PATIENT GUIDE

Understanding Obesity and Its Treatments
Obesity has reached epidemic proportions in the United States. In 2010, 38% of American adults were classified as obese, with an additional 26% classified as overweight. All told, over 60% of American adults weigh more than is healthy, and it costs the nation roughly $147 billion each year in medical expenses, both for the direct treatment of obesity and for treatment of obesity-related diseases.

Yet despite the $58 billion Americans pour into the diet industry every year, the national waistline continues to expand. Why?

For one thing, losing weight is not as simple as deciding to cut calories and exercise more. The social aspect of eating; the high cost of nutritious food compared with fast food; the demands of a busy life with little time for exercising or home-cooking; and the comfort many people get from eating all act as obstacles on the road to weight loss.

Then there is physiology. The human body is extremely efficient in its ability to conserve energy and store excess calories as fat. Once upon a time, when humans had to hunt or gather their own food, this was a good thing: It kept people from starving to death when food was scarce. Now, when food is never farther away than the kitchen, for most people conserving energy is no longer an advantage. Usually it results in putting on weight. Gain enough weight and you will develop a disease: The disease of obesity.

Obesity Is a Disease

It may seem strange to think of obesity as a disease, especially when elements of lifestyle such as nutrition and physical activity play a role in developing it. But the medical definition of disease is “an impairment of the normal state of the body or one of its parts that interrupts or changes the performance of its vital functions.” Many doctors and scientists feel that obesity fits this definition because of the way it harms the body. In 2004, the Centers for Medicare & Medicaid Services (CMS) recognized obesity as a disease, which paved the way for the government to cover treatment. (Although insurance companies usually follow the government’s lead, private coverage for the treatment of obesity remains a contentious issue that often prevents patients from seeking medical interventions they might otherwise consider.)

Obesity is characterized by a body mass index (BMI) of 30 or higher. Overweight is defined as a BMI of 25 to 29.9. These are general guidelines, with the exceptions being athletes who have high muscle mass and low body fat. You can quickly calculate your own BMI online at www.nhlbisupport.com/bmi.

Some of these diseases and conditions can be very dangerous, while others team up to wreak havoc on your heart and blood vessels. For example, type 2 diabetes can cause heart disease, and high blood pressure can cause a heart attack or stroke. Obesity also contributes to high cholesterol and triglycerides, which are associated with heart disease and stroke.
Scientists have been able to show a relationship between high BMI and increased risk of many diseases and conditions, including:

- heart disease
- stroke
- high blood pressure
- type 2 diabetes
- certain types of cancer (particularly endometrial, breast, and colon cancer)
- liver disease
- gallbladder disease (including gallstones)
- infertility
- osteoarthritis
- depression
- sleep disorders
- gastroesophageal reflux (heartburn)

Obesity’s ability to damage the body lies in the way fat cells behave. Fat cells are metabolically active. This means they undergo chemical processes to grow, provide energy, and eliminate waste. They also react to different hormones and chemical messengers in the body, and release substances of their own. Because there are so many fat cells in obesity—up to 100 billion compared to 10 to 30 billion in people of normal weight—the body becomes overloaded with these substances. This causes chronic, low-level inflammation that damages blood vessels, muscles (including the heart), and organs such as the liver and pancreas. Belly fat is particularly lethal because it surrounds many organs and is more metabolically active than fat found in the hips and thighs.

What Causes Obesity?

Although it seems logical to say that obesity is caused by eating more calories than you burn, it is more complicated than that. For example, what causes people to eat more calories than they need? Sometimes the answer is psychological.
People can derive comfort from food, or they use eating as a way of dealing with stress, boredom, anger, or sadness. Sometimes the answer is a lack of understanding: They don’t realize how many calories are in the food they are eating, or they underestimate how much they are eating, especially now, when “super-sized” portions are common and getting more food for less money is considered a “good value.”

But glitches in certain hormones contribute to obesity, as well. The most well-known culprit is low thyroid, which slows metabolism and promotes weight gain. Now research suggests that hormones, proteins, and other substances in the body that control appetite and the sensation of feeling full (satiety) may also play a role. Scientists have identified many that affect appetite, but a few stand out. They include:

**Ghrelin.** This hormone stimulates your appetite. Scientists have found that ghrelin levels in obese people do not decrease as quickly after meals as it does in normal weight people; thus, they eat more.

**GLP-1.** This substance is released in proportion to the calories you ingest and helps regulate how much food you eat. Researchers have noted lower levels of GLP-1 in obese people which seems to cause them to have a desire for more food.

**Peptide YY (PYY).** PYY is secreted in your intestine in response to a meal and remains for 1 to 2 hours after you are finished eating. It reduces your appetite. Researchers have found that PYY levels are reduced in obese people and thus, their appetite does not diminish as it should upon ingesting food.

**Amylin.** This hormone normally slows gastric emptying and produces satiety. However, studies show that obese people have higher levels of amylin than people of normal weight but do not respond to its satiety effects.

**Leptin.** This hormone is puzzling. It is secreted by fat cells so the more fat cells you have, the more leptin you have circulating in your blood. It activates certain brain cells to reduce food intake and increase energy expenditure. However, obesity is associated with higher levels of leptin. Obese people given additional leptin in clinical trials do not respond to it. Some scientists believe that in obese people, leptins are somehow prevented from reaching the cells in the brain that tell people when they have had enough to eat.

Scientists are still unraveling the mysteries of these substances with an eye toward determining what goes wrong in obesity. In the meantime, drug companies are testing various compounds that improve how these hormones work in obese people.
Treatment Begins With Lifestyle

Scientists believe that the number of fat cells generally does not change in adults of normal weight. However, it is possible to increase the number of fat cells by consistently overeating for months or years. The good news is that just as fat cells expand to store fat, they shrink when the body burns fat for fuel. The first step in weight loss, then, is to try to shrink the fat cells you have.

But not through dieting.

That’s right: Diets generally do not work for long-term weight loss, for several reasons.

First, diets are designed to be temporary. Note how many of them promise a weight loss of X number of pounds in X number of weeks. Then what? Many people go back to the way they were eating before and regain the weight.

That’s if they stick with a diet long enough to lose more than a few pounds. The second problem with diets is that many of them, particularly fad diets such as the grapefruit diet and cabbage soup diet, are not nutritionally balanced. This leaves people feeling hungry, low on energy, and deprived of the enjoyment of eating. Eventually biology and psychology win, as evidenced by the millions of Americans who begin diets each year only to quit within a week.

Finally, diets alter metabolism. They tend to rely on restricting calories too much in order to produce “fast results.” The problem is that the body interprets severe calorie restriction as famine, and just like the bodies of the hunter-gatherers, your body will start conserving energy and storing fat.

The kicker is that the body remains in conservation mode even after the diet ends, so all of the extra calories you take in will be stored away for another “famine.” That is why many people who go off diets and regain their weight find it much harder to lose the weight a second, third, or fourth time. The more you repeat the pattern, the more efficient your body will become at conserving energy and storing fat, and the harder it will be to lose weight.

The better approach is to look at proper nutrition as a permanent lifestyle change, with the goal of losing weight slowly, only 1 to 2.5 pounds per week.

Nutrition. When adjusting your eating, remember that small changes add up. This can mean eating one fewer snack per day, switching from juices and soft drinks to flavored mineral water, baking or broiling food instead of frying it, or swapping high-

Continued on page 6
calorie, mayonnaise-based dressings for a low-calorie vinaigrette. Check with your insurance carrier to see if your policy covers consultations with a nutritionist or dietician. A nutrition professional can help you ease into healthier eating and plan meals that fit with your schedule and preferences.

**Physical activity.** Studies have shown that people who exercise regularly are most successful at not only losing weight but keeping weight off. But before you begin any fitness program, check with your doctor first, especially if you are 45 or older or are not accustomed to physical activity.

Once you get the all-clear, the easiest thing to do is go for a walk. Start slowly, for 20 to 30 minutes, 2 or 3 days per week, and build up to a brisk pace for 45 to 60 minutes, 5 days per week. You do not have to do all your walking for the day at once: Studies have shown that people who break up their walking into smaller increments still lose weight. Adding weight training as your endurance improves will increase your muscle mass and help your body burn more fat.

**Support.** Remember the buddy system. Research indicates that joining weight loss support groups, in person or online, can help people lose weight and stay on track.

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**The Role of Drugs in Obesity Treatment**

Lifestyle changes are the cornerstone of weight loss. However, sometimes they are not enough to produce significant weight loss. Remember, the body is efficient at conserving energy and storing fat.

If you have had limited success, your doctor may prescribe a drug to give you a temporary boost. Prescription drugs intended specifically for weight-loss are approved by the Food and Drug Administration (FDA) only for people who have a BMI of 30 or higher, or who have a BMI of 27 and an obesity-related condition like high blood pressure, type 2 diabetes, or high cholesterol. (Several drugs approved for other medical conditions are sometimes prescribed for weight loss.) The FDA recently approved two prescription drug products for losing weight. One is lorcaserin, a new drug which acts in your brain to reduce your appetite by boosting your feelings of satiety and fullness. The other is a product that is a combination of two older drugs (phentermine and topiramate) each of which have been shown to depress your appetite.

The drug orlistat, available in both prescription and nonprescription strengths (trade name Alli®), prevents the intestines from absorbing up to one-third of dietary fat. It may be taken for up to 1 year. Talk to your doctor first before you buy orlistat.

The effectiveness of other nonprescription weight loss products is questionable.

Keep in mind that all of these drugs have side effects and generally produce only modest weight loss. Depending on what other medications you’re taking and your medical history, weight-loss drugs may or may not be appropriate for you.
Surgery

If your BMI is higher than 40, or if it’s between 35 and 40 and you have an obesity-related disease like type 2 diabetes, heart disease, high cholesterol, or severe sleep apnea, you may be a candidate for weight-loss surgery. Weight-loss surgery is a life-altering event and it entails risk, so it is considered a last resort.

**Sleeve gastrectomy.** This type of surgery involves removing 75% of the stomach. The remaining 25% forms a thin tube, or sleeve, that is connected to the intestines. This type of surgery can be the sole surgical procedure performed, or it may be performed in very obese patients in preparation for a more complex surgical gastric bypass later.

**Roux-en Y gastric bypass (RYGB).** RYGB accounts for 80% of all weight-loss surgeries in the U.S. A very small upper section of the stomach is completely sealed off from the lower section of the stomach and is attached directly to the lower part of the small intestine, making the surgery difficult to reverse. RYGB works two ways. First, it creates early satiety because of the small gastric pouch. Second, fewer calories are absorbed because part of the small intestine is bypassed. Patients must have regular follow-up appointments after the surgery to ensure weight loss as well as to monitor...

**Gastric banding.** In gastric banding, the surgeon uses an inflatable band to divide the stomach into two sections, with the top section capable of holding only about one-half to one cup of food. When the band is placed around the stomach, it is not completely filled. Instead, it is filled in increments to make the channel between the top and bottom sections of the stomach narrower. Gastric bands can be adjusted at the doctor’s office, and they may be surgically removed later. A variation of gastric banding incorporates surgical staples, although this type of surgery is less common. Gastric banding is now FDA-approved for use in adults with a BMI greater than 30 who have a major obesity-related disease (for example high blood pressure) and who have not lost a significant amount of weight by adjusting their lifestyle.

Illustration of gastric banding (right).
for complications from the surgery or from malabsorption of vitamins and minerals.

**Biliopancreatic diversion.** This surgery is a more extreme version of the RYGB. Up to 70% of the stomach is actually removed, and what is left is attached further down the small intestine creating more malabsorption. This surgery can cause vitamin and mineral deficiencies, so close follow-up is necessary.

Weight-loss surgery is not something that can be scheduled after one discussion with a doctor. Preparing for the surgery involves counseling so that patients know the risks and understand how their lives will change. Many doctors and surgeons recommend that a patient lose 5 to 10% of his or her body weight in the months leading up to the surgery to minimize the risk of complications from either the anesthesia or the surgery itself. Studies show that complying with this request can shorten the hospital stay after the surgery, reduce surgical complications, and result in greater weight loss from the procedure.

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**Childhood Obesity**

The obesity epidemic extends to children in the U.S., where 15% of kids between ages 6 and 19 are overweight and 17% are obese. Overweight teens have a 70% chance of being overweight or obese as adults, a risk that increases to 80% when one or both parents are also overweight or obese.

These figures are ominous because they foretell a future where people in their 20s are diagnosed with obesity-related conditions that were previously rare in that age group, such as heart disease, high blood pressure, high cholesterol, and joint disease. Those who develop obesity-related type 2 diabetes as children will be at risk of having their first heart attack as early as age 30.

There are several reasons why the number of overweight and obese children has tripled in the last 30 years. Increased consumption of fast food and snacks combine with parents’ “portion distortion” in plating their children’s meals to provide children with more calories than they need. Insisting that children eat everything on their plates can do more harm than good.

Society plays a role, too. Schools offer less physical education (gym) than they did just 20 years ago. School lunch choices and snack choices are often high in calories. Parents may feel there are few safe places or parks where children can play outside, especially in cities. Sedentary leisure activities such as watching TV and playing computer and video games have replaced traditional childhood fun such as climbing trees and playing “street league” sports.
What You Can Do

Addressing childhood obesity requires the same dedication as addressing adult obesity. In some ways, it can be even more challenging because overweight children often grapple with social issues such as being teased or left out of activities by their peers, or they feel self-conscious about their weight and avoid signing up for sports or other physically demanding activities.

Approaching lifestyle adjustments as a family is more likely to result in success for everyone involved because the family is its own source of support. As with adults, weight loss in children requires permanent changes in lifestyle, not short-term diets. Start by phasing out sugary snacks, soft drinks, and juices and replacing them with whole grains, fruit, and water. Increase physical activity slowly in ways children enjoy, such as swimming, tossing a Frisbee around, or having a home tournament of active video gaming such as tennis or dancing. As a parent, you can be a role model for your children in living a healthy lifestyle.

If you’d like more in-depth information, check out *The No-Diet Obesity Solution for Kids*, written by Miriam B. Vos, MD, MSPH and published by the AGA Institute Press. This comprehensive guide includes nutritious recipes, pointers for addressing the social aspects of childhood obesity, and practical advice for helping kids to be more active, develop better sleep habits, and try new types of food. It’s available through amazon.com and barnesandnoble.com.

For tips on getting started, visit www.letsmove.gov.
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