MAYO CLINIC

8 Ways to Lower Your Risk of a Heart Attack or Stroke
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It’s time to change your lifestyle

Research continues to show how a healthy lifestyle can improve and, in some cases, eliminate many significant risk factors for coronary artery disease and stroke. Coronary artery disease is the narrowing of the arteries that serve your heart.

You have a heart attack when one of these arteries becomes blocked — usually by a blood clot — cutting off the supply of oxygen and nutrients to your heart.

Stroke, another common and deadly form of heart and blood vessel disease (cardiovascular disease), occurs when the blood supply to your brain is disrupted. This can be caused by a blockage or a rupture in the arteries supplying oxygen and other nutrients to your brain.

Risk factors for heart attack and stroke include smoking, a high-fat and high-cholesterol diet, being inactive (sedentary), obesity, high blood sugar, undesirable levels of cholesterol and triglycerides (blood fats), high blood pressure and too much stress.

This booklet offers eight sound strategies you can adopt now to reduce your risks and improve the quality of your life.
Atherosclerosis

When excess cholesterol is in your blood, cholesterol-containing fatty deposits can accumulate in your arteries — a process called atherosclerosis. As these deposits build up, blood flow is reduced — putting you at risk of a heart attack or stroke.

Certain health conditions increase your risk of atherosclerosis, including high blood pressure, elevated cholesterol levels (hyperlipidemia) and diabetes. Smoking also is a strong risk factor. Many of the strategies in this booklet can help you reduce your risk of atherosclerosis.
Tobacco smoke contains more than 4,000 chemicals. Many of these substances can damage your heart and the blood vessels that supply blood to your heart and brain. Not smoking is the single best thing you can do to reduce your risk of a heart attack or stroke.

**Extensive damage**

Smoking damages the walls of your blood vessels, making them prone to the buildup of cholesterol-containing fatty deposits called plaques — a condition known as atherosclerosis. Smoking may also reduce the proportion of high-density lipoprotein (HDL) cholesterol to low-density lipoprotein (LDL) cholesterol in your blood.

High blood levels of LDL (“bad”) cholesterol increase your risk of atherosclerosis. In contrast, high levels of HDL (“good”) cholesterol are protective because they may prevent the formation of plaques.

In addition, nicotine in cigarette smoke makes your heart work harder by constricting blood vessels and increasing your heart rate and blood pressure.

Carbon monoxide in cigarette smoke replaces some of the oxygen in your blood. This also increases blood pressure by forcing your heart to work harder to supply enough oxygen.
Why quit?
If you smoke cigarettes, your risk of a heart attack or stroke is at least double that of nonsmokers. And the risk increases with the number of cigarettes you smoke each day. Smoking cigars or pipes or using chewing tobacco also increases your risk, but to a lesser degree.

When you quit, your risk of heart and blood vessel disease drops dramatically within a few years. Also, your risk of lung cancer drops significantly.

Adopting the right approach
It takes most people three to four attempts to stop smoking permanently. However, each try increases your chances of success. Think of each relapse not as a failure but as an opportunity to learn. In this way, you can avoid or change the circumstances leading to relapse.

There’s no single best way to quit smoking. But you’re most likely to be successful if you plan ahead:

- **Commit to quitting.** List all of the positive reasons you want to stop smoking. Then be sure you’re ready to follow through on your commitment.

- **Set a date.** Mark the calendar for two weeks to one month from now. Try to avoid a time when other factors may increase stress in your life. But be realistic. There’s no ideal day to quit.
• **Devise a plan.** Identify trigger behaviors such as drinking coffee or talking on the phone. Decide how to change your response to these situations. Taking a walk, chewing gum and eating a healthy snack are possible distractions.

• **Condition yourself.** If you smoke two packs a day, wean yourself to one. Don’t buy a new pack until you finish the present one. Switch to a brand you don’t enjoy as much.

• **Seek support.** Ask someone to exercise with you or to call you regularly with words of encouragement. Refusing the help of others protects the addiction, not you. For heavy addiction, consider counseling, a support group or an inpatient program.

• **Consider using at least one medication.** Using FDA-approved medication can double your chances of stopping smoking (see next page).

• **Think positively.** Stay focused by reviewing your list of reasons for quitting. Then take it one day at a time.

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**Dangers of secondhand smoke**

In the United States, experts estimate that almost 50,000 nonsmokers die each year from exposure to secondhand tobacco smoke. If you breathe it regularly, you’re probably at risk. Because of secondhand smoke:

- About 3,000 nonsmokers die of lung cancer each year
- More than 46,000 nonsmokers die of heart disease
- Up to 300,000 children under 18 months old have lower respiratory tract infections

In addition, secondhand smoke leads to coughing, phlegm, chest discomfort, reduced lung function and red, itchy, watery eyes.
Medications can help

Research shows that medications can help people stop smoking. Medications can increase your comfort level and sense of control by reducing nicotine withdrawal symptoms (such as irritability, anxiety and restlessness) and reducing cravings. Ask your doctor or pharmacist about the options below, including side effects.

Nicotine replacement products

**Patch.** A nonprescription product, you apply these patches to your skin to provide a steady dose of absorbed nicotine. As you lower the patch dose, the nicotine levels decrease. Ask your doctor or pharmacist about the length of treatment.

**Nasal spray.** Available by prescription only, you spray nicotine directly into each nostril. Typical length of treatment is six to 12 weeks.

**Lozenge.** This nonprescription tablet is placed against the side of your mouth. As it slowly dissolves, nicotine is absorbed through the lining of your mouth. Typical length of treatment is 12 weeks. You gradually reduce use and then stop using it.

**Gum.** To use this nonprescription product, chew it a few times, and then let it sit between your cheek and gum. The nicotine is absorbed through the lining of your mouth. Gradually decrease use and stop completely in three to six months.

**Inhaler.** Available by prescription, the inhaler is a plastic cylinder about the size of a cigarette that has a cartridge with nicotine. When you puff on it, nicotine vapors are absorbed through the lining of your mouth. Therapy may be six to 12 weeks.

Non-nicotine medication

**Bupropion (Zyban).** Bupropion, a prescription non-nicotine medication, can reduce nicotine withdrawal symptoms and may make smoking less satisfying. Treatment may be three to six months. For depression, bupropion is sold as Wellbutrin. Don’t use Zyban and Wellbutrin at the same time. People with a history of seizures or certain medical conditions should not use bupropion — talk with your doctor.

**Varenicline (Chantix).** Varenicline is a prescription non-nicotine medication that acts very similarly to nicotine, reducing withdrawal symptoms. It may also make smoking less satisfying. Length of therapy varies from three to six months.

**Note:** Serious psychiatric symptoms such as behavior changes, agitation, depressed mood, thoughts of suicide or attempts at suicide have occurred in people being treated with bupropion or varenicline. Watch for these symptoms. If they occur, stop the medication and immediately report the symptoms to your doctor.
Many foods contain substances that may reduce your risk of heart disease. So eat lots of vegetables, fruits, whole grains and fish with omega-3 fatty acids. And choose foods that are low in saturated and trans fats, cholesterol and sodium.

Eat more fruits and vegetables
Fruits and vegetables are your allies in the battle against heart disease. They’re low in calories and rich in antioxidants, which may help prevent cholesterol from damaging the lining of your arteries. And they don’t contain fat or sodium.

Aim for one fruit at each meal and two vegetables for lunch and supper. Raw vegetables and fruit also make great snacks.

Go with whole grains
Grains — such as cereals, breads, rice and pasta — are rich in vitamins and minerals. Whole-grain foods are better sources of fiber and certain nutrients, such as vitamin E and folate. Look for breads and cereals that provide at least 3 grams of fiber per serving. (See “Fiber facts,” p. 25.)

However, be careful about which grains you choose. Croissants, sweet breads and even some crackers are high in fat. Fatty cream sauces are often added to pasta, and bread may be topped with mayonnaise, butter or margarine.
Choose fat-free and low-fat dairy
Dairy foods provide essential calcium. But whole milk and products made from it are high in saturated fat, cholesterol and calories. So choose fat-free and low-fat dairy products.

Get protein from a variety of sources
All animal foods, such as meat, have saturated fat and cholesterol. So choose lean cuts and small portions. If you don’t eat meat, you can get enough protein from legumes (beans, peas and lentils), poultry, seafood, nuts and low-fat dairy products. Try planning your meals around whole grains, vegetables and legumes instead of meat.

Getting your omega-3s
Fish that are rich in omega-3 fatty acids may reduce your risk of heart disease. Omega-3 fats may help lower triglyceride levels. They may also help prevent disturbances in heart rhythm, reducing your risk of sudden cardiac death.

Omega-3 fats are most abundant in fatty, cold-water fish, but some fresh-water fish also are good sources. Fish high in omega-3s include anchovies, bass, bluefish, herring, mackerel,* salmon, sardines, swordfish,* trout (rainbow and lake) and tuna (especially white and albacore). Eating at least two servings (about 3 ounces each) of fish rich in omega-3s every week as part of a low-fat diet may reduce your risk of heart and blood vessel disease.

Plant sources of omega-3s — such as canola oil, flaxseed (ground and oil), soybeans and walnuts (whole and oil) — also appear to be beneficial.

*The Food and Drug Administration advises pregnant women, nursing mothers and children not to eat king mackerel, swordfish or tilefish because these types of fish have higher amounts of mercury.
Your heart-healthy eating guide

Here’s a guide to help you incorporate a variety of delicious foods into your meals and choose the healthiest options from each group.

Make “Preferred” foods the basis of your diet. These foods are either fat- and cholesterol-free or low in fat and cholesterol.*

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<thead>
<tr>
<th>Food (Groups)</th>
<th>Preferred</th>
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<tbody>
<tr>
<td>Fruits and vegetables</td>
<td>A colorful variety of fresh, frozen or canned fruits and vegetables to get a variety of nutrients (Remember that canned foods are high in sodium.)</td>
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<tr>
<td>Whole grains (breads, cereals, rice, pasta)</td>
<td>Whole-grain breads and cereals, whole-grain bagels, breadsticks and English muffins, whole-grain pasta, brown rice, wild rice, plain popcorn</td>
</tr>
<tr>
<td>Dairy products (milk, yogurt, cheese)</td>
<td>Fat-free (skim) or low-fat (1%) milk, fat-free yogurt, fat-free and low-fat cheeses</td>
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<tr>
<td>Meat, poultry, fish, beans</td>
<td>Lean meats, fish and poultry without skin, dried beans, lentils, egg whites or egg substitutes, water-packed tuna or salmon (Aim for fish rich in omega-3s twice weekly and more plant-based, meatless meals.)</td>
</tr>
<tr>
<td>Fats and oils (use sparingly)</td>
<td>Monounsaturated oils (canola, olive, peanut), nuts, polyunsaturated oils (corn, safflower, sunflower, soybean, sesame, cottonseed), tub margarine, salad dressings with unsaturated oils</td>
</tr>
</tbody>
</table>

*Low-fat means no more than 3 grams of fat per serving. Low-cholesterol means no more than 20 milligrams of cholesterol and no more than 2 grams of saturated fat per serving. Check the label.
†One serving is 3 ounces — about the size of a deck of cards.
Limit “Occasional” foods to once or twice daily, and eat small portions. These foods have moderate amounts of fat or cholesterol. If you eat “Infrequent” foods at all, keep portions small and limit them to once or twice a week. These foods are highest in fat or cholesterol.

<table>
<thead>
<tr>
<th>Occasional</th>
<th>Infrequent</th>
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<tr>
<td>Potatoes, avocados, olives, dried fruit, fruit juices</td>
<td>Coconut, fried vegetables, fruits and vegetables in cheese, cream, butter or heavy sauces</td>
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<tr>
<td>Egg noodles, refined grains such as white bread and white rice, pretzels</td>
<td>Croissants, muffins, regular snack crackers, chips, biscuits, scones, sugary cereals</td>
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<tr>
<td>Reduced-fat milk (2%), part-skim milk cheeses (mozzarella, ricotta, farmer), low-fat yogurt, ice milk, creamed cottage cheese (4%)</td>
<td>Whole milk, whole milk yogurt and cheese, ice cream (regular and gourmet)</td>
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<tr>
<td>Shrimp, oysters, oil-packed fish, peanut butter, nuts, egg yolks, low-fat luncheon meats, low-fat hot dogs</td>
<td>Organ meats, fatty and heavily marbled meats, spare ribs, cold cuts, hot dogs, sausage, bacon, fried meats</td>
</tr>
<tr>
<td>Creamy salad dressing, mayonnaise, reduced-fat sour cream and cream cheese</td>
<td>Shortening, lard, butter, stick margarine, cream, half-and-half, sour cream, cream cheese, gravy, most nondairy creamers, bacon fat, cream sauces, coconut oil, palm and palm kernel oils, cocoa butter (found in chocolate)</td>
</tr>
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**Fats: The good and the bad**

**Monounsaturated fat (“good fat”):** Helps lower total and LDL ("bad") cholesterol and may lower your risk of heart disease. Found mainly in olive, canola and peanut oils, as well as most nuts and avocados.

**Polyunsaturated fat (“good fat”):** Helps lower total and LDL ("bad") cholesterol and may lower your risk of heart disease. Found mainly in vegetable oils such as safflower, corn, sunflower, soy, sesame and cottonseed.

**Saturated fat (“bad fat”):** Raises total and LDL ("bad") cholesterol, increasing your risk of heart disease. Found mainly in red meats, most whole-fat dairy products (including butter), egg yolks, chocolate (cocoa butter), as well as coconut, palm and other tropical oils.

**Trans fat (“bad fat”), also called partially hydrogenated vegetable oil:** Raises LDL (“bad”) cholesterol and lowers HDL (“good”) cholesterol, increasing the risk of heart disease. Found mainly in stick margarine and shortening, which are often used in making cookies, pastry and other baked goods, as well as most crackers, many candies, commercially prepared snack foods and french fries.

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**Heart-healthy cooking**

Find ways to reduce the amount of fat, sugar and salt in your recipes, such as:

- Trim fat from meat before cooking and drain fat drippings after cooking.
- De-fat soups, stews, sauces and gravies by chilling and skimming off fat.
- Add chopped vegetables to lean ground beef, using less meat.
- Reduce the amount of sugar in foods.
- Use herbs instead of salt.
- Use oil sparingly. When you do use it, choose olive or canola oil.
- Use vegetable cooking sprays instead of oil or butter.
- Use cooking methods such as baking, braising, broiling, grilling, roasting, sautéing, steaming and stir-frying. Avoid frying foods.
Regular physical activity can help prevent or manage heart disease and reduce your risk of heart attack and stroke. Regular exercise reduces risk of death from all causes, including heart disease.

Physical activity is any movement you make that burns calories, such as walking up the stairs. Exercise is a planned, structured and repetitive form of physical activity to improve fitness, such as using a treadmill or lifting weights.

How physical activity promotes longevity

Regular physical activity may help you live longer by:

• Decreasing the cholesterol in your blood
• Helping to control your blood sugar (glucose) levels
• Helping prevent or manage blood pressure
• Helping to control your weight
• Increasing immune system activity
• Reducing anxiety and depression

Increase your physical activity

If you’re middle-aged or older and haven’t been exercising regularly or have a chronic health problem, work with your doctor to develop an exercise program.
You may need to start slowly by making simple changes to your lifestyle. Even routine activities such as gardening or cleaning the house can burn calories and help improve your health, although not as much as an exercise program.

**Design a balanced program**

Fitness includes four elements: aerobic capacity, strength, flexibility and weight control. To condition your heart safely and improve your fitness:

- **Start gradually.** Try walking five to 10 minutes a day. Increase activity by a few minutes a week, as tolerated. Health benefits start after about 10 minutes. Three 10-minute sessions in a day can provide health benefits similar to what you’d get in one 30-minute session.

- **Schedule regular physical activity.** The Physical Activity Guidelines for Americans recommend 150 minutes a week of moderately intense physical activity or 75 minutes a week of vigorous physical activity to get health benefits. For weight loss, gradually work up to an hour a day, even if it’s 20 minutes three times a day.

- **Include variety.** Combine three types of exercise — stretching (flexibility), endurance (aerobic) and strengthening (weight training) — and three levels of intensity — warm-up, workout level and cool-down — in each exercise session.

- **Cross-train to reduce risk of injury.** Alternate activities that focus on different parts of the body, such as swimming, bicycling and walking.

- **Don’t overdo it.** Start slowly and build up gradually, allowing time between sessions for your body to rest and recover.
Is exercise risky?

Most heart attacks occur during rest — not activity. Of people who have heart attacks during strenuous exertion, most are sedentary, have underlying heart disease and overdo it.

To minimize risks and maximize benefits of exercise, check with your doctor for recommendations if you’re a woman older than 50 or a man older than 40 and you haven’t exercised regularly, or if you have a chronic health condition such as heart disease or diabetes. Then follow these tips:

- **Exercise regularly.** Risk of heart problems rises if you alternate intense workouts with weeks to months of inactivity.
- **Warm up and cool down.** This reduces stress on your heart and risk of muscle strain.
- **Exercise, don’t compete.** Avoid physical and emotional intensity in competitive sports.
- **Wait 2 to 3 hours after a large meal before exercising.** Digestion directs blood to your digestive system and away from your heart.
- **Take the talk test.** If you can talk while exercising, you’re probably not overexerting.
- **Tailor exercise to the weather.** Reduce speed and distance when it’s hot and humid.
- **Avoid start-and-stop activities.** Control physical exertion with a continuous form of exercise, such as walking or cycling.
- **Don’t walk or jog near heavy traffic.** Carbon monoxide pollution reduces oxygen supply to your heart.
- **Listen to your body.** If you have dizziness, nausea, weakness, unusual shortness of breath or — in particular — chest pain, stop exercising and seek medical attention.
Being overweight or obese makes your heart work harder. You’re more likely to have high blood pressure, heart and blood vessel disease, or type 2 diabetes. Losing weight through diet and physical activity may help reduce your risk of a heart attack or stroke by lowering blood pressure and improving cholesterol levels.

**What is a healthy weight?**

Consider your weight healthy if:

- You don’t have a medical problem that’s caused or aggravated by your weight
- You don’t have a family history of a weight-related condition
- Your weight falls within the recommended limits for healthy weight

The National Institutes of Health bases recommendations for healthy weight on the body mass index (BMI). The link between this indirect measure of your body fat and risk of death provides the recommended limits for weight. (To figure your BMI and determine your weight-related risk of disease, see pp. 18 to 20.)

**Losing weight safely and permanently**

If you need to lose weight, here’s how to improve your chances of getting rid of the pounds for good:
• **Make a commitment.** Lose weight because you want to, not because you want to please others. Become self-motivated.

• **Get your priorities straight.** It takes a lot of mental and physical energy to change your habits. Plan to lose weight when you aren’t distracted by any major problems or commitments.

• **Set a realistic goal.** If you’ve always been overweight, you may not need to lose as much weight as you think. A loss of only 5 to 10 percent of your current weight may be enough to significantly improve your blood pressure, energy, cholesterol and blood sugar.

• **Don’t starve yourself.** Cutting calories to less than 1,200 if you’re a woman or 1,400 if you’re a man generally won’t provide enough food to be satisfying in the long term. Eating fewer than 1,200 calories makes it difficult to get enough of some nutrients. To lose weight, the daily calorie goals below often work well, but check with your doctor or dietitian if you have a medical condition.

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<thead>
<tr>
<th>Weight</th>
<th>Calorie goal</th>
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<td>Pounds</td>
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<td>250 or less</td>
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<td>251 to 300</td>
<td>1,400</td>
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<tr>
<td>301 or more</td>
<td>1,600</td>
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• **Get and stay active.** To lose weight, gradually increase your physical activity to 60 minutes on most days of the week. It should be moderately intense, but you don’t have to do it all at once.
Does your weight put you at risk of health problems?

**STEP 1: Figure your body mass index (BMI)**

BMI is a better measurement of body fat and health risks than just your weight. Higher BMI numbers are associated with higher blood fats and blood pressure and an increased risk of heart and blood vessel disease, stroke, diabetes, and some cancers. To calculate your BMI, use the chart below. Find your height in the left column, then locate your weight. Your BMI is the number at the top of that column.

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Source: National Institutes of Health, 1998
The BMI is a good but not perfect guide. For example, muscle weighs more than fat, and many people who are very muscular and physically fit have high BMIs without added health risks. The BMI is not appropriate if you’re pregnant. Here’s what the numbers indicate:

- If your BMI is below 18.5, you may be at risk of health problems linked with low weight.
- If your BMI is between 18.5 and 24.9, it’s in the healthy range. But Asians with a BMI of 23 or more could be at risk of health problems.

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</tbody>
</table>
• If your BMI falls between 25 and 29.9, you’re overweight.
• If your BMI is 30 or higher, you’re obese.

If your BMI is too high or too low, talk with your doctor about how to improve your BMI.

**STEP 2: Measure your waist**

Measure your waist at your navel. Using your body mass index and waist size as guides, look at the table below to help assess your risk of obesity-related diseases.

---

### Does your weight put you at risk of high blood pressure, heart disease and type 2 diabetes?

<table>
<thead>
<tr>
<th>Body mass index (BMI)*</th>
<th>Waist measurement</th>
<th>Waist measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men: 40 inches or less</td>
<td>Men: More than 40 inches</td>
</tr>
<tr>
<td></td>
<td>Women: 35 inches or less</td>
<td>Women: More than 35 inches</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight category</th>
<th>BMI range</th>
<th>Increased risk risk</th>
<th>High risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight</td>
<td>25 to 29.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>30 to 34.9</td>
<td>High risk</td>
<td>Very high risk</td>
</tr>
<tr>
<td></td>
<td>35 to 39.9</td>
<td></td>
<td>Very high risk</td>
</tr>
<tr>
<td>Extremely obese</td>
<td>40 or over</td>
<td>Extremely high risk</td>
<td>Extremely high risk</td>
</tr>
</tbody>
</table>

---

*If your BMI is between 18.5 and 24.9, your weight is not likely to have a major effect on your health. If your BMI is 25 or more, you’re at increased risk of serious health problems. Asians with a BMI of 23 or more may have an increased risk of health problems.*

---

Source: National Institutes of Health, 2000
Keeping your blood sugar close to normal — by healthy eating, physical activity and, if needed, medications — reduces your risk of heart attack and stroke. If you have prediabetes or diabetes, your risk of heart disease and stroke is significantly increased.

If you have prediabetes
Prediabetes means that your blood sugar is higher than normal but not high enough to be type 2 diabetes. The long-term damage associated with diabetes — especially to your heart and blood vessels — may already be starting if you have prediabetes.

But you can prevent or delay type 2 diabetes by making healthy lifestyle changes. In a major study on diabetes prevention, those in the lifestyle treatment group (who ate a healthy diet and engaged in moderately intense physical activity) cut their risk of diabetes in half.

If you have prediabetes, see your doctor regularly and ask how often you should be tested for diabetes. Also ask for an eating and exercise plan to help prevent diabetes.

If you have diabetes
Diabetes can damage major arteries and small blood vessels, allowing fatty deposits (plaques) to form. This narrowing of arteries greatly increases your risk of heart attack and stroke.
If you have diabetes, work closely with your diabetes care team to create an action plan to keep your blood sugar under control and reduce your risk of heart attack and stroke.

Monitor your blood sugar, eat a healthy diet, stay physically active, achieve a healthy weight, use medications as directed, learn how to manage your stress, and get regular checkups.

---

**Testing for prediabetes and diabetes**

An international committee of diabetes experts recommends the A1C test (glycated hemoglobin test) for prediabetes and diabetes testing. This blood test helps determine your average blood sugar level over the past two to three months. If the A1C test isn’t available, the fasting blood glucose test may be used.

<table>
<thead>
<tr>
<th>A1C test results</th>
<th>Fasting blood glucose test results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1C level</strong>*</td>
<td><strong>Glucose level</strong></td>
</tr>
<tr>
<td>Between 4% and 6%</td>
<td>Under 100 mg/dL†</td>
</tr>
<tr>
<td>Between 6% and 6.5%</td>
<td>100 to 125 mg/dL</td>
</tr>
<tr>
<td>6.5% or higher on two separate tests</td>
<td>126 mg/dL or higher on two separate tests</td>
</tr>
</tbody>
</table>

*Results indicate what percentage of your hemoglobin (a protein in red blood cells) is sugar coated (glycated). Issues such as low iron can affect test results.

†mg/dL = milligrams of glucose per deciliter of blood

Source: American Diabetes Association, 2009
Metabolic syndrome raises risk

Metabolic syndrome increases your risk of type 2 diabetes, heart disease and stroke. If you have three or more of the risk factors below, you probably have metabolic syndrome.

- **Abdominal obesity:** Women, 35-inch waist or larger; men, 40-inch waist or larger; or 3 inches smaller with a family history of diabetes. (For most Asian-Americans, 31-inch waist or larger for women and 33-inch waist or larger for men.)

- **Triglycerides:** 150 mg/dL or higher

- **HDL ("good") cholesterol:** Women, under 50 mg/dL; men, under 40 mg/dL

- **Blood pressure:** Top number (systolic), 130 millimeters of mercury (mm Hg) or higher; bottom number (diastolic), 85 mm Hg or higher

- **Fasting blood glucose:** 100 mg/dL or higher

Ask your doctor about tests that can help determine metabolic syndrome. A healthy lifestyle can help combat metabolic syndrome and help prevent diabetes, heart disease and stroke.

Is it in your genes — or learned behavior?

Do you have the same eating habits as your parents and grandparents? The same physical activity habits?

A family history of high blood pressure, high cholesterol, weight problems, certain types of heart disease or type 2 diabetes often stems from learned behavior rather than genes.

Talk with your doctor. Discuss the eating and physical activity habits that you learned — and how you can break an unhealthy chain by living a healthier lifestyle. And if you’re at risk of heart disease because of genetics, make sure your lifestyle doesn’t raise your risk even higher.
Strategy 6: Watch your cholesterol

When you have high cholesterol, you may develop fatty deposits in your blood vessels. Eventually, these deposits make it difficult for enough blood to flow through your arteries. Decreased blood flow to your heart increases your risk of a heart attack. Decreased blood flow to your brain can cause a stroke.

Get tested
Cholesterol and triglycerides are fats that circulate in your blood. A blood test is the only way to detect high cholesterol — there are no signs or

Does your weight put you at risk of high blood pressure, heart disease and type 2 diabetes?

<table>
<thead>
<tr>
<th>Type of blood fat</th>
<th>Typical goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
<td>Below 200</td>
</tr>
<tr>
<td>LDL (&quot;bad&quot;) cholesterol</td>
<td>Below 100 (Below 70 if you’re at very high risk of heart attack)</td>
</tr>
<tr>
<td>HDL (&quot;good&quot;) cholesterol</td>
<td>Men: 40 or higher; women: 50 or higher</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>Below 150*</td>
</tr>
</tbody>
</table>

Adapted from the American Heart Association, 2007. Numbers are in milligrams per deciliter of blood (mg/dL).

*Emerging data indicates that below 100 is ideal.
symptoms. A lipid panel blood test shows numbers for total cholesterol, HDL ("good") cholesterol, LDL ("bad") cholesterol and triglycerides.

**Make lifestyle changes**

High cholesterol is largely preventable and treatable. A healthy diet, regular physical activity and medication (if needed) can go a long way toward lowering high cholesterol.

Eating too many cholesterol-rich foods raises your blood cholesterol. All animal foods, such as meat and dairy products, have cholesterol. So eat smaller amounts of lean protein and choose fat-free or low-fat dairy products. See the food guide on pp. 10-11.

If you have high cholesterol and use spreads, consider a cholesterol-lowering spread that contains plant stanol or sterol esters (such as Benecol or Promise Activ). Use as directed, as part of a diet low in saturated fat and cholesterol.

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**Fiber facts**

There are two types of dietary fiber — one type doesn’t dissolve in water (insoluble fiber) and the other does (soluble fiber). When eaten as part of a diet that’s low in saturated fat, trans fat and cholesterol, both types may help lower your risk of heart and blood vessel disease.

Soluble fiber helps lower LDL ("bad") cholesterol. You’ll find soluble fiber in foods such as oats (oat bran, for example), barley, dried beans, citrus fruits (oranges, for example), apples and strawberries. Insoluble fiber is filling, so it helps manage weight. It’s found in whole-wheat breads and cereals, wheat bran, and the skins of fruits and vegetables. The best way to get fiber is from food. But your doctor may recommend fiber supplements if necessary.
Most people with high blood pressure don’t have any signs or symptoms, even if blood pressure reaches dangerously high levels. That’s why it’s called a silent killer. High blood pressure (hypertension) is a major risk factor for heart attack and stroke.

**Blood pressure goals**
Prehypertension (see chart below) often leads to high blood pressure, which increases your risk of heart and blood vessel disease. If you’re in the prehypertension range or above, it’s especially

### Your blood pressure measurement

<table>
<thead>
<tr>
<th>Category</th>
<th>Top number (systolic)</th>
<th>Bottom number (diastolic)</th>
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</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Below 120</td>
<td>and</td>
</tr>
<tr>
<td>Prehypertension*</td>
<td>120 to 139</td>
<td>or</td>
</tr>
<tr>
<td>Stage 1 hypertension*</td>
<td>140 to 159</td>
<td>or</td>
</tr>
<tr>
<td>Stage 2 hypertension*</td>
<td>160 or above</td>
<td>or</td>
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</tbody>
</table>

Source: National Institutes of Health, 2003. Numbers are in millimeters of mercury (mm Hg).
*Based on the average of two or more readings taken at each of two or more visits after an initial screening.
important to take steps to lower your blood pressure to prevent heart and blood vessel disease.

Many people don’t make lifestyle changes until after their blood pressure becomes too high, when it’s hard to control. The lifestyle tips in this booklet can help. For example, when your weight increases, your blood pressure typically does, too. Losing even a few pounds can improve your blood pressure. And most people with high blood pressure are sensitive to sodium — even small amounts may raise blood pressure, so limit intake.

Ask your doctor how often you need blood pressure checks and whether a home blood pressure monitor would help. If your blood pressure is consistently high, you may need medication.

**Alcohol: Benefits and risks**

Moderate amounts of alcohol may increase HDL (“good”) cholesterol and reduce the risk of heart disease. But if you don’t drink, don’t start. Even moderate amounts of alcohol can raise blood pressure, increase your risk of heart failure and stroke, increase the risk of breast cancer and other cancers, interfere with some medications, interfere with sleep and complicate depression.

**Alcohol and high blood pressure**

Reducing alcohol intake can reduce your blood pressure. Heavy drinkers who cut back to moderate alcohol consumption can lower their systolic blood pressure by about 5 mm Hg and their diastolic pressure by about 3 mm Hg.

People who drink too much alcohol generally don’t get enough nutrients that help control blood pressure, such as potassium and calcium. Alcohol can also interfere with some blood pressure medications and increase side effects.

**Moderation is key**

If you drink, do so in moderation. Moderate drinking is no more than one drink a day for women and anyone age 65 or older and no more than two drinks a day for men under 65.
It’s challenging to examine the impact of psychological stress on the development of heart and blood vessel disease. Part of the problem is that stress is a difficult concept to quantify and define. What you may find stressful, another person may find invigorating.

Although more research is needed, stress may be a factor in the development of heart and blood vessel disease. Many cardiac rehabilitation programs use stress management as a valuable tool.

What is stress?
Generally, stress is what you feel when the demands on your life exceed your ability to meet those demands. Stress is your response to an event — not the event itself. Often referred to as the fight-or-flight reaction, the stress response occurs automatically when you feel threatened.

During a stressful event, your body releases a flood of hormones, including adrenaline and cortisol, into your bloodstream. Your heart beats faster, breathing quickens and blood pressure rises. You’re also more susceptible to angina, a type of chest pain.

Not all stress is bad. For example, stress associated with a job promotion can be positive. However, negative stress that lasts too long can harm your health.
Stress and high blood pressure

If you have a distressing event, your blood pressure may dramatically increase due to the temporary increase in adrenaline and cortisol. But once the stress disappears, your blood pressure decreases.

However, temporary spikes in blood pressure can complicate existing high blood pressure. And if these spikes occur often enough, they may damage your blood vessels and heart in a way that’s similar to persistent high blood pressure.

How do you react to stress?

If you react to stress by smoking, drinking too much alcohol or eating unhealthy foods, you increase your risk of high blood pressure, heart attack and stroke. Stress management strategies can help you make healthy lifestyle changes — including behavior changes that may reduce your blood pressure.

Stress-relieving steps

Take common clues to stress — headaches, indigestion, sleeplessness and sweaty palms — seriously. Learn to manage stress using these tips:

- **Change the factors you can.** You may not be able to walk away from a stressful job or home situation, but you can develop new responses to defuse anger or conflict. You can also learn to manage your time better by using several techniques — from delegating household responsibilities to just saying no.
• **Exercise regularly.** The natural decrease in adrenaline production after exercise may counteract the stress response. People who are physically fit handle stress better.

• **Relax.** Learning techniques such as guided imagery, meditation, muscle relaxation and relaxed breathing can help you relax. Your goal is to lower your heart rate and blood pressure while reducing muscle tension. Also focus on hobbies or activities you find calming, such as reading, listening to music or playing with your dog.

• **Find a friend.** From dealing with cancer to coping with a troubled relationship, social support can help reduce stress and prolong life.

• **Recognize when you need help.** If stress is keeping you from work or activities, talk to your doctor or a specialist in behavioral medicine. Behavior therapy is one approach that can help you gain control over your symptoms.

---

**Stressed? Catch your breath**

This quick exercise helps you learn to relax your breathing. When you’re faced with a stressful situation, it can have an immediate calming effect:

1. Inhale slowly through your nose, counting to six. Imagine the inhaled, warm air flowing to all parts of your body.
2. Pause.
3. Exhale slowly through your mouth, again counting to six. Imagine the tension flowing out.
4. Pause, and then begin again. Repeat several times.
Live healthy, live well

Adopting these eight strategies is within your reach. If you make a commitment and proceed step by step, reducing your risk of a heart attack or stroke becomes a realistic goal.

As you improve your lifestyle, each step complements and builds on another. A healthy diet and active lifestyle aren’t always enough to protect you from a heart attack or stroke. You still may need medication or other medical intervention.

However, only you can control your diet and lifestyle. And whether they prevent health problems or improve treatment of a disease, they’re key determinants of your health and quality of life.
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