

## CERTIFIED MEN'S HEALTH COUNSELOR ONLINE COURSE: SESSION 5

### • Heart Health, Heart Attack, Cardiac Arrest, Strokes, and Herbal Programs

The circulatory system provides a continuous supply of nutrients and oxygen to every cell in the body. Simultaneously, it picks up carbon dioxide and other waste materials produced by the cells and carries them away for removal from the body.

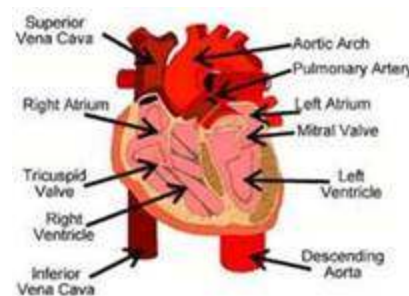


Health concerns related to the circulatory system include high cholesterol or triglycerides, high blood pressure, stress, poor circulation and heart disease.

#### Examining the Circulatory System

In order for your body to stay alive, each of its cells must have a continuous supply of food and oxygen. At the same time, carbon dioxide and other waste materials produced by the cells must be picked up for removal from the body. The circulatory system performs these two functions.

The human heart makes the circulatory system work. A hollow, pear-shaped, muscular organ, the heart is located between the lungs in the middle of the chest. It pumps blood through the body, supplying cells and tissues with oxygen and nutrients. In order to meet your body's energy demands, your heart must beat more than 100,000 times per day.



Like all other body tissues, your heart also needs oxygen and nutrients in order to function properly. Because blood flowing through the heart is traveling too fast for the heart to absorb, the heart has its own system of vessels that supply it with oxygen and nutrients.

The heart contains four chambers: the upper chambers are called atria and the lower chambers are ventricles. Each half of your heart works as a separate pump. The right side of the heart is responsible for returning the oxygen-poor blood to the lungs to expel carbon dioxide and reoxygenates the blood. The left side receives the newly oxygenated blood from the lungs and pumps it through the entire body. Although the average adult body contains less than 1.5 gallons of blood, amazingly the heart pumps 2,000 gallons each day.

Blood vessels are small tubes that carry blood to and from all parts of the body. The human circulatory system is composed of three types of vessels that total an incredible 60,000 miles in length.

The arteries are the largest blood vessels. They carry oxygen-rich blood from the heart to the cells and tissues of the body. Because arteries transport under high pressure, they have walls that are much more elastic than veins. The arteries pulsate as a result of the force with which the heart pumps new blood into them.

The veins are smaller vessels that carry oxygen-poor blood and waste products back to the heart. This blood moves slowly due to low pressure. Veins can expand or contract to accommodate variations in blood flow. Semilunar valves are found at regular intervals throughout the veins. These force the blood to move in only one direction.

Capillaries are microscopic in size. They link the arteries and veins to the tissues of the body. The exchange of oxygen and carbon dioxide takes place across thin capillary walls.

Blood supplies oxygen and transports nutrients, waste and hormonal messengers to each of the billions of cells in the body. Blood has four main components: red blood cells, white blood cells, platelets and liquid plasma. Red blood cells carry 99 percent of the oxygen the body needs and are the most abundant cells in the body, constituting 45 percent of the blood. White blood cells comprise an important part of the body's immune system. Their main function is providing defense against infectious agents. Platelets are tiny, specialized cells that are activated whenever blood clotting or blood-vessel repair is needed. Liquid plasma carries the other 1- percent of the oxygen the body needs and also helps repair damaged blood vessels. To do this, plasma is transformed into thin strands that create a protective mesh over the damaged area.

#### **Did You Know?**

- Randomized double blind clinical studies of standardized hawthorn berry extract show positive results, appearing to increase the efficiency of nerve impulses in, and protect against oxygen deprivation of, the heart muscle.
- Blood is made up of 55 percent plasma and 45 percent cells.
- Plasma is mostly water, but it also contains proteins (albumin, immunoglobulins, clotting factors, enzymes, transport proteins), salts, lipids (cholesterol), carbohydrates (glucose) and gases (oxygen, carbon dioxide).
- Garlic can offer significant protection against heart disease and stroke. It has also been shown to lower high blood pressure.

#### **Circulatory System Analysis**

If you have four or more of the following indications, you may consider nutritional aid to the circulatory system.

- Lack of energy
- Bags under eyes
- Smoking
- Poor concentration or memory
- Stressful lifestyle
- Hair loss
- Sore or painful joints
- Low endurance/stamina
- Slow recovery from illness
- High-fat/low-fiber diet
- High-carbohydrate/low-protein diet

#### **Circulatory System Suggestions**

- Eat low to moderate amounts of fat daily.
- Avoid saturated fats.
- Eat lots of fruits, vegetables, onions and garlic.
- Perform aerobic exercise, especially walking.
- Manage weight.
- Avoid stress.

## **Circulatory System Products**

The following products are listed with ingredients only as not to sell any particular product line. These ingredients can be purchased at any store you wish. If you are interested in the actual combinations listed below, please contact JLS directly.

- **Blood Pressure Combination** – This combination helps your body control the dangers of high blood pressure, regardless of the origin or cause. It inhibits damage to cells due to its potent antioxidant properties and helps relax and dilate blood vessels to encourage improved blood flow.
- **Cardiovascular Combination** – These herbs and nutrients protect the heart from disease and damage and support heart function and strength. Ingredients include hawthorn berries extract, red clover extract, ginkgo biloba, capsicum, folic acid, vitamins B6 and B12 and choline bitartrate.
- **CoQ10** – CoQ10 is essential for generating energy in every body cell and may help prevent heart disease and hypertension. It is also an antioxidant and is used in dental practices to help fight gum disease.
- **Magnesium** – The essential mineral keeps the heart muscle from going into spasm.
- **Grapine** – Grapine contains high amounts of proanthocyanidins – powerful antioxidants that help prevent cell damage by quenching oxidative free radicals. This combination of antioxidant nutrients has been shown to be many times more powerful than vitamin C or E. Proanthocyanidins also improve the integrity of collagen fibers, strengthening tissues in the skin, blood vessels, muscles, cartilage and other connective tissues.
- **Fat Grabbing Combination** – This combination contains guar gum, psyllium hulls, lecithin and chickweed herb. When taken with water, these ingredients combine in the stomach to create a gel that traps some fat molecules from food in the stomach, preventing their absorption into the bloodstream. This product promotes weight loss; increases dietary fiber intake and can help lower cholesterol (due to its psyllium hulls content).
- **Oral Chelation Combination** – This high-potency vitamin and mineral supplement contains herbs, amino acids and other nutrients designed to benefit the circulatory system. Minerals chelated to amino acids help remove plaque from artery walls, making this product a vital program for sufferers of arteriosclerosis.
- **Ginkgo & Hawthorn Combination** – These two herbs promote increased circulation and heart strength. In studies, hawthorn recipients also reported fewer overall symptoms, less fatigue and less shortness of breath. Ginkgo dilates blood vessels and bronchioles to improve circulation and oxygenation of cells. It also has scientifically proven nervous-system benefits.
- **Varicose Vein Combination** – This combination contains herbs that fortify and nourish the health, strength and resilience of veins, improving appearance and supporting optimal blood flow. The combination helps relieve congestion in the legs and minimizes damaged or weakened blood vessels.

## **Nature's Sunshine Mega-Chel Oral Chelation Program**

### **Caution**

The following program is based on the Nature's Sunshine Mega-Chel product as well as other Nature's Sunshine products. If you wish to use these products for this program please contact JLS. If you wish to follow a different oral chelation program, please follow the program that is advised for the product that you wish to use. Do not use this program with any products other than those Nature's Sunshine products listed below.

### **General Instructions**

It is important to start slowly with this program and follow instructions. Otherwise, symptoms such as nausea, dizziness, headaches and skin eruptions may occur. It is also important to taper off as instructed, or fatigue and temporary nutritional deficiencies may result.

### **Working up to a Full Dose**

For the first week, take the following with breakfast and dinner:

- 1 tablet of Mega-Chel
- ½ ounce of Colloidal Minerals OR 1 tablet of Mineral Maintenance.
- Every week increase the amount of Mega-Chel by one tablet. The second week, take two tablets of Mega-Chel and two tablets of Mineral Maintenance with breakfast and dinner. Continue this until you reach full program status (up to 12 tablets a day). If you are using Colloidal Minerals, gradually increase the amount of this supplement until you are taking 1 ounce in the morning and 1-ounce at night.

### **Full Program**

A full dose of Mega-Chel is 4-6 tablets twice daily, depending on body weight. Large people should take 6 tablets twice a day. Small people should take 4 tablets twice a day. Individuals of average height and weight should find 5 tablets twice a day sufficient.

When you reach full dose, you will be taking the following with breakfast and dinner:

- 4-6 Mega-Chel tablets
- 1 ounce of Colloidal Minerals OR 4-6 Mineral Maintenance tablets.
- Stay on this full dose for a least one-month for each 10 years of your age. For example, if you are 40 you need to stay on the full dose for at least four months, six months if you are 60, etc.

### **Tapering Off**

It is critical that you taper off slowly. On the full program you are taking large doses of certain vitamins and minerals, and your body will get lazy about extracting them from food. If you quit all at once, your body may experience a sudden drop in nutrient levels until it readjusts to absorbing these vitamins and minerals from food. Taper off by reducing the amount of tablets you take each week by two. After completing the program, some people use Mega-Chel as their daily vitamin and mineral supplement by taking two tablets per day.

### **Cleansing Reactions**

As the body removes the plaque from the walls of the arteries, the blood cholesterol levels will temporarily rise. This is normal. The kidneys and liver will remove the calcium, cholesterol and impurities from the body. If there are indications that these organs are weak, it may be necessary to give them extra support. People with kidney weakness (history of symptoms like arthritis, chronic back pain, urinary infections, etc.) should take two KB-C with each meal. People with liver weakness (history of high cholesterol, skin problems, digestive upset, etc.) should take 1 teaspoon LOCLO in a large glass of water or juice upon arising and before retiring, plus two LIV-C with each meal.

You may also wish to add some of the following supplements for special problems. Work up to these amounts gradually if you wish. For heart problems, take two HSII or two Hawthorn Berries capsules with each meal. For mental support, take two Ginkgo & Hawthorn combination capsules with each meal. For varicose veins and high risk for stroke, take two Butcher's Broom capsules with each meal.

## HEART/CIRCULATION/BLOOD VESSELS CIRCULATION

### Blood Pressure Problems

#### Indications:

Blood pressure readings exceeding 140 over 90  
Family history of high blood pressure  
Advancing age  
Diabetes  
Cigarette smoking  
Obesity  
Stress

↓  
Blood Pressure Combination  
Capsicum, Garlic & Parsley  
Stress Combination  
Calming Combination

### Cholesterol Problems

#### Indications:

Cholesterol over 200  
Triglyceride levels over 200  
High-density lipoprotein (HDL) levels less than 35  
High-fat, low-fiber diet  
High-carbohydrate, low-protein diet  
Stress

↓  
Grapine  
Fat Grabbing Combination  
Guggal Lipids  
Lecithin  
Cholesterol Regulating Combination  
Check Possible Thyroid Influences

## HEART/CIRCULATION/BLOOD VESSELS BLOOD VESSELS\*

### Congested Arteries

#### Indications:

High blood pressure  
Cold hands/feet  
Sores in extremities that won't heal  
Absent-mindedness  
Medical diagnosis of hardening of the arteries  
Angina

↓  
Oral Chelation Combination  
Ginkgo/Hawthorn Combination

### Congested Veins

#### Indications:

Varicose veins  
Hemorrhoids  
Spider veins

↓  
Varicose Vein Combination  
Grapine

\*Consult a doctor for a diagnosis first.

## HEART/CIRCULATION/BLOOD VESSELS

### HEART\*

#### Indications:

Crease in ear lobe  
Large, red, bulbous nose (rule out acne, rosacea or alcohol)  
Crease in tongue from tip to back  
Cold hands and feet  
Swelling in the feet and ankles  
Angina  
Family history of heart disease



Cardiovascular Combination  
CoQ10  
Magnesium

\*Consult a doctor for a diagnosis first.

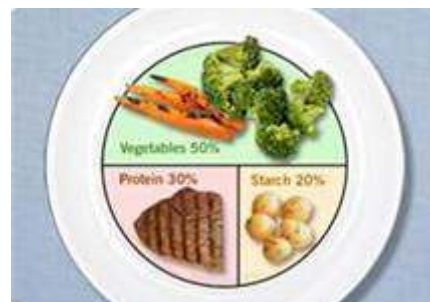
## Heart-healthy diet: 8 steps to prevent heart disease

Changing your eating habits can be tough. Start with these eight strategies to kick-start your way toward a heart-healthy diet.

Although you might know that eating certain foods can increase your heart disease risk, it's often tough to change your eating habits. Whether you have years of unhealthy eating under your belt or you simply want to fine-tune your diet, here are eight heart-healthy diet tips. Once you know which foods to eat more of and which foods to limit, you'll be on your way toward a heart-healthy diet.

### Control your portion size

How much you eat is just as important as what you eat. Overloading your plate, taking seconds and eating until you feel stuffed can lead to eating more calories, fat and cholesterol than you should. Portions served in restaurants are often more than anyone needs. Keep track of the number of servings you eat — and use proper serving sizes — to help control your portions. Eating more of low-calorie, nutrient-rich foods, such as fruits and vegetables, and less of high-calorie, high-sodium foods, such as refined, processed or fast foods, can shape up your diet as well as your heart and waistline.



A serving size is a specific amount of food, defined by common measurements such as cups, ounces or pieces. For example, one serving of pasta is 1/2 cup, or about the size of a hockey puck. A serving of meat, fish or chicken is 2 to 3 ounces, or about the size and thickness of a deck of cards. Judging serving size is a learned skill. You may need to use measuring cups and spoons or a scale until you're comfortable with your judgment.

### **Eat more vegetables and fruits**

Vegetables and fruits are good sources of vitamins and minerals. Vegetables and fruits are also low in calories and rich in dietary fiber. Vegetables and fruits contain substances found in plants that may help prevent cardiovascular disease. Eating more fruits and vegetables may help you eat less high-fat foods, such as meat, cheese and snack foods.



Featuring vegetables and fruits in your diet can be easy. Keep vegetables washed and cut in your refrigerator for quick snacks. Keep fruit in a bowl in your kitchen so that you'll remember to eat it. Choose recipes that have vegetables or fruits as the main ingredient, such as vegetable stir-fry or fresh fruit mixed into salads.

<b>Fruits and vegetables to choose</b>	<b>Fruits and vegetables to avoid</b>
<ul style="list-style-type: none"><li>• Fresh or frozen vegetables and fruits</li><li>• Low-sodium canned vegetables</li><li>• Canned fruit packed in juice or water</li></ul>	<ul style="list-style-type: none"><li>• Coconut</li><li>• Vegetables with creamy sauces</li><li>• Fried or breaded vegetables</li><li>• Canned fruit packed in heavy syrup</li><li>• Frozen fruit with sugar added</li></ul>

### **Select whole grains**

Whole grains are good sources of fiber and other nutrients that play a role in regulating blood pressure and heart health. You can increase the amount of whole grains in a heart-healthy diet by making simple substitutions for refined grain products. Or be adventuresome and try a new whole grain, such as whole-grain couscous, quinoa or barley.



Another easy way to add whole grains to your diet is ground flaxseed. Flaxseeds are small brown seeds that are high in fiber and omega-3 fatty acids, which can lower your total blood cholesterol. You can grind the seeds in a coffee grinder or food processor and stir a teaspoon of them into yogurt, applesauce or hot cereal.

<b>Grain products to choose</b>	<b>Grain products to limit or avoid</b>
<ul style="list-style-type: none"><li>• Whole-wheat flour</li><li>• Whole-grain bread, preferably 100% whole-wheat bread or 100% whole-grain bread</li><li>• High-fiber cereal with 5 g or more of fiber in a serving</li><li>• Whole grains such as brown rice, barley and buckwheat (kasha)</li><li>• Whole-grain pasta</li><li>• Oatmeal (steel-cut or regular)</li><li>• Ground flaxseed</li></ul>	<ul style="list-style-type: none"><li>• White, refined flour</li><li>• White bread</li><li>• Muffins</li><li>• Frozen waffles</li><li>• Corn bread</li><li>• Doughnuts</li><li>• Biscuits</li><li>• Quick breads</li><li>• Granola bars</li><li>• Cakes</li><li>• Pies</li><li>• Egg noodles</li><li>• Buttered popcorn</li><li>• High-fat snack crackers</li></ul>

### **Limit unhealthy fats and cholesterol**

Limiting how much saturated and trans fats you eat is an important step to reduce your blood cholesterol and lower your risk of coronary artery disease. A high blood cholesterol level can lead to a buildup of plaques in your arteries, called atherosclerosis, which can increase your risk of heart attack and stroke.

The American Heart Association offers these guidelines for how much fat and cholesterol to include in a heart-healthy diet:

Type of fat	Recommendation
Saturated fat	Less than 7% of your total daily calories, or less than 14 g of saturated fat if you follow a 2,000-calorie-a-day diet
Trans fat	Less than 1% of your total daily calories, or less than 2 g of trans fat if you follow a 2,000-calorie-a-day diet
Cholesterol	Less than 300 mg a day for healthy adults; less than 200 mg a day for adults with high levels of LDL ("bad") cholesterol or those who are taking cholesterol-lowering medication

The best way to reduce saturated and trans fats in your diet is to limit the amount of solid fats — butter, margarine and shortening — you add to food when cooking and serving. You can also reduce the amount of saturated fat in your diet by trimming fat off your meat or choosing lean meats with less than 10 percent fat.



You can also use low-fat substitutions when possible for a heart-healthy diet. For example, top your baked potato with salsa or low-fat yogurt rather than butter, or use low-sugar fruit spread on your toast instead of margarine.

You may also want to check the food labels of some cookies, crackers and chips. Many of these snacks — even those labeled "reduced fat" — may be made with oils containing trans fats. One clue that a food has some trans-fat in it is the phrase "partially hydrogenated" in the ingredient list.

When you do use fats, choose monounsaturated fats, such as olive oil or canola oil. Polyunsaturated fats, found in nuts and seeds, also are good choices for a heart-healthy diet. When used in place of saturated fat, monounsaturated and polyunsaturated fats may help lower your total blood cholesterol. But moderation is essential. All types of fat are high in calories.



Fats to choose	Fats to limit
<ul style="list-style-type: none"> <li>• Olive oil</li> <li>• Canola oil</li> <li>• Margarine that's free of trans fats</li> <li>• Cholesterol-lowering margarine, such as Benecol, Promise Activ or Smart Balance</li> </ul>	<ul style="list-style-type: none"> <li>• Butter</li> <li>• Lard</li> <li>• Bacon fat</li> <li>• Gravy</li> <li>• Cream sauce</li> <li>• Nondairy creamers</li> <li>• Hydrogenated margarine and shortening</li> <li>• Cocoa butter, found in chocolate</li> <li>• Coconut, palm, cottonseed and palm-kernel oils</li> </ul>

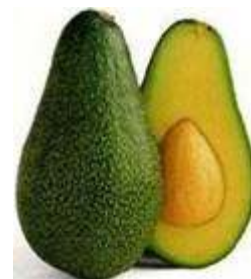
### **Choose low-fat protein sources**

Lean meat, poultry and fish, low-fat dairy products, and egg whites or egg substitutes are some of your best sources of protein. But be careful to choose lower fat options, such as skim milk rather than whole milk and skinless chicken breasts rather than fried chicken patties.



Fish is another good alternative to high-fat meats. And certain types of fish are rich in omega-3 fatty acids, which can lower blood fats called triglycerides. You'll find the highest amounts of omega-3 fatty

acids in cold-water fish, such as salmon, mackerel and herring. Other sources are flaxseed, walnuts, soybeans and canola oil.



Legumes — beans, peas and lentils — also are good sources of protein and contain less fat and no cholesterol, making them good substitutes for meat. Substituting plant protein for animal protein — for example, a soy or bean burger for a hamburger — will reduce your fat and cholesterol intake.

Proteins to choose	Proteins to limit or avoid
<ul style="list-style-type: none"> <li>• Low-fat dairy products such as skim or low-fat (1%) milk, yogurt and cheese</li> <li>• Egg whites or egg substitutes</li> <li>• Fish, especially fatty, cold-water fish, such as salmon</li> <li>• Skinless poultry</li> <li>• Legumes</li> <li>• Soybeans and soy products, for example, soy burgers and tofu</li> <li>• Lean ground meats</li> </ul>	<ul style="list-style-type: none"> <li>• Full-fat milk and other dairy products</li> <li>• Organ meats, such as liver</li> <li>• Egg yolks</li> <li>• Fatty and marbled meats</li> <li>• Spareribs</li> <li>• Cold cuts</li> <li>• Hot dogs and sausages</li> <li>• Bacon</li> <li>• Fried or breaded meats</li> </ul>

### **Reduce the sodium in your food**

Eating a lot of sodium can contribute to high blood pressure, a risk factor for cardiovascular disease. Reducing sodium is an important part of a heart-healthy diet. The Department of

Agriculture recommends:

- Healthy adults have no more than 2,300 milligrams (mg) of sodium a day (about a teaspoon)
- People age 51 or older, African-Americans, and people who have been diagnosed with high blood pressure, diabetes or chronic kidney disease have no more than 1,500 mg of sodium a day

Although reducing the amount of salt you add to food at the table or while cooking is a good first step, much of the salt you eat comes from canned or processed foods, such as soups and frozen dinners. Eating fresh foods and making your own soups and stews can reduce the amount of salt you eat. If you like the convenience of canned soups and prepared meals, look for ones with reduced sodium. Be wary of foods that claim to be lower in sodium because they are seasoned with sea salt instead of regular table salt — sea salt has the same nutritional value as regular salt.



Another way to reduce the amount of salt you eat is to choose your condiments carefully. Many condiments are available in reduced-sodium versions, and salt substitutes can add flavor to your food with less sodium.

Low-salt items to choose	High-salt items to avoid
<ul style="list-style-type: none"><li>• Herbs and spices</li><li>• Salt substitutes</li><li>• Reduced-salt canned soups or prepared meals</li><li>• Reduced-salt versions of condiments, such as reduced-salt soy sauce and reduced-salt ketchup</li></ul>	<ul style="list-style-type: none"><li>• Table salt</li><li>• Canned soups and prepared foods, such as frozen dinners</li><li>• Tomato juice</li><li>• Soy sauce</li></ul>

### Plan ahead: Create daily menus

You know what foods to feature in your heart-healthy diet and which ones to limit. Now it's time to put your plans into action.



Create daily menus using the six strategies listed above. When selecting foods for each meal and snack, emphasize vegetables, fruits and whole grains. Choose lean protein sources and limit high-fat and salty foods. Watch your portion sizes and add variety to your menu choices. For example, if you have grilled salmon one evening, try a black-bean burger the next night. This helps ensure that you'll get all of the nutrients your body needs. Variety also makes your meals and snacks more interesting.

### Allow yourself an occasional treat

Allow yourself an indulgence every now and then. A candy bar or handful of potato chips won't derail your heart-healthy diet. But don't let it turn into an excuse for giving up on your healthy-eating plan. If overindulgence is the exception, rather than the rule, you'll balance things out over the long term. What's important is that you eat healthy foods most of the time.

Incorporate these eight tips into your life, and you'll continue to find that heart-healthy eating is both doable and enjoyable. With planning and a few simple substitutions, you can eat with your heart in mind.

## **Menus for heart-healthy eating: Cut the fat and salt**

### **Heart-healthy eating can be easy if you have a strong start. Use these menus to kick off your heart-healthy diet.**

Do you want to adopt a heart-healthy diet but aren't sure where to start? One way to begin is to create a daily meal plan that emphasizes whole grains, fruits and vegetables and limits high-fat foods (such as red meat, cheese and baked goods) and high-sodium foods (such as canned or processed foods). Below are two days' worth of heart-healthy menus. Use them as examples of heart-healthy eating.

#### **Day 1 menu**

##### **Breakfast**

1 cup cooked oatmeal, sprinkle with 1 tablespoon cinnamon and chopped walnuts  
1 banana  
1 cup skim milk

##### **Lunch**

1 cup low-fat (1 percent or lower) plain yogurt with 1 teaspoon ground flaxseed  
1/2 cup peach halves, canned in juice  
5 Melba toast crackers  
1 cup raw broccoli and cauliflower  
2 tablespoons low-fat cream cheese, plain or vegetable flavor (as a spread for crackers or vegetable dip)  
Sparkling water

##### **Dinner**

Grilled turkey burger (4 ounces) with a whole-grain bun  
1/2 cup green beans with toasted almonds  
2 cups mixed salad greens  
2 tablespoons low-fat salad dressing  
1 tablespoon sunflower seeds  
1 cup skim milk  
1 small orange

##### **Snack**

1 cup skim milk  
9 animal crackers

#### **Day 1 nutrient analysis**

Calories	1,556
Total fat	42 g
Saturated fat	11 g
Monounsaturated fat	12 g
Cholesterol	109 mg
Sodium	1,595 mg
Carbohydrate	229 g
Fiber	26 g
Protein	81 g

## Day 2 menu

### Breakfast

1 cup plain low-fat yogurt, topped with 3/4 cup blueberries  
3/4 cup calcium-fortified orange juice

### Lunch

1 whole-wheat pita stuffed with 1 cup shredded romaine lettuce, 1/2 cup sliced tomato, 1/4 cup sliced cucumber, 2 tablespoons crumbled feta cheese and 1 tablespoon reduced-fat ranch dressing  
1 kiwi  
1 cup skim milk

### Dinner

Chicken stir-fry with eggplant and basil  
1 cup brown rice with 1 tablespoon chopped dried apricots  
1 cup steamed broccoli  
4 ounces red wine or concord grape juice

### Snack

3 graham cracker squares  
1 cup fat-free frozen yogurt

### Day 2 nutrient analysis

Calories	1,496
Total fat	24 g
Saturated fat	7 g
Monounsaturated fat	9 g
Cholesterol	103 mg
Sodium	1,638 mg
Carbohydrate	230 g
Fiber	28 g
Protein	80 g

On both days, if you're thirsty, drink water as a calorie-free way to supplement your diet.

## Nuts and your heart: Eating nuts for heart health

**Eating nuts helps your heart. Discover how walnuts, almonds and other nuts help lower your cholesterol when eaten as part of a balanced diet.**

Eating nuts as part of a healthy diet can be good for your heart. Nuts, which contain unsaturated fatty acids and other nutrients, are a great snack food, too. They're inexpensive, easy to store and easy to take with you to work or school.

The type of nut you eat isn't that important, although some nuts have more heart-healthy nutrients and fats than do others. Walnuts, almonds, hazelnuts — you name it — almost every type of nut has a lot of nutrition packed into a tiny package. If you have heart disease, eating nuts instead of a less healthy snack can help you more easily follow a heart-healthy diet.



## Can eating nuts help your heart?

People who eat nuts as part of a heart-healthy diet can lower the LDL, low-density lipoprotein or "bad," cholesterol level in their blood. High LDL is one of the primary causes of heart disease.

Eating nuts reduces your risk of developing blood clots that can cause a fatal heart attack. Nuts also improve the health of the lining of your arteries. The evidence for the heart-healthy benefits of nuts isn't rock solid — the Food and Drug Administration only allows food companies to say evidence "suggests but does not prove" that eating nuts reduces heart disease risk.



## What's in nuts that's thought to be heart healthy?

Although it varies by nut, most nuts contain at least some of these heart-healthy substances:

- **Unsaturated fats.** It's not entirely clear why, but it's thought that the "good" fats in nuts — both monounsaturated and polyunsaturated fats — lower bad cholesterol levels.
- **Omega-3 fatty acids.** Many nuts are also rich in omega-3 fatty acids. Omega-3s are a healthy form of fatty acids that seem to help your heart by, among other things, preventing dangerous heart rhythms that can lead to heart attacks. Omega-3 fatty acids are also found in many kinds of fish, but nuts are one of the best plant-based sources of omega-3 fatty acids.
- **Fiber.** All nuts contain fiber, which helps lower your cholesterol. Fiber also makes you feel full, so you eat less. Fiber is also thought to play a role in preventing diabetes.
- **Vitamin E.** Vitamin E may help stop the development of plaques in your arteries, which can narrow them. Plaque development in your arteries can lead to chest pain, coronary artery disease or a heart attack.
- **Plant sterols.** Some nuts contain plant sterols, a substance that can help lower your cholesterol. Plant sterols are often added to products like margarine and orange juice for additional health benefits, but sterols occur naturally in nuts.
- **L-arginine.** Nuts are also a source of L-arginine, which is a substance that may help improve the health of your artery walls by making them more flexible and less prone to blood clots that can block blood flow.

## What amount of nuts is considered healthy?

Nuts contain a lot of fat; as much as 80 percent of a nut is fat. Even though most of this fat is healthy fat, it's still a lot of calories. That's why you should eat nuts in moderation. Ideally, you should use nuts as a substitute for saturated fats, such as those found in meats, eggs and dairy products.

Instead of eating unhealthy saturated fats, try substituting a handful of nuts. According to the Food and Drug Administration, eating about a handful (1.5 ounces, or 42.5 grams) a day of most nuts, such as almonds, hazelnuts, peanuts, pecans, some pine nuts, pistachio nuts and walnuts, may reduce your risk of heart disease. But again, do this as part of a heart-

healthy diet. Just eating nuts and not cutting back on saturated fats found in many dairy and meat products won't do your heart any good.

### **Does it matter what kind of nuts you eat?**

Most nuts appear to be generally healthy, though some more so than others. Walnuts are one of the best-studied nuts, and it's been shown they contain high amounts of omega-3 fatty acids. Almonds, macadamia nuts, hazelnuts and pecans are other nuts that appear to be quite heart healthy. Even peanuts — which are technically not a nut, but a legume, like beans — seem to be relatively healthy. Coconut, which is technically a fruit, may be considered by some to be a nut, but it doesn't seem to have heart-healthy benefits. Both coconut meat and oil don't have the benefits of the mono- and polyunsaturated fats.



Keep in mind; you could end up canceling out the heart-healthy benefits of nuts if they're covered with chocolate, sugar or salt.

Here's some nutrition information on common types of nuts. All calorie and fat content measurements are for 1 ounce, or 28.4 grams (g), of unsalted nuts.

<b>Type of nut</b>	<b>Calories</b>	<b>Total fat (saturated/unsaturated fat)*</b>
Almonds, raw	163	14 g (1.1 g/12.2 g)
Almonds, dry roasted	169	15 g (1.1 g/12.9 g)
Brazil nuts, raw	186	19 g (4.3 g/12.8 g)
Cashews, dry roasted	163	13.1 g (2.6 g/10 g)
Chestnuts, roasted	69	0.6 g (0.1 g/0.5 g)
Hazelnuts (filberts), raw	178	17 g (1.3 g/15.2 g)
Hazelnuts (filberts), dry roasted	183	17.7 g (1.3 g/15.6 g)
Macadamia nuts, raw	204	21.5 g (3.4 g/17.1 g)
Macadamia nuts, dry roasted	204	21.6 g (3.4 g/17.2 g)
Peanuts, dry roasted	166	14 g (2g/11.4 g)
Pecans, dry roasted	201	21 g (1.8 g/18.3 g)
Pistachios, dry roasted	161	12.7 g (1.6 g/10.5 g)
Walnuts, halved	185	18.5 g (1.7 g/15.9 g)

\*The saturated and unsaturated fat contents in each nut may not add up to the total fat content because the fat value may also include some non-fatty acid material, such as sugars or phosphates.

### **How about nut oils? Are they healthy, too?**

Nut oils are a good source of omega-3 fatty acids and vitamin E, but they lack the fiber found in whole nuts. Walnut oil is the highest in omega-3s. Nut oils contain saturated as well as unsaturated fats. Consider using nut oils in homemade salad dressing or in cooking. When cooking with nut oils, remember that they respond differently to heat than do vegetable oils. Nut oil, if overheated, can become bitter. Just like with nuts, use nut oil in moderation, as the oils are high in fat and calories.



## **Chelation therapy for heart disease**

The theory behind using chelation therapy for heart disease is that the medicine used in the treatment binds to the calcium that's in fatty deposits (plaques) in your arteries. Once the medicine binds to the calcium, the plaques are swept away as the medicine moves through your bloodstream.

In chelation therapy, a dose of a medication called ethylenediaminetetraacetic acid (EDTA) is delivered through an intravenous (IV) line. This medication seeks out and binds to minerals in your bloodstream. Once the medication binds to the minerals, it creates a compound that leaves your body in your urine.



Chelation therapy is a proven treatment for lead or mercury poisoning. Some doctors think that chelation therapy could begin to reverse heart disease by binding to the calcium in the plaques clogging your arteries and sweeping it away.

Some doctors are concerned about the safety of chelation therapy as a treatment for heart disease. Potential side effects of chelation therapy include:

- A burning sensation at the injection site
- Fever
- A sudden drop in blood pressure
- Headache
- Nausea
- Vomiting
- Inability to create new blood cells
- Mineral deficiencies

Keep in mind that in chelation therapy, the medication used binds not only to metals and calcium in your blood, but also to minerals that are an important part of your diet. Following chelation therapy, you'll be given vitamin supplements that contain large amounts of the minerals that chelation therapy removes from your body. It's important that you carefully follow the instructions for taking the vitamins if you choose to have chelation therapy for heart disease.

Rare complications of chelation therapy include permanent kidney damage or failure. Deaths have occurred in some chelation studies. After weighing the risks, if you decide to have chelation therapy, there are no special preparations necessary. You'll need to sit in a chair for several hours to receive chelation therapy, so dress in comfortable clothing for your visit.

### **During the procedure**

Chelation therapy is done during the course of five to 30 treatments with a doctor or alternative medicine practitioner. During each treatment, you sit in a chair and an IV line is inserted in your hand or arm. A liquid solution is given to you through the IV line. Each treatment usually takes several hours. You may feel a temporary stinging or burning sensation at the injection site.

### **After the procedure**

After the procedure, you can go about your daily activities. You'll be able to drive yourself home, eat your usual diet and do chores normally. You may notice some swelling around your ankles or that you need to urinate more than usual. Both result from the amount of fluid that's in the solution injected during chelation therapy.

Because the solution used in chelation therapy also binds to vitamins and minerals in your bloodstream, you'll need to take supplements after your procedure to replace them. You'll take the pills until you've finished your series of chelation treatments. Because the supplements are strong, carefully follow the instructions for taking them.

It's unclear whether chelation therapy can prevent or treat heart disease. A large clinical trial, sponsored by the National Institutes of Health, is ongoing to see if chelation therapy can treat heart disease. The researchers working on the trial have finished recruiting participants and will release the study results within the next few years.

Because of the lack of scientific evidence to support chelation therapy as treatment for heart disease, the Food and Drug Administration hasn't approved chelation therapy. Also, the American Heart Association doesn't recommend chelation therapy as a treatment for heart disease.

## **Risk Factors for Heart Disease**

### **Obesity**

Obesity is defined as having an excessive amount of body fat. Obesity is more than just a cosmetic concern, though. 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. You can usually lose weight through dietary changes, increased physical activity and behavior changes. In some cases, prescription medications or weight-loss surgery may be options.

Obesity is diagnosed when an individual's 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.

<b>BMI</b>	<b>Weight status</b>
Below 18.5	Underweight
18.5 — 24.9	Normal
25.0 — 29.9	Overweight
30.0 and higher	Obese
40.0 and higher	Extreme obesity

Because BMI doesn't directly measure body fat, some people, such as muscular athletes, may have a BMI in the obese category even though they don't have excess body fat.



## Causes

Although there are genetic 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 usually results from a combination of causes and contributing factors, including:

- **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.** Having a diet that's high in calories, eating fast food, skipping breakfast, eating most of your calories at night, drinking high-calorie beverages and eating oversized portions all contribute to weight gain.
- **Lack of sleep.** Getting less than seven hours of sleep a night 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.
- **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.
- **Medical problems.** Obesity can sometimes be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome, polycystic ovary syndrome, and other diseases and conditions. Some medical problems, such as arthritis, can lead to decreased activity, which may result in weight gain. A low metabolism is unlikely to cause obesity, as is having low thyroid function.

## Risk factors

Obesity occurs when you eat and drink more calories than you burn through exercise and normal daily activities. Your body stores these extra calories as fat. 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. Even when someone has a genetic predisposition, environmental factors ultimately make you gain more weight.
- **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 off through exercise and normal daily activities.
- **Unhealthy diet and eating habits.** Having a diet that's high in calories, eating fast food, skipping breakfast, consuming high-calorie drinks and eating oversized portions all contribute to weight gain.
- **Family lifestyle.** Obesity tends to run in families. That's not just because of genetics. Family members tend to have similar eating, lifestyle and activity habits. If one or both of your parents are obese, your risk of being obese is increased.

- **Quitting smoking.** Quitting smoking is often associated with weight gain. And for some, it can lead to a weight gain of as much as several pounds a week for several months, which can result in obesity. 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 at night 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.
- **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.
- **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 control what you eat as you age, you'll likely gain weight.
- **Social and economic issues.** Certain social and economic issues may be linked to obesity. You may not have safe areas to exercise, 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.
- **Medical problems.** Obesity can rarely be traced to a medical cause, such as Prader-Willi syndrome, Cushing's syndrome, polycystic ovary syndrome, and other diseases and conditions. Some medical problems, such as arthritis, can lead to decreased activity, which may result in weight gain. A low metabolism is unlikely to cause obesity, as is having low thyroid function.

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.

## **Complications**

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

- High cholesterol and triglycerides
- Type 2 diabetes
- High blood pressure
- Metabolic syndrome — a combination of high blood sugar, high blood pressure, high triglycerides and high cholesterol
- Heart disease
- Stroke
- Cancer, including cancer of the colon, rectum and prostate
- Sleep apnea, a potentially serious sleep disorder in which breathing repeatedly stops and starts
- Depression

- Gallbladder disease
- Erectile dysfunction and sexual health issues, due to deposits of fat blocking or narrowing the arteries to the genitals
- Nonalcoholic fatty liver disease, a condition in which fat builds up in the liver and can cause inflammation or scarring
- Osteoarthritis
- Skin problems, such as poor wound healing

### **Quality of life**

When you're obese, your overall quality of life may be lower, too. You may not be able to do things you'd normally enjoy as easily as you'd like. You may have trouble participating in family activities. You may avoid public places. You may even encounter discrimination.

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

- Depression
- Disability
- Physical discomfort
- Sexual problems
- Shame
- Social isolation

### **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:

- Why can't I manage my weight on my own?
- What other health problems might I have?
- Should I see a dietitian?
- How can I overcome obstacles that keep me from being more physically active?
- What are the treatment options for obesity and my other health problems?
- Is weight-loss surgery an option for me?
- Will counseling help?
- Are there any brochures or other printed material that I can take home with me?
- What websites do you recommend visiting?

### **How to change**

You can start making some changes on your own to your eating and activity levels as you begin the journey to lose weight.

- **Start making healthy changes in your diet**, such as eating more fruits, vegetables and whole grains and reducing portion sizes. Eat breakfast.
- **Track how much you're eating or drinking each day** so that you get a sense of how many calories you're taking in. It's easy to underestimate how many calories you actually take in every day.

- **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.

## **Tests and diagnosis**

If your doctor believes you are overweight or obese, he or she 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.
- **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 in the examination and laboratory tests, such as high blood pressure and diabetes.
- **Calculating your BMI.** Your doctor will check your body mass index (BMI) to determine your level of obesity. 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 and men with a waist measurement of more than 40 inches may have more health risks than do people with smaller waist measurements.
- **A general physical exam.** This includes measuring your height, checking vital signs, such as heart rate, blood pressure and temperature, listening to your heart and lungs, and examining your abdomen.
- **Blood tests.** What tests you have depend on your health and risk factors. They may include a cholesterol test, liver function tests, fasting glucose, a thyroid test and others, depending on your health situation. 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 have. And this will shape what treatment options are right for you.

## **Treatments and drugs**

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 nutritionist, dietitian, therapist or an obesity specialist, to help you understand and make changes in your eating and activity habits. You can start feeling better and seeing improvements in your health by just introducing better eating and activity habits. The initial goal is a modest weight loss — 5 to 10 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 10 to 20 pounds (4.5 to 9.1 kg) to start seeing 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 eating healthier are vital to overcoming obesity. Although you may lose weight quickly at first, slow and steady weight loss of 1 or 2 pounds (1/2 to 1 kilogram) a week 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. Dietary ways to overcome obesity include:

- **A low-calorie diet.** 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 1,000 to 1,600 calories.
- **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 low energy density. These foods provide a larger portion size with a fewer number of calories. By eating larger portions of foods less packed with calories, you reduce hunger pangs, take in fewer calories and feel better about your meal, which contributes to how satisfied you feel overall.
- **Adopting a healthy-eating plan.** 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. 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 nuts and olive, canola and nut oils.
- **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 also 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.** The American College of Sports Medicine recommends that people who are overweight or obese get at least 150 minutes a week of moderate-intensity physical activity to prevent further weight gain or to lose a modest amount of weight. But to achieve significant weight loss, you may need to get as much as 250 to 300 minutes of exercise a week. You probably will need to gradually increase the amount you exercise as your endurance and fitness improve. To make your own exercise goal more doable, break it up into several sessions throughout the day, doing just five or six minutes at a time.
- **Increase your daily activity.** 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, 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. 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. Counseling may be available by telephone, email or Internet-based programs if travel is difficult. Therapy can take place on both an individual and group basis.
- **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.

## **Lifestyle and home remedies**

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:

- **Stick 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.
- **Take 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.
- **Learn 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.
- **Enlist 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.
- **Set 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.
- **Identify and avoid 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.
- **Keep a record.** Keep a food and activity journal. This journal 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 the journal to track other important health parameters such as blood pressure and cholesterol levels and overall fitness.

## **Coping and support**

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.

## **Prevention**

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.** According to the American College of Sports Medicine, you need to get 150 to 250 minutes of moderate-intensity activity a week to prevent weight gain. Moderately intense physical activities include fast walking and swimming.
- **Eat healthy meals and snacks.** Focus on low-calorie, nutrient-dense foods, such as fruits, vegetables and whole grains. Avoid saturated fat and limit sweets and alcohol. 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 more often than you choose foods that don't.
- **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.



## Metabolic syndrome

Metabolic syndrome is a cluster of conditions — increased blood pressure, a high blood sugar level, excess body fat around the waist or abnormal cholesterol levels — that occur together, increasing your risk of heart disease, stroke and diabetes.

Having just one of these conditions doesn't mean you have metabolic syndrome. However, any of these conditions increase your risk of serious disease. If more than one of these conditions occur in combination, your risk is even greater.



If you have metabolic syndrome or any of the components of metabolic syndrome, aggressive lifestyle changes can delay or even prevent the development of serious health problems.

### Symptoms

Having metabolic syndrome means you have three or more disorders related to your metabolism at the same time, including:

- **Obesity**, with your body fat concentrated around your waist (having an "apple shape"). For a metabolic syndrome diagnosis, obesity is defined by having a waist circumference of 40 inches (102 centimeters or cm) or more for men and 35 inches (89 cm) or more for women, although waist circumference cutoff points can vary by race.
- **Increased blood pressure**, meaning a systolic (top number) blood pressure measurement of 130 millimeters of mercury (mm Hg) or more or a diastolic (bottom number) blood pressure measurement of 85 mm Hg or more.
- **High blood sugar level**, with a fasting blood glucose test result of 100 milligrams/deciliter (mg/dL), or 5.6 millimoles per liter (mmol/L), or more.
- **High cholesterol**, with a level of the blood fat called triglycerides of 150 mg/dL, (1.7 millimoles/liter or mmol/L) or more and a level of high-density lipoprotein (HDL) cholesterol — the "good" cholesterol — of less than 40 mg/dL (1.04 mmol/L) for men or 50 mg/dL (1.3 mmol/L) for women.

Having one component of metabolic syndrome means you're more likely to have others. And the more components you have, the greater are the risks to your health.

### Causes

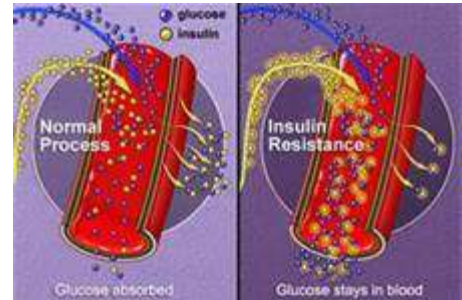
The metabolic syndrome includes several symptoms that have different causes.

#### Insulin resistance

Metabolic syndrome is linked to your body's metabolism, possibly to a condition called insulin resistance. Insulin is a hormone made by your pancreas that helps control the amount of sugar in your bloodstream.

Normally, your digestive system breaks down the foods you eat into sugar (glucose). Your blood carries the glucose to your body's tissues, where the cells use it as fuel.

Glucose enters your cells with the help of insulin. In people with insulin resistance, cells don't respond normally to insulin, and glucose can't enter the cells as easily. As a result, glucose levels in your blood rise despite your body's attempt to control the glucose by churning out more and more insulin. The result is higher than normal levels of insulin in your blood. This can eventually lead to diabetes when your body is unable to make enough insulin to control the blood glucose within the normal range.



Even if your levels aren't high enough to be considered diabetes, an elevated glucose level can still be harmful. In fact, some doctors refer to this condition as "prediabetes." Increased insulin raises your triglyceride level and other blood fat levels. It also interferes with how your kidneys work, leading to higher blood pressure. These combined effects of insulin resistance put you at risk of heart disease, stroke, diabetes and other conditions.

### **Combination of factors**

Insulin resistance probably involves a variety of genetic and environmental factors. Some people may be genetically prone to insulin resistance, inheriting the tendency from their parents. But being overweight and inactive are major contributors.

### **Risk factors**

The following factors increase your chances of having metabolic syndrome:

- **Age.** The risk of metabolic syndrome increases with age, affecting less than 10 percent of people in their 20s and 40 percent of people in their 60s. However, warning signs of metabolic syndrome can appear in childhood.
- **Race.** Hispanics and Asians seem to be at greater risk of metabolic syndrome than other races are.
- **Obesity.** A body mass index (BMI) — a measure of your percentage of body fat based on height and weight — greater than 25 increases your risk of metabolic syndrome. So does abdominal obesity — having an apple shape rather than a pear shape.
- **History of diabetes.** You're more likely to have metabolic syndrome if you have a family history of type 2 diabetes or a history of diabetes during pregnancy (gestational diabetes).
- **Other diseases.** A diagnosis of high blood pressure, cardiovascular disease — also increases your risk of metabolic syndrome.

### **Complications**

Having metabolic syndrome can increase your risk of developing these conditions:

- **Diabetes.** If you don't make lifestyle changes to control your insulin resistance, your glucose levels will continue to increase. You may develop diabetes as a result of metabolic syndrome.

- **Cardiovascular disease.** High cholesterol and high blood pressure can contribute to the buildup of plaques in your arteries. These plaques can cause your arteries to narrow and harden, which can lead to a heart attack or stroke.

## **Tests and diagnosis**

Several organizations have criteria for diagnosing metabolic syndrome. These guidelines were created by the National Cholesterol Education Program (NCEP) with modifications by the American Heart Association. According to these guidelines, you have metabolic syndrome if you have three or more of these traits:

- **Large waist circumference**, greater than 40 inches (102 cm) for men. Certain genetic risk factors, such as having a family history of diabetes or being of Asian descent — which increases your risk of insulin resistance — lower the waist circumference limit. If you have one of these genetic risk factors, waist circumference limits are 37 to 39 inches (94 to 99 cm) for men.
- **A triglyceride level** higher than 150 mg/dL (1.7 mmol/L), or you're receiving treatment for high triglycerides.
- **Reduced HDL** ("good") cholesterol — less than 40 mg/dL (1.04 mmol/L) in men — or you're receiving treatment for low HDL.
- **Increased blood pressure**, meaning a systolic (top number) blood pressure measurement of 130 millimeters of mercury (mm Hg) or more or a diastolic (bottom number) blood pressure measurement of 85 mm Hg or more.
- **Elevated fasting blood sugar** (blood glucose) of 100 mg/dL (5.6 mmol/L) or higher, or you're receiving treatment for high blood sugar.

## **Treatments and drugs**

Tackling one of the risk factors of metabolic syndrome is tough — taking on all of them might seem overwhelming. But aggressive lifestyle changes can improve all of the metabolic syndrome components. Getting more physical activity, losing weight and quitting smoking help reduce blood pressure and improve cholesterol and blood sugar levels. These changes are key to reducing your risk.

- **Exercise.** Doctors recommend getting 30 to 60 minutes of moderate-intensity exercise, such as brisk walking, every day.
- **Lose weight.** Losing as little as 5 to 10 percent of your body weight can reduce insulin levels and blood pressure and decrease your risk of diabetes.
- **Eat healthy.** The Dietary Approaches to Stop Hypertension (DASH) diet and the Mediterranean Diet, like many healthy-eating plans, limit unhealthy fats and emphasize fruits, vegetables, fish and whole grains. Both of these dietary approaches have been found to offer important health benefits — in addition to weight loss — for people who have components of metabolic syndrome. Ask your doctor for guidance before starting a new eating plan.

- **Stop smoking.** Smoking cigarettes increases insulin resistance and worsens the health consequences of metabolic syndrome. Talk to your doctor if you need help kicking the cigarette habit.

### **Lifestyle and home remedies**

You can do something about your risk of metabolic syndrome and its complications — diabetes, stroke and heart disease. Start by making these lifestyle changes:

- **Lose weight.** Losing as little as 5 to 10 percent of your body weight can reduce insulin levels and blood pressure and decrease your risk of diabetes.
- **Exercise.** Doctors recommend getting 30 to 60 minutes of moderate-intensity exercise, such as brisk walking, every day.
- **Stop smoking.** Smoking cigarettes increases insulin resistance and worsens the health consequences of metabolic syndrome. Talk to your doctor if you need help kicking the cigarette habit.
- **Eat fiber-rich foods.** Make sure you include whole grains, beans, fruits and vegetables in your grocery cart. These items are packed with dietary fiber, which can lower your insulin levels.

### **Prevention**

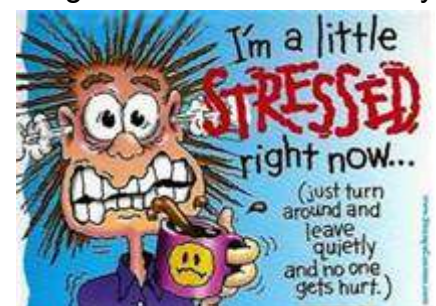
Whether you have one, two or none of the components of metabolic syndrome, the following lifestyle changes will reduce your risk of heart disease, diabetes and stroke:

- **Commit to a healthy diet.** Eat plenty of fruits and vegetables. Choose lean cuts of white meat or fish over red meat. Avoid processed or deep-fried foods. Eliminate table salt and experiment with other herbs and spices.
- **Get moving.** Get plenty of regular, moderately strenuous physical activity.
- **Schedule regular checkups.** Check your blood pressure, cholesterol and blood sugar levels on a regular basis. Make additional lifestyle modifications if the numbers are going the wrong way.

### **Stress symptoms: Effects on your body, feelings and behavior**

Stress symptoms may be affecting your health, even though you might not realize it. You may think illness is to blame for that nagging headache, your frequent insomnia or your decreased productivity at work. But stress may actually be the culprit.

Indeed, stress symptoms can affect your body, your thoughts and feelings, and your behavior. Being able to recognize common stress symptoms can give you a jump on managing them. Stress that's left unchecked can contribute to health problems such as high blood pressure, heart disease, obesity and diabetes.



If you have chest pain, especially if it occurs during physical activity or is accompanied by shortness of breath, sweating, dizziness, nausea, or pain radiating into your shoulder and arm, get emergency help immediately. These may be warning of a heart attack and not simply stress symptoms.

Common effects of stress ...		
... On your body	... On your mood	... On your behavior
<ul style="list-style-type: none"> <li>• Headache</li> <li>• Muscle tension or pain</li> <li>• Chest pain</li> <li>• Fatigue</li> <li>• Change in sex drive</li> <li>• Stomach upset</li> <li>• Sleep problems</li> </ul>	<ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Restlessness</li> <li>• Lack of motivation or focus</li> <li>• Irritability or anger</li> <li>• Sadness or depression</li> </ul>	<ul style="list-style-type: none"> <li>• Overeating or under eating</li> <li>• Angry outbursts</li> <li>• Drug or alcohol abuse</li> <li>• Tobacco use</li> <li>• Social withdrawal</li> </ul>

Source: American Psychological Association's "Stress in America" report, 2010

If you do have stress symptoms, taking steps to manage your stress can have numerous health benefits. Explore stress management strategies such as:

- Physical activity
- Relaxation techniques
- Meditation
- Yoga
- Tai chi

## Edema

Edema is swelling caused by excess fluid trapped in your body's tissues. Although edema can affect any part of your body, its most commonly noticed in your hands, arms, feet, ankles and legs.

Edema can be the result of medication or an underlying disease — often heart failure, kidney disease or cirrhosis of the liver.

Reducing the amount of salt in your food usually relieves edema. When edema is a sign of an underlying disease, the disease itself requires separate treatment.



## Symptoms

Signs and symptoms of edema include:

- Swelling or puffiness of the tissue directly under your skin
- Stretched or shiny skin
- Skin that retains a dimple after being pressed for several seconds
- Increased abdominal size

## Causes

Edema occurs when tiny blood vessels in your body (capillaries) leak fluid and the fluid builds up in surrounding tissues, leading to swelling.

Mild cases of edema may result from:

- Sitting or staying in one position for too long
- Eating too much salty food

Edema can be a side effect of some medications, including:

- Drugs that open blood vessels
- Calcium channel blockers
- Nonsteroidal anti-inflammatory drugs
- Certain diabetes medications called thiazolidinediones



In some cases, however, edema may be a sign of a more serious underlying medical condition. Diseases and conditions that may cause edema include:

- **Congestive heart failure.** When one or both of your heart's lower chambers lose their ability to pump blood effectively — as happens in congestive heart failure — the blood can back up in your legs, ankles and feet, causing edema.
- **Cirrhosis.** Fluid may fluid accumulate in your abdominal cavity (ascites) and in your legs as a result of cirrhosis, a liver disease often caused by alcoholism.
- **Kidney disease.** When you have kidney disease, extra fluid and sodium in your circulation may cause edema. The edema associated with kidney disease usually occurs in your legs and around your eyes.
- **Kidney damage.** Damage to the tiny, filtering blood vessels in your kidneys can result in nephrotic syndrome. In nephrotic syndrome, declining levels of protein (albumin) in your blood can lead to fluid accumulation and edema.
- **Weak or damaged leg veins (chronic venous insufficiency).** One-way valves keep the blood in your leg veins moving toward your heart. If the valves stop working properly, blood can pool in your lower legs and cause swelling.
- **Inadequate lymphatic system.** Your body's lymphatic system helps clear excess fluid from tissues. If this system is damaged — for example, by cancer surgery — the lymph nodes and lymph vessels draining an area may not work correctly and edema results.

## Risk factors

Your risk of edema may be increased if you take certain medications, including:



## Complications

If left untreated, edema can cause:

- Increasingly painful swelling
- Difficulty walking
- Stiffness
- Stretched skin, which can become itchy and uncomfortable
- Increased risk of infection in the swollen area
- Scarring between layers of tissue
- Decreased blood circulation
- Decreased elasticity of arteries, veins, joints and muscles
- Increased risk of skin ulcers

## Tests and diagnosis

To understand what might be causing your edema, your doctor will perform a physical exam and ask you questions about your medical history. This information is often enough to determine the underlying cause of your edema. In some cases, X-rays, ultrasound exams, blood tests or urine analysis may be necessary.

## Treatments and drugs

Mild edema usually goes away on its own, particularly if you help things along by raising the affected limb higher than your heart. More severe edema may be treated with drugs that help your body expel excess fluid in the form of urine. One of the most common diuretics is furosemide (Lasix). Long-term management typically focuses on treating the underlying cause of the swelling.



## Lifestyle and home remedies

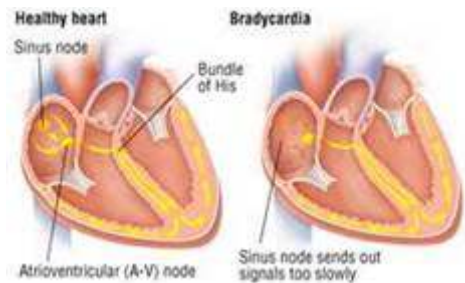
The following may help decrease edema and keep it from coming back. Herbal programs are included at the end of this session.

- **Movement.** Moving and using the muscles in the part of your body affected by edema may help pump the excess fluid back to your heart. Ask your doctor about exercises you can do that may reduce swelling.
- **Elevation.** Hold the swollen part of your body above the level of your heart for at least 30 minutes three or four times a day. In some cases, elevating the affected body part while you sleep may be helpful.
- **Massage.** Stroking the affected area toward your heart using firm, but not painful, pressure may help move the excess fluid out of that area.
- **Compression.** If one of your limbs is affected by edema, your doctor may recommend you wear compression stockings, sleeves or gloves. These garments keep pressure on your limbs to prevent fluid from collecting in the tissue.
- **Reduce salt intake.** Follow your doctor's suggestions about limiting how much salt you consume.

## Bradycardia

Bradycardia is a slower than normal heart rate. The heart usually beats between 60 and 100 times a minute in an adult at rest. If you have bradycardia (brad-e-KAHR-de-uh), your heart beats fewer than 60 times minute.

Bradycardia can be a serious problem if the heart doesn't pump enough oxygen-rich blood to the body. For some people, however, bradycardia doesn't cause symptoms or complications.



An implanted pacemaker and other treatments may correct bradycardia and help your heart maintain an appropriate rate.

### Symptoms

If you have bradycardia, your brain and other organs may not get the supply of oxygen they need. As a result, you may experience these bradycardia symptoms:

- Near-fainting or fainting (syncope)
- Dizziness
- Weakness
- Fatigue
- Shortness of breath
- Chest pains
- Confusion or memory problems
- Easily tiring during physical activity

### When a slow heart rate is normal

A resting heart rate slower than 60 beats a minute may be normal for some people, particularly for healthy, young adults and trained athletes. For these people, bradycardia isn't considered a health problem.

### Causes

Bradycardia is caused by something that disrupts the normal electrical impulses controlling the rate of your heart's pumping action. Many things can cause or contribute to problems with your heart's electrical system, including:

- Heart tissue damage related to aging
- Damage to heart tissues from heart disease or heart attack
- High blood pressure (hypertension)
- Heart disorder present at birth (congenital heart defect)
- Infection of heart tissue (myocarditis)
- A complication of heart surgery
- Underactive thyroid gland (hypothyroidism)
- Imbalance of electrolytes, mineral-related substances necessary for conducting electrical impulses
- Obstructive sleep apnea, the repeated disruption of breathing during sleep
- Inflammatory disease, such as rheumatic fever or lupus

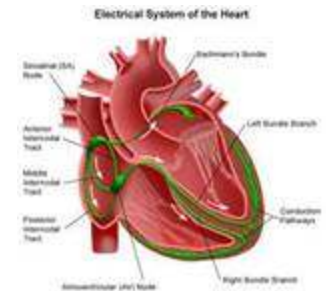


- Hemochromatosis, the buildup of iron in organs
- Medications, including some drugs for other heart rhythm disorders, high blood pressure and psychosis

## **Electrical circuitry of the heart**

Your heart is made up of four chambers — two upper chambers (atria) and two lower chambers (ventricles). The rhythm of your heart is normally controlled by a natural pacemaker — the sinus node — located in the right atrium. The sinus node produces electrical impulses that initiate each heartbeat.

From the sinus node, electrical impulses travel across the atria, causing the atria to contract and pump blood into the ventricles. The electrical impulses then arrive at a cluster of cells called the atrioventricular node (AV node).



The AV node transmits the signal to a specialized collection of cells called the bundle of His. These cells transmit the signal down a left branch serving the left ventricle and a right branch serving the right ventricle. When the electrical impulse travels down these branches, the ventricles contract and pump blood — the right ventricle sending oxygen-poor blood to the lungs and the left ventricle sending oxygen-rich blood to the body.

Bradycardia occurs when electrical signals slow down or are blocked.

## **Sinus node problems**

Bradycardia often starts in the sinus node. A slow heart rate may occur because the sinus node:

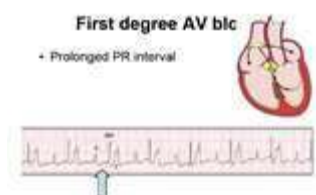
- Discharges electrical impulses at a slower than normal rate
- Pauses, or fails to discharge at a regular rate
- Discharges an electrical impulse that's blocked before causing the atria to contract

In some people the sinus node problems may result in alternating slow and fast heart rates (bradycardia-tachycardia syndrome).

## **Heart block (atrioventricular block)**

Bradycardia may also occur because electrical signals transmitted through the atria aren't transmitted to the ventricles (heart block, or atrioventricular block). The disruption of the electrical signal may occur in the AV node, the bundle of His, or somewhere along the left and right branches that transmit electrical signals to the ventricles. Heart blocks are classified based on the degree to which signals from the atria reach your heart's main pumping chambers (ventricles).

- **First-degree heart block.** In the mildest form of heart block, all electrical signals from the atria reach the ventricles, but the signal is slowed down slightly. First-degree heart block rarely causes symptoms and usually needs no treatment if there's no other abnormality in electrical signal conduction.



- **Second-degree heart block.** In second-degree heart block, not all electrical signals reach the ventricles. Some beats are "dropped," resulting in a slower and sometimes irregular rhythm.
- **Third-degree (complete) heart block.** In third-degree heart block, none of the electrical impulses from the atria reaches the ventricles. When this happens, the bundle of His or other tissues of the ventricles function as a substitute pacemaker for the ventricles. These substitutes result in slow and sometimes unreliable electrical impulses to control the beat of the ventricles.
- **Bundle branch block.** The interruption of an electrical signal somewhere in the right or left bundle branches — near the end of the pathway for electrical impulses — is called a bundle branch block. The seriousness of bundle branch block depends on whether both branches are affected, the presence of other types of heart block and the degree of damage to heart tissue.



## **Complications**

Complications of untreated bradycardia vary depending on how slow the heart rate is, where the electrical conduction problem occurs and what kind of damage may be present in heart tissue. If bradycardia is significant enough to cause symptoms, possible complications of the slow heart rate may include:

- Frequent fainting spells
- Inability of the heart to pump enough blood (heart failure)
- Sudden cardiac arrest or sudden death

## **Risk factors**

### **Age**

A key risk factor for bradycardia is age. Heart problems, which are often associated with bradycardia, are more common in older adults.

### **Risk factors related to heart disease**

Bradycardia is often associated with damage to heart tissue from some type of heart disease. Therefore, factors that increase your risk of heart disease may also increase the risk of bradycardia. Lifestyle changes or medical treatment may decrease the risk of heart disease associated with the following factors:

- High blood pressure
- High cholesterol
- Smoking
- Heavy alcohol use
- Use of illegal drugs
- Psychological stress or anxiety

## Tests and diagnosis

Your doctor will order a series of tests to measure your heart rate, establish a link between a slow heart rate and your symptoms, and identify conditions that may be causing bradycardia.

### Electrocardiogram (ECG)

An electrocardiogram — also called an ECG or EKG — is a primary tool for evaluating bradycardia. An ECG uses small sensors (electrodes) attached to your chest and arms to record electrical signals as they travel through your heart. Your doctor can look for patterns among these signals to determine what kind of bradycardia you have.



Your doctor may also have you use a portable ECG device at home to provide more information about your heart rate and to help establish a correlation between a slow heart rate and the onset of symptoms. These devices include:



- **Holter monitor.** This portable ECG device is carried in your pocket or worn on a belt or shoulder strap. It can record your heart's activity for an entire 24-hour period, which provides your doctor with a prolonged look at your heart rhythms. Your doctor will likely ask you to keep a diary during the same 24 hours. You'll describe any symptoms you experience and record the time they occur.

- **Event recorder.** This portable ECG device is intended to monitor your heart activity over a few weeks to a few months. You activate it only when you experience symptoms that may be related to a slow heart rate. When you feel symptoms, you push a button, and an ECG strip of the preceding few minutes and following few minutes is recorded. This permits your doctor to determine your heart rhythm at the time of your symptoms.



Your doctor may also use an ECG monitor while performing other tests to understand the impact of bradycardia. These tests include:



- **Tilt table test.** This test helps your doctor better understand how your bradycardia contributes to fainting spells. You lie flat on a special table, and then the table is tilted as if you were standing up. Changes in the position may cause a fainting spell and help your doctor to establish a link between your heart rate and fainting episodes.

- **Exercise test.** Your doctor may monitor your heart rate while you walk on a treadmill or ride a stationary bike to see whether your heart rate increases appropriately in response to physical activity.



## **Laboratory and other tests**

Your doctor will order blood tests to screen for underlying conditions that may be contributing to bradycardia, such as an infection, hypothyroidism or an electrolyte imbalance. If sleep apnea is suspected of contributing to bradycardia, you may undergo tests to monitor your sleep.

## **Treatments and drugs**

Treatment for bradycardia depends on the type of electrical conduction problem, the severity of symptoms, and the cause of your slow heart rate.

## **Treating underlying disorders**

If an underlying disorder, such as hypothyroidism or obstructive sleep apnea, is causing bradycardia, treatment of the disorder may correct bradycardia.

## **Change in medications**

A number of medications, including some to treat other heart conditions, can cause bradycardia. Your doctor will check what medications you're taking and may recommend alternative treatments. Changing drugs or lowering dosages may correct problems with a slow heart rate. When alternative treatments are not possible and symptoms require treatment, a pacemaker is necessary.

## **Pacemaker**

A pacemaker is a battery-operated device about the size of a cell phone that's implanted under your collarbone. Wires from the device are threaded through veins and into your heart. Electrodes at the end of the wires are attached to heart tissues. The pacemaker monitors your heart rate and generates electrical impulses as necessary to maintain an appropriate rate.



Most pacemakers also capture and record information that your cardiologist can use to monitor your heart. You will have regularly scheduled follow-up appointments to check your heart and ensure the proper function of your pacemaker.

## **Prevention**

The most effective way to prevent bradycardia is to reduce your risk of developing heart disease. If you already have heart disease, monitor it and follow your treatment plan to lower your risk of bradycardia.

## **Prevent heart disease**

Treat or eliminate risk factors that may lead to heart disease. Take the following steps:

- **Exercise and eat a healthy diet.** Live a heart-healthy lifestyle by exercising regularly and eating a healthy, low-fat diet that's rich in fruits, vegetables and whole grains.
- **Maintain a healthy weight.** Being overweight increases your risk of developing heart disease.
- **Keep blood pressure and cholesterol under control.** Make lifestyle changes and take medications as prescribed to correct high blood pressure (hypertension) or high cholesterol.



- **Don't smoke.** If you smoke and can't quit on your own, talk to your doctor about strategies or programs to help you break a smoking habit.
- **If you drink, do so in moderation.** If you drink alcohol, drink in moderation. For some conditions it's recommended that you completely avoid alcohol. Ask your doctor for advice specific to your condition. If you can't control your alcohol use, talk to your doctor about a program to quit drinking and manage other behaviors related to alcohol abuse.
- **Don't use illegal drugs.** Talk to your doctor about an appropriate program for you if you need help ending illegal drug use.
- **Control stress.** Avoid unnecessary stress and learn coping techniques to handle normal stress in a healthy way.
- **Go to scheduled checkups.** Have regular physical exams and report any signs or symptoms to your doctor.

## **Monitor and treat existing heart disease**

If you already have heart disease, there are steps you can take to lower your risk of developing bradycardia or another heart rhythm disorder:

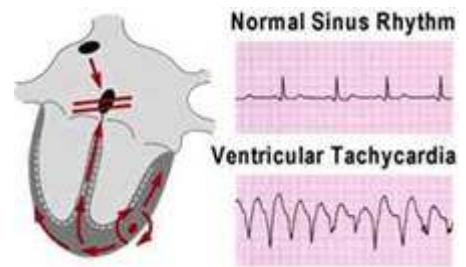
- **Follow the plan.** Be sure you understand your treatment plan, and take all medications as prescribed.
- **Report changes immediately.** If your symptoms change or get worse or you develop new symptoms, tell your doctor immediately.



# Tachycardia

Tachycardia is a faster than normal heart rate. A healthy adult heart normally beats 60 to 100 times a minute when a person is at rest. If you have tachycardia (tak-ih-KAHR-de-uh), the rate in the upper chambers or lower chambers of the heart, or both, are increased significantly.

Heart rate is controlled by electrical signals sent across heart tissues. Tachycardia occurs when an abnormality in the heart produces rapid electrical signals.



In some cases, tachycardias may cause no symptoms or complications. However, tachycardias can seriously disrupt normal heart function, increase the risk of stroke, or cause sudden cardiac arrest or death.

Treatments may help control a rapid heartbeat or manage diseases contributing to tachycardia.

## Symptoms

When your heart's rate is too rapid, it may not effectively pump blood to the rest of your body, depriving your organs and tissues of oxygen. This can cause these tachycardia symptoms:

- Dizziness
- Shortness of breath
- Lightheadedness
- Rapid pulse rate
- Heart palpitations — a racing, uncomfortable or irregular heartbeat or a sensation of "flopping" in the chest
- Chest pain
- Fainting (syncope)

Some people with tachycardia have no symptoms, and the condition is only discovered during a physical examination or with a heart-monitoring test called an electrocardiogram.

## Causes

Tachycardia is caused by something that disrupts the normal electrical impulses that control the rhythm of your heart's pumping action. Many things can cause or contribute to problems with the heart's electrical system. These factors include:

- Damage to heart tissues from heart disease
- Abnormal electrical pathways in the heart present at birth (congenital)
- Disease or congenital abnormality of the heart
- High blood pressure
- Smoking
- Fever
- Drinking too much alcohol
- Drinking too many caffeinated beverages
- A side effect of medications
- Abuse of recreational drugs, such as cocaine

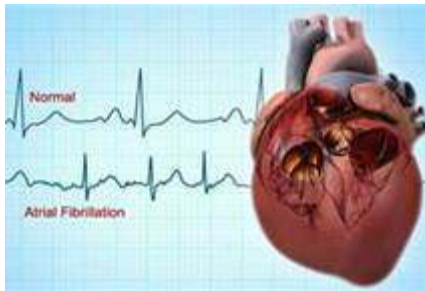
- Imbalance of electrolytes, mineral-related substances necessary for conducting electrical impulses
- Overactive thyroid (hyperthyroidism)

In some cases, the exact cause of tachycardia can't be determined.

### Types of tachycardias

Tachycardia occurs when a problem in electrical signals produces a heartbeat that is faster than normal. Common types of tachycardia include the following:

- **Atrial fibrillation** is a rapid heart rate caused by chaotic electrical impulses in the atria.



These signals result in rapid, uncoordinated, weak contractions of the atria. The chaotic electrical signals bombard the AV node, usually resulting in an irregular, rapid rhythm of the ventricles. Atrial fibrillation may be temporary, but some episodes won't end unless treated. Most people with atrial fibrillation have some structural abnormalities of the heart related to such conditions as heart disease or high blood pressure. Other factors that may contribute to atrial fibrillation

include a heart valve disorder, hyperthyroidism or heavy alcohol use.

- **Atrial flutter** is a very fast, but regular rate of the atria caused by irregular circuitry within the atria. The fast rate results in weak contractions of the atria. The rapid signals entering the AV node cause a rapid and sometimes irregular ventricular rate. Episodes of atrial flutter may get better on their own, or the condition may persist unless treated. People who experience atrial flutter often experience atrial fibrillation at other times.

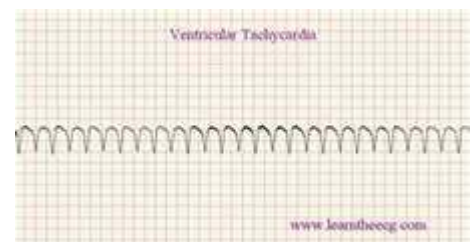


- **Supraventricular tachycardias (SVTs)**, which originate somewhere above the ventricles, are caused by abnormal circuitry in the heart, usually present at birth, that creates a loop of overlapping signals. In one form of SVT, an abnormality in the AV node may "split" an electrical signal into two, sending one signal to the ventricles and another back to the atria. Another common

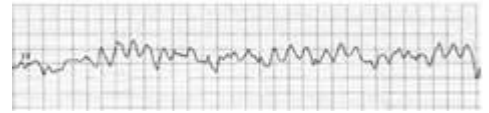
abnormality is the presence of an extra electrical pathway from the atria to the ventricles that bypasses the AV node. This may result in a signal going down one pathway and up the other. Wolff-Parkinson-White syndrome is one disorder featuring an extra pathway.



- **Ventricular tachycardia** is a rapid rate that originates with abnormal electrical signals in the ventricles. The rapid beat doesn't allow the ventricles to fill and contract efficiently to pump enough blood to the body. Ventricular tachycardia is often a life-threatening medical emergency.



- **Ventricular fibrillation** occurs when rapid, chaotic electrical impulses cause the ventricles to quiver ineffectively instead of pumping necessary blood to the body. This serious problem is fatal if the heart isn't restored to a normal rhythm within minutes. Most people who experience ventricular fibrillation have an underlying heart disease or have experienced serious trauma, such as being struck by lightning.



### **Risk factors**

Any condition that puts a strain on the heart or damages heart tissue can increase your risk of tachycardia. Lifestyle changes or medical treatment may decrease the risk associated with the following factors:

- Heart disease
- High blood pressure
- Smoking
- Heavy alcohol use
- Heavy caffeine use
- Use of recreational drugs
- Psychological stress or anxiety

### **Other risk factors**

Other factors that may increase the risk of tachycardia include:

- **Older age.** Aging-related wear on the heart makes you more likely to develop tachycardia.
- **Family.** If you have a family history of tachycardia or other heart rhythm disorders, you may have an increased risk of tachycardia.

### **Complications**

Complications of tachycardias vary in severity depending on such factors as the type of tachycardia, the rate and duration of a rapid heart rate, and the existence of other heart conditions. Possible complications include:

- Blood clots that can cause a stroke or heart attack
- Inability of the heart to pump enough blood (heart failure)
- Frequent fainting spells
- Sudden death, usually only associated with ventricular tachycardia or ventricular fibrillation

### **Tests and diagnosis**

Your doctor can make a diagnosis of a specific tachycardia based on your answers to questions about symptoms, a physical exam and heart tests. Common tests include the following.



## **Electrophysiological test**

Your doctor may recommend an electrophysiological test to confirm the diagnosis or to pinpoint the location of problems in your heart's circuitry. During this test, thin, flexible tubes (catheters) tipped with electrodes are threaded through your blood vessels to various spots in your heart. Once in place, the electrodes can precisely map the spread of electrical impulses during each beat and identify abnormalities in your circuitry.

Your cardiologist may order additional tests to diagnose an underlying condition that is contributing to tachycardia and judge the condition of your heart.

## **Treatments and drugs**

The treatment goals for tachycardias are to slow a fast heart rate when it occurs, prevent future episodes and minimize complications.

### **Stopping a fast heart rate**

A fast heartbeat may correct itself, and you may be able to slow your heart rate using simple physical movements. However, you may need medication or other medical treatment to slow down your heartbeat. Ways to slow your heartbeat include:

- **Vagal maneuvers.** Your doctor may ask you to perform an action, called a vagal maneuver, during an episode of a fast heartbeat. Vagal maneuvers affect the vagus nerve, which helps regulate your heartbeat. The maneuvers include coughing, bearing down as if you're having a bowel movement, and putting an icepack on your face.



- **Medications.** If vagal maneuvers don't stop the fast heartbeat, you may need an injection of an anti-arrhythmic medication to restore a normal heart rate. An injection of this drug is administered at a hospital. Your doctor may also prescribe a pill version of an anti-arrhythmic drug, such as flecainide (Tambocor) or propafenone (Rythmol), to take if you have an episode of a fast heartbeat that doesn't respond to vagal maneuvers.
- **Cardioversion.** In this procedure, a shock is delivered to your heart through paddles or patches on your chest. The current affects the electrical impulses in your heart and restores a normal rhythm. It's typically used when emergency care is needed or when maneuvers and medications aren't effective.



### **Preventing episodes of a fast heart rate**

With the following treatments, it may be possible to prevent or manage episodes of tachycardia.

- **Catheter ablation.** This procedure is used most often when an extra electrical pathway is responsible for an increased heart rate. In this procedure, catheters are threaded through the blood vessels to your heart. Electrodes at the catheter tips can use heat, extreme cold, or radiofrequency energy to damage (ablate) the extra electrical pathway and prevent it from sending electrical signals. This procedure is highly effective, especially for supraventricular tachycardia. Catheter ablation can also be used to treat atrial fibrillation and atrial flutter.



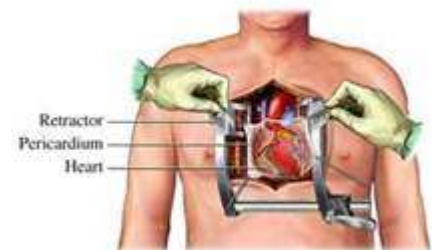
- **Medications.** Anti-arrhythmic medications may prevent a fast heart rate when taken regularly. Other medications that may be prescribed — either as an alternative or in combination with anti-arrhythmic medications — are calcium channel blockers, such as diltiazem (Cardizem) and verapamil (Calan) or beta blockers, such as metoprolol (Lopressor, Toprol) and esmolol (Brevibloc).

- **Pacemaker.** A pacemaker is a small device that's surgically implanted under your skin. When the device senses an abnormal heartbeat, it emits an electrical pulse that helps the heart resume a normal beat.



- **Implantable cardioverter-defibrillator.** If you're at risk of having a life-threatening tachycardia episode, your doctor may recommend an implantable cardioverter-defibrillator (ICD). The device, about the size of a cell phone, is surgically implanted in your chest. The ICD continuously monitors your heartbeat, detects an increase in heart rate and delivers precisely calibrated electrical shocks to restore a normal heart rhythm.

- **Surgery.** Open-heart surgery may be needed in some cases to destroy an extra electrical pathway. In another type of surgery, called the maze procedure, a surgeon makes small incisions in heart tissue to create a pattern or maze of scar tissue. Because scar tissue doesn't conduct electricity, it interferes with stray electrical impulses that cause some types of tachycardia. Surgery is usually used only when other treatment options don't work or when surgery is needed to treat another heart disorder.



## Preventing blood clots



Some people with tachycardias have an increased risk of developing a blood clot that could cause a stroke or heart attack. Your doctor may prescribe a drug-thinning medication, such as dabigatran (Pradaxa) and warfarin (Coumadin) to help lower your risk.

## **Treating an underlying disease**

If another medical condition is contributing to tachycardia — for example, some form of heart disease or hyperthyroidism — treating the underlying problem may prevent or minimize tachycardia episodes.

## **Coping and support**

If you have a plan in place to deal with an episode of a fast heartbeat, you may feel calmer and more in control when one occurs. Talk to your doctor about:

- When and how to use vagal maneuvers
- When to call your doctor
- When to seek emergency care

## **Prevention**

The most effective way to prevent tachycardias is to reduce your risk of developing heart disease. If you already have heart disease, monitor it and follow your treatment plan to lower your tachycardia risk.

## **Heart attack**

**Heart attack symptoms:**  
**Know what's a medical emergency**



### **Typical heart attack symptoms**

<b>Symptom</b>	<b>Description</b>
Chest discomfort or pain	This discomfort or pain can feel like a tight ache, pressure, fullness or squeezing in the center of your chest lasting more than a few minutes. This discomfort may come and go.
Upper body pain	Pain or discomfort may spread beyond your chest to your shoulders, arms, back, neck, teeth or jaw. You may have upper body pain with no chest discomfort.
Stomach pain	Pain may extend downward into your abdominal area and may feel like heartburn.
Shortness of breath	You may pant for breath or try to take in deep breaths. This often occurs before you develop chest discomfort or you may not experience any chest discomfort.
Anxiety	You may feel a sense of doom or feel as if you're having a panic attack for no apparent reason.
Lightheadedness	In addition to chest pressure, you may feel dizzy or feel like you might pass out.
Sweating	You may suddenly break into a sweat with cold, clammy skin.
Nausea and vomiting	You may feel sick to your stomach or vomit.

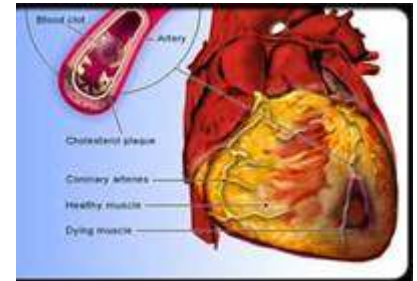
Most heart attacks begin with subtle symptoms — with only discomfort that often is not described as pain. The chest discomfort may come and go. Don't be tempted to downplay your symptoms or brush them off as indigestion or anxiety.

Don't "tough out" heart attack symptoms for more than five minutes. Call 911 or other emergency medical services for help. If you don't have access to emergency medical services, have someone drive you to the nearest hospital. Drive yourself only as a last resort, if there are absolutely no other options.

Heart attack symptoms vary widely. For instance, you may have only minor chest discomfort while someone else has excruciating pain. One thing applies to everyone, though: If you suspect you're having a heart attack, call for emergency medical help immediately.

## **Heart disease**

Heart disease is a broad term used to describe a range of diseases that affect your heart. The various diseases that fall under the umbrella of heart disease include diseases of your blood vessels, such as coronary artery disease; heart rhythm problems (arrhythmias); heart infections; and heart defects you're born with (congenital heart defects).



The term "heart disease" is often used interchangeably with "cardiovascular disease." Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack, chest pain (angina) or stroke. Other heart conditions, such as infections and conditions that affect your heart's muscle, valves or beating rhythm, also are considered forms of heart disease.

Many forms of heart disease can be prevented or treated with healthy lifestyle choices.

## **Symptoms**

Heart disease symptoms vary, depending on what type of heart disease you have.

### **Symptoms of heart disease in your blood vessels (cardiovascular disease)**

Cardiovascular disease is caused by narrowed, blocked or stiffened blood vessels that prevent your heart, brain or other parts of your body from receiving enough blood. Cardiovascular disease symptoms can include:

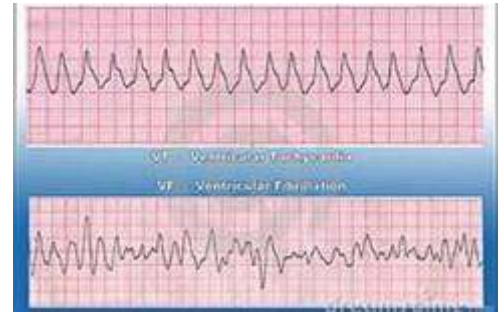
- Chest pain (angina)
- Shortness of breath
- Pain, numbness, weakness or coldness in your legs or arms, if the blood vessels in those parts of your body are narrowed

You might not be diagnosed with cardiovascular disease until your condition worsens to the point that you have a heart attack, angina, stroke, or heart failure. It's important to watch for cardiovascular symptoms and discuss any concerns with your doctor. Cardiovascular disease can sometimes be found early with regular visits to your doctor.

## **Heart disease symptoms caused by abnormal heartbeats (heart arrhythmias)**

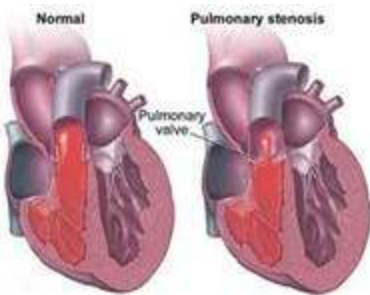
A heart arrhythmia is an abnormal heartbeat. Your heart may beat too quickly, too slowly, or irregularly if you have an arrhythmia. Heart arrhythmia symptoms can include:

- A fluttering in your chest
- A racing heartbeat (tachycardia)
- A slow heartbeat (bradycardia)
- Chest pain
- Shortness of breath
- Lightheadedness
- Dizziness
- Fainting (syncope) or near fainting



## **Heart disease symptoms caused by heart defects**

Serious congenital heart defects — a defect you're born with — usually become evident soon after birth. Heart defect symptoms could include:



- Pale gray or blue skin color (cyanosis)
- Swelling in the legs, abdomen or areas around the eyes
- Shortness of breath during feedings, leading to poor weight gain

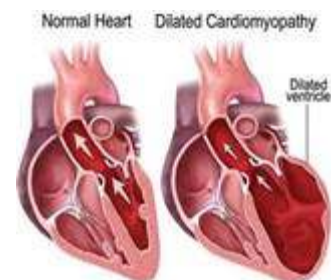
Less serious congenital heart defects are often not diagnosed until later in childhood or even during adulthood. Signs and symptoms of congenital heart defects that usually aren't immediately life-threatening include:

- Easily becoming short of breath during exercise or activity
- Easily tiring during exercise or activity
- Built-up fluid in the heart or lungs
- Swelling in the hands, ankles or feet

## **Heart disease symptoms caused by thick heart muscle (cardiomyopathy)**

Cardiomyopathy is the thickening and stiffening of heart muscle. In early stages of cardiomyopathy, you may have no symptoms. As the condition worsens, cardiomyopathy symptoms include:

- Breathlessness with exertion or even at rest
- Swelling of the legs, ankles and feet
- Bloating (distention) of the abdomen with fluid
- Fatigue
- Irregular heartbeats that feel rapid, pounding or fluttering
- Dizziness, lightheadedness and fainting

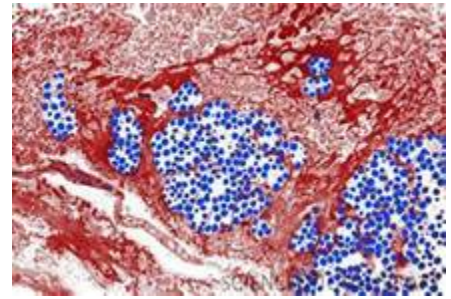




## **Heart disease symptoms caused by heart infections**

There are three types of heart infections:

- Pericarditis, which affects the tissue surrounding the heart (pericardium)
- Myocarditis, which affects the muscular middle layer of the walls of the heart (myocardium)
- Endocarditis, which affects the inner membrane that separates the chambers and valves of your heart (endocardium)



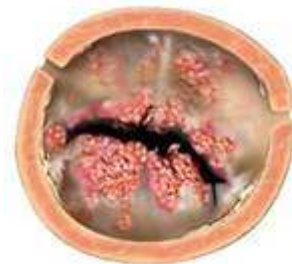
Varying slightly with each type of infection, heart infection symptoms can include:

- Fever
- Shortness of breath
- Weakness or fatigue
- Swelling in your legs or abdomen
- Changes in your heart rhythm
- Dry or persistent cough
- Skin rashes or unusual spots

## **Heart disease symptoms caused by valvular heart disease**

The heart has four valves — the aortic, mitral, pulmonary and tricuspid valves — that open and close to direct blood flow through your heart. Valves may be damaged by a variety of conditions leading to narrowing (stenosis), leaking (regurgitation or insufficiency) or improper closing (prolapse). Depending on which valve isn't working properly, valvular heart disease symptoms generally include:

- Fatigue
- Shortness of breath
- Irregular heartbeat or heart murmur
- Swollen feet or ankles
- Chest pain
- Fainting (syncope)

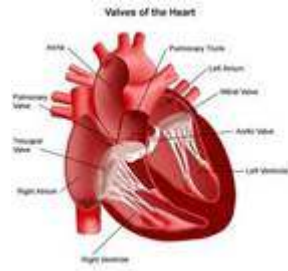


## **How the heart works**

To understand heart disease, it helps to know how the heart works. Your heart is a pump. It's a muscular organ about the size of your fist and located slightly left of center in your chest. Your heart is divided into the right and the left side. The division protects oxygen-rich blood from mixing with oxygen-poor blood. Oxygen-poor blood returns to the heart after circulating through your body.

The right side of the heart, composed of the right atrium and ventricle, collects and pumps blood to the lungs through the pulmonary arteries. The lungs refresh the blood with a new supply of oxygen, making it turn red. Oxygen-rich blood then enters the left side of the heart, composed of the left atrium and ventricle, and is pumped through the aorta to supply tissues throughout the body with oxygen and nutrients.

Four valves within your heart keep your blood moving the right way. The tricuspid, mitral, pulmonary and aortic valves open only one way and only when pushed on. Each valve opens and closes once per heartbeat — or about once every second while you're at rest.



A beating heart contracts and relaxes. Contraction is called systole, and relaxation is called diastole. During systole, your ventricles contract, forcing blood into the vessels going to your lungs and body — much like ketchup being forced out of a squeeze bottle. The right ventricle contracts a little bit before the left ventricle does. Your ventricles then relax during diastole and are filled with blood coming from the upper chambers, the left and right atria. The cycle then starts over again.

Your heart also has electrical wiring, which keeps it beating. Electrical impulses begin high in the right atrium and travel through specialized pathways to the ventricles, delivering the signal to pump. The conduction system keeps your heart beating in a coordinated and normal rhythm, which in turn keeps blood circulating. The continuous exchange of oxygen-rich blood with oxygen-poor blood is what keeps you alive.

The causes of heart disease vary by type of heart disease.

### **Causes of cardiovascular disease**

While cardiovascular disease can refer to many different types of heart or blood vessel problems, the term is often used to mean damage caused to your heart or blood vessels by atherosclerosis (ath-ur-o-skluh-RO-sis), a buildup of fatty plaques in your arteries. This is a disease that affects your arteries. Arteries are blood vessels that carry oxygen and nutrients from your heart to the rest of your body. Healthy arteries are flexible and strong.

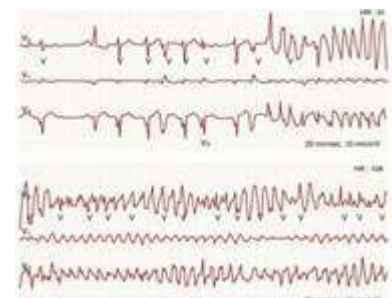


Over time, however, too much pressure in your arteries can make the walls thick and stiff — sometimes restricting blood flow to your organs and tissues. This process is called arteriosclerosis, or hardening of the arteries. Atherosclerosis is the most common form of this disorder. Atherosclerosis is also the most common cause of cardiovascular disease, and it's often caused by an unhealthy diet, lack of exercise, being overweight and smoking. All of these are major risk factors for developing atherosclerosis and, in turn, cardiovascular disease.

### **Causes of heart arrhythmia**

Common causes of abnormal heart rhythms (arrhythmias) or conditions that can lead to arrhythmias include:

- Heart defects you're born with (congenital heart defects)
- Coronary artery disease
- High blood pressure
- Diabetes
- Smoking
- Excessive use of alcohol or caffeine
- Drug abuse
- Stress



- Some over-the-counter medications, prescription medications, dietary supplements and herbal remedies
- Valvular heart disease

In a healthy person with a normal, healthy heart, it's unlikely for a fatal arrhythmia to develop without some outside trigger, such as an electrical shock or the use of illegal drugs. That's primarily because a healthy person's heart is free from any abnormal conditions that cause an arrhythmia, such as an area of scarred tissue.

However, in a heart that's diseased or deformed, the heart's electrical impulses may not properly start or travel through the heart, making arrhythmias more likely to develop.

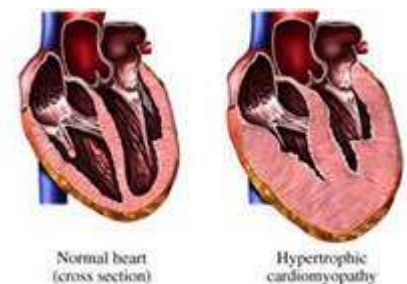
### **Causes of heart defects**

Heart defects usually develop while a baby is still in the womb. About a month after conception, the heart begins to develop. It's at this point that heart defects can begin to form. Some medical conditions, medications and genes may play a role in causing heart defects. Heart defects can also develop in adults. As you age, your heart's structure can change, causing a heart defect.

### **Causes of cardiomyopathy**

The exact cause of cardiomyopathy, a thickening or enlarging of the heart muscle, is unknown. There are three types of cardiomyopathy:

- **Dilated cardiomyopathy.** This is the most common type of cardiomyopathy. In this disorder, your heart's main pumping chamber — the left ventricle — becomes enlarged (dilated), its pumping ability becomes less forceful, and blood doesn't flow as easily through the heart.
- **Hypertrophic cardiomyopathy.** This type involves abnormal growth or thickening of your heart muscle, particularly affecting the muscle of your heart's main pumping chamber. As thickening occurs, the heart tends to stiffen and the size of the pumping chamber may shrink, interfering with your heart's ability to deliver blood to your body.
- **Restrictive cardiomyopathy.** The heart muscle in people with restrictive cardiomyopathy becomes stiff and less elastic, meaning the heart can't properly expand and fill with blood between heartbeats. It's the least common type of cardiomyopathy and can occur for no known reason.



### **Causes of heart infection**

Heart infections, such as pericarditis, endocarditis and myocarditis, are caused when an irritant, such as a bacterium, virus or chemical, reaches your heart muscle. The most common causes of heart infections include:



- **Bacteria.** Endocarditis can be caused by a number of bacteria entering your bloodstream. The bacteria can enter your bloodstream through everyday activities, such as eating or brushing your teeth, especially if you have poor oral health. Myocarditis can also be caused by a tick-borne bacterium that is responsible for Lyme disease.
- **Viruses.** Heart infections can be caused by viruses, including some that cause influenza (coxsackievirus B and adenovirus), a rash called fifth disease (human parvovirus B19), gastrointestinal infections (echovirus), mononucleosis (Epstein-Barr virus) and measles (rubella). Viruses associated with sexually transmitted infections also can travel to the heart muscle and cause an infection.
- **Parasites.** Among the parasites that can cause heart infections are *Trypanosoma cruzi*, toxoplasma, and some that are transmitted by insects and can cause a condition called Chagas' disease.
- **Medications that may cause an allergic or toxic reaction.** These include antibiotics, such as penicillin and sulfonamide drugs, as well as some illegal substances, such as cocaine. The needles used to administer medications or illegal drugs also can transmit viruses or bacteria that can cause heart infections.
- **Other diseases.** These include lupus; connective tissue disorders; inflammation of blood vessels (vasculitis); and rare inflammatory conditions, such as Wegener's granulomatosis.



### **Causes of valvular heart disease**

There are many causes of diseases of your heart valves. Four valves within your heart keep blood flowing in the right direction. You may be born with valvular disease, or the valves may be damaged by such conditions as rheumatic fever, infections (infectious endocarditis), connective tissue disorders, and certain medications or radiation treatments for cancer.

### **Risk factors**

Heart disease risk factors include:

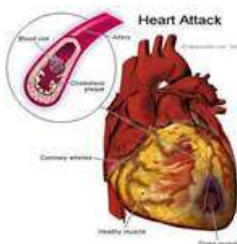
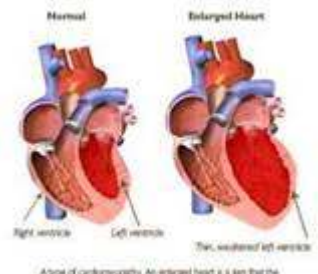
- **Your age.** Simply getting older increases your risk of damaged and narrowed arteries and weakened or thickened heart muscle, which contribute to heart disease.
- **Your sex.** Men are generally at greater risk of heart disease. However, the risk for a woman increases after menopause.
- **Family history.** A family history of heart disease increases your risk of coronary artery disease, especially if a parent developed it at an early age (before age 55 for a male relative, such as your brother or father, and 65 for a female relative, such as your mother or sister).
- **Smoking.** Nicotine constricts your blood vessels, and carbon monoxide can damage their inner lining, making them more susceptible to atherosclerosis. Heart attacks are more common in smokers than in nonsmokers.
- **Poor diet.** A diet that's high in fat, salt and cholesterol can contribute to the development of heart disease.

- **High blood pressure.** Uncontrolled high blood pressure can result in hardening and thickening of your arteries, narrowing the vessels through which blood flows.
- **High blood cholesterol levels.** High levels of cholesterol in your blood can increase the risk of formation of plaques and atherosclerosis. Plaques can be caused by a high level of low-density lipoproteins (LDLs), known as "bad" cholesterol, or a low level of high-density lipoproteins (HDLs), known as "good" cholesterol.
- **Diabetes.** Diabetes increases your risk of heart disease. Both conditions share similar risk factors, such as obesity and high blood pressure.
- **Obesity.** Excess weight typically worsens other risk factors.
- **Physical inactivity.** Lack of exercise also is associated with many forms of heart disease and some of its other risk factors, as well.
- **High stress.** Unrelieved stress in your life may damage your arteries as well as worsen other risk factors for heart disease.
- **Poor hygiene.** Not regularly washing your hands and failure to establish other habits that can help prevent viral or bacterial infections can put you at risk of heart infections, especially if you already have an underlying heart condition. Poor dental health also may contribute to heart disease.

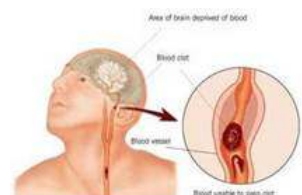
## **Complications**

Complications of heart disease include:

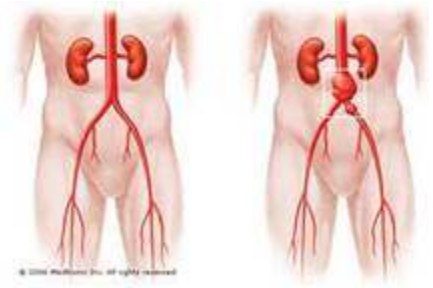
- **Heart failure.** One of the most common complications of heart disease is heart failure. Heart failure occurs when your heart can't pump enough blood to meet your body's needs. Over time, the heart can no longer keep up with the normal demands placed on it. The ventricles may become stiff and don't fill properly between beats. Also, the heart muscle may weaken, and the ventricles stretch (dilate) to the point that the heart can't pump blood efficiently throughout your body. Heart failure can result from many forms of heart disease, including heart defects, cardiovascular disease, valvular heart disease, heart infections or cardiomyopathy.



- **Heart attack.** Coronary artery disease can cause a heart attack. Heart attacks usually occur when a blood clot blocks the flow of blood through a coronary artery — a blood vessel that feeds blood to a part of the heart muscle. Interrupted blood flow to your heart can damage or destroy a part of the heart muscle.
- **Stroke.** Cardiovascular disease may cause an ischemic stroke, which happens when the arteries to your brain are narrowed or blocked and too little blood reaches your brain. A stroke is a medical emergency -brain tissue begins to die within just a few minutes of a stroke.



- **Aneurysm.** Cardiovascular disease can also cause aneurysms, a serious complication that can occur anywhere in your body. An aneurysm is a bulge in the wall of your artery. If an aneurysm bursts, you may face life-threatening internal bleeding. Although this is usually a sudden, catastrophic event, a slow leak is possible. If a blood clot within an aneurysm dislodges, it may block an artery at another point downstream.



- **Peripheral artery disease.** The same atherosclerosis that can lead to coronary artery disease can also lead to peripheral artery disease. When you develop peripheral artery disease (PAD), your extremities — usually your legs — don't receive enough blood flow to keep up with demand. This causes symptoms, most notably leg pain when walking (claudication).
- **Sudden cardiac arrest.** Sudden cardiac arrest is the sudden, unexpected loss of heart function, breathing and consciousness. Sudden cardiac arrest usually results from an electrical disturbance in your heart that disrupts its pumping action and causes blood to stop flowing to the rest of your body. Sudden cardiac arrest almost always occurs in the context of other underlying heart problems, particularly coronary artery disease. Sudden cardiac arrest is a medical emergency. If not treated immediately, it is fatal, resulting in sudden cardiac death.



## Tests and diagnosis

The tests you'll need to diagnose your heart disease depend on what condition your doctor thinks you might have. No matter what type of heart disease you have, your doctor will likely perform a physical exam and ask about your personal and family medical history before doing any tests. Tests to diagnose heart disease can include:

- **Blood tests.** You may need to have your blood drawn and tested for substances that could indicate you have heart disease. Your doctor may check the levels of your cholesterol and triglycerides, blood cell counts, or other blood tests that might show damage to your heart.

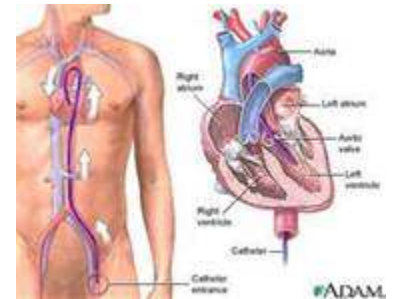


- **Chest X-ray.** An image is created by directing X-rays at your chest and positioning a large piece of photographic film or a digital recording plate against your back. The X-ray machine produces a small burst of radiation that passes through your body and produces an image on the film or digital plate. A chest X-ray shows an image of your heart, lungs and blood vessels. It can reveal if your heart is enlarged, a sign of some forms of heart disease.
- **Echocardiogram.** This noninvasive exam, which includes an ultrasound of your chest, shows detailed images of your heart's structure and function. Sound waves are transmitted, and their echoes are recorded with a device called a transducer that's held outside your body. A computer uses the information from the transducer to create moving images on a video monitor. If the images from a regular



echocardiogram are unclear, your doctor may recommend a transesophageal ultrasound. During this exam, you swallow a flexible tube containing a small transducer, about the size of your index finger that is guided down your throat. The transducer will transmit images of your heart to a computer monitor.

- **Cardiac catheterization.** In this test, a short tube (sheath) is inserted into a vein or artery in your leg (groin) or arm. A hollow, flexible and longer tube (guide catheter) is then inserted into the sheath. Aided by X-ray images on a monitor, your doctor threads the guide catheter through that artery until it reaches your heart. The pressures in your heart chambers can be measured, and dye can be injected. The dye can be seen on an X-ray, which helps your doctor see the blood flow through your heart, blood vessels and valves to check for abnormalities.



- **Heart biopsy.** Sometimes a heart biopsy will be done as part of cardiac catheterization, especially if your doctor suspects you have heart inflammation and hasn't been able to confirm that with other tests. In a heart biopsy, a tiny sample of your heart tissue is removed through the catheter and is sent to a lab for testing.

- **Cardiac computerized tomography (CT) scan.** This test is often used to check for heart failure or heart arrhythmias. In a cardiac CT scan, you lie on a table inside a doughnut-shaped machine. An X-ray tube inside the machine rotates around your body and collects images of your heart and chest. Some walk-in clinics may advertise heart scans that look for calcium buildup in your arteries, which may show you're at risk of having a heart attack. However, these scans are not recommended for most people, as the information they provide isn't often useful.



- **Cardiac magnetic resonance imaging (MRI).** In a cardiac MRI, you lie on a table inside a long tube-like machine that produces a magnetic field. The magnetic field aligns atomic particles in some of your cells. When radio waves are broadcast toward these aligned particles, they produce signals that vary according to the type of tissue they are. Images of your heart are created from these signals, which your doctor will look at to help determine the cause of your heart condition.



## **Treatments and drugs**

Heart disease treatments vary. You may need lifestyle changes, medications, surgery or other medical procedures as part of your treatment.

## **Cardiovascular disease treatments**

The goal in treating diseases of your arteries (cardiovascular disease) is often to open narrowed arteries that cause your symptoms. Depending on how severe the blockages in your arteries are, treatment may include:

- **Lifestyle changes.** Whether your heart disease is mild or severe, it's likely your doctor will recommend lifestyle changes as part of your treatment. Lifestyle changes include eating a low-fat and low-sodium diet, getting at least 30 minutes of moderate exercise on most days of the week, quitting smoking, and limiting how much alcohol you drink.
- **Medications.** If lifestyle changes alone aren't enough, your doctor may prescribe medications to control your heart disease. These could include medications to lower your blood pressure, such as diuretics, angiotensin-converting enzyme (ACE) inhibitors or beta blockers; blood thinning medications, such as daily aspirin therapy; or cholesterol-lowering medications, such as statins or fibrates.
- **Medical procedures or surgery.** If medications aren't enough, it's possible your doctor will recommend specific procedures or surgery to clear the blockages in your heart. A common procedure is coronary angioplasty, which is performed by placing a catheter in an artery in your arm or groin and threading a small balloon to your blocked artery and inflating it to reopen the artery. A small metal coil called a stent is often placed in the artery during angioplasty. The stent helps keep the artery open.

Sometimes a more invasive procedure, coronary artery bypass surgery, is necessary. In this procedure, a vein from another part of your body — usually your leg — is used to bypass the blocked section of the artery.

## **Heart arrhythmia treatments**

Depending on the seriousness of your condition, your doctor may simply recommend maneuvers or medications to correct your irregular heartbeat. It's also possible you'll need a medical device or surgery if your condition is more serious.

- **Vagal maneuvers.** You may be able to stop some heart arrhythmias by using particular maneuvers, which include holding your breath and straining, dunking your face in ice water, or coughing. Your doctor may be able to recommend other maneuvers to slow a fast heartbeat. These maneuvers affect the nervous system that controls your heartbeat (vagal nerves), often causing your heart rate to slow. Don't attempt any maneuvers without talking to your doctor first.
- **Medications.** People who have a rapid heartbeat may respond well to anti-arrhythmic medications. Though they don't cure the problem, they can reduce episodes of your heart beating rapidly or slow down the heart when an episode occurs. It's important to take any anti-arrhythmic medication exactly as directed by your doctor in order to avoid complications.
- **Medical procedures.** Two common procedures to treat heart arrhythmias are cardioversion and ablation. In cardioversion, an electrical shock is used to reset your heart to its regular rhythm. Usually this is done with paddles, placed on the chest that





can deliver an electrical shock in a monitored setting. You're given medication to sedate you during the procedure, so there's no pain. In ablation, one or more catheters are threaded through your blood vessels to your inner heart. They're positioned on areas of your heart identified by your doctor as causing your arrhythmia. Electrodes at the catheter tips destroy (ablate) a small spot of heart tissue and create an electrical block along the pathway that's causing your arrhythmia.

- **Pacemakers or implantable cardioverter-defibrillators (ICDs).** In some cases, your doctor may recommend having a pacemaker or ICD implanted to regulate your heartbeat. Pacemakers emit electrical impulses to quicken your heartbeat if it becomes too slow, and ICDs can correct a rapid or chaotic heartbeat using a similar type of electrical impulse as is used in cardioversion. The surgery to implant each device is relatively minor and usually requires only a few days of recovery.
- **Surgery.** For severe heart arrhythmias, or for those with an underlying cause such as a heart defect, surgery may be an option. Because the surgeries to correct heart arrhythmias are open-heart procedures that sometimes require several months for recovery, surgery is often a last-resort treatment option.

### **Heart defect treatments**

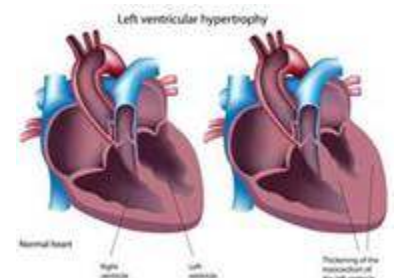
Some heart defects are minor and don't require treatment, while others may require regular checkups, medications or even surgery. Depending on what heart defect you have and how severe it is, your treatment could include:

- **Medications.** Some mild congenital heart defects, especially those found later in childhood or adulthood, can be treated with medications that help the heart work more efficiently.
- **Special procedures using catheters.** Some people now have their congenital heart defects repaired using catheterization techniques, which allow the repair to be done without surgically opening the chest and heart. In procedures that can be done using catheterization, the doctor inserts a thin tube (catheter) into a leg vein and guides it to the heart with the help of X-ray images. Once the catheter is positioned at the site of the defect, tiny tools are threaded through the catheter to the heart to repair the defect.
- **Open-heart surgery.** In some cases, your doctor may perform open-heart surgery to try to repair your heart defect. These surgeries are major medical procedures and sometimes require a long recovery time. It's possible you'll need multiple surgeries over several years to treat the defect.
- **Heart transplant.** If a serious heart defect can't be repaired, a heart transplant may be an option.

### **Treatments for cardiomyopathy**

Treatment for cardiomyopathy varies, depending on what type of cardiomyopathy you have and how serious it is. Treatments can include:

- **Medications.** Your doctor may prescribe medications that can improve your heart's pumping ability, such as ACE inhibitors or angiotensin II receptor blockers. Beta blockers,



which make your heart beat more slowly and less forcefully, help reduce the strain.

- **Medical devices.** If you have dilated cardiomyopathy, treatment may include a special pacemaker that coordinates the contractions between the left and right ventricles of your heart, improving the heart's pumping ability. If you're at risk of serious arrhythmias, an implantable cardioverter-defibrillator (ICD) may be an option. ICDs are small devices implanted in your chest to continuously monitor your heart rhythm and deliver electrical shocks when needed to control abnormal, rapid heartbeats. The devices can also work as pacemakers.
- **Heart transplant.** If you have severe cardiomyopathy and medications can't control your symptoms, a heart transplant may be necessary.

### **Heart infection treatments**

The first treatment for heart infections such as pericarditis, endocarditis or myocarditis is often medications, which may include:

- **Antibiotics.** If your condition is caused by bacteria, your doctor will prescribe antibiotics. Antibiotics are given by an intravenous (IV) line for two to six weeks, depending on how severe the infection is.
- **Medications to regulate your heartbeat.** If the infection has affected your heartbeat, your doctor may prescribe medications such as angiotensin-converting enzyme inhibitors or beta blockers to help normalize your heartbeat.

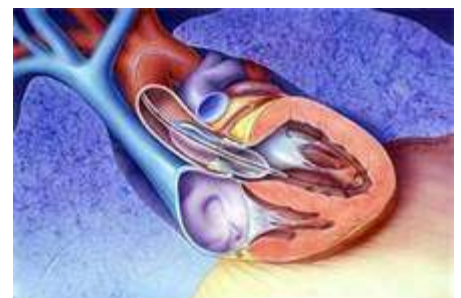


If your heart infection is severe and damages your heart, you may need surgery to repair the damaged portion of your heart.

### **Valvular heart disease treatments**

Although treatments for valvular heart disease can vary depending on what valve is affected and how severe your condition is, treatment options generally include:

- **Medications.** It's possible your valvular heart disease, if mild, can be managed with medications. Commonly prescribed medications for valvular heart disease include medications to open your blood vessels (vasodilators), medications to lower your cholesterol (statins), medications that reduce water retention (diuretics), and blood-thinning medications (anticoagulants).
- **Balloon valvuloplasty.** This procedure is sometimes used as a treatment for valve stenosis. During this procedure, your doctor threads a small tube through a vein in your leg and up to your heart. An uninflated balloon is placed through the opening of the narrowed pulmonary valve. Your doctor then inflates the balloon, opening up the narrowed pulmonary valve and increasing the area available for blood flow.





- **Valve repair or replacement.** If your condition is severe, you may need surgery to correct it. Your doctor may be able to repair the valve. If the valve can't be repaired, it may be replaced with a valve that's made of synthetic materials.

## **Lifestyle and home remedies**

Heart disease can be improved — or even prevented — by making certain lifestyle changes. The following changes can help anyone who wants to improve his or her heart health:

- **Stop smoking.** Smoking is a major risk factor for heart disease, especially atherosclerosis. Nicotine constricts blood vessels and forces your heart to work harder, and carbon monoxide reduces oxygen in your blood and damages the lining of your blood vessels. If you smoke, quitting is the best way to reduce your risk of heart disease and its complications.

- **Control your blood pressure.** Ask your doctor for a blood pressure measurement at least every two years. He or she may recommend more frequent measurements if your blood pressure is higher than normal or you have a history of heart disease. Optimal blood pressure is less than 120 systolic and 80 diastolic, as measured in millimeters of mercury (mm Hg).



- **Check your cholesterol.** Ask your doctor for a baseline cholesterol test when you're in your 20s and then at least every five years. If your test results aren't within desirable ranges, your doctor may recommend more frequent measurements. Most people should aim for an LDL level below 130 milligrams per deciliter (mg/dL), or 3.4 millimoles per liter (mmol/L). If you have other risk factors for heart disease, your target LDL may be below 100 mg/dL (2.6 mmol/L). If you're at very high risk of heart disease — if you've already had a heart attack or have diabetes, for example — your target LDL level is below 70 mg/dL (1.8 mmol/L).



- **Keep diabetes under control.** If you have diabetes, tight blood sugar control can help reduce the risk of heart disease.

- **Get moving.** If you have heart disease, exercise helps you achieve and maintain a healthy weight and control diabetes, elevated cholesterol and high blood pressure — all risk factors for heart disease. If you have a heart arrhythmia or heart defect, there may be some restrictions on the activities you can do, so be sure to talk to your doctor first. With your doctor's OK, aim for 30 to 60 minutes of physical activity most days of the week. Even if you can't make time for one 30- to 60-minute exercise session, you can still benefit from breaking up your activity into several 10-minute sessions.



- **Eat healthy foods.** A heart-healthy diet based on fruits, vegetables and whole grains — and low in saturated fat, cholesterol and sodium — can help you control your weight, blood pressure and cholesterol. Eating one or two servings of fish a week also is beneficial.

- **Maintain a healthy weight.** Being overweight increases your risk of heart disease. Weight loss is especially important for people who have large waist measurements — more than 40 inches (101.6 centimeters, or cm) for men and more than 35 inches (88.9 cm) for women — because people with this body shape are more likely to develop diabetes and heart disease.



- **Manage stress.** Reduce stress as much as possible. Practice healthy techniques for managing stress, such as muscle relaxation and deep breathing.

Hygiene

- **Practice good hygiene habits.** Staying away from other people when they are sick and regularly washing your hands can not only prevent heart infections, but also can help prevent viral or bacterial infections that can put stress on your heart if you already have heart disease. Also, brushing and flossing your teeth regularly can prevent germs in your mouth from making their way to plaques in your heart, which could

worsen cardiovascular disease.

In addition to healthy lifestyle changes, remember the importance of regular medical checkups. Early detection and treatment can set the stage for a lifetime of better heart health.

### Alternative medicine

There are several alternative medicines that may be effective in lowering cholesterol and preventing some types of heart disease, including:

- Blond psyllium
- Coenzyme Q10
- Flaxseed
- Oats and oat bran
- Omega-3 fatty acids
- Plant stanols and sterols, such as beta-sitosterol and sitostanol



As with any alternative medicine, talk to your doctor before adding any new supplements to your treatment regimen. Even natural medicines and herbal supplements can interact with medications you're taking.

### Coping and support

You may feel frustrated, upset or overwhelmed upon learning you or your loved one has heart disease. Fortunately, there are ways to help cope with heart disease or improve your condition. These include:

- **Cardiac rehabilitation.** For people who have cardiovascular disease that's caused a heart attack or has required surgery to correct, cardiac rehabilitation is often recommended as a way to improve treatment and speed recovery. Cardiac rehabilitation is a program often divided into phases that involve various levels of monitored exercise, nutritional counseling, emotional support, and support and education about lifestyle changes to reduce your risks of heart problems.



- **Support groups.** Finding out that you or a loved one has heart disease can be unnerving. Turning to friends and family for support is essential, but if you find you need more help, talk to your doctor about joining a support group. You may find that talking about your concerns with others who are experiencing the same difficulties can help.
- **Continued medical checkups.** If you have a recurring or chronic heart condition, it's a good idea to regularly check in with your doctor to make sure you're properly managing your heart condition. Regular checkups can help your doctor decide if you need to change your treatment, and may help catch new problems early, if they occur. If you're the parent of a child with heart disease, it's a good idea to encourage your child to regularly visit his or her doctor to monitor a heart condition in adulthood.

## Prevention

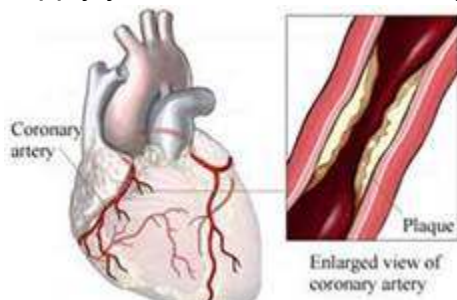
Certain types of heart disease, such as heart defects, can't be prevented. However, you can help prevent many other types of heart disease by making the same lifestyle changes that can improve your heart disease, such as:

- Quit smoking
- Control other health conditions, such as high blood pressure, high cholesterol and diabetes
- Exercise at least 30 minutes a day on most days of the week
- Eat a diet that's low in salt and saturated fat
- Maintain a healthy weight
- Reduce and manage stress
- Practice good hygiene



## Coronary artery disease

Coronary artery disease develops when your coronary arteries — the major blood vessels that supply your heart with blood, oxygen and nutrients — become damaged or diseased.



Cholesterol-containing deposits (plaque) on your arteries are usually to blame for coronary artery disease.

When plaques build up, they narrow your coronary arteries, causing your heart to receive less blood. Eventually, the decreased blood flow may cause chest pain (angina), shortness of breath, or other coronary artery disease signs and symptoms. A complete blockage can cause a heart attack.

Because coronary artery disease often develops over decades, it can go virtually unnoticed until you have a heart attack. But there's plenty you can do to prevent and treat coronary artery disease. Start by committing to a healthy lifestyle.

## **Symptoms**

If your coronary arteries become narrowed, they can't supply enough oxygen-rich blood to your heart — especially when it's beating hard, such as during exercise. At first, the decreased blood flow may not cause any coronary artery disease symptoms. As the plaques continue to build up in your coronary arteries, however, you may develop coronary artery disease symptoms, including:

- **Chest pain (angina).** You may feel pressure or tightness in your chest, as if someone were standing on your chest. The pain, referred to as angina, is usually triggered by physical or emotional stress. It typically goes away within minutes after stopping the stressful activity. In some people, especially women, this pain may be fleeting or sharp and noticed in the abdomen, back or arm.



- **Shortness of breath.** If your heart can't pump enough blood to meet your body's needs, you may develop shortness of breath or extreme fatigue with exertion.



- **Heart attack.** If a coronary artery becomes completely blocked, you may have a heart attack. The classic signs and symptoms of a heart attack include crushing pressure in your chest and pain in your shoulder or arm, sometimes with shortness of breath and sweating. Women are somewhat more likely than men are to experience less typical signs and symptoms of a heart attack, including nausea and back or jaw pain. Sometimes a heart attack occurs without any apparent signs or symptoms.

## **Causes**

Coronary artery disease is thought to begin with damage or injury to the inner layer of a coronary artery, sometimes as early as childhood. The damage may be caused by various factors, including:

- Smoking
- High blood pressure
- High cholesterol
- Diabetes
- Radiation therapy to the chest, as used for certain types of cancer

Once the inner wall of an artery is damaged, fatty deposits (plaques) made of cholesterol and other cellular waste products tend to accumulate at the site of injury in a process called atherosclerosis. If the surface of these plaques breaks or ruptures, blood cells called platelets will clump at the site to try to repair the artery. This clump can block the artery, leading to a heart attack.



## **Risk factors**

Risk factors for coronary artery disease include:

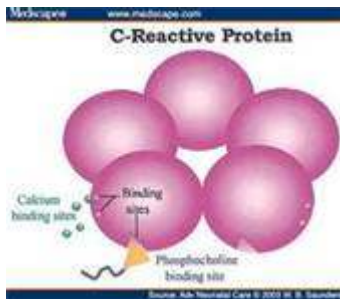
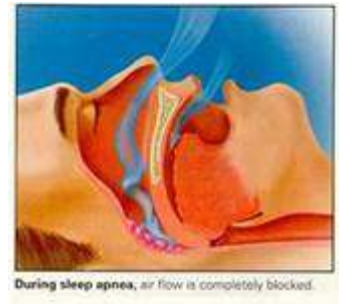
- **Age.** Simply getting older increases your risk of damaged and narrowed arteries.
- **Sex.** Men are generally at greater risk of coronary artery disease. However, the risk for women increases after menopause.
- **Family history.** A family history of heart disease is associated with a higher risk of coronary artery disease, especially if a close relative developed heart disease at an early age. Your risk is highest if your father or a brother was diagnosed with heart disease before age 55, or your mother or a sister developed it before age 65.
- **Smoking.** Nicotine constricts your blood vessels, and carbon monoxide can damage their inner lining, making them more susceptible to atherosclerosis. The incidence of heart attack in women who smoke at least 20 cigarettes a day is six times that of women who've never smoked. For men who smoke, the incidence is triple that of nonsmokers.
- **High blood pressure.** Uncontrolled high blood pressure can result in hardening and thickening of your arteries, narrowing the channel through which blood can flow.
- **High blood cholesterol levels.** High levels of cholesterol in your blood can increase the risk of formation of plaques and atherosclerosis. High cholesterol can be caused by a high level of low-density lipoprotein (LDL), known as the "bad" cholesterol. A low level of high-density lipoprotein (HDL), known as the "good" cholesterol, also can promote atherosclerosis.
- **Diabetes.** Diabetes is associated with an increased risk of coronary artery disease. Both conditions share similar risk factors, such as obesity and high blood pressure.
- **Obesity.** Excess weight typically worsens other risk factors.
- **Physical inactivity.** Lack of exercise also is associated with coronary artery disease and some of its risk factors, as well.
- **High stress.** Unrelieved stress in your life may damage your arteries as well as worsen other risk factors for coronary artery disease.

Risk factors often occur in clusters and may build on one another, such as obesity leading to diabetes and high blood pressure. When grouped together, certain risk factors put you at an ever greater risk of coronary artery disease. For example, metabolic syndrome — a cluster of conditions that includes elevated blood pressure, high triglycerides, elevated insulin levels and excess body fat around the waist — increases the risk of coronary artery disease.

Sometimes coronary artery disease develops without any classic risk factors. Researchers are studying other possible factors, including:

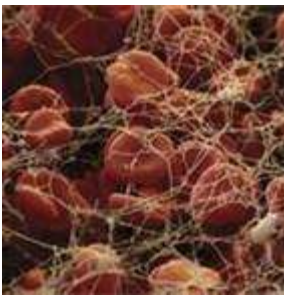
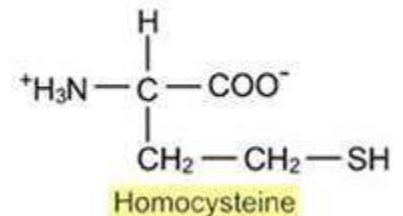


- **Sleep apnea.** This disorder causes you to repeatedly stop and start breathing while you're sleeping. Sudden drops in blood oxygen levels that occur during sleep apnea increase blood pressure and strain the cardiovascular system, possibly leading to coronary artery disease.



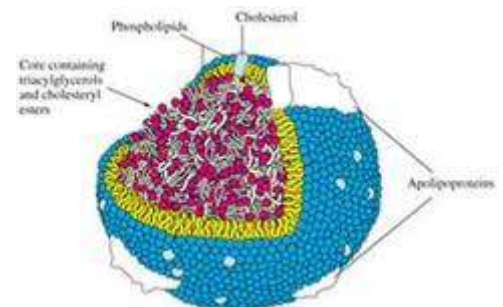
- **C-reactive protein.** C-reactive protein (CRP) is a normal protein that appears in higher amounts when there's swelling somewhere in your body. High CRP levels may be a risk factor for heart disease. It's thought that as coronary arteries narrow, you'll have more CRP in your blood.

- **Homocysteine.** Homocysteine is an amino acid your body uses to make protein and to build and maintain tissue. But high levels of homocysteine may increase your risk of coronary artery disease.



- **Fibrinogen.** Fibrinogen is a protein in your blood that plays a central role in blood clotting. But too much may increase clumping of platelets, the type of blood cell largely responsible for clotting. That can cause a clot to form in an artery, leading to a heart attack or stroke. Fibrinogen may also be an indicator of the inflammation that accompanies atherosclerosis.

- **Lipoprotein (a).** This substance forms when a low-density lipoprotein (LDL) particle attaches to a specific protein. Lipoprotein (a) may disrupt your body's ability to dissolve blood clots. High levels of lipoprotein (a) may be associated with an increased risk of cardiovascular disease, including coronary artery disease and heart attack.

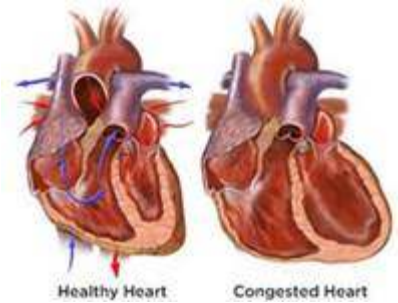


## Complications

Coronary artery disease can lead to:

- **Chest pain (angina).** When your coronary arteries narrow, your heart may not receive enough blood when demand is greatest — particularly during physical activity. This can cause chest pain (angina) or shortness of breath.

- **Heart attack.** If a cholesterol plaque ruptures and a blood clot forms, complete blockage of your heart artery may trigger a heart attack. The lack of blood flow to your heart may damage to your heart muscle. The amount of damage depends in part on how quickly you receive treatment.
- **Heart failure.** If some areas of your heart are chronically deprived of oxygen and nutrients because of reduced blood flow, or if your heart has been damaged by a heart attack, your heart may become too weak to pump enough blood to meet your body's needs. This condition is known as heart failure.
- **Abnormal heart rhythm (arrhythmia).** Inadequate blood supply to the heart or damage to heart tissue can interfere with your heart's electrical impulses, causing abnormal heart rhythms.




### Tests and diagnosis

The doctor will ask questions about your medical history, do a physical exam and order routine blood tests. He or she may suggest one or more diagnostic tests as well, including:

- **Electrocardiogram (ECG).** An electrocardiogram records electrical signals as they travel through your heart. An ECG can often reveal evidence of a previous heart attack or one that's in progress. In other cases, Holter monitoring may be recommended. With this type of ECG, you wear a portable monitor for 24 hours as you go about your normal activities. Certain abnormalities may indicate inadequate blood flow to your heart.
- **Echocardiogram.** An echocardiogram uses sound waves to produce images of your heart. During an echocardiogram, your doctor can determine whether all parts of the heart wall are contributing normally to your heart's pumping activity. Parts that move weakly may have been damaged during a heart attack or be receiving too little oxygen. This may indicate coronary artery disease or various other conditions.
- **Stress test.** If your signs and symptoms occur most often during exercise, your doctor may ask you to walk on a treadmill or ride a stationary bike during an ECG. This is known as an exercise stress test. In some cases, medication to stimulate your heart may be used instead of exercise. Some stress tests are done using an echocardiogram. For example, your doctor may do an ultrasound before and after you exercise on a treadmill or bike. Or your doctor may use medication to stimulate your heart during an echocardiogram. Another stress test known as a nuclear stress test helps measure blood flow to your heart muscle at rest and during stress. It's similar to a routine exercise stress test but with images in addition to an ECG. Trace amounts of radioactive material — such as thallium or a compound known as sestamibi (Cardiolite) — are injected into your bloodstream. Special cameras can detect areas in your heart that receive less blood flow.





- **Cardiac catheterization or angiogram.** To view blood flow through your heart, your doctor may inject a special dye into your arteries (intravenously). This is known as an angiogram. The dye is injected into the arteries of the heart through a long, thin, flexible tube (catheter) that is threaded through an artery, usually in the leg, to the arteries in the heart. This procedure is called cardiac catheterization. The dye outlines narrow spots and blockages on the X-ray images. If you have a blockage that requires treatment, a balloon can be pushed through the catheter and inflated to improve the blood flow in your coronary arteries. A mesh tube (stent) may then be used to keep the dilated artery open.
- 
- **CT scan.** Computerized tomography (CT) technologies, such as electron beam computerized tomography (EBCT) or a CT coronary angiogram, can help your doctor visualize your arteries. EBCT, also called an ultrafast CT scan, can detect calcium within fatty deposits that narrow coronary arteries. If a substantial amount of calcium is discovered, coronary artery disease may be likely. A CT coronary angiogram, in which you receive a contrast dye injected intravenously during a CT scan, also can generate images of your heart arteries.
  - **Magnetic resonance angiography (MRA).** This procedure uses MRI technology, often combined with an injected contrast dye, to check for areas of narrowing or blockages — although the details may not be as clear as those provided by coronary catheterization.

### Treatments and drugs

Treatment for coronary artery disease usually involves lifestyle changes and, if necessary, drugs and certain medical procedures.

### Lifestyle changes

Making a commitment to the following healthy lifestyle changes can go a long way toward promoting healthier arteries:

- Quit smoking.
- Eat healthy foods.
- Exercise regularly.
- Lose excess weight.
- Reduce stress.



### Drugs

Various drugs can be used to treat coronary artery disease, including:



- **Cholesterol-modifying medications.** By decreasing the amount of cholesterol in the blood, especially low-density lipoprotein (LDL, or the "bad") cholesterol, these drugs decrease the primary material that deposits on the coronary arteries. Boosting your high-density lipoprotein (HDL, or the "good") cholesterol may help, too. Your doctor can choose from a range of medications, including statins, niacin, fibrates and bile acid sequestrants.

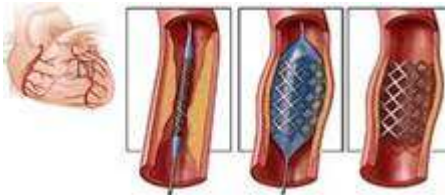
- **Aspirin.** Your doctor may recommend taking a daily aspirin or other blood thinner. This can reduce the tendency of your blood to clot, which may help prevent obstruction of your coronary arteries. If you've had a heart attack, aspirin can help prevent future attacks. There are some cases where aspirin isn't appropriate, such as if you have a bleeding disorder or you're already taking another blood thinner, so ask your doctor before starting to take aspirin.
- **Beta blockers.** These drugs slow your heart rate and decrease your blood pressure, which decreases your heart's demand for oxygen. If you've had a heart attack, beta blockers reduce the risk of future attacks.
- **Nitroglycerin.** Nitroglycerin tablets, sprays and patches can control chest pain by opening up your coronary arteries and reducing your heart's demand for blood.
- **Angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs).** These similar drugs decrease blood pressure and may help prevent progression of coronary artery disease. If you've had a heart attack, ACE inhibitors reduce the risk of future attacks.
- **Calcium channel blockers.** These medications relax the muscles that surround your coronary arteries and cause the vessels to open, increasing blood flow to your heart. They also control high blood pressure.



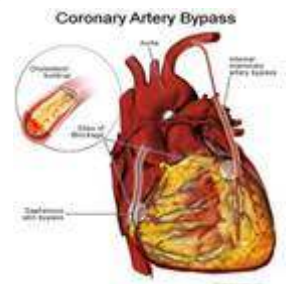
### Procedures to restore and improve blood flow

Sometimes more aggressive treatment is needed. Here are a few options:

- **Angioplasty and stent placement (percutaneous coronary revascularization).** In this procedure, your doctor inserts a long, thin tube (catheter) into the narrowed part of your artery. A wire with a deflated balloon is passed through the catheter to the narrowed area. The balloon is then inflated, compressing the deposits against your artery walls. A stent is often left in the artery to help keep the artery open. Some stents slowly release medication to help keep the artery open.



- **Coronary artery bypass surgery.** A surgeon creates a graft to bypass blocked coronary arteries using a vessel from another part of your body. This allows blood to flow around the blocked or narrowed coronary artery. Because this requires open-heart surgery, it's most often reserved for cases of multiple narrowed coronary arteries.



### Alternative medicine

Omega-3 fatty acids are a type of unsaturated fatty acid that's thought to reduce inflammation throughout the body, a contributing factor to coronary artery disease.

- **Fish and fish oil** are the most effective sources of omega-3 fatty acids. Fatty fish, such as salmon, herring and to a lesser extent tuna, contain the most omega-3 fatty acids and therefore the most benefit. Fish oil supplements may offer benefit, but the evidence is strongest for eating fish.

- **Flax and flaxseed oil** also contain beneficial omega-3 fatty acids, though studies have not found these sources to be as effective as fish. The shell on raw flaxseeds also contains soluble fiber, which can help lower blood cholesterol.
- **Other dietary sources of omega-3 fatty acids** include walnuts, canola oil, soybeans and soybean oil. These foods contain smaller amounts of omega-3 fatty acids than do fish and fish oil, and evidence for their benefit to heart health isn't as strong.



Other supplements may help reduce your blood pressure or cholesterol level, two other contributing factors to coronary artery disease. These include:

- Alpha-linolenic acid (ALA)
- Artichoke
- Barley
- Beta-sitosterol (found in oral supplements and some margarines, such as Promise Activ)
- Blond psyllium
- Cocoa
- Coenzyme Q10
- Garlic
- Oat bran (found in oatmeal and whole oats)
- Sitostanol (found in oral supplements and some margarines, such as Benecol)



## Angina

Angina is a type of chest pain caused by reduced blood flow to the heart muscle. Angina (an-JI-nuh or AN-juh-nuh) is a symptom of coronary artery disease. Angina is typically described as squeezing, pressure, heaviness, tightness or pain in your chest. Many people with angina say it feels like someone is standing on their chest.



Angina, also called angina pectoris, can be a recurring problem or a sudden, acute health concern.

Angina is relatively common, but can be hard to distinguish from other types of chest pain, such as the pain or discomfort of indigestion. If you have unexplained chest pain, seek medical attention right away.

## Symptoms

Angina symptoms include:

- Chest pain or discomfort
- Pain in your arms, neck, jaw, shoulder or back accompanying chest pain
- Nausea
- Fatigue
- Shortness of breath
- Anxiety

- Sweating
- Dizziness

The chest pain and discomfort common with angina may be described as pressure, squeezing, fullness or pain in the center of your chest. Some people with angina symptoms describe angina as feeling like a vise is squeezing their chest, or feeling like a heavy weight has been placed on their chest.

The severity, duration and type of angina can vary. It's important to recognize if you have new or changing chest pain. New or different symptoms may signal a more dangerous form of angina (unstable angina) or a heart attack.

Stable angina is the most common form of angina and typically occurs with exertion and goes away with rest. If chest pain is a new symptom for you, it's important to see your doctor to find out what's causing your chest pain and to get proper treatment. If your stable angina gets worse or changes, seek medical attention immediately.

### **Characteristics of stable angina**



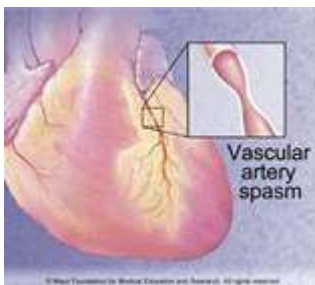
- Develops when your heart works harder, such as when you exercise or climb stairs
- Can usually be predicted and the pain is usually similar to previous types of chest pain you've had
- Lasts a short time, perhaps five minutes or less
- Disappears sooner if you rest or use your angina medication
- Could feel like indigestion
- Might spread to your arms, back or other areas
- Can be triggered by mental or emotional stress

### **Characteristics of unstable angina (a medical emergency)**

- Occurs even at rest
- Is a change in your usual pattern of angina
- Is unexpected
- Is usually more severe and lasts longer than stable angina, maybe as long as 30 minutes
- May not disappear with rest or use of angina medication
- Might signal a heart attack



### **Characteristics of variant angina (Prinzmetal's angina)**



- Usually happens when you're resting
- Is often severe
- May be relieved by angina medication

Prinzmetal's angina is rare — only about 2 percent of angina cases are Prinzmetal's angina. This type of angina is caused by a spasm in your heart's arteries that temporarily reduces blood flow.

## **Causes**

Angina is caused by reduced blood flow to your heart muscle. Your blood carries oxygen, which your heart muscle needs to survive. When your heart muscle isn't getting enough oxygen, it causes a condition called ischemia.

The most common cause of reduced blood flow to your heart muscle is coronary artery disease (CAD). Your heart (coronary) arteries can become narrowed by fatty deposits called plaques. This is called atherosclerosis.

This reduced blood flow is a supply problem — your heart is not getting enough oxygen-rich blood. You may wonder why you don't always have angina if your heart arteries are narrowed due to fatty buildup. This is because during times of low oxygen demand — when you're resting, for example — your heart muscle may be able to get by on the reduced amount of blood flow without triggering angina symptoms. But when you increase the demand for oxygen, such as when you exercise, this can cause angina.

- **Stable angina.** Stable angina is usually triggered by physical exertion. When you climb stairs, exercise or walk, your heart demands more blood, but it's harder for the muscle to get enough blood when your arteries are narrowed. Besides physical activity, factors such as emotional stress, cold temperatures, heavy meals and smoking also can narrow arteries and trigger angina.
- **Unstable angina.** If fatty deposits (plaques) in a blood vessel rupture or a blood clot forms, it can quickly block or reduce flow through a narrowed artery, suddenly and severely decreasing blood flow to your heart muscle. Unstable angina can also be caused by conditions such as severe anemia, especially if you already have narrowed coronary arteries. Unstable angina worsens and is not relieved by rest or your usual medications. If the blood flow doesn't improve, heart muscle deprived of oxygen dies — a heart attack. Unstable angina is dangerous and requires emergency treatment.
- **Variant angina.** Variant angina, also called Prinzmetal's angina, is caused by a spasm in a coronary artery in which the artery temporarily narrows. This narrowing reduces blood flow to your heart, causing chest pain. Variant angina accounts for about 2 percent of angina cases.

## **Complications**

The chest pain that can occur with angina can make doing some normal activities, such as walking, uncomfortable. However, the most dangerous complication to be concerned about with angina is a heart attack.

## **Tests and diagnosis**

To diagnose angina, your doctor will start by doing a physical exam and asking about your symptoms. You'll also be asked about any risk factors, including whether you have a family history of heart disease.



There are several tests your doctor may order to help confirm whether you have angina:

- Electrocardiogram (ECG).
- Stress test.
- Chest X-ray.
- Echocardiogram.
- Nuclear stress test.
- Coronary angiography.
- Blood tests.
- Cardiac computerized tomography (CT) scan.

## **Treatments and drugs**

There are many options for angina treatment, including lifestyle changes, medications, angioplasty and stenting, or coronary bypass surgery. The goals of treatment are to reduce the frequency and severity of your symptoms and to lower your risk of heart attack and death. However, if you have unstable angina or angina pain that's different from what you usually have, such as occurring when you're at rest, you need immediate treatment in a hospital.

## **Lifestyle changes**

If your angina is mild, lifestyle changes may be all you need to do. Even if your angina is severe, making lifestyle changes can still help. Changes include:

- If you smoke, stop smoking. Avoid exposure to secondhand smoke.
- If you're overweight, talk to your doctor about weight-loss options.
- If you have diabetes make sure that it is well controlled and that you are following an optimal diet and exercise plan.
- Because angina is often brought on by exertion, it's helpful to pace yourself and take rest breaks.
- Avoid large meals.
- Avoiding stress is easier said than done, but try to find ways to relax. Talk with your doctor about stress-reduction techniques.
- Eat a healthy diet with limited amounts of saturated fat, lots of whole grains, and many fruits and vegetables.
- Talk to your doctor about starting a safe exercise plan.

## **Medications**

If lifestyle changes alone don't help your angina, you may need to take medications. These may include:

- Aspirin.
- Nitrates.
- Beta blockers.
- Statins.
- Calcium channel blockers.
- Angiotensin-converting enzyme (ACE) inhibitors.
- **Ranolazine (Ranexa)**. Ranexa can be used alone or with other angina medications, such as calcium channel blockers, beta blockers or nitroglycerin. Unlike some other angina medications, Ranexa can be used if you're taking oral erectile dysfunction medications.



## **Medical procedures and surgery**

Lifestyle changes and medications are frequently used to treat stable angina. But medical procedures such as angioplasty, stenting and coronary artery bypass surgery are also used to treat angina.

- Angioplasty and stenting.
- Coronary artery bypass surgery.

## **Lifestyle and home remedies**

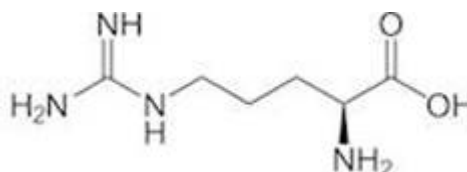
Because heart disease is often the cause of most forms of angina, you can reduce or prevent angina by working on reducing your heart disease risk factors. Making lifestyle changes is the most important step you can take.

- If you smoke, stop smoking.
- Eat a healthy diet with limited amounts of saturated fat, lots of whole grains, and many fruits and vegetables.
- Talk to your doctor about starting a safe exercise plan.
- If you're overweight, talk to your doctor about weight-loss options.
- Take anti-angina medications as prescribed and follow your doctor's directions.
- Treat diseases or conditions that can increase your risk of angina, such as diabetes, high blood pressure and high blood cholesterol.
- Because angina is often brought on by exertion, pace yourself and take rest breaks.
- Avoid large meals that make you feel overly full.
- Try to find ways to relax. Talk with your doctor about stress-reduction techniques.

## **Alternative medicine**

Supplements that may help improve your angina treatment include:

- L-arginine
- L-carnitine



Both of these supplements may help reduce the swelling in your arteries that causes them to narrow, which contributes to high blood pressure and chest pain. Before adding either of these supplements to your treatment, talk to your doctor. Supplements can interact with other medications, causing dangerous side effects.

## **Prevention**

You can help prevent angina by making the same lifestyle changes that might improve your symptoms if you already have angina. These include:

- Quit smoking.
- Monitor and control other health conditions, such as high blood pressure, high cholesterol and diabetes.
- Eat a healthy diet.
- Increase your physical activity, with your doctor's OK.
- Maintain a healthy weight.
- Reduce your stress level.



## Ventricular fibrillation

Ventricular fibrillation is a heart rhythm problem that occurs when the heart beats with rapid, erratic electrical impulses. This causes pumping chambers in your heart (the ventricles) to quiver uselessly, instead of pumping blood. During ventricular fibrillation, your blood pressure plummets, cutting off blood supply to your vital organs. Ventricular fibrillation is frequently triggered by a heart attack.



Ventricular fibrillation is an emergency that requires immediate medical attention. A person with ventricular fibrillation will collapse within seconds and soon won't be breathing or have a pulse. Emergency treatment for ventricular fibrillation includes cardiopulmonary resuscitation (CPR) and shocks to the heart with a device called a defibrillator.

Treatments for those at risk of ventricular fibrillation include medications and implantable devices that can restore a normal heart rhythm.

### Symptoms

Loss of consciousness or fainting is the most common sign of ventricular fibrillation.

### Early ventricular fibrillation symptoms

It's possible that you may have other signs and symptoms that start about an hour before your heart goes into ventricular fibrillation and you faint. These include:

- Chest pain
- Rapid heartbeat (tachycardia)
- Dizziness
- Nausea
- Shortness of breath

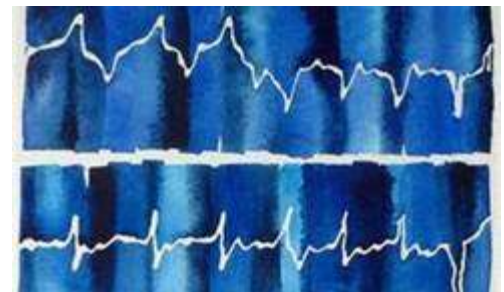
### Causes

To understand how ventricular fibrillation happens, consider what should happen during a normal heartbeat.

### What's a normal heartbeat?

When your heart beats, the electrical impulses that cause it to contract must follow a precise pathway through your heart. Any interruption in these impulses can cause an irregular heartbeat (arrhythmia).

Your heart is divided into four chambers. The chambers on each half of your heart form two adjoining pumps, with an upper chamber (atrium) and a lower chamber (ventricle).



During a heartbeat, the smaller, less muscular atria contract and fill the relaxed ventricles with blood. This contraction starts after the

sinus node — a small group of cells in your right atrium — sends an electrical impulse causing your right and left atria to contract.

The impulse then travels to the center of your heart, to the atrioventricular node, which lies on the pathway between your atria and your ventricles. From here, the impulse exits the atrioventricular node and travels through your ventricles, causing them to contract and pump blood throughout your body.

### **What causes ventricular fibrillation?**

It's not always known what causes ventricular fibrillation. But the most common cause is a problem in the electrical impulses traveling through your heart after a first heart attack, or problems resulting from a scar in your heart's muscle tissue from a previous heart attack. Some cases of ventricular fibrillation begin as a rapid heartbeat called ventricular tachycardia (VT). This fast, regular beating of the heart is caused by abnormal electrical impulses that start in the ventricles.

Most VT occurs in people with some form of heart-related problem, such as scars or damage within the ventricle muscle from a heart attack. Sometimes VT can last for 30 seconds or less (nonsustained) and may not cause any symptoms, although it causes inefficient heartbeats. But, VT may be a sign of more-serious heart problems. If VT lasts more than 30 seconds, it will usually lead to palpitations, dizziness or fainting. Untreated VT will often lead to ventricular fibrillation.

In ventricular fibrillation, rapid, chaotic electrical impulses cause your ventricles to quiver uselessly instead of pumping blood. Without an effective heartbeat, your blood pressure plummets, instantly cutting off blood supply to your vital organs — including your brain. Most people lose consciousness within seconds and require immediate medical assistance, including cardiopulmonary resuscitation (CPR). Your chances of survival are better if CPR is delivered until your heart can be shocked back into a normal rhythm with a device called a defibrillator. Without CPR or defibrillation, death results in minutes. Most cases of ventricular fibrillation are linked to some form of heart disease.

### **Risk factors**

Several factors may increase your risk of ventricular fibrillation, including:

- A previous episode of ventricular fibrillation
- A previous heart attack
- A heart defect you're born with (congenital heart disease)
- Heart muscle disease (cardiomyopathy)
- Injuries that cause damage to the heart muscle, such as electrocution
- Use of illegal drugs, such as cocaine or methamphetamine

### **Tests and diagnosis**

Because ventricular fibrillation is a life-threatening condition, it's unlikely you'd be diagnosed at a routine doctor's appointment unless you happened to collapse in the office. Ventricular fibrillation is always diagnosed in an emergency situation. Your doctors will know if you're in ventricular fibrillation based on results from:

- **Heart monitoring.** A heart monitor that will read the electrical impulses that make your heart beat will show that your heart is beating erratically or not at all.
- **Pulse check.** In ventricular fibrillation, your pulse will be difficult to feel or you may not have a pulse.



### **Tests to diagnose the cause of ventricular fibrillation**

After your doctors diagnose and treat ventricular fibrillation, they'll want to know what caused it. You'll have additional tests to find the cause of your ventricular fibrillation, which can include:

- Electrocardiogram (ECG).
- Blood tests.
- Chest X-ray.
- Echocardiogram.
- Coronary catheterization (angiogram).
- Cardiac computerized tomography (CT) or magnetic resonance imaging (MRI).

### **Treatments and drugs**

Emergency treatments for ventricular fibrillation focus on restoring blood flow through your body as quickly as possible to prevent damage to your brain and other organs. After blood flow is restored through your heart, if necessary, you'll have treatment options to help prevent future episodes of ventricular fibrillation.

### **Emergency treatments**

- **Cardiopulmonary resuscitation (CPR).** This treatment can help restore blood flow through the body by mimicking the pumping motion your heart makes. CPR can be performed by anyone, including family members of those at risk. In a medical emergency, CPR can be started before emergency medical personnel arrive. But first, call for emergency medical attention and check the unconscious person's breathing. Then begin CPR by pushing hard and fast on the person's chest — about 100 compressions a minute. Allow the chest to rise completely between compressions. Unless you've been trained in CPR, don't worry about breathing into the person's mouth. Keep doing chest compressions until a portable defibrillator is available or emergency personnel arrive.



- **Defibrillation.** The delivery of an electrical shock through the chest wall to the heart momentarily stops the heart and the chaotic rhythm. This often allows the normal heart rhythm to resume. The shock may be administered by emergency personnel or by a bystander if a public-use defibrillator — the device used to administer the shock — is available. Most public-use defibrillators are easy to use and give voice instructions as you use them. Public-use defibrillators are programmed to recognize ventricular fibrillation and send a shock only when it's appropriate. These portable defibrillators are available in an increasing number of public places, including in airports, shopping malls, casinos, health clubs, and community and senior citizen centers.



## **Treatments to prevent future episodes**

If your doctor finds that your ventricular fibrillation episode is caused by a change in the structure of your heart, such as scarred tissue from a heart attack, he or she may recommend that you take medications or have a medical procedure performed to reduce your risk of future ventricular fibrillation. Treatment options can include:

- Medications.
- Implantable cardioverter-defibrillator (ICD).
- Coronary angioplasty and stent placement.
- Coronary bypass surgery.
- Ventricular tachycardia ablation.

## **Lifestyle and home remedies**

If you're at risk of ventricular fibrillation, taking steps to improve your heart health will decrease the chances of your heart going into ventricular fibrillation. But, you should talk to your doctor about purchasing a home automated external defibrillator (AED) if you have serious concerns.

## **Home automated external defibrillators (AEDs)**

If you're at risk of ventricular fibrillation and don't have an ICD, you may want to consider purchasing a home automated external defibrillator (AED) after talking to your doctor. If you're experiencing ventricular fibrillation and an AED is on hand, a bystander could grab it and easily connect it to your chest to check your heart rhythm. If your heart rhythm can be treated with an electric shock, the AED automatically sends an electrical current to your heart muscle. That jolt could reset your heart back into a normal rhythm, possibly saving your life.

If you plan to use an AED on someone, it's still critical that you call 911 or your local emergency services to get help on the way before you begin using the AED.

## **Prevention**

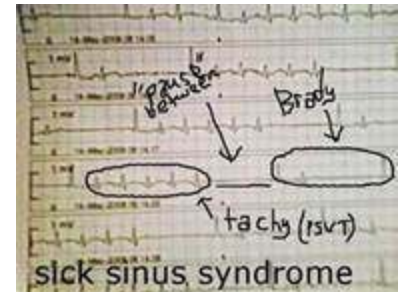
Adopting a heart-healthy lifestyle can help prevent episodes of ventricular fibrillation, primarily by reducing your risk of heart attack. A heart-healthy lifestyle includes:

- Not smoking.
- Checking your cholesterol.
- Controlling your blood pressure.
- Exercising regularly.
- Maintaining a healthy weight.
- Eating a heart-healthy diet.

## Sick sinus syndrome

Sick sinus syndrome is the name for a group of heart rhythm problems (arrhythmias) in which the sinus node — the heart's natural pacemaker — doesn't work properly.

The sinus node is an area of specialized cells in the upper right chamber of the heart that controls the rhythm of your heart. Normally, the sinus node produces a steady pace of regular electrical impulses. In sick sinus syndrome, these signals are abnormally paced. A person with sick sinus syndrome may have heart rhythms that are too fast, too slow, punctuated by long pauses — or an alternating combination of all of these rhythm problems.



Sick sinus syndrome is relatively uncommon, but the risk of developing sick sinus syndrome increases with age. Many people with sick sinus syndrome eventually need a pacemaker to keep the heart in a regular rhythm.

### Symptoms

Most people with sick sinus syndrome initially have few or no symptoms. In some cases, symptoms may come and go.

When they do occur, sick sinus syndrome symptoms may include:

- Slower than normal pulse (bradycardia)
- Fatigue
- Dizziness or lightheadedness
- Fainting or near fainting
- Shortness of breath
- Chest pains
- Interrupted sleeping
- Confusion or difficulty remembering things
- A sensation of rapid, fluttering heartbeats (palpitations)



Many of these signs and symptoms are caused by reduced blood flow to the brain when the heart beats too fast or too slowly.

### What makes the sinus node misfire?

Diseases and conditions that cause scarring or damage to your heart's electrical system can be the reason. Scar tissue from a previous heart surgery also may be the cause, particularly in children. Sick sinus syndrome may also be set off by medications, such as calcium channel blockers or beta blockers used to treat high blood pressure, heart disease or other conditions. However, in most cases, the sinus node doesn't work properly because of age-related wear and tear to the heart muscle.

## **Risk factors**

Sick sinus syndrome can occur in people of all ages, even infants. Because it usually develops slowly, over many years, it's most common in people around age 70.

In rare cases, sick sinus syndrome may also be associated with certain conditions such as muscular dystrophy and other diseases that may affect the heart.

## **Complications**

When your heart's natural pacemaker isn't working properly, your heart can't perform as efficiently as it should. This can lead to a very slow heart rate, which may cause fainting. In rare cases, long periods of slow heart rate or fast heart rate can keep your heart from pumping enough blood to meet your body's needs — a condition called heart failure.

If you have a type of sick sinus syndrome called bradycardia-tachycardia syndrome, you may also be at a higher risk of developing a blood clot in your heart that may lead to a stroke. That's because the fast heart rhythm that occurs in bradycardia-tachycardia syndrome is often atrial fibrillation. Atrial fibrillation is a chaotic rhythm of the upper chambers of the heart that can cause blood pooling in the heart. Blood clots are more likely to form when blood flow through the heart is altered in any way. A blood clot can break loose and travel to the brain, causing a stroke.

## **Tests and diagnosis**

Symptoms of sick sinus syndrome — such as dizziness, shortness of breath and fainting — are also symptoms of many other diseases and conditions. However, in sick sinus syndrome, these symptoms only occur when the heart is beating abnormally. In order to diagnose and treat sick sinus syndrome, your doctor will need to establish a connection between your symptoms and an abnormal heart rhythm.

- Electrocardiogram
- Electrophysiologic testing

## **Treatments and drugs**

Treatment for sick sinus syndrome focuses on eliminating or reducing unpleasant symptoms. If you aren't bothered by symptoms, you may only need regular checkups to monitor your condition. For people who are bothered by symptoms, the treatment of choice is usually an implanted electronic pacemaker.

## **Medication changes**

Your doctor may start by looking at your current medications to see if any of them could be interfering with the function of your sinus node. Medications used to treat high blood pressure or heart disease — such as beta blockers or calcium channel blockers — can worsen abnormal heart rhythms. In some cases, adjusting these medications can relieve symptoms.



## Pacing the heart

Most people with sick sinus syndrome eventually need a permanent artificial pacemaker to maintain a regular heartbeat. This small, battery-powered electronic device is implanted under the skin near your collarbone during a minor surgical procedure. The pacemaker is programmed to stimulate or "pace" your heart as needed to keep it beating normally.

The type of pacemaker you need depends on the type of irregular heart rhythm you're experiencing. Some rhythms can be treated with a single-chamber pacemaker, which uses only one wire (lead) to pace one chamber of the heart - in this case, the atrium. However, most people with sick sinus syndrome benefit from dual-chamber pacemakers, in which one lead paces the atrium and one lead paces the ventricle.

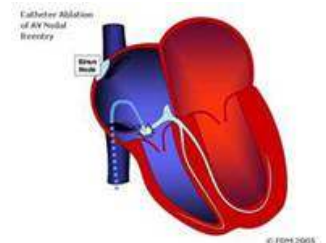


You'll be able to resume normal or near-normal activities after you recover from pacemaker implantation surgery. The risk of complications, such as swelling or infection in the area where the pacemaker was implanted, is small.

## Additional treatments for fast heart rate

If you have rapid heart rate as part of your sick sinus syndrome, you may need additional treatments to control these rhythms:

- **Medications.** If you have a pacemaker and your heart rate is still too fast, your doctor may prescribe anti-arrhythmia medications to prevent fast rhythms. If you have atrial fibrillation or other abnormal heart rhythms that increase your risk of stroke, you may need a blood-thinning medicine, such as warfarin (Coumadin) or dabigatran (Pradaxa).
- **AV node ablation.** This procedure can also control fast heart rhythms in people with pacemakers. It involves applying radiofrequency energy through a long, thin tube (catheter) to destroy (ablate) the tissue around the atrioventricular (AV) node between the atria and the ventricles. This stops fast heart rates from reaching the ventricles and causing problems.



- **Radiofrequency ablation of atrial fibrillation.** This procedure is similar to AV node ablation. However, in this case, ablation targets the tissue that triggers atrial fibrillation. This actually eliminates atrial fibrillation itself, rather than just preventing it from reaching the ventricles.

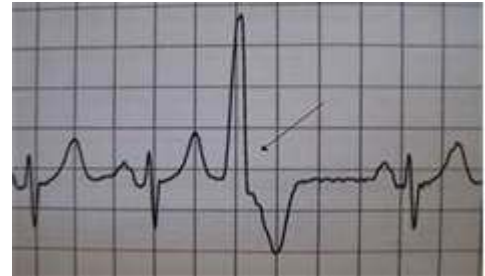
## Premature ventricular contractions (PVCs)

Premature ventricular contractions (PVCs) are extra, abnormal heartbeats that begin in one of your heart's two lower pumping chambers (ventricles). These extra beats disrupt your regular heart rhythm, sometimes causing you to feel a flip-flop or skipped beat in your chest.

Premature ventricular contractions are very common — they occur in most people at some point.

Premature ventricular contractions are also called:

- Premature ventricular complexes
- PVCs
- Ventricular premature beats
- Extrasystoles



If you have occasional premature ventricular contractions, but you're an otherwise healthy person, there's generally no reason for concern, and no treatment is needed. If you have frequent premature ventricular contractions or underlying heart disease, you may need treatment to help you feel better and treat underlying heart problems.

### Symptoms

Premature ventricular contractions often cause no symptoms. But you may feel an odd sensation in your chest, such as:

- Flip-flops
- Fluttering
- Pounding or jumping
- Skipped beats or missed beats
- Increased awareness of your heartbeat

### Causes

Premature ventricular contractions are abnormal contractions that begin in the ventricles. These extra contractions usually beat sooner than the next expected regular heartbeat. And they often interrupt the normal order of pumping, which is atria first, then ventricles. As a result, the extra, out-of-sync beats are usually less effective in pumping blood throughout the body.

### Why do extra beats occur?

The reasons aren't always clear. Certain triggers, heart diseases or changes in the body can make cells in the ventricles electrically unstable. Underlying heart disease or scarring may also cause electrical impulses to be misrouted. Premature ventricular contractions may be associated with:

- Chemical changes or imbalances in the body
- Certain medications, including common asthma medications
- Alcohol or illegal drugs
- Increased levels of adrenaline in the body caused by caffeine, exercise or anxiety
- Injury to the heart muscle from coronary artery disease, congenital heart disease, high blood pressure or infections (myocarditis)

## **Risk factors**

The following stimulants, conditions and triggers may increase your risk of premature ventricular contractions:

- Caffeine
- Alcohol
- Tobacco
- Exercise
- High blood pressure (hypertension)
- Anxiety
- Underlying heart disease, including congenital heart disease, coronary artery disease, heart attack, myocarditis and cardiomyopathy

## **Complications**

If you have frequent premature ventricular contractions or certain patterns of premature ventricular contractions, you may be at increased risk of developing heart rhythm problems (arrhythmias). Rarely, when accompanied by underlying heart disease, frequent premature contractions can lead to chaotic, dangerous heart rhythms and possibly sudden cardiac death.

## **Tests and diagnosis**

If your doctor suspects that you have premature ventricular contractions, you may have an electrocardiogram (ECG). This test can detect the extra beats, identify their pattern and their source, and look for any underlying heart disease.

## **Treatments and drugs**

Most people with premature ventricular contractions and an otherwise normal heart won't need treatment. Rarely, if you have frequent, bothersome symptoms, you may be offered treatment to help you feel better, but PVCs are typically not harmful.

In some cases, if you have underlying heart disease that could lead to more serious rhythm problems, you may need to make efforts to avoid triggers or perhaps take medications.

- **Lifestyle changes.** Eliminating common PVC triggers — such as caffeine or tobacco — can decrease the frequency and severity of your symptoms.
- **Medications.** Beta blockers — which are often used to treat high blood pressure and heart disease — can suppress premature contractions. Other medications, such as calcium channel blockers, or anti-arrhythmic drugs, such as amiodarone, also may be used if you have ventricular tachycardia or very frequent premature ventricular contractions that interfere with your heart's function, causing severe symptoms.

If you have very frequent PVCs associated with underlying heart disease and periods of ventricular tachycardia, your doctor might recommend treatment for the underlying condition.

## **Lifestyle and home remedies**

The following self-care strategies can help control premature ventricular contractions and improve your heart health:

- **Track your triggers.** If you have frequent symptoms, you might want to take note of your symptoms and your activities. This can help identify substances or actions that may trigger premature ventricular contractions.
- **Modify your substance use.** Caffeine, alcohol, tobacco and other recreational drugs are known triggers of premature ventricular contractions. Reducing or avoiding these substances can reduce your symptoms.
- **Manage stress.** Anxiety can trigger abnormal heartbeats. If you think anxiety may be contributing to your condition, try stress-reduction techniques, such as biofeedback, meditation or exercise, or talk to your doctor about anti-anxiety medications.



## **Wolff-Parkinson-White (WPW) syndrome**

Wolff-Parkinson-White syndrome, or WPW syndrome, is the presence of an extra, abnormal electrical pathway in the heart that leads to periods of a very fast heartbeat (tachycardia).



The extra electrical pathway of Wolff-Parkinson-White syndrome is present at birth. People of all ages, including infants, can experience the symptoms related to Wolff-Parkinson-White syndrome. Episodes of a fast heartbeat often first occur when people are in their teens or early 20s.

In most cases, the episodes of fast heartbeats aren't life-threatening, but serious heart problems can occur. Treatments for Wolff-Parkinson-White syndrome can stop or prevent episodes of fast heartbeats. A catheter-based procedure, known as ablation, can permanently correct the heart rhythm problems.

## **Symptoms**

Wolff-Parkinson-White syndrome symptoms are the result of a fast heart rate. Common signs and symptoms include:

- Sensation of rapid, fluttering or pounding heartbeats (palpitations)
- Dizziness
- Lightheadedness
- Fainting
- Tiring easily during exercise
- Anxiety

Symptoms most often appear for the first time in people in their teens or 20s. An episode of a very fast heartbeat can begin suddenly and last for a few seconds or several hours. Episodes often happen during exercise.

### **Symptoms in more-serious cases**

If a person with Wolff-Parkinson-White syndrome also has a very rapid heart rate, more-serious symptoms can develop, including:

- Chest pain
- Chest tightness
- Difficulty breathing
- Sudden death

### **Symptoms in infants**

Symptoms in infants with Wolff-Parkinson-White syndrome may include:

- Shortness of breath
- Not alert or active
- Poor eating
- Fast heartbeats visible on the chest

### **No symptoms**

A person may have an extra electrical pathway in the heart but experience no fast heartbeat and no symptoms. This condition, called Wolff-Parkinson-White pattern, is discovered only by chance when a person is undergoing a heart exam for other reasons. Wolff-Parkinson-White pattern is harmless in many people.

### **Causes**

The extra electrical pathway of Wolff-Parkinson-White syndrome is present at birth. An abnormal gene (gene mutation) is the cause of a small percentage of cases of the disorder. Wolff-Parkinson-White syndrome is associated with some forms of congenital heart disease, such as Ebstein's anomaly. Otherwise, little is known about why this extra pathway develops.

### **Abnormal electrical system related to Wolff-Parkinson-White syndrome**

In Wolff-Parkinson-White syndrome, an extra electrical pathway connects the atria and ventricles. This means that an electrical signal can bypass the AV node. When electrical impulses use this detour through the heart, the ventricles are activated too early — a condition known as preexcitation.

### **Abnormal rhythm or fast heartbeat in patients with WPW:**

Two major types of rhythm disturbances can be related to the presence of the extra electrical pathway:

- **Looped electrical impulses.** The problem with a fast heartbeat usually occurs in Wolff-Parkinson-White syndrome because electrical impulses travel down either the normal or the extra pathway and up the other one, creating a complete electrical loop of signals. This condition, called AV reentrant tachycardia, sends impulses to the ventricles at a very rapid rate. The ventricles, as a result, pump very quickly, causing symptoms.

- **Disorganized electrical impulses.** If electrical impulses don't begin correctly in the right atrium, they may travel across the atria in a disorganized way, causing them to beat very quickly and out of step with each other. This condition is called atrial fibrillation. These disorganized signals also increase the pumping rate of the ventricles to some extent. If there's an extra electrical pathway, as with Wolff-Parkinson-White syndrome, the ventricles can beat even faster. The ventricles don't have time to fill up with blood and don't pump enough blood to the body. This less common condition can be life-threatening

### **Complications**

Wolff-Parkinson-White syndrome doesn't cause significant problems for many people, but complications can occur, and it's not always possible to know your risk of serious heart-related events. If the disorder is left untreated, and particularly if you have other heart conditions, you could experience the following:

- Sudden death
- Chaotic electrical signals through the ventricles and very rapid beating of the ventricles (ventricular fibrillation)
- Low blood pressure (hypotension)
- Inability of the heart to pump enough blood (heart failure)
- Frequent fainting spells

### **Tests and diagnosis**

Your doctor can make a diagnosis of Wolff-Parkinson-White syndrome based on your answers to questions about symptoms, a physical exam and heart tests.

- Electrocardiogram(ECG)
- Electrophysiological testing

### **Treatments and drugs**

The treatment goals for Wolff-Parkinson-White syndrome are to slow a fast heart rate when it occurs and prevent future episodes.

### **Stopping a fast heart rate**

A fast heartbeat may correct itself, and you may be able to slow your heart rate using simple physical movements. However, you may need medication or other medical treatment to slow down your heartbeat. Ways to slow your heartbeat include:

- Vagal maneuvers
- Medications.
- Cardioversion



## **Preventing episodes of a fast heart rate**

With the following treatments, it's possible to correct or manage problems related to Wolff-Parkinson-White syndrome in the majority of cases.

- Radiofrequency catheter ablation
- Medications
- Surgery

## **If you don't have symptoms**

If you have the Wolff-Parkinson-White pathway but don't have any symptoms, you probably won't need treatment. In some people without symptoms, the extra pathway may spontaneously disappear over time.

Your doctor may be able to evaluate your risk of having episodes of a fast heartbeat based on findings from an ECG or electrophysiological testing. If he or she determines that you may be at risk of an event, your doctor may suggest radiofrequency catheter ablation.

## **Lifestyle and home remedies**

If you have a plan in place to deal with a possible episode of a fast heartbeat, you may feel calm and in control when one occurs. Talk to your doctor about:

- When and how to use vagal maneuvers
- When to call your doctor
- When to seek emergency care

You can also avoid substances that may contribute to a faster heartbeat, including:

- Caffeine
- Tobacco
- Alcohol

## **Arthritis pain medications: Do they raise blood pressure?**

It is true, though there's more to learn about how much additional risk you take on when you use acetaminophen regularly. For years, heart and arthritis specialists thought that acetaminophen was relatively safe for your heart, but recent studies have found that the drug may increase your risk of heart problems. The risk appears to be most significant if you already have high blood pressure or other risk factors for heart disease, but more studies are needed before we can be sure.



Other over-the-counter (OTC) arthritis medications — specifically, the nonsteroidal anti-inflammatory drugs (NSAIDs) ibuprofen (Advil, Motrin, others) and naproxen (Aleve, others) — also are associated with an increased risk of cardiovascular disease. More is known about how — and to what degree — these drugs affect your heart, blood vessels and blood pressure. You need to be especially careful about using these drugs if you've had a heart attack or are at risk of heart attack, as they increase your risk and interfere with the preventive effects of aspirin.

NSAIDs also increase the risk of bleeding. This is a particular concern for people who have heart disease and are already taking aspirin and other medications that increase bleeding risk, such as clopidogrel (Plavix) or warfarin (Coumadin). In addition, because NSAIDs cause fluid retention, people with heart failure should avoid them.

Keep in mind that medication isn't the only treatment for arthritis pain. Mild to moderate arthritis pain may be relieved with a combination of self-care measures and lifestyle changes, such as weight loss, exercise, heat or cold therapy, and physical therapy. Many doctors recommend trying this combined approach before starting medication.

If you need medication to help manage your arthritis pain, use the lowest dose necessary for the shortest time possible. Also, discuss with your doctor which pain medication is most appropriate for your specific situation. All medications — prescription and nonprescription — have risks and potential side effects.

When taking OTC pain relievers for arthritis, keep these tips in mind:

- Get your blood pressure checked regularly.
- Avoid alcohol.
- Tell your doctor about any herbal supplements, nutritional supplements or other medications you are taking.

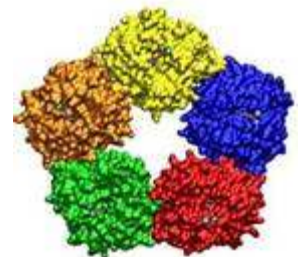
## Blood tests for heart disease

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|---|--|
| <ul style="list-style-type: none"><li>• Introduction</li><li>• C-reactive protein</li><li>• Fibrinogen</li><li>• Homocysteine</li><li>• Cholesterol test</li><li>• Lipoprotein (a)</li><li>• Natriuretic peptides</li></ul> | <p>Your blood offers many clues about your heart health. For example, high levels of "bad" cholesterol in your blood can be a sign that you're at increased risk of having a heart attack. And other substances in your blood can help determine if you have heart failure or are at risk of developing plaques in your arteries (atherosclerosis).</p> <p>It's important to remember that one blood test alone doesn't determine your risk of heart disease and that the most important risk factors for heart disease are smoking, high blood pressure, high cholesterol and diabetes.</p> |
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### C-reactive protein

C-reactive protein (CRP) is a protein your liver produces as part of your body's response to injury or infection (inflammatory response).

CRP is a sign of inflammation somewhere in the body. However, CRP tests can't pinpoint where in the body this may be happening. Inflammation plays a central role in the process of atherosclerosis, in which fatty deposits clog your arteries. Measuring CRP alone won't tell your doctor your risk of heart disease. But factoring in CRP test results with other blood test results and risk factors for heart disease helps create an overall picture of your heart health.



According to the American Heart Association, your CRP test result can be interpreted as putting your heart disease risk at:

- Low risk (less than 1.0 milligrams per liter, or mg/L)
- Average risk (1.0 to 3.0 mg/L)
- High risk (above 3.0 mg/L)

The American Heart Association doesn't yet recommend CRP screening for the general public — only those at known risk of heart disease.

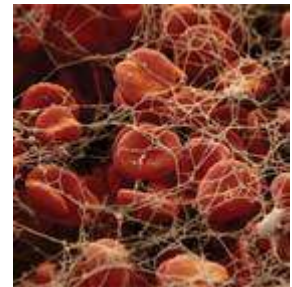
Cholesterol-lowering statin medications may reduce CRP levels and decrease your heart disease risk, but it's not recommended that you take statin medications solely to decrease your CRP level. Talk to your doctor if you're concerned about your CRP level.

## **Fibrinogen**

Fibrinogen is a protein in your blood that helps blood clot. But too much fibrinogen can cause a clot to form in an artery, leading to a heart attack or stroke.

Having too much fibrinogen may also mean that you have atherosclerosis. It may also worsen existing injury to artery walls.

Your doctor may check your fibrinogen level if you have an increased risk of heart disease. Smoking, inactivity, drinking too much alcohol and taking supplemental estrogen — whether from birth control pills or hormone therapy — may increase your fibrinogen level.



A normal fibrinogen level is considered to be between 200 and 400 mg/L.

## **Homocysteine**

Homocysteine is a substance your body uses to make protein and to build and maintain tissue. But too much homocysteine may increase your risk of stroke, certain types of heart disease, and disease of the blood vessels of the arms, legs and feet (peripheral artery disease).

Your doctor may check your homocysteine level if you've had cardiovascular problems but don't have any of the traditional risk factors, such as smoking. Your doctor may also suggest screening if any family members developed heart problems at a young age or have high homocysteine levels. A normal homocysteine level is between 4.4 and 10.8 micromoles per liter (μmol/L).



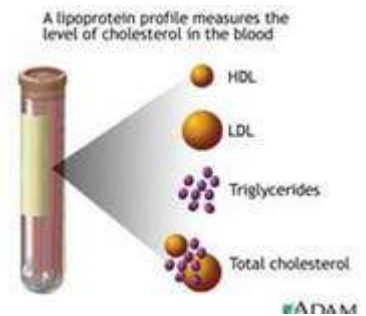
Your homocysteine level may drop if you get plenty of folate (folic acid) and B vitamins in your diet through foods such as green, leafy vegetables and fortified grain products or through supplements.

But it's not known if reducing your homocysteine level actually reduces your risk of death from heart disease.

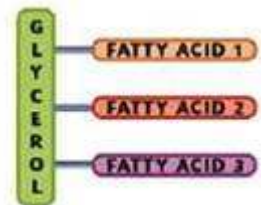
## Cholesterol test

A cholesterol test, also called a lipid panel or lipid profile, measures the fats (lipids) in your blood. The measurements can indicate your risk of having a heart attack or other heart disease. The test typically includes measurements of:

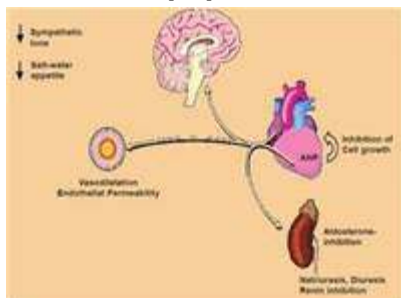
- **Total cholesterol.** This is a sum of your blood's cholesterol content. A high level can put you at increased risk of heart disease. Ideally, your total cholesterol should be below 200 milligrams per deciliter (mg/dL) or 5.2 millimoles per liter (mmol/L).
- **Low-density lipoprotein (LDL) cholesterol.** This is sometimes called the "bad" cholesterol. Too much of it in your blood causes the accumulation of fatty deposits (plaques) in your arteries (atherosclerosis), which reduces blood flow. These plaques sometimes rupture and lead to major heart and vascular problems. Ideally, your LDL cholesterol level should be less than 130 mg/dL (3.4 mmol/L).
- **High-density lipoprotein (HDL) cholesterol.** This is sometimes called the "good" cholesterol because it helps carry away LDL cholesterol, keeping arteries open and your blood flowing more freely. Ideally, your HDL cholesterol level should be 60 mg/dL (1.6 mmol/L) or higher, though it's common that HDL cholesterol is higher in women than men.



- **Triglycerides.** Triglycerides are another type of fat in the blood. High triglyceride levels usually mean you regularly eat more calories than you burn. High levels increase your risk of heart disease. Ideally, your triglyceride level should be less than 150 mg/dL (1.7 mmol/L). The American Heart Association (AHA) recommends that a triglyceride level of 100 mg/dL (1.1 mmol/L) or lower is considered "optimal." The AHA says this optimal level would improve your heart health.
- **Lipoprotein (a)** Lipoprotein (a), or Lp (a), is a type of LDL cholesterol. Your Lp (a) level is determined by your genes and isn't generally affected by lifestyle. High levels of Lp (a) may be a sign of increased risk of heart disease, though it's not clear how much risk. Your doctor might order an Lp(a) test if you already have atherosclerosis or heart disease but appear to have otherwise normal cholesterol levels. Lp (a) is often tested if you have a family history of early-onset heart disease or sudden death. It should also be tested if your LDL cholesterol doesn't respond well to drug treatment.



- **Natriuretic peptides** Brain natriuretic peptide, also called B-type natriuretic peptide (BNP), is a protein that your heart and blood vessels produce. BNP helps your body eliminate fluids, relaxes blood vessels and funnels sodium into your urine. When your heart is damaged, your body secretes high levels of BNP into your bloodstream to try to ease the strain on your heart. BNP levels may also rise if you have new or increasing chest pain (unstable angina) or after a heart attack. Your BNP level can help in the diagnosis and evaluation of heart failure and other heart conditions.



Normal levels vary according to age and gender. One of the most important uses

of BNP is to try to sort out whether shortness of breath is due to heart failure. For people who have heart failure, establishing a baseline BNP can be helpful and future tests can be used to help gauge how well your treatment works. A variation of BNP called N-terminal BNP also is useful in diagnosing heart failure and in some laboratories is used instead of BNP. N-terminal BNP may also be useful in evaluating your risk of heart attack and other problems if you already have heart disease. A high level of BNP alone isn't enough to diagnose a heart problem. Your doctor will also consider your risk factors and other blood test results.

## **Daily aspirin therapy: Understand the benefits and risks**

### **Is an aspirin a day the right thing for you? It's not as easy a decision as it sounds. Know the benefits and risks before considering daily aspirin therapy.**

Daily aspirin therapy may lower your risk of heart attack, but daily aspirin therapy isn't for everyone. Is it right for you?

You should take a daily aspirin only if your doctor advises you to do so. If you have had a heart attack or stroke, your doctor will likely recommend you take a daily aspirin unless you have a serious allergy or history of bleeding. If you have a high risk of having a first heart attack, your doctor might recommend aspirin after weighing the risks and benefits. You shouldn't start daily aspirin therapy on your own.



Although taking an occasional aspirin or two is safe for most adults to use for headaches, body aches or fever, daily use of aspirin can have serious side effects, including internal bleeding.

### **How can aspirin prevent a heart attack?**

Aspirin interferes with your blood's clotting action. When you bleed, your blood's clotting cells, called platelets, build up at the site of your wound. The platelets help form a plug that seals the opening in your blood vessel to stop bleeding.

But this clotting can also happen within the vessels that supply your heart with blood. If your blood vessels are already narrowed from atherosclerosis — the buildup of fatty deposits in your arteries — a fatty deposit in your vessel lining can burst. Then, a blood clot can quickly form and block the artery. This prevents blood flow to the heart and causes a heart attack. Aspirin therapy reduces the clumping action of platelets — possibly preventing a heart attack.

### **Should you take a daily aspirin?**

You shouldn't start daily aspirin therapy on your own in an effort to prevent a heart attack. Your doctor may suggest daily aspirin therapy if:

- You've already had a heart attack or stroke
- You haven't had a heart attack, but you have had a stent placed in a coronary artery, have had coronary bypass surgery, or you have chest pain due to coronary artery disease
- You've never had a heart attack, but you're at high risk of having one
- You're a man with diabetes older than 50



Although aspirin has been recommended in the past for certain groups of people without a history of heart attack, there's some disagreement among doctors about this approach. Guidelines are changing and have varied between organizations. The bottom line is that before taking a daily aspirin you should have a discussion with your doctor.

### **Should you avoid daily aspirin therapy if you have another health condition?**

Before starting daily aspirin therapy under the advice of your doctor, you should let him or her know if you have a health condition that could increase your risk of bleeding or other complications. These conditions include:

- A bleeding or clotting disorder (bleeding easily)
- Aspirin allergy, which can include asthma caused by aspirin
- Bleeding stomach ulcers

### **What's the best dose of aspirin to take?**

Your doctor will discuss what dose is right for you. Very low doses of aspirin — 75 milligrams (mg), which is less than a standard baby aspirin — can be effective. Your doctor will usually prescribe a daily dose anywhere from 81 mg — the amount in a baby aspirin — to 325 mg (a regular strength tablet). If you have had a heart attack or have had a heart stent placed, it is very important to take aspirin and any other blood thinning medications exactly as recommended.

### **What happens if you stop taking aspirin every day?**

You might be surprised to learn that stopping daily aspirin therapy can have a rebound effect that may increase your risk of heart attack. If you have had a heart attack or a stent placed in one or more of your heart arteries, stopping daily aspirin therapy can lead to a life-threatening heart attack. If you've been taking daily aspirin therapy and want to stop, it's important to talk to your doctor before making any changes. Suddenly stopping daily aspirin therapy could have a rebound effect that may trigger a blood clot.

### **Can you take aspirin if you regularly take ibuprofen or another nonsteroidal anti-inflammatory drug (NSAID) for another condition?**

Both aspirin and other nonsteroidal anti-inflammatory medications, such as ibuprofen (Motrin, Advil, others) and naproxen (Aleve), reduce the clotting action of blood platelets. Regular use of nonsteroidal anti-inflammatory medications can increase your bleeding risk, as can other medications you may take for aches and pains (Tylenol, others).



If you need only a single dose of ibuprofen, take it eight hours before or 30 minutes after the aspirin. If you need to take ibuprofen or other NSAIDs more often, talk to your doctor about medication alternatives that won't interfere with daily aspirin therapy.



## What are the possible side effects of daily aspirin therapy?

Side effects and complications of taking aspirin include:

- **Stroke caused by a burst blood vessel.** While daily aspirin can help prevent a clot-related stroke, it may increase your risk of a bleeding stroke (hemorrhagic stroke).
- **Gastrointestinal bleeding.** Daily aspirin use increases your risk of developing a stomach ulcer. And, if you have a bleeding ulcer or bleeding anywhere else in your gastrointestinal tract, taking aspirin will cause it to bleed more, perhaps to a life-threatening extent.
- **Allergic reaction.** If you're allergic to aspirin, taking any amount of aspirin can trigger a serious allergic reaction.
- **ringing in the ears (tinnitus) and hearing loss.** Too much aspirin (overdosing) can cause tinnitus and eventual hearing loss in some people.

If you're taking aspirin and need a surgical procedure or dental work, be sure to tell the surgeon or dentist that you take daily aspirin and how much. Otherwise you risk excessive bleeding during surgery.

The Food and Drug Administration also warns that people who regularly take aspirin should limit the amount of alcohol they drink because of its additional blood-thinning effects and potential to upset your stomach. If you choose to drink alcohol, do so in moderation. For healthy adults, that means up to one drink a day for men older than age 65, and up to two drinks a day for men age 65 and younger.

## What are possible drug interactions with daily aspirin therapy?

If you're already taking an anticoagulant, such as warfarin (Coumadin, Jantoven), dabigatran (Pradaxa) or rivaroxaban (Xarelto) for another condition, combining it with aspirin may greatly increase the risk of major bleeding complications. However, there may be some conditions for which combining a low dose of aspirin with warfarin is appropriate, such as with artificial heart valves for secondary stroke prevention. But this therapy always needs to be carefully discussed with your doctor.



Other medications and herbal supplements also may increase your risk of bleeding. Medications that can interact with aspirin include:

- Heparin
- Ibuprofen (Advil, Motrin, others), when taken regularly
- Corticosteroids
- Some antidepressants (clomipramine, paroxetine, others)

Taking some dietary supplements can also increase your bleeding risk. These include:

- Danshen
- Dong quai
- Evening primrose oil
- Ginkgo
- Omega-3 fatty acids (fish oil)
- Policosanol
- Willow bark

### **If you take daily aspirin, is it still safe to take an aspirin during a heart attack?**

If you think you're having a heart attack, the most important thing for you to do is call 911 or emergency medical services. Don't delay calling for help. Aspirin alone won't save your life if you're having a heart attack.

The operator may advise you to chew an aspirin, but will first ask questions to make sure you're not allergic to aspirin or have any other health conditions that would make taking an aspirin during a heart attack too risky. It's OK to chew an aspirin if your doctor has previously told you to do so if you think you're having a heart attack — but call 911 or emergency medical services first.

### **Should you take a coated aspirin?**

Enteric-coated aspirin is designed to pass through your stomach and not disintegrate until it reaches your small intestine. It's gentler on the stomach and may be appropriate for some people who take a daily aspirin, especially in those with a history of gastritis or ulcers. However, some researchers think there's no evidence that taking an enteric-coated aspirin decreases your chance of developing gastrointestinal bleeding. Talk to your doctor if you're concerned about ways to decrease your bleeding risk.

## **Polypill: Does it treat heart disease?**

### **What is the polypill? Can it prevent or treat heart disease?**

The term "polypill" describes a pill that contains a combination of several medications commonly used to treat heart disease and high blood pressure. Doctors aren't sure what exact combination of medications should be included in a polypill. It's thought that low doses of each of these medications could be effective:

- Aspirin
- Water pills (diuretics)
- Cholesterol-lowering medications (statins)
- Medications to make your heart beat with less force (beta blockers)
- Medications to help keep your blood vessels open (ACE inhibitors)



The polypill is still being studied and isn't available for sale yet in the United States. Who should take the polypill is still being considered. Doctors are trying to see if the polypill should be given as a preventive measure for people who haven't had a heart attack or stroke or as a treatment option for people who have already had a heart attack or stroke.

## **Grass-fed beef: What are the heart-health benefits?**

### **Does grass-fed beef have any heart-health benefits that other types of beef don't?**

Grass-fed beef typically comes from cattle that eat only grass and other foraged foods throughout their lives. Often, conventional beef and dairy cattle eat a diet that includes grains, such as corn, at some point. The difference in the diets of the cattle changes the nutrients and fats you get from eating the different types of beef.

Grass-fed beef may have some heart-health benefits that other types of beef don't have. When compared with other types of beef, grass-fed beef may have:

- Less total fat
- More heart-healthy omega-3 fatty acids
- More conjugated linoleic acid, a type of fat that's thought to reduce heart disease and cancer risks
- More antioxidant vitamins, such as vitamin E



Lean beef that's 10 percent fat or less — whether it's grass-fed beef or another type of beef — can be part of a heart-healthy diet. But it's still uncertain whether grass-fed beef adds even more heart-health benefits.

## **Drug-eluting stents: Do they increase heart attack risk?**

### **Drug-eluting stents, once thought to increase heart attack risk, are generally considered safe if used properly.**

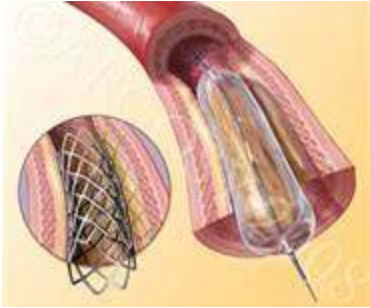
Stents are used to keep arteries open after a procedure called angioplasty. Some researchers were worried about a popular type of stent that slowly releases medication over time (drug-eluting stents). The concern was that drug-eluting stents might increase a person's risk of having a heart attack compared with having a bare-metal stent placed in an artery.



However, since these concerns surfaced, a number of studies have shown that drug-eluting stents are safe and a good option for many people. Find out the differences between drug-eluting stents and bare-metal stents, what you should ask your doctor before having a stent placed, and what you should do after you get a drug-eluting stent.

## What's a stent?

Stents are metal mesh tubes inserted during angioplasty. Angioplasty is a catheter procedure that involves temporarily inserting and blowing up a tiny balloon where your artery is clogged to help widen the artery. Stents help prevent restenosis — a situation where the artery becomes blocked again. Without the use of stents, about 30 percent of arteries become blocked again.



There are two basic kinds of stents: bare-metal stents and drug-eluting stents.

- **Bare-metal stents** are metal stents with no special coating. Bare-metal stents act as simple scaffolding to prop open blood vessels after they're widened with angioplasty. As the artery heals, tissue grows around the stent holding it in place. However, sometimes an overgrowth of this scar tissue in the arterial lining increases the risk that the artery will become blocked again.
- **Drug-eluting stents** are coated with medication that is slowly released (eluted) to help prevent the growth of scar tissue in the artery lining. This helps the artery remain smooth and open, ensuring good blood flow through it. Drug-eluting stents were developed because in some people who get bare-metal stents, tissue growth over the stent eventually leads to re-blockage.

Many people with heart problems have been successfully treated with drug-eluting stents, preventing the need for more-invasive procedures, such as coronary artery bypass surgery. The reduced risk of re-narrowed arteries from drug-eluting stents reduces the need for repeat hospitalization and angioplasty procedures — each of which carry some risk of complications including heart attack and stroke.

## What are your options for treating clogged heart arteries?

Drug-eluting stents are just one option for treating narrowed heart arteries. It's worth remembering that you basically have four options if your arteries become narrowed, each with risks:

- Medications and lifestyle changes.
- Bare-metal stents.
- Drug-eluting stents.
- Coronary bypass surgery.

## What should you do if you have a drug-eluting stent?

It's very important that you take anti-clotting medications exactly as directed by your doctor. Here's what to do if you have a stent of any kind:

- **Take aspirin.** If you have a stent, you'll have to take aspirin daily and indefinitely to reduce the risk of clotting. Follow your doctor's instructions on how much and what type of aspirin to take.

- **Take anti-clotting medication.** People with stents are given prescription anti-clotting medications, such as clopidogrel (Plavix). The American Heart Association and Food and Drug Administration recommend that people who have had drug-eluting stents inserted should continue to take medications, such as clopidogrel, to reduce the risk of stent clotting for at least one year after the stent is inserted. In some high-risk situations, your cardiologist may recommend taking clopidogrel indefinitely.
- **Listen to your cardiologist.** Always talk with your cardiologist about how long you should take anti-clotting and other medications because the answer will vary depending on the nature of your blockage and your risk of bleeding. The most important thing to remember is to take all your medications exactly as your doctor prescribes.
- **Talk to your other health care providers.** It's important to let your primary care doctor and any other specialists you see know what medications you take and that you have a stent. Anti-clotting medications and aspirin can affect surgeries and other medical procedures, and may interact with other medications.

### **What if I need other surgeries?**

If you're considering surgery not related to your heart (noncardiac surgery) in the year after receiving your stent, there are some additional things to keep in mind:

- If possible, you should postpone your noncardiac surgery for one year after receiving a stent.
- If the surgery can't be postponed, discuss with your doctor medications you should be taking at the same time, such as aspirin or clopidogrel. Your medication dosages might need to be changed.
- If you're likely to need surgery in the year after you get a stent, a bare-metal stent may be a better treatment for you. You may also want to consider a bare-metal stent if you're at an increased risk of bleeding or don't think you'll be able to take anti-clotting medications as prescribed by your doctor. Talk with your doctor about your situation.

## **Herbal supplements may not mix with heart medicines**

### **Some herbal supplements can have dangerous interactions with heart medications.**

Herbal supplements are natural, so they must be safe, right? Not necessarily. Herbal supplements can have strong effects in the body, and some can interact with prescription medications used to treat heart and circulatory problems, such as high blood pressure and heart failure. Some of these interactions can even be dangerous.

### **Herbal supplements and prescription medications**

At least a quarter of adults who take prescription medications also take dietary supplements, including herbal supplements. That number is even higher among adults older than age 70 — three-quarters report using both prescription medications and dietary supplements.

Yet many herbal supplements interact with medications for cardiovascular disease — which are widely prescribed for older adults. The chances of herbs and drugs interacting are high. Indeed, 8 of the 10 most widely used supplements interact with the blood-thinning medication warfarin (Coumadin). Here are just a few of the herbal supplements that can affect warfarin:

- Danshen
- Dong quai
- Evening primrose oil
- Garlic
- Ginkgo
- Ginseng
- St. John's wort

That's why it's so important to talk with your doctor before taking herbal supplements if you take prescription medications. Your doctor and pharmacist can help you avoid risky interactions.



## Herbal Program for Heart Attack

The following was taken from Footprints on the Path by HerbAllure.

When coronary arteries that carry oxygen and nutrients to the heart muscle become obstructed, a heart attack can occur. Atherosclerosis is the most common cause of obstruction. Blood clots in the coronary arteries also result in heart attacks. Seek appropriate medical assistance immediately.

**Heart Attack:** Capsicum (extract or capsules) – In the mouth may aid heart attack victims while seeking appropriate medical assistance.

**Victim should cough vigorously and repeatedly with deep breaths between until help arrives. Cough, Breathe Deeply...Repeat... to get oxygen into lungs and blood circulating.**

### **Herbals:**

- Cardio Assurance – To reduce risk of cardiovascular disease
- HS-II, Hawthorn Berries or Ginkgo/Hawthorn – Heart
- Green Tea Extract – To prevent vascular blood clots
- Blood Pressurex – To control high blood pressure
- Vari-Gone – To improve blood circulation
- Energ-V, Capsicum & Garlic w/Parsley or Capsicum
- Garlic, High Potency (Circulatory Tonic)
- Super GLA or Flax Seed Oil (Essential Fatty Acids)
- Super Algae, Alfalfa or Kelp – To strengthen Heart
- Cholester-Reg II – To support Circulatory System
- Butcher's Broom – Vascular cleanser and builder

### **Vitamins, Minerals & Other Supplements**

- CoQ10 – To support Circulatory System and membrane health
- Nattozimes Plus – To support the circulatory system
- Thai-Go or Grapine, High Potency (Powerful Antioxidants)
- Mega-Chel + Trace Mineral Maintenance
- Vitamin C and Vitamin E Complete – Vascular builders
- Magnesium or Calcium & Magnesium – To control heartbeat
- Krill Oil or Super Omega-3 EPA (Essential Fatty Acids)
- Potassium, Combination – For sodium/potassium balance
- Colostrum – Repair the heart muscle and generate blood vessels
- Protease/High Potency – To prevent

### **Essential Oils:**

- Ylang Ylang, Lavender, Helichrysum, Peppermint, Lemon

### **Diet:**

- Reduce fat intake. Check weight.

### **Other:**

- Fasting decreases blood coagulation and may be beneficial.

## **Herbal Program for Heart Palpitations**

The following was taken from Footprints on the Path by HerbAllure.

Throbbing, “pounding”, rapid or fluttery heartbeat, sufficiently out of the ordinary to make the person aware of it. More often than not the condition is temporary and not serious, but there are many causes and if the symptom is repeated or alarming it should be investigated by a medical professional. Causes may include an imbalance in calcium and magnesium levels, hormone imbalances or hypoglycemia.

### **Primary Supplements:**

- Magnesium Complex + Herbal CA, Coral Calcium, Nature’s Sea Calcium or Liquid Calcium – To control the heartbeat.

### **Herbals:**

- Cardio Assurance – To support the circulatory system
- HS-II (Heart Support), Hawthorn Berries or Ginkgo/Hawthorn – For heart health
- Cordyceps – To tone the heart
- Cholester-Reg II - To support the Circulatory System
- Green Tea Extract – To improve circulation
- Stress Pack, Stress-J, Stress Relief, Nerve Control, Passion Flower or Valerian – Herbal nerviness
- Natural Changes – If caused by menopause
- Astragalus – To minimize free radical damage

### **Vitamins, Minerals & Other Supplements:**

- Nattozimes Plus – To support the circulatory system
- Potassium Combination
- L-Carnitine – To support the circulatory System
- Colostrum – Repair the heart muscle and generate new blood vessels
- Ionic Minerals or Mineral Chi Tonic – For trace minerals

### **Essential Oils:**

- Ylang Ylang, Peppermint or Lavender – In massage oil applied to the heart area

### **Diet:**

- Eliminate caffeine, avoid coffee, chocolate and soft drinks.

## **Herbal Program for Angina (Pectoris)**

The following was taken from Footprints on the Path by HerbAllure.

Severe paroxysmal pain in the chest associated with an insufficient supply of blood to the heart. Symptoms may include shooting pains in the left arm. Seek appropriate medical attention immediately.

### **Primary Formulas:**

- HSII (Heart Support) – To strengthen Heart and Circulatory System
- Hawthorn Berries Extract, Magnesium or Magnesium Complex – To relax spasms for relief of Angina

### **Herbals:**

- Cardio Assurance
- Green Tea Extract – To improve circulation
- Cordyceps – As a nourishing tonic
- Thai-Go
- Blessed Thistle or Black Cohosh

### **Vitamins, Minerals & Other Supplements:**

- Grape, High Potency (Powerful Antioxidant)
- Guggul Lipid + LOCLO – To support the Circulatory System
- CoQ10 – For prevention
- Nattozimes Plus – To support the cardiovascular system
- Folic Acid Plus
- Vitamin E Complete w/Selenium (Synergistic Antioxidants)
- L-Carnitine 9 If heartbeat is irregular
- Lecithin (Fat Emulsifier) – To lower cholesterol level
- Potassium Combination - For potassium/sodium balance
- Magnesium Complex – Helps regulate heartbeat

### **Essential Oils:**

- Ylang Ylang (cardio tonic)
- Rosemary (poor circulation)
- Pink Grapefruit (as a toner for the heart)
- Clary Sage
- Geranium
- Rose Bulgaria
- Thyme Linalol
- Sandalwood

### **Other:**

- Cleanse the Gallbladder. Sluggish or impacted Gallbladder can cause false Angina plus poor breakdown of fats and, therefore, high cholesterol levels.

## **Herbal Program for Tachycardia**

The following was taken from Footprints on the Path by HerbAllure.

A rapid heartbeat that begins and ends abruptly for no apparent reason.

### **Herbals:**

- HS-II (heart Support), Hawthorn Berries or Hawthorn Berries Extract – General circulation and to regulate heartbeat
- Cardio Assurance – To improve the circulatory system
- Energ-V (Endurance/Energy), Capsicum, Garlic w/Parsley or Capsicum (General Circulation
- Garlic, High-Potency (Circulatory Tonic)
- Guggul Lipid – Add bulk fiber to insure the bowels move properly
- Ginkgo/Hawthorn (Heart and Brain Circulation)
- Butcher's Broom (Cardiac/Circulatory Tonic)
- Cordyceps – As a nourishing tonic for the Circulatory System
- Cholesterol-Reg II - To support the Circulatory System
- Stress-J, Stress Relief or Stress Pack

### **Vitamins, Minerals and Other Supplements:**

- Mega-Chel (Oral Chelation) – For the circulatory system
- Nattozimes Plus – To support the circulatory system
- CoQ10 – For the Circulatory System
- Magnesium Complex (Regulates Heartbeat) or Calcium-Magnesium
- L-Carnitine (Energy Regulating Amino Acid)
- IGF-1 – To improve cardiac function.

### **Essential Oils:**

- Ylang Ylang or Lavender – Applied over heart area.

### **Other:**

- Physical stress, like mental stress, requires lifestyle changes. Put exercise and laughter, deep breathing and right attitude into your life.

## **Herbal Program for Cholesterol**

The following was taken from Footprints on the Path by HerbAllure.

The white, crystalline substance found in animal tissues and various foods that is normally synthesized by the liver and is important as a constituent of cell membranes and a precursor to steroid hormones. Its level in the bloodstream can influence the pathogenesis of certain conditions such as the development of atherosclerotic plaque and coronary artery disease.

### **Primary Formula:**

- Cholester-Reg II

### **Herbals**

- Guggul Lipid + LOCLO or Fat Grabbers
- Garlic, High-Potency (Circulatory Tonic)
- Chickweed or Safflowers (Fat Emulsifiers)
- HS-II, Hawthorn Berries or Hawthorn Berries Extract
- Green Tea Extract – Improve circulation and reduce cholesterol
- Red Yeast Rice
- Cordyceps (To lower LDL and triglyceride levels and raise HDL)
- Olive Leaf Extract 0 To inhibit LDL cholesterol (bad cholesterol)
- Super Algae or Alfalfa – To lower cholesterol
- Nopal – To absorb dietary fat
- Liver Balance, LIV-J or Liver Cleanse Formula
- He Shou Wu – To lower cholesterol, a major tonic

### **Vitamins, Minerals and Other Supplements:**

- Mega-Chel (Oral chelation) For the Circulatory System
- MSM + Vitamin C – To regulate cholesterol
- CLA – For essential fatty acids to maintain normal cholesterol levels
- Vitamin E Complete
- Flax seed oil, Krill Oil, or Super Omega-2 EPS – To lower LDL cholesterol and triglyceride levels
- Lecithin (Fat Emulsifier)
- Super Omega-3, Super GLA, Black Currant or Evening Primrose Oil
- Grape, High Potency (Powerful Antioxidant)
- Vitamin C, Carotenoid Blend, Niacin + B-Complex
- Pregnenolone or DHEA – To lower serum LDL
- CoQ10 – If depleted by cholesterol-lowering drugs

### **Essential Oils:**

- Blend #1 – Helichrysum + Rosemary
- Blend #2 – Helichrysum + Geranium or Clary Sage

## **Herbal Program for Triglycerides**

The following was taken from Footprints on the Path by HerbAllure.

### **Herbals:**

- Cordyceps – To lower LDL and triglyceride levels while raising HDL
- Liver Cleanse Formula – To control triglycerides
- Gallbladder Formula – To cleanse gallbladder
- Garlic, High Potency
- Guggul Lipid + LOCLO or Psyllium Hulls
- Black Currant Oil

### **Vitamins and Minerals:**

- Mega-Chel
- Liv-Guard – Liver support
- L-Carnitine – To burn fat
- Krill Oil or Super Omega-3 EPA

### **Diet:**

- Avoid sugar, red meat, dairy products, coffee, salt, and fried foods.
- Drink lemon water and black cherry juice.
- Use capsicum in place of salt.
- Include shredded raw beets daily.
- Liquid lecithin can be purchased in a health food store. Use to cook by combining with safflower oil. Keeps food from sticking to pans and salad dressing from separating.



## CERTIFIED MEN'S HEALTH COUNSELOR ONLINE COURSE - SESSION 5

### QUESTION & ANSWERS

NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE, ZIP, PC: \_\_\_\_\_  
PHONE: \_\_\_\_\_  
FAX: \_\_\_\_\_  
E-MAIL: \_\_\_\_\_

Please be sure to fill out the information above, complete the test and e-mail or mail it back to us at [iridology@netzero.net](mailto:iridology@netzero.net) or P.O. Box 485, Weimar, CA, 95736-0485. We will grade your question & answer session and will let you know if we have any questions or concerns. **Please use a separate sheet to do this assignment.**

1. How many times must your heart beat per day?
2. How many gallon of blood does your heart pump every day?
3. What are the indications that someone may need nutritional aid for the circulatory system?
4. Blood is made up of \_\_\_\_\_ percent plasma and \_\_\_\_\_ percent cells.
5. What is oral chelation therapy?
6. What are the 8 steps to prevent heart disease?
7. How many mg of sodium should a healthy adult have per day?
8. People age 51 or older, African-Americans, and people who have been diagnosed with high blood pressure, diabetes or chronic kidney disease have no more than \_\_\_\_\_ mg of sodium a day.
9. What's in nuts that's thought to be heart healthy? Why?
10. What amount of nuts is considered healthy? Why?
11. Does it matter what kind of nuts you eat? Why?
12. How many calories and how much total saturated fats are in 5 raw macadamia nuts?
13. What are the risk factors for heart disease?
14. What are the complications of obesity?
15. How much should you exercise per day/week to get significant weight loss?
16. What is metabolic syndrome?
17. What are the symptoms of metabolic syndrome?
18. What are the risk factors of metabolic syndrome?
19. What is insulin resistance?
20. What are the common effects of stress?
21. What is edema?
22. What is bradycardia?
23. What are the disease symptoms caused by valvular heart disease?
24. What is an electrophysiological test?
25. What is catheter ablation?
26. What are the risk factors of coronary artery disease?
27. What is sleep apnea?
28. What is a cardiac catheterization or angiogram?
29. What are heart diseases that can be caused by infection?
30. What is Ventricular fibrillation?
31. What kind of alternative treatments are available for