|--|---|--|

## Diseases and Drugs

Some illnesses may lead to obesity or weight gain. These may include Cushing's disease, and polycystic ovary syndrome. Drugs such as steroids and some antidepressants may also cause weight gain.

Weight gain is among side effects listed in official information sheets for some of the most frequently prescribed drugs in the United States. They include drugs taken by tens of millions of people for diabetes, clinical depression, high blood pressure, gastric reflux and heartburn, and serious mental disorders like schizophrenia and bipolar disorder.

"Weight-gain drugs" is how Dr. George A. Bray, an obesity expert at Louisiana State University, described such medications. Dr. Bray has studied why obesity skyrocketed in the United States between 1970 and the 1990s. The number of obese people remained fairly steady - about 20 per cent of men and 15 per cent of women - until the mid-1970s. Then it took off on an upward spiral that by 2000 meant a 100 per cent increase in obesity in men and a 50 per cent rise in women.

## Section VII. Weight Loss and Nutrition Plans

### Weight Loss Profile

Health care providers generally agree that people who have a BMI of 30 or more can improve their health through weight loss. This is especially true for people who are severely obese.

Preventing additional weight gain is recommended if the individual has a BMI between 25 and 29.9, unless they have other risk factors. Obesity experts recommend they try to lose weight if the individual has two or more of the following:

- Family history of certain chronic diseases. If they have close relatives who have had heart disease or diabetes, you are more likely to develop these problems if you are obese.
- Pre-existing medical conditions. High blood pressure, high cholesterol levels, or high blood sugar levels are all warning signs of some obesity-associated diseases.
- "Apple" shape. If their weight is concentrated around the waist, they may have a higher risk of heart disease, diabetes, or cancer than people of the same weight who have a "pear" shape.

A weight loss of 5 to 10 percent can do much to improve health by lowering blood pressure and cholesterol levels. In addition, recent research has shown that a 5 to 7 percent weight loss can prevent type 2 diabetes in people at high risk for the disease.

### Weight Loss Benefits

Although obesity is associated with a number of sometimes serious medical conditions, for most people it is a treatable and manageable chronic condition. Weight loss is an essential part of managing and reducing obesity, as it provides many short and long-term health benefits. Physicians typically recommend that obese people lose approximately 10 percent of their weight to significantly decrease

obesity related health risks. According to recent research, the following health benefits are associated with weight loss:

- Losing five to 15 percent of total body weight can lower an individual's chances for developing heart disease or having a stroke
- Weight loss may improve blood pressure, triglyceride and cholesterol levels, and decrease inflammation throughout the body
- Weight loss of 10 to 15 pounds is likely to slow the development of, and halt the symptoms associated with, knee osteoarthritis
- Weight loss of five to 10 percent of total body weight can raise high-density lipoprotein cholesterol
- For every two pounds lost, low-density lipoprotein cholesterol levels are reduced by one percent

### **CDC Weight Loss Recommendations**

The method of treatment depends on the level of obesity, overall health condition, and motivation to lose weight. Treatment may include a combination of diet, exercise, behavior modification, and sometimes weight-loss drugs. In some cases of severe obesity, gastrointestinal surgery may be recommended. The CDC notes that weight control is a life-long effort.

The CDC recommends that the safest and most effective way to lose weight is to reduce calories and increase physical activity. The CDC also recommends that it is best to consult with the individual's personal physician or health care professional for advice to meet their needs.<sup>31</sup>

### **Academy of Nutrition and Dietetics (AND) Recommendations**

When it comes to healthy weight management, small steps add up. In fact, little changes in eating and activity level have a more positive impact on health than drastic ones. This is because they are more likely to stick with smaller changes over time. Extreme diets and intensive exercise regimens may work well at first, but they rarely last over the long term.<sup>32</sup>

Healthy weight is all about balancing food intake with physical activity. Most of us could improve our energy balance by shaving just 100 calories a day off our usual intake. It's not difficult:

- Lighten up your favorite coffee drink with non-fat milk and sugar-free syrup.
- Trim all fat from beef, pork and chicken. Remove the skin from poultry.
- Dish up slow-churned, reduced-calorie ice cream in place of regular.
- Enjoy raw vegetables with salsa or fat-free ranch dip instead of chips.

Additional recommendations from the AND that that will cut calories from total daily intake, possibly without even noticing include:

1. ***Downsize the Dishes.*** Use smaller plates and bowls to help you eat less. We tend to fill up the dish we're using and then eat it all. Our brains also think we are getting more when the same amount of food is placed in a smaller dish.

2. **Savor the Meals.** Eating slowly helps you consume only what your body needs to feel satisfied. Eating too quickly, in less than 20 to 30 minutes, leads to overeating and feeling uncomfortably full afterwards.
3. **Leave Some Food on Your Plate.** This is especially important if you grew up in the “clean plate club.” By leaving even a few bites, you can focus more on your internal signals of satisfaction and less on eating food just because it is there.
4. **Don't Eat Out of a Bag or Box.** When you eat out of a package, you are likely to keep eating until it's all gone – no matter how many servings the package actually contains. Pour one serving into a small bowl.
5. **Choose Your Glass Wisely.** Here's another place where our eyes play tricks on us. When glasses are short and wide, we tend to fill them with more fluid and to drink more. Use a slender glass for any beverage except water.
6. **Rethink Your Drinks.** High-calorie beverages like soft drinks, juice drinks, energy drinks, specialty coffees and alcohol add calories just like solid foods. Whenever possible, replace these drinks with plenty of water.

## Types of Diets

The *National Institute of Diabetes & Digestive & Kidney Diseases* lists the following types of diets to consider in developing a nutritional plan. It is important to choose an eating plan that the individual can live with. The plan should also teach how to select and prepare healthy foods, as well as how the person can maintain their new weight. Many people tend to regain lost weight. Eating a healthful and nutritious diet to maintain their new weight, combined with regular physical activity, helps to prevent weight regain.<sup>33</sup>

1. **Fixed-menu diet.** A fixed-menu diet provides a list of all the foods they will eat. This kind of diet can be easy to follow because the foods are selected for them. But, they may get very few different food choices, which may make the diet boring and hard to follow away from home. In addition, fixed-menu diets do not teach the food selection skills necessary for keeping weight off. If they start with a fixed-menu diet, they should switch eventually to a plan that helps them learn to make meal choices on their own, such as an exchange-type diet.
2. **Exchange-type diet.** An exchange-type diet is a meal plan with a set number of servings from each of several food groups. Within each group, foods are about equal in calories and can be interchanged as they wish. For example, the "starch" category could include one slice of bread or 1/2 cup of oatmeal; each is about equal in nutritional value and calories. If the meal plan calls for two starch choices at breakfast, they could choose to eat two slices of bread, or one slice of bread and 1/2 cup of oatmeal. With the exchange-type diet plans, they have more day-to-day variety and they can easily follow the diet away from home. The most important advantage is that exchange-type diet plans teach the food selection skills they need to keep the weight off.
3. **Prepackaged-meal diet.** These diets require them to buy prepackaged meals. Such meals may help them learn appropriate portion sizes. However, they can be costly. Before beginning this type of program, they should find out whether they will need to buy the meals and how much the meals cost. They should also find out whether the program will teach them how to select and prepare food, skills that are needed to sustain weight loss.
4. **Formula diet.** Formula diets are weight-loss plans that replace one or more meals with a liquid formula. Most formula diets are balanced diets containing a mix of protein, carbohydrate, and usually a small amount of fat. Formula diets are usually sold as liquid or a powder to be mixed with liquid. Although formula diets are easy to use and do promote short-term weight loss, most

people regain the weight as soon as they stop using the formula. In addition, formula diets do not teach them how to make healthy food choices, a necessary skill for keeping their weight off.

5. **Questionable diets.** Individuals should avoid any diet that suggests that they eat a certain nutrient, food, or combination of foods to promote easy weight loss. Some of these diets may work in the short term because they are low in calories. However, they are often not well balanced and may cause nutrient deficiencies. In addition, they do not teach eating habits that are important for long-term weight management.
6. **Flexible diets.** Some programs or books suggest monitoring fat only, calories only, or a combination of the two, with the individual making the choice of both the type and amount of food eaten. This flexible type of approach works well for many people, and teaches them how to control what they eat. One drawback of flexible diets is that some don't consider the total diet. For example, programs that monitor fat only often allow people to take in unlimited amounts of excess calories from sugars, and therefore don't lead to weight loss.

### Choosing a Weight Loss Program

Obesity is a chronic condition. Too often it is viewed as a temporary problem that can be treated for a few months with a strenuous diet. However, as most overweight people know, weight control must be considered a life-long effort. To be safe and effective, any weight-loss program must address the long-term approach or else the program is largely a waste of money and effort.

For many people who try to lose weight, it is difficult to lose more than a few pounds and few succeed in remaining at the reduced weight. The difficulty in losing weight and keeping it off leads many people to turn to a professional or commercial weight-loss program for help. These programs are quite popular and are widely advertised in newspapers and on television. What is the evidence that any of these programs are worthwhile, that they will help the individual lose weight and keep it off and that they will do it safely?

The *National Task Force on Prevention and Treatment of Obesity*, a subcommittee of the National Digestive Diseases Advisory Board, notes that almost any of the commercial weight-loss programs can work, but only if they motivate the person sufficiently to decrease the amount of calories they eat or increase the amount of calories they burn each day (or both). What elements of a weight-loss program should an intelligent consumer look for in judging its potential for safe and successful weight loss?

It is recommended that a responsible and safe weight-loss program should be able to document the five following features:

1. The diet should be safe. It should include all of the Recommended Daily Allowances (RDAs) for vitamins, minerals, and protein. The weight-loss diet should be low in calories (energy) only, not in essential foodstuffs.
2. The weight-loss program should be directed towards a slow, steady weight loss unless a doctor feels that the individual's health condition would benefit from more rapid weight loss. Expect to lose only about a pound a week after the first week or two. With many calorie-restricted diets there is an initial rapid weight loss during the first 1 to 2 weeks, but this loss is largely fluid. The initial rapid loss of fluid also is regained rapidly when the person returns to a normal-calorie diet. Thus, a reasonable goal of weight loss must be expected.

3. If they plan to lose more than 15 to 20 pounds, have any health problems, or take medication on a regular basis, they should be evaluated by their doctor before beginning any weight-loss program. A doctor can assess their general health and medical conditions that might be affected by dieting and weight loss. Also, a physician should be able to advise the individual on the need for weight loss, the appropriateness of the weight-loss program, and a sensible goal of weight loss. If they plan to use a very-low-calorie diet (a special liquid formula diet that replaces all food intake for 1 to 4 months), they definitely should be examined and monitored by a doctor.
4. The program should include plans for weight maintenance after the weight loss phase is over. It is of little benefit to lose a large amount of weight only to regain it. Weight maintenance is the most difficult part of controlling weight and is not consistently implemented in weight-loss programs. The program they select should include help in permanently changing the person's dietary habits and level of physical activity, to alter a lifestyle that may have contributed to weight gain in the past. The program should provide behavior modification help, including education in healthy eating habits and long-term plans to deal with weight problems. One of the most important factors in maintaining weight loss appears to be increasing daily physical activity, often by sensible increases in daily activity, as well as incorporating an individually tailored exercise program.
5. A commercial weight-loss program should provide a detailed statement of fees and costs of additional items such as dietary supplements.

### Good Nutrition Plans

In developing a meal plan, *the National Institutes of Health (NIH)* recommends that a patient's diet contains all the essential nutrients for good health. Using the Food Guide Pyramid and the Nutrition Facts Label that is found on most processed food products can help the person choose a healthful diet. The Pyramid shows the kinds and amounts of food that they need each day for good health. The Nutrition Facts Label will help the individual select foods that meet their daily nutritional needs. A healthful diet should include:

- Adequate vitamins and minerals. Eating a wide variety of foods from all the food groups on the Food Guide Pyramid will help them get the vitamins and minerals they need. If they eat less than 1,200 calories per day, they may benefit from taking a daily vitamin and mineral supplement.
- Adequate protein. The NIH recommends that the average woman 25 years of age and older should get 50 grams of protein each day, and the average man 25 years of age and older should get 63 grams of protein each day. Adequate protein is important because it prevents muscle tissue from breaking down and repairs all body tissues such as skin and teeth. To get adequate protein in the diet, make sure they eat 2-3 servings from the Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group on the Food Guide Pyramid every day. These foods are all good sources of protein.
- Adequate carbohydrates. At least 100 grams of carbohydrates per day are needed to prevent fatigue and dangerous fluid imbalances. To make sure they get enough carbohydrates, eat 6-11 servings from the Bread, Cereal, Rice, and Pasta Group on the Food Guide Pyramid every day.
- A daily fiber intake of 20 to 30 grams. Adequate fiber helps with proper bowel function. If you were to eat one cup of bran cereal, 1/2 cup of carrots, 1/2 cup of kidney beans, a medium-sized pear, and a medium-sized apple together in one day, you would get about 30 grams of fiber.
- No more than 30 percent of calories, on average, from fat per day, with less than 10 percent of calories from saturated fat (such as fat from meat, butter, and eggs). Limiting fat to these levels reduces your risk for heart disease and may help you lose weight. In addition, you should limit the amount of cholesterol in your diet. Cholesterol is a fat-like substance found in animal products such as meat and eggs. A diet should include no more than 300 milligrams of cholesterol

per day (one egg contains about 215 milligrams of cholesterol, and 3.5 ounces of cooked hamburger contain 100 milligrams of cholesterol).

- At least 8 to 10 glasses, 8 ounces each, of water or water-based beverages, per day. People need more water if they exercise a lot.

### **Fad Diets**

Quick-fix weight loss programs abound, making claims of easy, no-fail weight loss. Some are yo-yo diets where the individuals put the weight back on when they stop the diet, some severely restrict caloric intake, and still others proclaim the superiority of one particular food item or group.

Generally speaking, no "miracle diets" exist. Some dieting fads consider fluid loss equivalent to weight loss, but little actual fat is lost.

The *Academy of Nutrition and Dietetics* has previously recommended that when considering one or more popular diets or exercise plans, the individual owes it to themselves and their health to make sure the claims are valid. The questions that should be asked are: Does the diet plan:

- Promise a quick fix?
- Encourage or require you to stop eating certain foods, food groups or products?
- Rely on a single study as the basis for its recommendations?
- Contradict recommendations of reputable health organizations?
- Identify "good" and "bad" foods?
- Just sound too good to be true?

If the answer is "Yes" to any of these questions, the AND recommends that the person keep looking for a plan that is backed by solid science, lets the individual keep eating their favorite foods and allows for flexibility. The best source for help in making healthful changes to any diet is a dietetic professional with the training and expertise to help develop an eating plan that is right for the individual.

### **The "Mediterranean" Diet**

Another diet that has become popular is the Mediterranean diet. In 2011, the *American Heart Association* reported that there is no one Mediterranean diet. At least 16 countries border the Mediterranean Sea. Diets vary between these countries and also between regions within a country. Many differences in culture, ethnic background, religion, economy and agricultural production result in different diets.<sup>34</sup>

In January 1993, the Harvard University School of Public Health and Oldways Preservation & Exchange Trust (a Boston based educational organization) held a conference on the Mediterranean diet and its impact on public health. They reviewed data from a variety of epidemiological studies that described the dietary traditions of the people from the Mediterranean area (Crete, Greece, Southern Italy and Northern Africa) which may be responsible for the low rates of chronic disease. From this committee, the Mediterranean Food Guide Pyramid was developed.



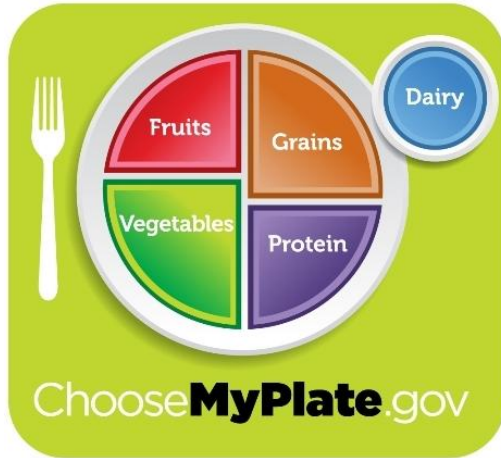
This pyramid, representing a healthy, traditional Mediterranean diet, is based on the dietary traditions of Crete, much of the rest of Greece and southern Italy circa 1960, structured in light of current nutrition research.

The design of the pyramid is not based solely on either the weight or the percentage of energy (calories) that foods account for in the diet, but on a blend of these that is meant to give relative proportions and a general sense of frequency of servings, as well as an indication of which foods to favor in a healthy Mediterranean-style diet. The pyramid describes a diet for most healthy adults. Whether changes would need to be made for children, women in the reproductive years, and other special population groups is an issue that needs further consideration.

The Mediterranean diet incorporates the basics of healthy eating, plus a splash of flavorful olive oil and perhaps a glass of good red wine, among other components characterizing the traditional cooking style of countries bordering the Mediterranean Sea.

Most healthy diets include fruits and vegetables, fish and whole grains, and limit unhealthy fats. While these fundamental parts of a healthy diet remain tried and true, subtle variations or differences in proportions of certain foods may make a difference in the risk of heart disease.

In June 2011, the U.S. Department of Agriculture unveiled its new food icon, MyPlate. The icon is a departure from the previous MyPyramid and serves as a quick, simple reminder to all Americans to eat healthfully. It is built off of the *2010 Dietary Guidelines for all Americans*. MyPlate offers a visual reminder to make healthy food choices when choosing a meal. MyPlate can help prioritize food choices by reminding the consumer to make half of the plate fruits and vegetables and shows the other important food groups for a well-balanced meal: whole grains, lean proteins, and low fat dairy.



### Benefits of the Mediterranean Diet

According to the Mayo Clinic, the Mediterranean eating style significantly reduces the risk of further heart disease in individuals who had already had a heart attack. Remarkably, this benefit was not related to any significant difference in cholesterol levels — rather other components of the diet seem to work in concert to protect the body.<sup>35</sup>

Key components of the Mediterranean diet include:

- Eating a generous amount of fruits and vegetables
- Consuming healthy fats such as olive oil and canola oil
- Eating small portions of nuts
- Drinking red wine, in moderation, for some
- Consuming very little red meat
- Eating fish on a regular basis

### Fruits, Vegetables and Grains

The traditional diet among some Mediterranean countries includes fruits, vegetables, pasta and rice. For example, residents of Greece eat very little red meat and average nine servings a day of antioxidant-rich fruits and vegetables. This eating pattern has been associated with a lower level of low-density lipoprotein (LDL) oxidation — a change in LDL cholesterol (the "bad" cholesterol) that makes it more likely to build up deposits in arteries.

Grains in the Mediterranean region typically contain very few unhealthy trans fats, and bread is an important part of the diet there. However, throughout the Mediterranean region, bread is eaten without butter or margarines, which contain saturated fat or trans fats.

### Healthy fats

The Mediterranean diet doesn't view all fat as bad. The focus of the diet isn't to limit total fat consumption, but to make wise choices about the types of fat.

The Mediterranean diet is similar to the American Heart Association's Step I diet, but it contains less cholesterol and has more fats that contain the beneficial linolenic acid (a type of omega-3 fatty acid). These fat sources include olive oil, canola oil and nuts, particularly walnuts. Fish — another source of

omega-3 fatty acids — is eaten on a regular basis in the Mediterranean diet. Studies have shown that omega-3 fatty acids lower triglycerides and may provide an anti-inflammatory effect helping to stabilize the blood vessel lining. The Mediterranean diet discourages saturated fats and hydrogenated oils (trans-fatty acids), both of which contribute to heart disease.

### Choosing oils and fats

*Olive oil.* All types of olive oil provide monounsaturated fat, but "extra-virgin" or "virgin" oil are the least processed forms, and so contain the highest levels of the protective plant compounds that provide antioxidant effects.

*Nuts.* Nuts are high in fat — up to 80 percent of their calories — but tree nuts, including walnuts, pecans, almonds and hazel nuts, are low in saturated fat. Walnuts also contain omega-3 fatty acids. Nuts are high in calories, so they should not be eaten in large amounts — generally no more than a handful a day.

### Wine

The Mayo Clinic reports that the health effects of alcohol have been debated for many years, and some doctors are reluctant to encourage alcohol consumption because of the health consequences of excessive drinking. However, light intake of alcohol is associated with a reduced risk of heart disease.

Red wine has an aspirin-like effect, reducing the blood's ability to clot, and also contains antioxidants. The Mediterranean diet typically includes some red wine, but this should be consumed only in moderation. This means no more than one 5-ounce glass of wine daily for women (or men over age 65), and no more than two 5-ounce glasses of wine daily for men under age 65. Any more than this increases the risk of health problems, including increased risk of certain types of cancer.

If the individual is unable to limit their alcohol intake, they have a personal or family history of alcohol abuse, or they have liver disease, they should refrain from drinking wine or any other alcohol. Red wine may also trigger migraines in some people.

### Putting it all together

- Eat natural peanut butter, rather than the kind with hydrogenated fat added.
- Use butter sparingly, and don't think that "low fat" or "cholesterol-free" on the label means a product is necessarily good for you. Many of these items are made with trans fats.
- Eat a variety of whole fruits and vegetables every day. Ultimately, strive for seven to 10 servings a day. Keep baby carrots, apples and bananas on hand for quick, satisfying snacks. Fruit salads are a wonderful way to eat a variety of healthy — and tasty — fruit.
- Use canola or olive oil in cooking. Try olive oil for salad dressing and as a healthy replacement for butter or margarine. After cooking pasta, add a touch of olive oil, some garlic and green onions for flavoring. Dip bread in flavored olive oil or lightly spread it on whole-grain bread for a tasty alternative to butter.
- Substitute fish and poultry for red meat. Avoid sausage, bacon and other high-fat meats.
- Limit higher fat dairy products such as whole or 2% milk, cheese and ice cream. Switch to skim milk, fat-free yogurt and low-fat cheese.
- Eat fish once or twice a week. Water-packed tuna, salmon, trout, mackerel and herring are healthy choices.. Avoid fried fish, unless it's sauteed in a small amount of olive oil.
- Keep walnuts, almonds, pecans and Brazil nuts on hand for a quick snack.

## Section VIII. CDC Weight Management Recommendations

### Weight Management Research to Practice Series

The Weight Management Research to Practice Series is designed to summarize the science on a weight management topic for health professionals. The series is developed by a collaborative multi-disciplinary workgroup consisting of DNPA behavioral scientists, epidemiologists, and communication specialists.<sup>36</sup>

#### Energy Density

Energy density is the relationship of calories to the weight of food (calories per gram). For the same number of calories, people can eat foods with low energy density in greater volume than foods with high energy density. This helps people feel full and yet consume fewer calories. Limitation of intake need not be based on calories.

CDC research supports the conclusion that replacing foods of high energy density (high calories per weight of food) with foods of lower energy density, such as fruits and vegetables, can be an important part of a weight management strategy.

Extensive research has been conducted on the relationships between calories, amount of food eaten and body weight. The association of this information with the role of fruits and vegetables in weight management can be summarized as follows:

- To lose weight a person must eat fewer calories than what he or she expends.
- People may not limit what they consume based on calories alone. Feeling full is one reason that people stop eating. Short-term studies indicate that the volume of food people eat at a meal is what makes them feel full and stop eating, rather than the calorie content of the food.
- At the same calorie level, foods with low energy density provide a greater volume of food, which may help people feel full at a meal while consuming fewer calories.
- Water and fiber increase the volume of foods and reduce energy density. In their natural state, fruits and vegetables have high water and fiber content and thus are low in calories and energy density.
- Fruits and vegetables are good substitutes for foods of high energy density.

Foods high in energy density have a large number of calories relative to their weight or volume (4 to 9 calories per gram of weight). Foods high in energy density include low-moisture foods like crackers and cookies or high-fat foods like butter and bacon.

Foods with medium energy density range from 1.5 to 4 calories per gram of weight. Examples include hard-boiled eggs, dried fruits, bagels, broiled lean sirloin steak, hummus, grape jelly, whole wheat bread, and part-skim mozzarella

Foods low in energy density have 0.7 to 1.5 calories per gram; those very low in energy density range from 0 to 0.6 calories per gram. Examples of foods in these two groups include tomatoes, cantaloupe, broth-based soups, fat free cottage cheese, fat free yogurt, strawberries, broccoli, and turkey breast roasted with no skin. Most fresh fruits and vegetables fall into one of these two categories.

Fat increases the energy density of foods, while water and fiber decrease energy density. Water has the greatest impact on energy density because it adds weight to food without increasing calories, thus decreasing energy density. Most fruits and vegetables are low in energy density because of their high water and fiber content and their low fat content.

The popular term "comfort food" succinctly provides one reason: people eat foods that make them feel good, that give them comfort. The CDC reports short-term studies (mostly conducted over several days with limited food options) indicate that feeling full is more likely to make a person stop eating than is the total caloric content of the food consumed. Many people believe that consuming high-calorie foods will make them feel full, provided contrary evidence. In their study 20 obese and nonobese participants ate as much as they wanted over 5 days from a diet that alternated from low-energy-density to high-energy-density foods. On the low-energy-density diet, the participants felt full with just over half the calories (1570 kcal) they needed to feel full on the high-energy-density diet (3000 kcal).

Different aspects of the environment may act as cues to consume more food than people realize. It is important that people understand how their surroundings can influence their calorie intake so they can make simply changes within their environments.

- Package size may influence consumption. For some reason, the larger the package, the more people consume from it without realizing it. To minimize this effect, encourage patients or clients to:
  - Divide up the contents of one large package into several smaller containers to help avoid over consumption.
  - Don't eat straight from the package. Instead, serve a reasonable portion in a bowl or container.
- Out of sight, out of mind. People tend to consume more when they have easy access to food. Advise patients or clients to make their home a "portion friendly zone."
- Get rid of the candy dish, or better yet, replace it with a fruit bowl.
- Place especially tempting foods, like cookies, chips, or ice cream, out of immediate eyesight, like on a high shelf or at the back of the freezer. Move the healthy fare to the front at eye level.
- When buying in bulk, store the excess in a place that's not convenient to get to, such as in a garage or basement.

The CDC recommends that practitioners who advise their patients or clients to substitute fruits and vegetables for foods of high energy density as part of a weight management strategy might consider including the information.

To lose weight, people must eat fewer calories than they expend. Adding fruits and vegetables to an existing eating plan that supplies sufficient calories or has more calories than needed can cause the person to gain weight. Fruits and vegetables should be substituted for foods high in energy density.

- To lower the energy density of foods, such as soups, sandwiches, and casseroles, substitute fruits and vegetables for some of the ingredients that have higher energy density, such as high-fat meat, cheese, and pasta. For example, vegetables such as carrots, broccoli, mushrooms, and celery can be added to a chicken noodle casserole, thereby lowering the energy density of a fixed amount (e.g., 1 cup) of the altered dish in relation to 1 cup of the original casserole. Lettuce, tomatoes, onions, and other sliced vegetables can be added to sandwiches while decreasing the amount of high-fat meat or cheese. Many different vegetables can be added to pasta sauce.

- The way fruits and vegetables are prepared and consumed makes a big difference in their effect on weight. Techniques such as breading and frying, adding high-fat dressings and sauces, and as part of a high-calorie dessert greatly increase the calorie and fat content of the dish even if it includes fruits and vegetables.
- Whole fruit is lower in energy density and more satiating than fruit juices. Pulp-free fruit juices lose their fiber content in the process of juicing. For weight control purposes, the whole fruit contains added fiber that helps make one feel full.
- Are canned and frozen fruits and vegetables just as good as fresh? Frozen and canned fruits and vegetables are good options when fresh produce is not available. Consumers should be careful, however, to choose those without added sugar, syrup, cream sauces, or other ingredients that will increase calories, thereby raising the energy density. Additionally, consumers should be aware that frozen and canned fruits and vegetables sometimes contain added salt, which is not in fresh produce.

### **Portion Size**

Portion sizes, have increased significantly over the past 2 decades. Restaurant meals of all kinds have gotten larger with an emphasis on getting more food for the money. However, the rise of portion sizes is not limited to restaurants alone. Bags of snack foods or soft drinks in vending machines and the grocery store are offered in larger and larger sizes that contain multiple servings while a 1-ounce bag of snack food or an 8-ounce soft drink, which are the recommended single serving sizes, are very difficult to find. Americans are surrounded by larger portion sizes at relatively low prices, appealing to the consumer's economic sensibilities.

Eating in restaurants offers many opportunities to encounter large portion sizes. The CDC reports the number of eating establishments in the United States increased by 75 percent between 1977 and 1991. While Americans have many choices in restaurants, the food (especially from fast food restaurants) is often very cheap and available in large quantities. The frequency of eating out, particularly at fast-food restaurants, is associated with an increase in energy and fat intake and with a higher body mass index.

Even those who do not frequent restaurants are confronted with large portion sizes of prepackaged or convenience foods. The current weight of ready-to-eat foods was compared with past weights using data from manufacturers. Portion sizes of these foods began increasing in the 1970s and have continued to do so through today to the point where most exceed federal serving size standards.

Even though there is information available about appropriate serving sizes, people generally do not correctly assess the amount they are eating. Often people are unable to tell the differences in portion size when offered different sizes on different days. Although the ability to accurately determine appropriate amounts of food to eat is important, there is little research to suggest which methods would be most successful in helping people estimate appropriate serving sizes. The CDC states that characteristics of people (gender, age, body weight, level of education) cause differences in the way they estimate portion size, and error in estimating becomes greater as portions increase. In addition, physiologic satiety cues are readily overridden by food cues, such as large portions, easy access, and the sensory attractiveness of food.

In addition to food cues, other factors add to the effect of portion size, causing people to eat more than they need, particularly in a restaurant setting. Eating out can affect energy intake not only because of portion size, but also by convivial atmosphere, tendency to choose foods with high energy density, and alcohol consumption.

The research suggests that people inadvertently consume more calories when faced with larger portions. The CDC recommends that practitioners counsel their patients and clients with the following suggestions:

- Portion control when eating out. Many restaurants serve more food than is appropriate for one person. Encourage your patients or clients to control the amount of food that ends up on their plate by splitting an entrée with a friend, or asking the waiter to put half of the meal in a "doggie bag" before it's even brought to the table.
- Portion control when eating in. To minimize the temptation of second and third helpings when eating at home, people should serve reasonable portions on individual plates, instead of putting the serving dishes on the table. Keeping the excess food out of reach may discourage inadvertent overeating.
- Portion control in front of the TV. When eating or snacking in front of the TV, encourage people to put a reasonable amount of food into a bowl or container, and leave the rest of the package in the kitchen. It's easy to overeat when a person's attention is focused on something else.
- Controlling hunger between meals. Encourage patients or clients to eat a snack, like a piece of fruit or small salad, if they feel hungry between meals to avoid overeating during the meal.

## Section IX. Bariatric Surgery

### Surgery to Control Obesity

Severe obesity is a chronic condition that is difficult to treat through diet and exercise alone. Gastrointestinal surgery is the best option for people who are severely obese and cannot lose weight by traditional means or who suffer from serious obesity-related health problems. The surgery promotes weight loss by restricting food intake and, in some operations, interrupting the digestive process. As in other treatments for obesity, the best results are achieved with healthy eating behaviors and regular physical activity.<sup>37</sup>

The concept of gastrointestinal surgery to control obesity grew out of results of operations for cancer or severe ulcers that removed large portions of the stomach or small intestine. Because patients undergoing these procedures tended to lose weight after surgery, some physicians began to use such operations to treat severe obesity.

Gastrointestinal surgery for obesity, also called **bariatric surgery**, alters the digestive process. The operations promote weight loss by closing off parts of the stomach to make it smaller. Operations that only reduce stomach size are known as "restrictive operations" because they restrict the amount of food the stomach can hold.

Some operations combine stomach restriction with a partial bypass of the small intestine. These procedures create a direct connection from the stomach to the lower segment of the small intestine, literally bypassing portions of the digestive tract that absorb calories and nutrients. These are known as malabsorptive operations.

### Patient Selection

The National Institute of Diabetes and Digestive and Kidney Disease recommends that the option of surgical treatment should be offered to patients who are morbidly obese, well informed, motivated, and acceptable operative risks. The patient should be able to participate in treatment and long term follow-up. Some patients with manifest psychopathology that jeopardizes an informed consent and cooperation with long term follow up may need to be excluded. A decision to elect surgical treatment requires an assessment of the risk and benefit in each case. Increased abdominal fat or “central obesity” (apple shaped as opposed to pear shaped) is an important risk factor associated with the major complications of obesity.

Functional impairments associated with obesity are also important deciding factors for surgical treatment. An important conclusion of the *National Institutes Consensus Development Conference Statement* on the surgical treatment of obesity was that “patients judged by experienced clinicians to have a low probability of success with non-surgical measures, as demonstrated, for example, by failure in established weight control programs or reluctance by the patient to enter such a program, may be considered for surgical treatment”.

The National Institute of Health reports that patients whose BMI exceeds 40 are potential candidates for surgery if they strongly desire substantial weight loss, because obesity severely impairs the quality of their lives. They must clearly and realistically understand how their lives may change after operation.

In certain circumstances, less severely obese patients (with BMI’s between 35 and 40) also may be considered for surgery. Included in this category are patients with high risk co-morbid conditions such as life threatening cardiopulmonary problems (e.g. severe sleep apnea, Pickwickian syndrome, obesity related cardiomyopathy, or severe diabetes mellitus). Other possible indications for patients with BMI’s between 35 and 40 include obesity-induced physical problems that are interfering with lifestyle (e.g. musculoskeletal or neurologic or body size problems precluding or severely interfering with employment, family function and ambulation).

Some candidates for surgical treatment of severe obesity have such impaired health that they must be hospitalized pre-operatively and undergo treatment to improve their operative risk.<sup>38</sup>

According to the former American Society for Bariatric Surgery (now the American Society for Metabolic and Bariatric Surgery, or ASMBS), the number of procedures increased from about 16,000 in the early 1990s to more than 103,000 in 2003. The ASMBS estimates that 220,000 people in the United States had bariatric surgery in 2008.

### **Bariatric Surgery for Weight Loss**

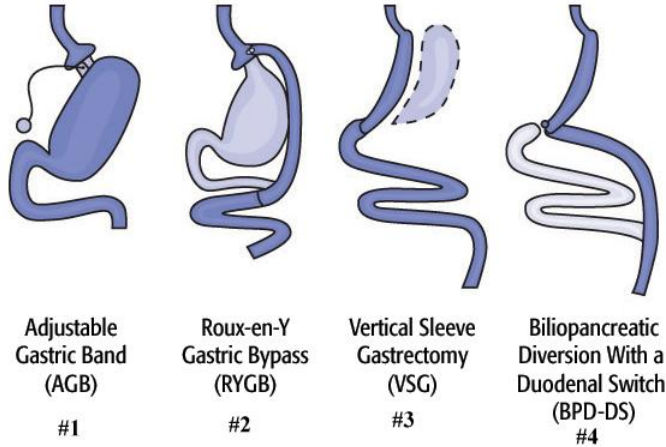
Normally, as food moves along the digestive tract, digestive juices and enzymes digest and absorb calories and nutrients. After we chew and swallow food, it moves down the esophagus to the stomach, where a strong acid continues the digestive process. The stomach can hold about 3 pints of food at one time. When the stomach contents move to the duodenum, the first segment of the small intestine, bile and pancreatic juice speed up digestion. Most of the iron and calcium in the food we eat is absorbed in the duodenum. The jejunum and ileum, the remaining two segments of the nearly 20 feet of small intestine, complete the absorption of almost all calories and nutrients. The food particles that cannot be digested in the small intestine are stored in the large intestine until eliminated.

Bariatric surgery produces weight loss by restricting food intake and, in some cases, interfering with nutrition through malabsorption. Patients who undergo bariatric surgery must also commit to a lifetime of healthy eating and regular physical activity. These healthy habits help ensure that the weight loss from surgery is successfully maintained.

## Surgical Options

There are four types of operations that are commonly offered in the United States: #1- Adjustable gastric band (AGB), #2 - Roux-en-Y gastric bypass (RYGB), #3- Biliopancreatic diversion with a duodenal switch (BPD-DS), and #4 - Vertical sleeve gastrectomy (VSG). Each has its own benefits and risks.

### Bariatric Surgery Options



### 1. Adjustable Gastric Band

AGB works primarily by decreasing food intake. Food intake is limited by placing a small bracelet-like band around the top of the stomach to produce a small pouch about the size of a thumb. The outlet size is controlled by a circular balloon inside the band that can be inflated or deflated with saline solution to meet the needs of the patient.

### 2. Roux-en-Y Gastric Bypass

RYGB works by restricting food intake *and* by decreasing the absorption of food. Food intake is limited by a small pouch that is similar in size to the adjustable gastric band. In addition, absorption of food in the digestive tract is reduced by excluding most of the stomach, duodenum, and upper intestine from contact with food by routing food directly from the pouch into the small intestine.

### 3. Biliopancreatic Diversion With a Duodenal Switch

BPD-DS, usually referred to as a “duodenal switch,” is a complex bariatric operation that principally includes 1) removing a large portion of the stomach to promote smaller meal sizes, 2) re-routing of food away from much of the small intestine to partially prevent absorption of food, and 3) re-routing of bile and other digestive juices which impair digestion.

In removing a large portion of the stomach, a more tubular “gastric sleeve” (also known as a vertical sleeve gastrectomy, or VSG) is created.

The smaller stomach sleeve remains connected to a very short segment of the duodenum, which is then directly connected to a lower part of the small intestine. This operation leaves a small portion of the duodenum available for food and the absorption of some vitamins and minerals. However, food that is eaten by the patient bypasses the majority of the duodenum. The distance between the stomach

and colon is made much shorter after this operation, thus promoting malabsorption. BPD-DS produces significant weight loss. However, there is greater risk of long-term complications because of decreased absorption of food, vitamins, and minerals.

#### **4. Vertical Sleeve Gastrectomy**

VSG historically had been performed only as the first stage of BPD-DS (see above) in patients who may be at high risk for complications from more extensive types of surgery. These patients' high risk levels are due to body weight or medical conditions. However, more recent information indicates that some patients who undergo a VSG can actually lose significant weight with VSG alone and avoid a second procedure. It is not yet known how many patients who undergo VSG alone will need a second stage procedure. A VSG operation restricts food intake and does not lead to decreased absorption of food. However, most of the stomach is removed, which may decrease production of a hormone called ghrelin. A decreased amount of ghrelin may reduce hunger more than other purely restrictive operations, such as gastric band.

#### **Surgery Complications**

Early complications of these operations can include bleeding, infection, leaks from the site where the intestines are sewn together, and blood clots in the legs that can progress to the lungs and heart.

Examples of complications that may occur later include malnutrition, especially in patients who do not take their prescribed vitamins and minerals. In some cases, if the malnutrition is not addressed promptly, diseases such as pellagra, beri beri, and kwashiorkor may occur along with permanent damage to the nervous system. Other late complications include strictures (narrowing of the sites where the intestine is joined) and hernias.

Two kinds of hernias may occur after a patient has bariatric surgery. An incisional hernia is a weakness that sticks out from the abdominal wall's fascia (connective tissue) and may cause a blockage in the bowel. An internal hernia occurs when the small bowel is displaced into pockets in the lining of the abdomen. These pockets are created when the intestines are sewn together. Internal hernias are considered more dangerous than incisional ones and need prompt attention to avoid serious complications.

Research indicates that about 10 percent of patients who undergo bariatric surgery may have unsatisfactory weight loss or regain much of the weight that they lost. Some behaviors such as frequent snacking on high-calorie foods or lack of exercise can contribute to inadequate weight loss. Technical problems that may occur with the operation, like a stretched pouch or separated stitches, may also contribute to inadequate weight loss.

Some patients may also require emotional support to help them through the postoperative changes in body image and personal relationships.

#### **Open and Laparoscopic Bariatric Surgery**

Bariatric surgery may be performed through "open" approaches, which make abdominal incisions in the traditional manner, or by laparoscopy. With the laparoscopic approach, sophisticated instruments are inserted through 1/2-inch incisions and guided by a small camera that sends images to a television monitor. Most bariatric surgery today is performed laparoscopically because it requires a smaller cut, creates less tissue damage, leads to earlier discharges from the hospital, and has fewer complications, especially postoperative hernias.

However, not all patients are suitable for laparoscopy. Patients who are extremely obese, who have had previous abdominal surgery, or have complicating medical problems may require the open approach.

### **Bariatric Surgery for Adolescents**

Rates of obesity among youth are on the rise. Bariatric surgery is sometimes considered as a treatment option for adolescents who have developed extreme obesity. Although it is becoming clear that adolescents can lose weight following bariatric surgery, there are numerous unanswered questions about the long-term effects of these operations on adolescents' developing bodies and minds.

Experts in pediatric obesity and bariatric surgery recommend that surgical treatment only be considered when adolescents have tried for at least 6 months to lose weight and have not been successful. Candidates should be extremely obese (typically with BMI greater than 40), have reached their adult height (usually 13 or older for girls and 15 or older for boys), **and** have serious weight-related health problems, such as type 2 diabetes, sleep apnea, heart disease, or significant functional or psychosocial impairment. In addition, potential patients and their parents should be evaluated to see how emotionally prepared they are for the operation and the lifestyle changes they will need to make. Patients should be referred to specialized adolescent bariatric surgery centers with a team of experts qualified to meet their unique needs.

A growing body of research suggests that both weight and health of extremely obese youth can be favorably changed by bariatric surgery. Over the years, gastric bypass surgery has been the predominant operation used to treat adolescent extreme obesity. An estimated 2,700 adolescent bariatric surgeries were performed between 1996 and 2003 (*Arch Pediatr Adolesc Med.* 2007;161:217–221). A review of short-term data from the national inpatient sample (the largest inpatient database in the United States) suggests that these operations are at least as safe for adolescents as adults. As yet, the adjustable gastric band has not been approved for use in the United States for people younger than age 18, but favorable weight-loss outcomes following adjustable gastric banding for adolescents have been reported internationally.

### **Medical Costs**

Bariatric procedures, on average, cost from \$20,000 to \$25,000. Medical insurance coverage varies by state and insurance provider. In 2004, the U.S. Department of Health and Human Services reduced barriers to obtaining Medicare coverage for obesity treatments. Bariatric surgery may be covered if it is medically appropriate and if it is performed to correct an obesity-related illness.

### **Selecting Bariatric Surgery**

Bariatric surgery may be the next step for people who remain severely obese after trying nonsurgical approaches, especially if they have an obesity-related disease.

Bariatric surgery may be the next step for people who remain severely obese after trying nonsurgical approaches, especially if they have an obesity-related disease. Surgery to produce weight loss is a serious undertaking. Anyone thinking about undergoing this type of operation should understand what it involves. Answers to the following questions may help the person decide whether weight-loss surgery is right for them.

Are they:

- Unlikely to lose weight or keep it off over the long term with nonsurgical measures?
- Well informed about the surgical procedure and the effects of treatment?

- Determined to lose weight and improve your health?
- Aware of how your life may change after the operation (adjustment to the side effects of the operation, including the need to chew food well and inability to eat large meals)?
- Aware of the potential risk for serious complications, dietary restrictions, and occasional failures?
- Committed to lifelong healthy eating and physical activity habits, medical follow-up, and vitamin/mineral supplementation?

There are no guarantees for any method, including surgery, to produce and maintain weight loss. Success is possible only with maximum cooperation and commitment to behavioral change and medical follow-up—and this cooperation and commitment must be carried out for the rest of the person’s life.

### **Childbearing**

The American Society for Metabolic and Bariatric Surgery Guidelines recommends that women of childbearing age who elect to have weight reduction operations must use secure birth control methods during the period of rapid weight loss. They should be informed that maternal malnutrition may impair normal fetal development. This is particularly important to those who may have previously failed to conceive, since fertility may increase following weight loss. Indeed, failure to conceive in the face of morbid obesity is yet another positive indication for weight loss surgery. Women who become pregnant after these surgical procedures need specific attention from the surgical care team. However, there are several reports in the literature of pregnancy outcomes following gastric bypass without evidence of fetal impairment.

### **Preoperative Psychological Testing and Patient Assessment**

The *National Institute of Health* reports that there are two reasons for pre-operative psychological testing prior to bariatric surgery. One is to identify those with significant psychopathology in whom surgery would be contra-indicated, the other to pre-select those in whom the surgery is likely to be a success.

Studies of severely overweight persons conducted before their undergoing anti-obesity surgery show:

- There is no single personality type that characterizes the severely obese
- The population does not report greater levels of psychopathology than do average-weight control subjects
- Complications specific to severe obesity include body image disparagement and binge eating

Studies conducted after surgical treatment and weight loss show:

- Self esteem and positive emotions increase
- Body image disparagement decreases;
- Marital satisfaction increases, but only if a measure of satisfaction existed before surgery
- Eating behavior is improved dramatically. The results of surgical treatment are superior to those of dietary treatment alone

Practitioners should be aware that severely obese persons are subjected to prejudice and discrimination and should be treated with an extra measure of compassion and concern to help alleviate their feelings of rejection and shame.

When a patient is considered for bariatric surgery, *The American Society for Metabolic & Bariatric Surgery* recommends that their general health, with the idea of identifying those for whom surgery is too

risky and those who have conditions that need to be treated, stabilized, or managed for surgery to be worth its risk is ascertained.

Patients are typically faced with initial dietary restrictions, permanent changes in eating and dietary habits, altered body sensations and experiences, shifting body image and self care behaviors, new cognitions and feelings, and an emerging and different lifestyle. In addition, they may realize sometimes unexpected and significant changes in relationships that may result in marked stress. Bariatric surgery is a highly effective procedure that not only reconfigures and/or restricts a patient's stomach, but significantly affects their psyche as well. Generally patients will need a secure identity, sound psychological resources, resiliency, effective coping strategies, and willingness to access meaningful support from others.

### **Physical Activity and Inactivity**

Physical activity and fitness are related to improved health and quality of life, while physical inactivity is related to increased risk for cardiovascular disease and has been implicated in the development of obesity. Some candidates report having a moderate activity program in place that is appropriate to their body size, shape, and physical limitations. Others may describe an almost entirely sedentary lifestyle. All candidates should understand the relationship between physical activity and lifelong management of morbid obesity and optimal states of physical and psychological health. Some patients seem more amenable to incorporating body movement into their daily lives when: it is fun, and/or it is done for the purpose of disease management (to improve cardiovascular fitness), it is used as a stress releaser, it improves sleep, or it becomes a social outlet, and not engaged in simply for "weight loss" or as an antidote to eating. By operating from this mindset, patients may be more likely to sustain their activity program.

Whether or not a candidate is currently engaging in appropriate activity, it is important to assess his/her plan (if any) to incorporate meaningful exercise post surgery. How reasonable is their plan? What will be necessary for them to maintain physical activity after surgery? Work schedules and family commitments may make it difficult to initiate a consistent plan. Some communities are more exercise-friendly than others and it is important to ascertain what barriers to sustained post surgery exercise the patient's home environment and neighborhood community may pose.

### **Coping Skills and Emotional Modulation**

Some bariatric surgery patients are especially susceptible to weight regain when faced with adversity that distracts them from attending to self-management guidelines. Clinically, maladaptive eating behavior (whether stress eating, emotional eating, binge eating or night eating) is associated frequently with poor stress management and with an inability to effectively self-modulate intense emotions or internal sensations of arousal (whether positive or negative). A careful assessment of the candidate's coping strategies will reveal whether coping skills training is indicated. Such an assessment includes asking about coping both with negative stressors (uncertainty, frustration, deadlines, depressed mood, anger, anxiety or tension, or boredom) and with positive stressors (a raise, a promotion, a party, or vacation). A person who engages in one maladaptive coping behavior (e.g., stress eating) is at higher risk for ineffectual life stressor resolution and/or substituting another maladaptive coping behavior (e.g., compulsive shopping or alcohol abuse) if he/she has not learned more adaptive options for managing the stressor.

The assessment may also explore how a candidate copes with the emotional and physical strain imposed on him/her by the disease of morbid obesity. For example:

- If the candidate has experienced social discrimination or ridicule associated with morbid obesity, at what intensity has this occurred and for how long? What effect has it had on the candidate and how has he/she handled it?
- To what extent is the candidate demoralized over “failed” non-surgical attempts to manage morbid obesity? How does he/she handle this demoralization?
- Does the candidate equate morbid obesity to a “personal defect” or a “behavioral problem”? If so, does he/she compensate for this by over-extending oneself at home, at work, or with friends? Does the candidate have a tendency to take care of other people at the expense of his/her own health and well being? Is he/she a “caretaker” and puts the needs of others above his or her needs? Is the candidate able to ask for what he/she needs?
- Finally, to what extent does the candidate have control over his/her environment? Feeling helpless (or without control over one’s environment) increases the risk for depression and for treatment non-adherence.

### **Current Life Situation**

A chaotic lifestyle is negatively related to eating balanced meals and to following a regular program of physical activity, and that a chaotic home life is known anecdotally to interfere with postoperative adjustment. The assessment needs to clarify the stability of the candidate’s current living situation – with respect to home, work and/or school, immediate, extended family, and close friends.

### **Motivation and Expectations**

Patient motivation and reasons for pursuing surgery are critical variables to assess. The evaluation should query what is motivating the candidate to pursue a bariatric surgical procedure at this time. Most patients will state the obvious medical benefits. It is also important to have them discuss their more private motivations, if any, for having weight loss surgery. What expectations does the patient have concerning psychosocial, emotional and lifestyle challenges and adjustments post surgery, both short and long-term? Are they committed to actively and permanently following post-surgical guidelines for health and success? Patients may have unrealistic expectations concerning the effect of weight loss on their physical condition, as well as on their social and professional lives. They may believe that everything in their life would be great “if only they’d lose weight.” Unrealistic expectations may lead to the perception of failure when those expectations cannot be met. This failure may then become linked to “throwing in the towel” and to giving in to old habits and unhealthy choices.

## **Section X. Guide to Behavioral Change**

### **Behavioral Changes to Maintain and Reduce Weight**

Over the past few years it has become clear that weight is an important health issue. Being overweight is a risk factor for health problems such as diabetes, high blood pressure, high cholesterol and triglycerides, arthritis, gallbladder disease, gynecologic problems, some cancers, and even lung problems. Some people who need to lose weight for their health don’t recognize it, while others who don’t need to lose weight want to get thinner for cosmetic reasons. However, in some ways weight is different from, for example, cholesterol level or blood pressure, because you can’t see these by looking at someone.

Weight can affect a person's self-esteem. Excess weight is highly visible and evokes some powerful reactions, however unfairly, from other people and from the people who possess the excess weight. There are however, behavioral changes that can make a difference in the battle against obesity and overweight.<sup>39</sup>

### **Set the Right Goals**

Setting the right goals is an important first step. Most people trying to lose weight focus on just that one goal: weight loss. However, the most productive areas to focus on are the dietary and exercise changes that will lead to that long-term weight change. Successful weight managers are those who select two or three goals at a time that they are willing to take on, that meet the following criteria of effective goals:

Effective goals are 1) specific; 2) attainable; and 3) forgiving (less than perfect). "Exercise more" is a commendable ideal, but it's not specific. "Walk five miles everyday" is specific and measurable, but is it attainable if you're just starting out? "Walk 30 minutes every day" is more attainable, but what happens if you're held up at work one day and there's a thunderstorm during your walking time another day? "Walk 30 minutes, five days each week" is specific, attainable, and forgiving. In short, a great goal!

### **Diet Readiness Test**

The following test can be used by an obese patient to determine their diet readiness.

#### Am I Ready to Make a Change?

##### Score

1 point- not at all

2 points- more so than ever

\_\_\_\_\_ Compared to dieting attempts in the past, how motivated are you to stick with it this time?

\_\_\_\_\_ How determined are you to stick with it until you reach your weight or fitness goals?

\_\_\_\_\_ Long-term weight management requires effort. How willing are you to take the time and make the effort to reach your goals?

\_\_\_\_\_ Weight loss should be gradual, no more than 2 pounds per week to ensure permanent fat loss. How realistic are your plans to lose weight in a given amount of time?

\_\_\_\_\_ How much support for your weight management efforts can you expect from family, friends, co-workers and other people in your social support network?

\_\_\_\_\_ Learning weight management skills is like learning new any new skill: it requires time. How much time do you have to make permanent changes in your life?

#### Total score Interpretation

6-16 reflects low commitment, high likelihood to fail in losing weight or keeping it off. Wait and try another time.

17-23 moderate commitment to weight management, but still need to work on motivation.

24 or > high motivation. This may be best time to begin losing weight.

(Source: Somer, E., Nutrition for women: The complete guide. New York: H. Holt & Co, Inc.)

### **Behavioral Technique**

Shaping is a behavioral technique in which you select a series of short-term goals that get closer and closer to the ultimate goal (e. g., an initial reduction of fat intake from 40% of calories to 35% of calories, and later to 30%). It is based on the concept that "nothing succeeds like success." Shaping uses two

important behavioral principles: 1) consecutive goals that move you ahead in small steps are the best way to reach a distant point; and 2) consecutive rewards keep the overall effort invigorated.

### **Success and Rewards**

Rewards that they control can be used to encourage attainment of behavioral goals, especially those that have been difficult to reach. An effective reward is something that is desirable, timely, and contingent on meeting their goal. The rewards that one administers may be tangible (e. g., a movie or music CD or a payment toward buying a more costly item) or intangible (e. g., an afternoon off from work or just an hour of quiet time away from family). Numerous small rewards, delivered for meeting smaller goals, are more effective than bigger rewards, requiring a long, difficult effort.

### **Self-monitoring**

Self-monitoring refers to observing and recording some aspect of behavior, such as calorie intake, servings of fruits and vegetables, exercise sessions, medication usage, etc., or an outcome of these behaviors, such as weight. Self-monitoring of a behavior can be used at times when the person is not sure how they're doing, and at times when they want the behavior to improve. Self-monitoring of a behavior usually changes the behavior in the desired direction and can produce "real-time" records for review. For example, keeping a record of all exercise can let the person and their provider know how they are doing, and when the record shows that their exercise is increasing. This will act as encouragement to help the person keep it up. Some patients find that specific self-monitoring forms make it easier, while others prefer to use their own recording system.

While they may or may not wish to weigh themselves frequently while losing weight, regular monitoring of their weight will be essential to help maintain a lower weight. When keeping a record of ones weight, a graph may be more informative than a list of the weights. When weighing yourself and keeping a weight graph or table, however, remember that one day's diet and exercise patterns won't have a measurable effect on the fat weight the next day. Today's weight is not a true measure of how well you followed your program yesterday, because your body's water weight will change much more from day to day than will the fat weight, and water changes are often the result of things that have nothing to do with weight-management efforts.

### **Avoid Cues for Unplanned Eating**

Stimulus (cue) control involves learning what social or environmental cues seem to encourage undesired eating, and then changing those cues. For example, the patient may learn from reflection or from self-monitoring records that they are more likely to overeat while watching television, or whenever treats are on display by the office coffee pot, or when around a certain friend. They might then try to sever the association of eating with the cue (don't eat while watching television), avoid or eliminate the cue (leave coffee room immediately after pouring coffee), or change the circumstances surrounding the cue (plan to meet with friend in non-food settings). In general, visible and accessible food items are often cues for unplanned eating.

### **Feel Fuller**

Changing the way we go about eating can make it easier to eat less without feeling deprived. It takes 15 or more minutes for your brain to get the message you've been fed. Some suggested methods for eat less but feeling fuller include:

- Slowing the rate of eating can allow satiety signals to begin to develop by the end of the meal.

- Eating lots of vegetables can also make one feel fuller.
- Another trick is to use smaller plates so that moderate portions do not appear meager.
- Changing eating schedules, or setting one, can be helpful, especially if the person tends to skip, or delay meals and overeat later.

The claim that drinking water before a meal will reduce hunger was studied at Pennsylvania State University. Their findings don't support that idea. Those people who drank extra water (or other beverages) before and during meals were found to eat just as much as those who drank less. One exception concerns certain beverages such as vegetable juice and milk, which act more as food than liquid in the body. In separate studies, the researchers found drinking such beverages before meals reduced total calories consumed.<sup>40</sup>

### **Exercise & Dieting Limitations**

It takes an enormous amount of energy to burn a meaningful number of calories. A woman who walks 30 minutes a day, six days a week will burn only 850 calories. At this rate it would take her more than four weeks to expend the 3,500 calories needed to lose one pound.

In a study presented at the *American College of Sports*, over-weight college students were put on a treadmill for 45 minutes, five days a week, for 16 months. At the end of the study, women participants had gained more than a pound. Men lost about ten pounds but they had to burn the caloric equivalent of 60 pounds to do it.

People who combine diet with exercise will lose weight but that is because they are dieting. At best, exercise will help them lose a few extra pounds more than they would have otherwise. While exercise won't make you thin it's generally the only way to keep from getting fat again. That is because we make daily overeating mistakes such as a handful of potato chips. Even a 100 calories daily mistake adds up to ten pounds per year. Regular exercise allows the body to correct those small over-eating mistakes and will keep people from gaining the unwanted pounds.

Exercise also helps redistribute the percentage of lean mass and fat mass in the body, which can lower the risk for a number of health problems. Lean mass also has a higher metabolic rate, but for most people, the difference won't be noticeable because they will still need fewer calories than when they were fat.

A Duke University study found that overweight adults who aren't on a diet need only a small amount of exercise – the equivalent of a half-hour of brisk walking a day – to prevent further weight gain. The fact that small amounts of exercise alone can prevent weight gain is significant. Samuel Kline, Director of the Center for Human Nutrition at Washington University School of Medicine in St. Louis said that it is “important because on average we gain about a pound of fat a year from age 25 to 55 in this country.”<sup>41</sup>

### **Social Network**

*The National Institute of Aging* found that obesity can spread from person to person, much like a virus. When one person gains weight, close friends tend to gain weight too. The study involved a detailed analysis of a large social network of 12,067 people who had been closely followed for 32 years, from 1971 until 2003. The investigators knew who was friends with whom, as well as who was a spouse or sibling or neighbor, and they knew how much each person weighed at various times over three decades. They found that people were most likely to become obese when a friend became obese. That increased one's chances of becoming obese by 57 percent.<sup>42</sup>

To explore whether obesity spreads from person to person within social networks, the research team gleaned weight, height and other data from the records of 5,124 Framingham Study participants at up to seven time points between 1971 and 2003. In addition, they analyzed similar information from the Framingham records of these key participants' parents, spouses, siblings, children and close friends. Together, these individuals formed a large, intertwined social web totaling 12,067 people. The average age of key participants at the inception of the study was 38 years, with a range of 21 to 70 years.

"We were able to reconstruct a large network of individuals who had been repeatedly weighed over time as part of the Framingham Heart Study, and we could see that as one person gained weight, those around him or her gained weight," says Christakis. "We didn't find that people who were overweight simply flocked together. Rather, we found what seemed to be a spread of obesity and that the likelihood of a person becoming obese depended on the nature of the relationship."

"The rising rate of obesity threatens to reverse the decline in disability in the older population, with major implications for the health care system," says Richard Suzman, Ph.D., director of the NIA's Behavioral and Social Research Program. "This seminal study breaks important new ground in showing how social networks may amplify other factors and help account for the dramatic increase in obesity across the population."

Findings include:

- A key participant's chances of becoming obese increased by 57 percent if he or she had a close friend who became obese.
- In same-sex friendships, a close friend becoming obese increased a key participant's chance of becoming obese by 71 percent. However, no such association was found in opposite-sex friendships.
- The perception of friendship also was an important factor. When two people identified each other as close friends, the key participant's risk of becoming obese increased by 171 percent if his or her friend became obese. In contrast, a key participant was not likely to become obese if someone claimed a close friendship with him or her but the key participant did not report the friendship.
- Among pairs of siblings, one's becoming obese increased the other's chance of becoming obese by 40 percent. This finding was more marked among same-sex siblings than opposite-sex siblings.
- In married couples, one spouse's becoming obese increased the likelihood of the other spouse becoming obese by 37 percent. Husbands and wives appeared to affect each other equally.
- Obesity spread across social ties, despite geographic distance from one person to another. Further, social distance--the degree of social separation between two people in the network--appeared to make more of a difference than geographic distance in the spread of behaviors and norms associated with obesity.
- An immediate neighbor's becoming obese did not affect a person's risk of becoming obese.
- Smoking behavior was not associated with the spread of obesity from person to person.

"We identified distinct clusters of obese people within social networks, and the clusters spread about three people deep," Christakis says. "People who were only one degree removed from each other socially, such as siblings or close friends, influenced one another twice as much as people who were two degrees removed from each other."

### **Social-Ecological Model**

The CDC reports that changing multiple levels of society to promote health and prevent/control obesity and other chronic diseases requires several approaches. Rather than focusing solely on personal

behavioral change interventions with groups or individuals, a blend of individual and environmental strategies are required. Whether the targets of interventions are individual students, employees, community citizens, corporate presidents, or legislators, each is surrounded by interpersonal social networks comprising families, friends, colleagues, and acquaintances.

Each layer of social structure (whether individual, interpersonal, organizational, community, or societal) affects the others above and below it, from the inside outward or the outside inward. Change one level and multiple levels may experience change. Each of the five major levels of social structure calls for a blend of intervention strategies and methods. For interventions to be most successful, many levels of social structure must be supportive of the change. Perhaps the most effective and comprehensive interventions occur when individual and environmental strategies are directed at several levels of social structure simultaneously. Increasingly, health promotion professionals are recognizing the dynamic interplay, which exists between individuals and their environments. Although lifestyle choices are ultimately personal decisions, they are made within a complex mix of social and environmental influences, which affect health behaviors by making healthier lifestyle options more readily accessible, affordable, comfortable, and safe.

The CDC concludes that research has shown that behavior change is more likely to endure when both the individual and the environment undergo change simultaneously. Together, the two approaches create synergy, having a far greater influence on individuals, organizations, communities, and society as a whole than either individual or environmental strategies could alone. Therefore, interventions, which address not only individual intentions and skills, but also the social and physical environmental context of a desired behavior, considering as well all social networks and organizations that share that environment, have the potential for population-wide impact.

## Section XI. Obesity and Binge Eating Disorder

### Obesity and Binge Eating Disorder

Most everyone overeats from time to time, and sometimes we often feel we have eaten more than we should have. Eating a lot of food does not necessarily mean that the person has a binge eating disorder. Experts generally agree that most people with serious binge eating problems often eat an unusually large amount of food and feel their eating is out of control. People with binge eating disorder also may:

- Eat much more quickly than usual during binge episodes.
- Eat until they are uncomfortably full.
- Eat large amounts of food even when they are not really hungry.
- Eat alone because they are embarrassed about the amount of food they eat.
- Feel disgusted, depressed, or guilty after overeating.

The National Institutes of Health reports that binge eating also occurs in another eating disorder called bulimia nervosa. Persons with bulimia nervosa, however, usually purge, fast, or do strenuous exercise after they binge eat. Purging means vomiting or using a lot of diuretics (water pills) or laxatives to keep from gaining weight. Fasting is not eating for at least 24 hours. Strenuous exercise, in this case, means exercising for more than an hour just to keep from gaining weight after binge eating. Purging, fasting, and over exercising are dangerous ways to try to control weight.<sup>43</sup>

**Although most obese people do not have binge eating disorder, people with this problem are usually overweight or obese. Binge eating disorder is more common in people who are severely obese.**

Normal-weight people can also have the disorder. People who are obese and have binge eating disorder often became overweight at a younger age than those without the disorder. They might also lose and gain weight more often, a process known as weight cycling or “yo-yo dieting.”

Binge eating disorder is the most common eating disorder. It affects about 3 percent of all adults in the United States. People of any age can have binge eating disorder, but it is seen more often in adults age 46 to 55. Binge eating disorder is a little more common in women than in men; three women for every two men have it. The disorder affects Blacks as often as Whites, but it is not known how often it affects people in other ethnic groups.

### **Binge Eating Disorder Causes**

No one knows for sure what causes binge eating disorder. As many as half of all people with binge eating disorder are depressed or have been depressed in the past. Whether depression causes binge eating disorder, or whether binge eating disorder causes depression, is not known.

It is also unclear if dieting and binge eating are related, although some people binge eat after dieting. In these cases, dieting means skipping meals, not eating enough food each day, or avoiding certain kinds of food. These are unhealthy ways to try to change your body shape and weight.

Studies suggest that people with binge eating disorder may have trouble handling some of their emotions. Many people who are binge eaters say that being angry, sad, bored, worried, or stressed can cause them to binge eat.

Certain behaviors and emotional problems are more common in people with binge eating disorder. These include abusing alcohol, acting quickly without thinking (impulsive behavior), not feeling in charge of themselves, not feeling a part of their communities, and not noticing and talking about their feelings.

Researchers are looking into how brain chemicals and metabolism (the way the body uses calories) affect binge eating disorder. Other research suggests that genes may be involved in binge eating, since the disorder often occurs in several members of the same family. This research is still in the early stages.

### **Health Complications**

People with binge eating disorder are usually very upset by their binge eating and may become depressed. Research has shown that people with binge eating disorder report more health problems, stress, trouble sleeping, and suicidal thoughts than do people without an eating disorder. Other complications from binge eating disorder could include joint pain, digestive problems, headache, muscle pain, and menstrual problems.

People with binge eating disorder often feel bad about themselves and may miss work, school, or social activities to binge eat.

People with binge eating disorder may gain weight. Weight gain can lead to obesity, and obesity puts people at risk for many health problems, including:

- Type 2 diabetes
- High blood pressure
- High blood cholesterol levels
- Gallbladder disease

- Heart disease
- Certain types of cancer

Most people who binge eat, whether they are obese or not, feel ashamed and try to hide their problem. Often they become so good at hiding it that even close friends and family members do not know that their loved one binge eats.

### **Weight Loss Recommendation**

Many people with binge eating disorder are obese and have health problems because of their weight. They should try to lose weight and keep it off; however, research shows that long-term weight loss is more likely when a person has long-term control over his or her binge eating.

People with binge eating disorder who are obese may benefit from a weight-loss program that also offers treatment for eating disorders. However, some people with binge eating disorder may do just as well in a standard weight-loss program as people who do not binge eat.

People who are not overweight should avoid trying to lose weight because it may make their binge eating worse.

### **Treatments**

People with binge eating disorder should get help from a health care professional such as a psychiatrist, psychologist, or clinical social worker. There are several different ways to treat binge eating disorder.

- **Cognitive behavioral therapy** teaches people how to keep track of their eating and change their unhealthy eating habits. It teaches them how to change the way they act in tough situations. It also helps them feel better about their body shape and weight.
- **Interpersonal psychotherapy** helps people look at their relationships with friends and family and make changes in problem areas.
- **Drug therapy**, such as antidepressants, may be helpful for some people.

The methods mentioned here seem to be equally helpful. Researchers are still trying to find the treatment that is the most helpful in controlling binge eating disorder. Combining drug and behavioral therapy has shown promising results for treating overweight and obese individuals with binge eating disorder. Drug therapy has been shown to benefit weight management and promote weight loss, while behavioral therapy has been shown to improve the psychological components of binge eating.

Other therapies being tried include dialectical behavior therapy, which helps people regulate their emotions; drug therapy with the anti-seizure medication topiramate; weight-loss surgery (bariatric surgery); exercise used alone or in combination with cognitive behavioral therapy; and self-help. Self-help books, videos, and groups have helped some people control their binge eating.

## **Section XII. Healthy People 2020**

### **Healthy People 2020 Initiative**

The Healthy People initiative, developed by the U.S. Department of Health and Human Resources, provides science-based, 10-year national objectives for improving the health of all Americans. For three decades, Healthy People has established benchmarks and monitored progress over time in order to:

- Encourage collaborations across sectors.
- Guide individuals toward making informed health decisions.
- Measure the impact of prevention activities.

Healthy People 2020 continues in this tradition with the launch on December 2, 2010 of its ambitious, yet achievable, 10-year agenda for improving the Nation's health. Healthy People 2020 is the result of a multiyear process that reflects input from a diverse group of individuals and organizations.<sup>44</sup>

The objective is to produce a society in which all people live long, healthy lives and to:

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups.
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

Healthy People 2020 strives to:

- Identify nationwide health improvement priorities.
- Increase public awareness and understanding of the determinants of health, disease, and disability and the opportunities for progress.
- Provide measurable objectives and goals that are applicable at the national, State, and local levels.
- Engage multiple sectors to take actions to strengthen policies and improve practices that are driven by the best available evidence and knowledge.
- Identify critical research, evaluation, and data collection needs.

The goal is to promote health and reduce chronic disease risk through the consumption of healthful diets and achievement and maintenance of healthy body weights.

### **Nutrition and Weight Status Objectives**

The Nutrition and Weight Status objectives for Healthy People 2020 reflect strong science supporting the health benefits of eating a healthful diet and maintaining a healthy body weight. The objectives also emphasize that efforts to change diet and weight should address individual behaviors, as well as the policies and environments that support these behaviors in settings such as schools, worksites, health care organizations, and communities.

Americans with a healthful diet:

- Consume a variety of nutrient-dense foods within and across the food groups, especially whole grains, fruits, vegetables, low-fat or fat-free milk or milk products, and lean meats and other protein sources.
- Limit the intake of saturated and trans fats, cholesterol, added sugars, sodium (salt), and alcohol.
- Limit caloric intake to meet caloric needs.

All Americans should avoid unhealthy weight gain, and those whose weight is too high may also need to lose weight.

## Summary

The prevalence of overweight and obesity in the U.S. has increased dramatically in the past three decades. This is true of children, adolescents, and adults and is more severe in minority groups. There is increased morbidity in the obese, with diabetes, heart disease, and cancer being particular risks, leading to greater mortality. The American environment is conducive to this epidemic, presenting an abundance of foods in the form of tasty, energy dense, micronutrient poor foods and beverages. The macronutrient distribution of the diet is not the driving force behind obesity; rather it is the overly large amount of total calories eaten coupled with very low physical activity.

## Section XIII. Bibliography of Additional Information Sources

Links to organizations are provided solely as a service. Links do not constitute an endorsement of these organizations or their programs by Vantage Professional Education (VPE), and none should be inferred. VPE is not responsible for the content of the individual organizations' web pages found at these links.

### **1 Win Way**

Bethesda, MD 20892-3665  
Tel: (202) 828-1025 or 1-877-946-4627  
Fax: (202) 828-1028  
E-mail: [win@info.niddk.nih.gov](mailto:win@info.niddk.nih.gov)

The Weight-control Information Network (WIN) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health, under the U.S. Public Health Service. Authorized by Congress (Public Law 103-43), WIN assembles and disseminates to health professionals and the public information on weight control, obesity, and nutritional disorders.

### **Academy for Eating Disorders**

6728 Old McLean Village Drive  
McLean, VA 22101-3906  
(703) 556-9222  
(703) 556-8729 (fax)  
Web: [www.aedweb.org](http://www.aedweb.org)

The Academy for Eating Disorders is a multidisciplinary professional organization focusing on Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder and related disorders. Founded in September of 1993, they believe that effective treatment for eating disorder patients requires professionals from various disciplines working together.

### **Academy of Nutrition and Dietetics**

120 South Riverside Plaza, Suite 2000  
Chicago, IL 60606-6995  
312/899-0040  
Web: <http://www.eatright.org>  
E-mail: [webmaster@eatright.org](mailto:webmaster@eatright.org)

The Chicago-based AND is the world's largest organization of food and nutrition professionals, with nearly 70,000 members.

### **American Obesity Association**

1250 24th Street, NW

Suite 300  
Washington, DC 20037  
800-98-OBESE (986-2373)  
202-776-7711  
Web: <http://www.obesity.org>

Promotes education, research, and community action to improve the quality of life for people with obesity.

### **Centers for Disease Control and Prevention (CDC)**

1600 Clifton Rd  
Atlanta, GA 30333  
(800) 311-3435  
Web: <http://www.cdc.gov>

The Centers for Disease Control and Prevention (CDC) is recognized as the lead federal agency for protecting the health and safety of people - at home and abroad, providing credible information to enhance health decisions, and promoting health through strong partnerships. CDC serves as the national focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities designed to improve the health of the people of the United States

### **Center for Nutrition Policy and Promotion**

USDA, 1120 20th Street, NW  
Suite 200, North Lobby  
Washington, DC 20036-3406  
202-418-2312  
202-208-2322 (Fax)  
202-606-8000 (Pubs. Order Line)  
Web: <http://www.usda.gov/fcs/cnpp.html>

The agency provides information on nutrition and food selection, and maintains data on the nutrient value of the U.S. food supply.

### **National Eating Disorder Association**

Information and Referral Program  
603 Stewart Street, Suite 803  
Seattle, WA 98101  
1-800-931-2237  
(206) 382-3587  
(206) 829-8501 (fax)  
Web: [www.nationaleatingdisorders.org](http://www.nationaleatingdisorders.org)  
Email: [info@nationaleatingdisorders.org](mailto:info@nationaleatingdisorders.org)  
The National Eating Disorders Association came into being in 2001, when Eating Disorders Awareness & Prevention (EDAP) joined forces with the American Anorexia Bulimia Association (AABA) to create the largest eating disorders prevention and advocacy organization in the world.

301-443-4279 (Fax)  
Web: <http://www.nimh.nih.gov>  
E-mail: [nimhinfo@nih.gov](mailto:nimhinfo@nih.gov)  
Provides information about mental health, including eating disorders, to health professionals and the public. Develops, identifies, and distributes educational materials.

**National Heart, Lung, and Blood Institute  
Information Center**

P.O. Box 30105  
Bethesda, MD 20824-0105  
301-592-8573  
301-592-8563 (Fax)  
Web: <http://www.nhlbi.nih.gov>  
E-mail: [nhlbiinfo@over.nhlbi.nih.gov](mailto:nhlbiinfo@over.nhlbi.nih.gov)  
Provides information about cardiovascular, lung, and blood diseases to health professionals and the public. Develops, identifies, and distributes educational materials.

**National Institute of Mental Health**

6001 Executive Boulevard  
Rm. 8184, MSC 9663  
Bethesda, MD 20892  
301-443-4513

**Section XIV. Continuing Education Answer Sheet & Test Questions**

**MAKE A COPY OF THIS ANSWER SHEET so that others may use this course.**

**Dietitians: RD, CDE, LDN, DTR.** Approved for **8 CPE credits.** VPE (Provider Number VA002) is a CPE Accredited Provider with the CDR.

**Course Expiration Date: 04/29/14**

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<b>Make Check Payable to: VPE</b>		

**Mail Answer Sheet & Payment:**

Ms. Angela Turton, Registrar  
 Vantage Professional Education  
 P.O. Box 172835  
 Tampa, FL 33672

ANSWER SECTION									
	a	b	c	d		a	b	c	d
<b>1</b>	O	O	O	O	<b>13</b>	O	O	O	O
<b>2</b>	O	O	O	O	<b>14</b>	O	O	O	O
<b>3</b>	O	O	O	O	<b>15</b>	O	O	O	O
<b>4</b>	O	O	O	O	<b>16</b>	O	O	O	O
<b>5</b>	O	O	O	O	<b>17</b>	O	O	O	O
<b>6</b>	O	O	O	O	<b>18</b>	O	O	O	O
<b>7</b>	O	O	O	O	<b>19</b>	O	O	O	O
<b>8</b>	O	O	O	O	<b>20</b>	O	O	O	O
<b>9</b>	O	O	O	O	<b>21</b>	O	O	O	O
<b>10</b>	O	O	O	O	<b>22</b>	O	O	O	O
<b>11</b>	O	O	O	O	<b>23</b>	O	O	O	O
<b>12</b>	O	O	O	O	<b>24</b>	O	O	O	O

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 Where did you hear about our courses? \_\_\_\_\_

<u>Content Evaluation</u>	<u>Disagree</u>	<u>Agree</u>
1. Relationship of objectives appropriate to meet the goals of activity?	1 2 3 4 5	
2. Effective as a learning resource?	1 2 3 4 5	
3. Extended my knowledge on the topic?	1 2 3 4 5	
4. Was consistent with the objectives?	1 2 3 4 5	
5. Was related to my job?	1 2 3 4 5	

<u>Course Objectives Evaluation: Did the course content meet the stated objectives?</u>	<u>Disagree</u>	<u>Agree</u>
1. Identify obesity definitions and measurements.....	1 2 3 4 5	
2. Identify the prevalence and cost of overweight and obesity in the US.....	1 2 3 4 5	
3. Identify the health hazards of obesity.....	1 2 3 4 5	
4. Identify the factors contributing to overweight and obesity.....	1 2 3 4 5	
5. Describe the six types of diets to consider in the development of a nutritional plan.....	1 2 3 4 5	
6. Describe the benefits of the “Mediterranean” diet .....	1 2 3 4 5	
7. Describe the CDC Weight Management Strategies.....	1 2 3 4 5	
8. Describe the four types of Bariatric Surgery.....	1 2 3 4 5	
9. Identify behavioral changes that affect obesity and overweight.....	1 2 3 4 5	
10. Describes the goals of Health People 2020.....	1 2 3 4 5	

## A Dietitian's Guide to Obesity (#099773)

### 24 Test Questions: Please use the Answer Sheet.

**Dietitians: RD, CDE, LD/LCN, DTR.** This offering is approved for **8 Continuing Professional Education Credits** by the Commission on Dietetic Registration (CDR). Activity Expiration: 04/29/14

1. Identify the waist circumference in women that is considered medically overweight?
  - a. Waist circumference is over 30 inches
  - b. Waist circumference is over 32 inches
  - c. Waist circumference is over 33 inches
  - d. Waist circumference is over 35 inches
2. How much does the risk of developing type 2 diabetes increase for a person identified as having Obesity Grade III?
  - a. By up to 40 times at this stage of obesity
  - b. By up to 45 times at this stage of obesity
  - c. By up to 50 times at this stage of obesity
  - d. By up to 55 times at this stage of obesity
3. What is the problem with the Height Weight tables to diagnose obesity?
  - a. They do not distinguish between excess fat and muscle
  - b. They do not specify the muscle density
  - c. They do not distinguish between age and height
  - d. They do not distinguish between apple and pear body types
4. Which group of people have an uncharacteristically high BMI as compared to their actual body fat levels?
  - a. Short people
  - b. Tall people
  - c. Women
  - d. Men
5. According to the CDC, what is the percentage of all U.S. adults that are overweight or obese?
  - a. Over one-quarter
  - b. Over one-half
  - c. Over two-thirds
  - d. Over three-quarters
6. What is the likelihood of an obese youth becoming an overweight or obese adult?
  - a. They are more likely
  - b. They are less likely
  - c. Only males would be more likely
  - d. No risk
7. Which of the following most accurately describes the findings of the *Duke University Medical Center Study* comparing workers compensation claims between obese and non-obese workers?
  - a. There was no difference
  - b. Obese workers filed 10% more claims
  - c. Obese workers filed 20% more claims
  - d. Obese workers filed twice the number of claims

8. How many more calories per day does the average American consume compared to 2 or 3 decades ago?
  - a. 100 more calories a day
  - b. 200 more calories a day
  - c. 250 more calories a day
  - d. 350 more calories a day
9. Genetics studies show that the weights of adopted children more closely resemble which of the following?
  - a. Those of their adoptive rather than biological parents
  - b. Those of their biological rather than adoptive parents
  - c. Environmental factors weighed the most heavily
  - d. There were no differences in weights
10. How is obesity classified by the U.S. Equal Employment Opportunity Commission under the Americans with Disabilities Act Amendments Act?
  - a. There is no specific specification
  - b. A social condition
  - c. Obesity is a disability
  - d. A serious medical condition
11. What prevalence do infants born to obese mothers have of congenital anomalies as compared to the offspring of normal-weight women?
  - a. A higher prevalence
  - b. A lower prevalence
  - c. There is no difference
  - d. Has not been estimated
12. What does the American Cancer Association estimate that 1 out of every 3 cancers in the United States is associated with?
  - a. Excess body weight, poor nutrition, or physical inactivity
  - b. Smoking
  - c. Stress and lack of exercise
  - d. Immune system related
13. According to the CDC, how many U.S. adults eat the recommended five or more servings of fruits and vegetables each day?
  - a. One-eighth
  - b. One-third
  - c. One-fourth
  - d. One-half
14. The cheeseburger 20 years ago had 333 calories, how many calories does today's average cheeseburger contain?
  - a. 290 calories
  - b. 390 calories
  - c. 490 calories
  - d. 590 calories
15. What affect did the *American Journal of Preventive Medicine* find when people were given larger bowls and spoons?
  - a. They consumed the same amount of food regardless of the size
  - b. They served themselves smaller portions
  - c. They served themselves larger portions and tended to eat the whole portion
  - d. They served themselves larger portions but did not necessarily consume it all
16. What is the difference between physical activity and physical fitness?
  - a. Physical fitness is any bodily movement that involves only skeletal muscles
  - b. Physical activity is any bodily movement produced by skeletal muscles resulting in energy while physical fitness is a multi-component trait related to the ability to perform physical activity

- c. Physical fitness is any bodily movement while physical activity measures intensive physical tasks
  - d. Physical fitness measures the total number of calories burned per hour
17. The “Mediterranean” diet is based on the dietary traditions of which areas?
- a. The 16 countries that border the Mediterranean Sea
  - b. Italy, Greece and Sardinia
  - c. Crete, much of the rest of Greece and southern Italy circa 1960
  - d. Crete, Greece, Southern Italy and Northern Africa
18. What physiologic satiety cues does the CDC NOT identify as readily overridden by food cues?
- a. Nutritional value
  - b. Large portions
  - c. Easy access
  - d. Sensory attractiveness of food
19. The *National Institute of Health* recommends that patients whose BMI exceeds what level are potential candidates for surgery if they strongly desire substantial weight loss?
- a. BMI exceeds 25
  - b. BMI exceeds 30
  - c. BMI exceeds 35
  - d. BMI exceeds 40
20. Which bariatric surgery works primarily by decreasing food intake by placing a small bracelet-like band around the top of the stomach to produce a small pouch about the size of a thumb?
- a. Adjustable Gastric Band
  - b. Roux-en-Y Gastric Bypass
  - c. Vertical Sleeve Gastrectomy
  - d. Biliopancreatic Diversion with a Duodenal Switch
21. What are the recommended criteria for effective weight loss goals?
- a. Specific
  - b. Attainable
  - c. Forgiving
  - d. All of the above
22. According to a study conducted by *Pennsylvania State University*, what was the effect of drinking extra water before and during meals?
- a. People ate just as much as those who drank less water
  - b. People ate less than those who drank less water
  - c. People ate more than those who drank less water
  - d. The study was inconclusive
23. What is the prevalence of Binge Eating Disorder among people who are severely obese?
- a. A lower prevalence
  - b. A higher prevalence
  - c. There is no difference
  - d. Has not been estimated
24. Which of the following best describes the goals of *Health People 2020*?
- a. Promote health and reduce chronic disease
  - b. Promote the consumption of healthful diets
  - c. Promote the maintenance of healthy body weights
  - d. Promote active lifestyles

## Section XIV. Footnotes

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