



Diseases and Conditions

Obesity

By Mayo Clinic Staff

Obesity is a complex disorder involving an excessive amount of body fat. Obesity isn't just a cosmetic concern. It increases your risk of diseases and health problems, such as heart disease, diabetes and high blood pressure.

Being extremely obese means you are especially likely to have health problems related to your weight.

The good news is that even modest weight loss can improve or prevent the health problems associated with obesity. Dietary changes, increased physical activity and behavior changes can help you lose weight. Prescription medications and weight-loss surgery are additional options for treating obesity.

Obesity is diagnosed when your body mass index (BMI) is 30 or higher. Your body mass index is calculated by dividing your weight in kilograms (kg) by your height in meters (m) squared.

BMI	Weight status
Below 18.5	Underweight
18.5-24.9	Normal
25.0-29.9	Overweight
30.0-34.9	Obese (Class I)
35.0-39.9	Obese (Class II)
40.0 and higher	Extreme obesity (Class III)

For most people, BMI provides a reasonable estimate of body fat. However, BMI doesn't directly measure body fat, so some people, such as muscular athletes, may have a BMI in the obese category even though they don't have excess body fat. Ask your doctor if your BMI is a problem.

When to see a doctor

If you think you may be obese, and especially if you're concerned about weight-related health problems, see your doctor or health care provider. You and your provider can evaluate your health risks and discuss your weight-loss options.

Although there are genetic, behavioral and hormonal influences on body weight, obesity occurs when you take in more calories than you burn through exercise and normal daily activities. Your body stores these excess calories as fat.

Obesity can sometimes be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome, and other diseases and conditions. However, these disorders are rare and, in general, the principal causes of obesity are:

- **Inactivity.** If you're not very active, you don't burn as many calories. With a sedentary lifestyle, you can easily take in more calories every day than you use through exercise and normal daily activities.
- **Unhealthy diet and eating habits.** Weight gain is inevitable if you regularly eat more calories than you burn. And most Americans' diets are too high in calories and are full of fast food and high-calorie beverages.

Obesity usually results from a combination of causes and contributing factors, including:

- **Genetics.** Your genes may affect the amount of body fat you store, and where that fat is distributed. Genetics may also play a role in how efficiently your body converts food into energy and how your body burns calories during exercise.
- **Family lifestyle.** Obesity tends to run in families. If one or both of your parents are obese, your risk of being obese is increased. That's not just because of genetics. Family members tend to share similar eating and activity habits.
- **Inactivity.** If you're not very active, you don't burn as many calories. With a sedentary lifestyle, you can easily take in more calories every day than you burn through exercise and routine daily activities. Having medical problems, such as arthritis, can lead to decreased activity, which contributes to weight gain.
- **Unhealthy diet.** A diet that's high in calories, lacking in fruits and vegetables, full of fast food, and laden with high-calorie beverages and oversized portions contributes to weight gain.
- **Medical problems.** In some people, obesity can be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome and other conditions. Medical problems, such as arthritis, also can lead to decreased activity, which may result in weight gain.

- **Certain medications.** Some medications can lead to weight gain if you don't compensate through diet or activity. These medications include some antidepressants, anti-seizure medications, diabetes medications, antipsychotic medications, steroids and beta blockers.
- **Social and economic issues.** Research has linked social and economic factors to obesity. Avoiding obesity is difficult if you don't have safe areas to exercise. Similarly, you may not have been taught healthy ways of cooking, or you may not have money to buy healthier foods. In addition, the people you spend time with may influence your weight — you're more likely to become obese if you have obese friends or relatives.
- **Age.** Obesity can occur at any age, even in young children. But as you age, hormonal changes and a less active lifestyle increase your risk of obesity. In addition, the amount of muscle in your body tends to decrease with age. This lower muscle mass leads to a decrease in metabolism. These changes also reduce calorie needs, and can make it harder to keep off excess weight. If you don't consciously control what you eat and become more physically active as you age, you'll likely gain weight.
- **Pregnancy.** During pregnancy, a woman's weight necessarily increases. Some women find this weight difficult to lose after the baby is born. This weight gain may contribute to the development of obesity in women.
- **Quitting smoking.** Quitting smoking is often associated with weight gain. And for some, it can lead to enough weight gain that the person becomes obese. In the long run, however, quitting smoking is still a greater benefit to your health than continuing to smoke.
- **Lack of sleep.** Not getting enough sleep or getting too much sleep can cause changes in hormones that increase your appetite. You may also crave foods high in calories and carbohydrates, which can contribute to weight gain.

Even if you have one or more of these risk factors, it doesn't mean that you're destined to become obese. You can counteract most risk factors through diet, physical activity and exercise, and behavior changes.

If you're obese, you're more likely to develop a number of potentially serious health problems, including:

- High triglycerides and low high-density lipoprotein (HDL) cholesterol
- Type 2 diabetes
- High blood pressure
- Metabolic syndrome — a combination of high blood sugar, high blood pressure, high triglycerides and low HDL cholesterol
- Heart disease
- Stroke
- Cancer, including cancer of the uterus, cervix, endometrium, ovaries, breast, colon, rectum, esophagus, liver, gallbladder, pancreas, kidney and prostate

- Breathing disorders, including sleep apnea, a potentially serious sleep disorder in which breathing repeatedly stops and starts
- Gallbladder disease
- Gynecological problems, such as infertility and irregular periods
- Erectile dysfunction and sexual health issues
- Nonalcoholic fatty liver disease, a condition in which fat builds up in the liver and can cause inflammation or scarring
- Osteoarthritis

Quality of life

When you're obese, your overall quality of life may be diminished. You may not be able to do things you used to do, such as participating in enjoyable activities. You may avoid public places. Obese people may even encounter discrimination.

Other weight-related issues that may affect your quality of life include:

- Depression
- Disability
- Sexual problems
- Shame and guilt
- Social isolation
- Lower work achievement

Talking to your health care provider openly and honestly about your weight concerns is one of the best things you can do for your health. In some cases, you may be referred to an obesity specialist — if one is available in your area. You may also be referred to a behavioral counselor, dietitian or nutrition specialist.

What you can do

Being an active participant in your care is important. One way to do this is by preparing for your appointment. Think about your needs and goals for treatment. Also, write down a list of questions to ask. These questions may include

- What eating or activity habits are likely contributing to my health concerns and weight gain?
- What can I do about the challenges I face in managing my weight?
- Do I have other health problems that are caused by obesity?
- Should I see a dietitian?
- Should I see a behavioral counselor with expertise in weight management?
- What are the treatment options for obesity and my other health problems?
- Is weight-loss surgery an option for me?

Be sure to let your health care provider know about any medical conditions you have and about any prescription or over-the-counter medications, vitamins or supplements that you take.

What to expect from your doctor

During your appointment, your doctor or other health care provider is likely to ask you a number of questions about your weight, eating, activity, mood and thoughts, and any symptoms you might have. You may be asked such questions as:

- How much did you weigh in high school?
- What life events may have been associated with weight gain?
- What and how much do you eat in a typical day?
- How much activity do you get in a typical day?
- During what periods of your life did you gain weight?
- What are the factors that you believe affect your weight?
- How is your daily life affected by your weight?
- What diets or treatments have you tried to lose weight?
- What are your weight-loss goals?
- Are you ready to make changes in your lifestyle to lose weight?
- What do you think might prevent you from losing weight?

What you can do in the meantime

If you have time before your scheduled appointment, you can help prepare for the appointment by keeping a diet diary for two weeks prior to the appointment and by recording how many steps you take in a day by using a step counter (pedometer).

You can also begin to make choices that will help you start to lose weight, including:

- **Start making healthy changes in your diet.** Include more fruits, vegetables and whole grains in your diet. Begin to reduce portion sizes.
- **Begin increasing your activity level.** Try to get up and move around your home more frequently. Start gradually if you aren't in good shape or aren't used to exercising. Even a 10-minute daily walk can help. If you have any health conditions, or if you're a man over age 40 or a woman over age 50, wait until you've talked to your doctor or health care provider before you start a new exercise program.

If your BMI is in the obese range, your health care provider will typically review your health history in detail, perform a physical exam and recommend some tests.

These exams and tests generally include:

- **Taking your health history.** Your doctor may review your weight history, weight-loss efforts, exercise habits, eating patterns, what other conditions you've had,

medications, stress levels and other issues about your health. Your doctor may also review your family's health history to see if you may be predisposed to certain conditions.

- **A general physical exam.** This includes also measuring your height; checking vital signs, such as heart rate, blood pressure and temperature; listening to your heart and lungs; and examining your abdomen.
- **Calculating your BMI.** Your doctor will check your body mass index (BMI) to determine your level of obesity. This should be done at least once a year. Your BMI also helps determine your overall health risk and what treatment may be appropriate.
- **Measuring your waist circumference.** Fat stored around your waist, sometimes called visceral fat or abdominal fat, may further increase your risk of diseases, such as diabetes and heart disease. Women with a waist measurement (circumference) of more than 35 inches (80 centimeters, or cm) and men with a waist measurement of more than 40 inches (102 cm) may have more health risks than do people with smaller waist measurements. Like the BMI measurement, your waist circumference should be checked at least once a year.
- **Checking for other health problems.** If you have known health problems, your doctor will evaluate them. Your doctor will also check for other possible health problems, such as high blood pressure and diabetes.
- **Blood tests.** What tests you have depend on your health, risk factors and any current symptoms you may be having. Tests may include a cholesterol test, liver function tests, a fasting glucose, a thyroid test and others. Your doctor may also recommend certain heart tests, such as an electrocardiogram.

Gathering all this information helps you and your doctor determine how much weight you need to lose and what health conditions or risks you already have. And this will guide treatment decisions.

The goal of obesity treatment is to reach and stay at a healthy weight. You may need to work with a team of health professionals — including a dietitian, behavior counselor or an obesity specialist — to help you understand and make changes in your eating and activity habits.

The initial treatment goal is usually a modest weight loss — 3 to 5 percent of your total weight. That means that if you weigh 200 pounds (91 kg) and are obese by BMI standards, you would need to lose only about 6 to 10 pounds (2.7 to 4.5 kg) for your health to begin to improve. However, the more weight you lose, the greater the benefits.

All weight-loss programs require changes in your eating habits and increased physical activity. The treatment methods that are right for you depend on your level of obesity, your overall health and your willingness to participate in your weight-loss plan.

Other treatment tools include:

- Dietary changes

- Exercise and activity
- Behavior change
- Prescription weight-loss medications
- Weight-loss surgery

Dietary changes

Reducing calories and practicing healthier eating habits are vital to overcoming obesity. Although you may lose weight quickly at first, slow and steady weight loss over the long term is considered the safest way to lose weight and the best way to keep it off permanently.

Avoid drastic and unrealistic diet changes, such as crash diets, because they're unlikely to help you keep excess weight off for the long term.

Plan to participate in a comprehensive weight-loss program for at least six months and in the maintenance phase of a program for at least a year to boost your odds of weight-loss success.

There is no best weight-loss diet. Choose one that includes healthy foods that you feel will work for you. Dietary changes to treat obesity include:

- **Cutting calories.** The key to weight loss is reducing how many calories you take in. You and your health care providers can review your typical eating and drinking habits to see how many calories you normally consume and where you can cut back. You and your doctor can decide how many calories you need to take in each day to lose weight, but a typical amount is 1,200 to 1,500 calories for women and 1,500 to 1,800 for men.
- **Feeling full on less.** The concept of energy density can help you satisfy your hunger with fewer calories. All foods have a certain number of calories within a given amount (volume). Some foods — such as desserts, candies, fats and processed foods — are high in energy density. This means that a small volume of that food has a large number of calories. In contrast, other foods, such as fruits and vegetables, have lower energy density. These foods provide a larger portion size with a fewer number of calories. By eating larger portions of foods that have fewer calories, you reduce hunger pangs, take in fewer calories and feel better about your meal, which contributes to how satisfied you feel overall.
- **Making healthier choices.** To make your overall diet healthier, eat more plant-based foods, such as fruits, vegetables and whole-grain carbohydrates. Also emphasize lean sources of protein — such as beans, lentils and soy — and lean meats. If you like fish, try to include fish twice a week. Limit salt and added sugar. Stick with low-fat dairy products. Eat small amounts of fats, and make sure they come from heart-healthy sources, such as olive, canola and nut oils.
- **Restricting certain foods.** Certain diets limit the amount of a particular food group, such as high-carbohydrate or full-fat foods. Ask your doctor which diet plans have

been found effective and which might be helpful for you. Drinking sugar-sweetened beverages is a sure way to consume more calories than you intended, and limiting these drinks or eliminating them altogether is a good place to start cutting calories.

- **Meal replacements.** These plans suggest that you replace one or two meals with their products — such as low-calorie shakes or meal bars — and eat healthy snacks and a healthy, balanced third meal that's low in fat and calories. In the short term, this type of diet can help you lose weight. Keep in mind that these diets likely won't teach you how to change your overall lifestyle, though, so you may have to keep this up if you want to keep your weight off.

Be wary of quick fixes. You may be tempted by fad diets that promise fast and easy weight loss. The reality, however, is that there are no magic foods or quick fixes. Fad diets may help in the short term, but the long-term results don't appear to be any better than other diets.

Similarly, you may lose weight on a crash diet, but you're likely to regain it when you stop the diet. To lose weight — and keep it off — you have to adopt healthy-eating habits that you can maintain over time.

Exercise and activity

Increased physical activity or exercise is an essential part of obesity treatment. Most people who are able to maintain their weight loss for more than a year get regular exercise, even simply walking.

To boost your activity level:

- **Exercise.** People who are overweight or obese need to get at least 150 minutes a week of moderate-intensity physical activity to prevent further weight gain or to maintain the loss of a modest amount of weight. To achieve more-significant weight loss, you may need to exercise 300 minutes or more a week. You probably will need to gradually increase the amount you exercise as your endurance and fitness improve.
- **Keep moving.** Even though regular aerobic exercise is the most efficient way to burn calories and shed excess weight, any extra movement helps burn calories. Making simple changes throughout your day can add up to big benefits. Park farther from store entrances, rev up your household chores, garden, get up and move around periodically, and wear a pedometer to track how many steps you actually take over the course of a day.

Behavior changes

A behavior modification program can help you make lifestyle changes and lose weight and keep it off. Steps to take include examining your current habits to find out what factors, stresses or situations may have contributed to your obesity.

Everyone is different and has different obstacles to managing weight, such as a lack of

time to exercise or late-night eating. Tailor your behavior changes to address your individual concerns.

Behavior modification, sometimes called behavior therapy, can include:

- **Counseling.** Therapy or interventions with trained mental health or other professionals can help you address emotional and behavioral issues related to eating. Therapy can help you understand why you overeat and learn healthy ways to cope with anxiety. You can also learn how to monitor your diet and activity, understand eating triggers, and cope with food cravings. Therapy can take place on both an individual and group basis. More-intensive programs — those that include 12 to 26 sessions a year — may be more helpful in achieving your weight-loss goals.
- **Support groups.** You can find camaraderie and understanding in support groups where others share similar challenges with obesity. Check with your doctor, local hospitals or commercial weight-loss programs for support groups in your area, such as Weight Watchers.

Prescription weight-loss medication

Losing weight requires a healthy diet and regular exercise. But in certain situations, prescription weight-loss medication may help.

Keep in mind, though, that weight-loss medication is meant to be used along with diet, exercise and behavior changes, not instead of them. If you don't make these other changes in your life, medication is unlikely to work.

Your doctor may recommend weight-loss medication if other methods of weight loss haven't worked for you and you meet one of the following criteria:

- Your body mass index (BMI) is 30 or greater
- Your BMI is greater than 27, and you also have medical complications of obesity, such as diabetes, high blood pressure or sleep apnea

Before selecting a medication for you, your doctor will consider your health history, as well as possible side effects. Some weight-loss medications can't be used by women who are pregnant, or people who take certain medications or have chronic health conditions.

Commonly prescribed weight-loss medications include orlistat (Xenical), lorcaserin (Belviq), phentermine and topiramate (Qsymia), bupropion and naltrexone (Contrave), and liraglutide (Saxenda).

You will need close medical monitoring while taking a prescription weight-loss medication. Also, keep in mind that a weight-loss medication may not work for everyone, and the effects may wane over time. When you stop taking a weight-loss medication, you may regain much or all of the weight you lost.

Weight-loss surgery

In some cases, weight-loss surgery, also called bariatric surgery, is an option. Weight-loss surgery limits the amount of food you're able to comfortably eat or decreases the absorption of food and calories or both. While weight-loss surgery offers the best chance of losing the most weight, it can pose serious risks.

Weight-loss surgery for obesity may be considered if you have tried other methods to lose weight that haven't worked and:

- You have extreme obesity (BMI of 40 or higher)
- Your BMI is 35 to 39.9, and you also have a serious weight-related health problem, such as diabetes or high blood pressure
- You're committed to making the lifestyle changes that are necessary for surgery to work

It doesn't guarantee that you'll lose all of your excess weight or that you'll keep it off long term. Weight-loss success after surgery depends on your commitment to making lifelong changes in your eating and exercise habits.

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Common weight-loss surgeries include:

- **Gastric bypass surgery.** In gastric bypass (Roux-en-Y gastric bypass), the surgeon creates a small pouch at the top of your stomach. The small intestine is then cut a short distance below the main stomach and connected to the new pouch. Food and liquid flow directly from the pouch into this part of the intestine, bypassing most of your stomach.
- **Laparoscopic adjustable gastric banding (LAGB).** In this procedure, your stomach is separated into two pouches with an inflatable band. Pulling the band tight, like a belt, the surgeon creates a tiny channel between the two pouches. The band keeps the opening from expanding and is generally designed to stay in place permanently.
- **Biliopancreatic diversion with duodenal switch.** This procedure begins with the surgeon removing a large part of the stomach. The surgeon leaves the valve that releases food to the small intestine and the first part of the small intestine (duodenum). Then the surgeon closes off the middle section of the intestine and attaches the last part directly to the duodenum. The separated section of the intestine is reattached to the end of the intestine to allow bile and digestive juices to flow into this part of the intestine.
- **Gastric sleeve.** In this procedure, part of the stomach is removed, creating a smaller reservoir for food. It's a less complicated surgery than gastric bypass or biliopancreatic diversion with duodenal switch.

Other treatments

Vagal nerve blockade is another treatment for obesity. It involves implanting a device under the skin of the abdomen that sends intermittent electrical pulses to the abdominal vagus nerve, which tells the brain when the stomach feels empty or full. This new technology received FDA approval in 2014 for use by adults who have not been able to lose weight with a weight-loss program and who have a BMI of 35 to 45 with at least one obesity-related condition, such as type 2 diabetes.

Preventing weight regain after obesity treatment

Unfortunately, it's common to regain weight no matter what obesity treatment methods you try. If you take weight-loss medications, you'll probably regain weight when you stop taking them. You might even regain weight after weight-loss surgery if you continue to overeat or overindulge in high-calorie foods. But that doesn't mean your weight-loss efforts are futile.

One of the best ways to prevent regaining the weight you've lost is to get regular physical activity. Aim for 60 minutes a day.

Keep track of your physical activity if it helps you stay motivated and on course. As you lose weight and gain better health, talk to your doctor about what additional activities you might be able to do and, if appropriate, how to give your activity and exercise a boost.

You may always have to remain vigilant about your weight. Combining a healthier diet and more activity in a practical and sustainable manner are the best ways to keep the weight you lost off for the long term.

Take your weight loss and weight maintenance one day at a time and surround yourself with supportive resources to help ensure your success. Find a healthier way of living that you can stick with for the long term.

Your effort to overcome obesity is more likely to be successful if you follow strategies at home in addition to your formal treatment plan. These can include:

- **Learning about your condition.** Education about obesity can help you learn more about why you became obese and what you can do about it. You may feel more empowered to take control and stick to your treatment plan. Read reputable self-help books and consider talking about them with your doctor or therapist.
- **Setting realistic goals.** When you have to lose a significant amount of weight, you may set goals that are unrealistic, such as trying to lose too much too fast. Don't set yourself up for failure. Set daily or weekly goals for exercise and weight loss. Make small changes in your diet instead of attempting drastic changes that you're not likely to stick with for the long haul.
- **Sticking to your treatment plan.** Changing a lifestyle you may have lived with for many years can be difficult. Be honest with your doctor, therapist or other health care providers if you find your activity or eating goals slipping. You can work together to come up with new ideas or new approaches.
- **Enlisting support.** Get your family and friends on board with your weight-loss goals.

Surround yourself with people who will support you and help you, not sabotage your efforts. Make sure they understand how important weight loss is to your health. You might also want to join a weight-loss support group.

- **Keeping a record.** Keep a food and activity log. This record can help you remain accountable for your eating and exercise habits. You can discover behavior that may be holding you back and, conversely, what works well for you. You can also use your log to track other important health parameters such as blood pressure and cholesterol levels and overall fitness.
- **Identifying and avoiding food triggers.** Distract yourself from your desire to eat with something positive, such as calling a friend. Practice saying no to unhealthy foods and big portions. Eat when you're actually hungry — not simply when the clock says it's time to eat.
- **Taking your medications as directed.** If you take weight-loss medications or medications to treat obesity-related conditions, such as high blood pressure or diabetes, take them exactly as prescribed. If you have a problem sticking with your medication regimen or have unpleasant side effects, talk to your doctor.

Numerous dietary supplements that promise to help you shed weight quickly are available. The effectiveness, particularly the long-term effectiveness, and safety of these products are often questionable.

Herbal remedies, vitamins and minerals, all considered dietary supplements by the Food and Drug Administration, don't have the same rigorous testing and labeling process as over-the-counter and prescription medications do.

Yet some of these substances, including products labeled as "natural," have drug-like effects that can be dangerous. Even some vitamins and minerals can cause problems when taken in excessive amounts. Ingredients may not be standard, and they can cause unpredictable and harmful side effects. Dietary supplements also can cause dangerous interactions with prescription medications you take. Talk to your doctor before taking any dietary supplements.

Mind-body therapies — such as acupuncture, mindfulness meditation and yoga — may complement other obesity treatments. However, these therapies generally haven't been well-studied in the treatment of weight loss. Talk to your doctor if you're interested in adding a mind-body therapy to your treatment.

Talk to your doctor or therapist about improving your coping skills and consider these tips to cope with obesity and your weight-loss efforts:

- **Journal.** Write in a journal to express pain, anger, fear or other emotions.
- **Connect.** Don't become isolated. Try to participate in regular activities and get together with family or friends periodically.
- **Join.** Join a support group so that you can connect with others facing similar challenges.

- **Focus.** Stay focused on your goals. Overcoming obesity is an ongoing process. Stay motivated by keeping your goals in mind. Remind yourself that you're responsible for managing your condition and working toward your goals.
- **Relax.** Learn relaxation and stress management. Learning to recognize stress and developing stress management and relaxation skills can help you gain control of unhealthy eating habits.

Whether you're at risk of becoming obese, currently overweight or at a healthy weight, you can take steps to prevent unhealthy weight gain and related health problems. Not surprisingly, the steps to prevent weight gain are the same as the steps to lose weight: daily exercise, a healthy diet, and a long-term commitment to watch what you eat and drink.

- **Exercise regularly.** You need to get 150 to 300 minutes of moderate-intensity activity a week to prevent weight gain. Moderately intense physical activities include fast walking and swimming.
- **Follow a healthy eating plan.** Focus on low-calorie, nutrient-dense foods, such as fruits, vegetables and whole grains. Avoid saturated fat and limit sweets and alcohol. Eat three regular meals a day with limited snacking. You can still enjoy small amounts of high-fat, high-calorie foods as an infrequent treat. Just be sure to choose foods that promote a healthy weight and good health most of the time.
- **Know and avoid the food traps that cause you to eat.** Identify situations that trigger out-of-control eating. Try keeping a journal and write down what you eat, how much you eat, when you eat, how you're feeling and how hungry you are. After a while, you should see patterns emerge. You can plan ahead and develop strategies for handling these types of situations and stay in control of your eating behaviors.
- **Monitor your weight regularly.** People who weigh themselves at least once a week are more successful in keeping off excess pounds. Monitoring your weight can tell you whether your efforts are working and can help you detect small weight gains before they become big problems.
- **Be consistent.** Sticking to your healthy-weight plan during the week, on the weekends, and amidst vacation and holidays as much as possible increases your chances of long-term success.

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