

OBESITY

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What is obesity and how is it measured?

Obesity is a term used to describe body weight that is significantly greater than what is considered healthy. If you are obese, you have a higher amount of body fat compared to lean muscle mass. Importantly, obesity is a diagnosis, not a judgment of character.

One of the simplest and most accepted ways to measure obesity involves calculation of the **body mass index** (BMI). BMI is a determination of body fat based on height and weight. Adults with a BMI of 25 to 29.9 are considered overweight while those with a BMI of 30 or more are considered obese. Obesity can be further classified as Class I, II or III depending upon the degree of increase in BMI over 30. Class III obesity is sometimes referred to as extreme obesity. Morbid obesity is when an obesity-associated complication (see below) exists in an individual with any class of obesity. BMI does have some limitations - it may overestimate body fat in those with a muscular build and it may underestimate body fat in those who have lost muscle mass.

<u>Weight Classification</u>		<u>BMI</u>
Underweight		Below 18.5
Normal weight		18.5 - 24.9
Overweight		25.0 - 29.9
Obesity	Class I	30.0 – 34.9
	Class II	35.0-39.9
	Class III	40.0 and above

You can calculate your own BMI from your height and weight using the National Heart Lung and Blood Institute (NHLBI) calculator at www.nhlbisupport.com/bmi/bmicalc.htm or you can look it up on the NHLBI BMI table at www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm.

The places where you store your body fat may affect your health. Some people store fat primarily in their hips and buttocks while others store fat primarily in their abdomen. If most of your fat is in your abdomen rather than in your hips, you're at higher risk for heart disease, cancer and diabetes. **Waist circumference** can be used as a measure of abdominal fat. A waist circumference of more than 35 inches around in women or more than 40 inches around in men puts them at higher risk of weight-related health problems.



To measure your waist circumference, stand straight, loop a tape measure around your bare abdomen just above your hip bones, bringing the tape measure together at the belly button. Take the measurement when the tape is snug but not pinching and just after you breathe out.



Why should I care about obesity?

Obesity is a problem of epidemic proportions in the United States and worldwide. Recent nationwide surveys have shown that about two-thirds of adults in the United States are overweight or obese while over one-third are obese. This amounts to millions of people in the United States alone. Being obese affects more than just appearance as it puts you at risk for many conditions including high blood pressure, high blood cholesterol, diabetes, heart disease, stroke, arthritis, sleep apnea and certain cancers. Being obese also puts you at risk of premature death. Certainly, the emotional (psychological and social) effects of obesity can be significant as well. The diseases associated with obesity are responsible for a substantial amount of health care costs related to doctor visits, testing, treatments and hospitalizations in the United States. The table, **Risks of Obesity-Associated Diseases by BMI and Waist Circumference** (http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/bmi_dis.htm), provides you with an idea of whether your BMI combined with your waist circumference increases your risk for developing obesity-associated conditions.

Is obesity a problem in children?

Obesity is being seen more and more often in children. This is of major concern because children who are overweight have a greater chance of becoming obese adults. Like adults, overweight children may develop associated health problems. Overweight is defined differently for children than it is for adults because children are still growing and boys and girls mature at different rates. **BMI-for-age percentile** is used for children to compare their heights and weights against growth charts that take age and sex into account. You can find out your child's BMI-for-age and growth charts for children using the Centers for Disease Control and Prevention's **BMI-for-age calculator** (<http://apps.nccd.cdc.gov/dnpabmi/Calculator.aspx>).

BMI-for-Age Percentile

Less than 5th percentile
5th percentile to less than the 85th percentile
85th percentile to less than the 95th percentile
95th percentile or greater

Weight Classification

Underweight
Healthy weight
Risk of overweight
Overweight



What causes obesity?

Obesity occurs when you eat more calories than you use doing activities – your body stores the difference. A calorie is a unit of energy in food and drink. Your body needs energy to be healthy and active but if you take in more energy than your body uses, over time you will gain weight. Be aware that eating a diet consisting of low-fat or low-carbohydrate/sugar foods without accounting for the total number of calories consumed can result in weight gain! In addition to eating, activity level and exercise habits, a person's weight is a result of many factors including the environment and culture in which they live, their family history and genetics, and how their body uses the energy consumed ('metabolism'). Other factors such as certain medical conditions, pregnancy, emotional factors, smoking cessation, aging and lack of sleep may also contribute. Importantly, while hypothyroidism (low thyroid function) is often blamed as a cause of obesity, its role has largely been exaggerated. Certainly, obesity should not be attributed to thyroid disease if adequate thyroid replacement treatment is in place. Finally, some medications may also cause weight gain and increase body fat, although the propensity of these medications to increase body weight differs considerably. Examples of some medications that may cause weight gain are as follows:

- Psychotropic medications
 - Tricyclic antidepressants
 - Monoamine oxidase inhibitors
 - Selective serotonin reuptake inhibitors
 - Lithium
 - Specific anticonvulsants
 - Valproic acid
- β -adrenergic receptor blockers
- Diabetes medications
 - Insulin
 - Sulfonylurea's
 - Thiazolidinediones
- Highly active antiretroviral therapy
- Tamoxifen
- Steroid hormones
 - Corticosteroids (for example, prednisone)
 - Progestational steroids

Valproic acid may cause considerable weight gain of 15–20 kg, whereas the β -adrenergic receptor blocker, propranolol, is associated with much smaller weight gain. The mechanism responsible for medication-induced weight gain may be related to an increase in energy intake (e.g. antipsychotics and steroid hormones), a decrease in energy expenditure (e.g. β -adrenergic receptor blockers), a decrease in energy loss (e.g. decreased glucosuria from diabetes therapy), or a combination of these factors. Decreasing the dose if possible or substituting for another drug with less weight gain potential may facilitate weight loss.



Who is most at risk of becoming obese?

Virtually anyone can become obese but certain people seem to be at higher risk because of their race, ethnicity and income. Overweight and obesity are highest for non-Hispanic Black women and Mexican-American women compared to non-Hispanic White women. In men, Mexican-Americans are at highest risk. Persons from low-income families are at a higher risk, possibly because they may buy more high-calorie, high-fat foods which tend to cost less than more healthy foods.

What gastrointestinal diseases are associated with obesity?

In addition to the risks of obesity to your general health like heart disease, high blood pressure and diabetes, obesity is also associated with a number of conditions that affect your digestive system, pancreas and liver. Many of the gastrointestinal diseases that are commonly seen in normal weight individuals are seen up to 2 to 3 times more commonly in those who are obese.

Digestive Disorders Associated with Obesity

Esophagus	Gastroesophageal reflux disease Barrett's esophagus Cancer
Colon	Precancerous polyps Cancer
Gallbladder	Gallstones Cancer
Pancreas	Acute pancreatitis Cancer
Liver	Fatty liver disease Cirrhosis Cancer

How is obesity treated?

A person's motivation, commitment, and compliance are critical for long-term weight loss success - certainly, knowing that weight loss can reduce blood pressure, cholesterol, blood sugar levels, and many other obesity-associated health risks can be very motivating! The goals of treatment are first to prevent further weight gain, and then to reduce body weight and maintain the lower body weight over the long-term. A number of factors play a role in deciding about the most appropriate treatment of obesity including a person's BMI, waist circumference, associated health conditions, and their motivation to lose weight.



Important facts:

- Body weight alone can be used to follow weight loss, and to determine the effectiveness of a weight loss treatment.
- The initial goal of weight loss therapy should be to reduce body weight by about 10 percent from baseline over 6 to 12 months.
- To lose weight, you must use more energy than you take in.
- To improve long-term success, lose weight gradually (1-2 pounds/week).
- Long-term behavior modification therapy is necessary for long-term weight loss.
- If unable to lose weight, prevent further weight gain by exploring your barriers to weight reduction.


Treatment generally begins with lower calorie and lower fat meals, increasing physical activity, and incorporating behavioral modification techniques like engaging social support, using stimulus control, and stress management. Medications or surgical management require physician supervision. Before beginning a weight loss program, you should consult with your health care provider to know which of these treatments is right for you. Do make sure your provider is aware if you suffer from chest pains, dizziness or fainting, or if you plan a vigorous program and are over age 40 (men) or 50 (women).

Reduced Calorie Diet and Exercise

Treatment starts with a combination of a reduced calorie diet and increased physical activity. Cutting back intake by 500-1000 kcal daily can lead to a 26 to 55 pound weight loss in 6 months, with an average loss of around 26-35 pounds. A difference of one 12-oz. soda (150 calories) or 30 minutes of brisk walking most days can add or subtract approximately 10 pounds to your weight each year. Reducing your calorie intake by 150 calories a day, along with participating in moderate activity, could double your weight loss and is equivalent to approximately 20 pounds in 1 year. Fad diets and very-low calorie diets can result in substantial weight loss rapidly; however, the sustainability of these diets and their long-term benefits and health consequences are not well documented. Consult with your physician for the diet that's right for you.



Activities at the length of time specified from the following table will burn approximately 150 calories:

Examples of moderate-vigorous physical activity		
<p>General Chores Washing and waxing a car for 45-60 minutes Washing windows or floors for 45-60 minutes Gardening for 30-45 minutes Wheeling self in wheelchair 30-40 minutes Pushing a stroller 1½ miles in 30 minutes Raking leaves for 30 minutes Walking 2 miles in 30 minutes (15min/mile) Shoveling snow for 15 minutes Walking stairs for 15 minutes</p>	<p>Physical Activities Playing volleyball for 45-60 minutes Playing touch football for 45 minutes Walking 1¾ miles in 35 minutes (20min/mile) Basketball (shooting baskets) 30 minutes Bicycling 5 miles in 30 minutes Dancing fast (social) for 30 minutes Water aerobics for 30 minutes Swimming laps for 20 minutes Basketball (playing game) for 15-20 minutes Bicycling 4 miles in 15 minutes Jumping rope for 15 minutes Running 1½ miles in 15 min. (10min/mile)</p>	<p>Less Vigorous, More Time</p>  <p>More Vigorous, Less Time</p>

Behavior Therapy

The importance of behavior modification cannot be stressed enough. **Unless you change the way you think about food and exercise habits, weight loss is unlikely to be maintained over the long-term.** Behavioral strategies to reinforce changes in diet and physical activity can produce a weight loss in the range of 10 percent of baseline weight over 4-12 months. Behavioral strategies include stress management, social support, recording food and calorie intake, and modifying environmental cues that are associated with overeating and inactivity. Commercial weight loss programs that promote these behavioral changes may be useful.

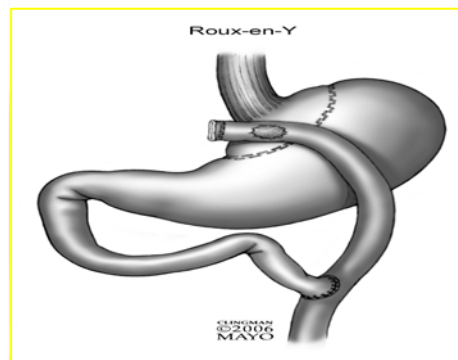
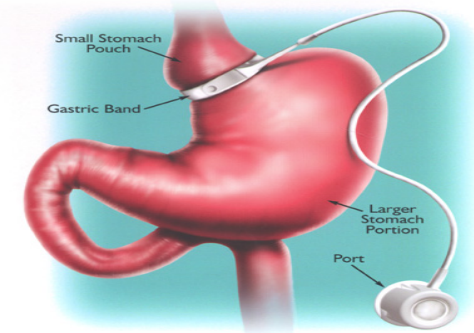
Medications

When a reduced calorie diet, increased physical activity, and behavior modification are unsuccessful in creating significant sustained weight loss, medications may be helpful in selected patients. Medications may be considered in patients with a BMI of ≥ 30 or in those with a BMI of ≥ 27.5 with concomitant risk factors (e.g., smoking) or obesity-related illnesses (e.g. diabetes, heart disease). At present, two medications are approved by the United States Food and Drug Administration for long-term use as weight loss aids: Sibutramine and Orlistat. A lower dose form of orlistat is available over-the-counter (Alli). Both orlistat and sibutramine are most effective when taken in conjunction with a low fat/low calorie diet, regular exercise and behavior therapy. There is no convincing evidence to support the use of the so-called “fat burners” that are commonly advertised.



Surgery

Weight loss surgery is currently the most effective treatment for morbid obesity and the only effective approach for the extremely obese. Weight loss surgery may be an option in carefully selected patients with a BMI of ≥ 40 without obesity-associated health problems and ≥ 35 in those with obesity-associated health problems. Weight loss surgery should be reserved for patients in whom medical efforts have failed and who are suffering the complications of extreme obesity. Currently, the most common surgeries performed are gastric banding and the Roux-en-Y gastric bypass. Laparoscopic adjustable gastric banding (LAGB) restricts the entrance of food into the lower part of the stomach by placing a tight, adjustable prosthetic band around the entrance to the stomach. The Roux-en-Y gastric bypass (RYGB) both restricts the amount of food comfortably ingested by dividing the stomach and creating a small gastric pouch, and reconfigures the anatomy of the upper small intestine, thereby creating some degree of malabsorption. The RYGB is a much more technically complex operation but can also be performed laparoscopically.



These procedures normally result in sustained weight loss between 15% and 40% of total body weight, with a maximum weight loss about 12 months after the operation. The RYGB is more effective than the LAGB at causing sustained weight loss. Importantly, some individuals gain back weight in the long-term, emphasizing the point that the results from these surgical procedures are most effective when combined with a low fat/low calorie diet, regular exercise and behavior modification. An experienced surgeon and participation in an after-care program are recommended to optimize the chance for optimal results. It is also important to recognize that complications and mortality following surgical treatment of severe obesity do occur and vary based upon the procedure performed.

Can obesity be prevented?

Maintaining a healthy weight requires a balance of the calories consumed from foods and beverages with the calories expended through physical activity and normal metabolism. Healthy foods can provide adequate nutrition and an appropriate number of calories and developing healthy eating habits can lead to healthier favorite dishes and reduced calorie-rich temptations.

To promote healthy eating habits:

- Eat plenty of vegetables, fruits, and whole-grain products.
- Include low-fat or non-fat milk or dairy products.
- Choose lean meats, poultry, fish, lentils, and beans for protein.
- Serve reasonably-sized portions.
- Drink lots of water.
- Limit fruit juice and sodas
- Limit consumption of sugar and saturated fat.

Remember that small changes every day can lead to significant benefit over time. In addition to healthy eating, an active lifestyle will help maintain your weight. Choosing to add more physical activity to your day will increase the amount of calories your body burns. This makes it more likely that you'll maintain your weight.

What is the role of a gastroenterologist in obesity?

Obesity is of particular concern to gastroenterologists because of the associations of obesity with a number of gastrointestinal diseases described previously. As experts in stomach, intestinal, pancreas, and liver disorders, gastroenterologists help to define new treatments and participate in the evaluation and the management of digestive and liver complications that occur as a result of obesity and those that occur as a result of medical and surgical treatments of obesity.

Helpful links to learn more about obesity:

American College of Gastroenterology
ACG Obesity Initiative
www.acg.gi.org/obesity

National Heart Lung and Blood Institute
NHLBI Publications “Aim for a Healthy Weight”
http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/patmats.htm

National Institute of Diabetes and Digestive and Kidney Diseases
Weight-Control Information Network (WIN)
<http://win.niddk.nih.gov/index.htm>

Centers for Disease Control and Prevention
CDC – Obesity and Overweight Resources for Consumers
<http://www.cdc.gov/obesity/index.html>

U.S. Department of Health and Human Services
Food and Diet Tools
<http://www.4woman.gov/tools/#food>

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