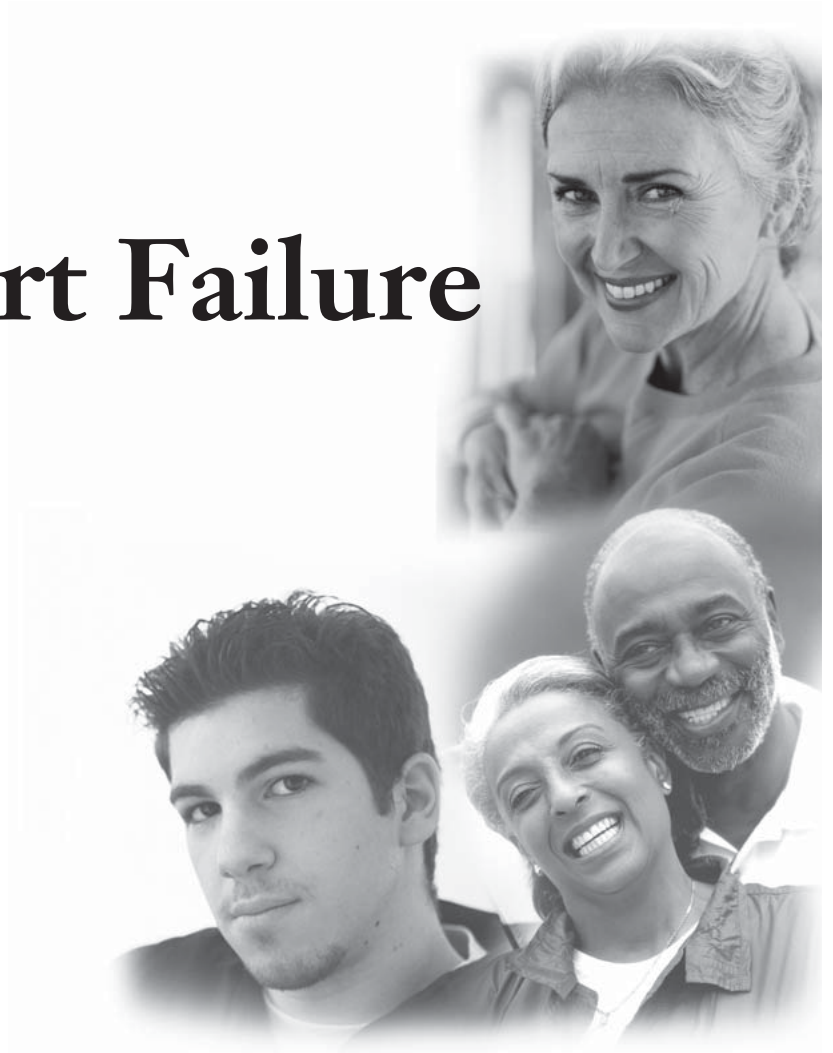


# Heart Failure



**UPMC** | University of Pittsburgh  
Medical Center

# Key Points

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## **When to call the doctor**

After you are discharged from the hospital, it is important to notice any worsening of heart failure symptoms and call your doctor. These symptoms may include:

- new or increased shortness of breath
- light-headedness, dizziness, or fainting
- weight gain of more than 2 or 3 pounds overnight or 1 pound each day for 3 days in a row
- abdominal bloating or swelling in legs or ankles
- unexplained side effects after taking medicine

Make a list of your questions and concerns so that you will remember everything when you call your doctor.

## **What to bring to your doctor visits:**

- weight chart or calendar
- all your medicines in their original containers
- a list of your questions and concerns

## **Remember to:**

- Take your medicine as prescribed.
- Eat less sodium; follow fluid limits if prescribed.
- Record your weight daily.
- Follow your doctor's instructions for activity.
- Make sure you have an appointment within 1 to 2 weeks after leaving the hospital.
- If you smoke, quit.

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# What is Heart Failure?

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Heart failure (HF) is sometimes called congestive heart failure (CHF). It affects 5 million Americans, with 500,000 new cases diagnosed each year.

Heart failure means that your heart's pumping ability is reduced. Heart failure can be controlled with diet, medicine, and careful management. You will learn more about these as you continue reading this book and by discussing your disease with your doctor, nurse, and multidisciplinary team.

## **Does this mean my heart is stopping?**

Many people hear the phrase "heart failure" and mistakenly believe that the heart has stopped or is about to stop. Heart failure simply means that the heart is not moving blood throughout the body as well as it should. The heart is a pump. As it weakens, its pumping action also weakens. Blood backs up into the blood vessels around the lungs and causes fluid to seep into the lungs. This fluid or congestion makes it difficult to breathe. Sometimes fluid builds up in the body limbs, particularly the legs and feet. These areas become swollen.

Heart failure usually occurs because of another problem that makes the heart muscle weak or stiff. One such cause is a heart attack. Other causes include:

- infection of the heart muscle
- lung disease
- heart valve problems
- high blood pressure
- diabetes

Heart failure is a serious illness that can affect how long you live. But with proper medicine in the right doses and careful management, you can live longer and feel better. Many people with heart failure lead normal lives. They can do so because they have learned to take good care of themselves. You too can help control your heart failure by understanding and following your treatment plan.

Some parts of your treatment plan are medicine, dietary changes, weight monitoring, quitting smoking, and physical activity. These all will be covered in the remainder of this book.

# The Heart and How it Works

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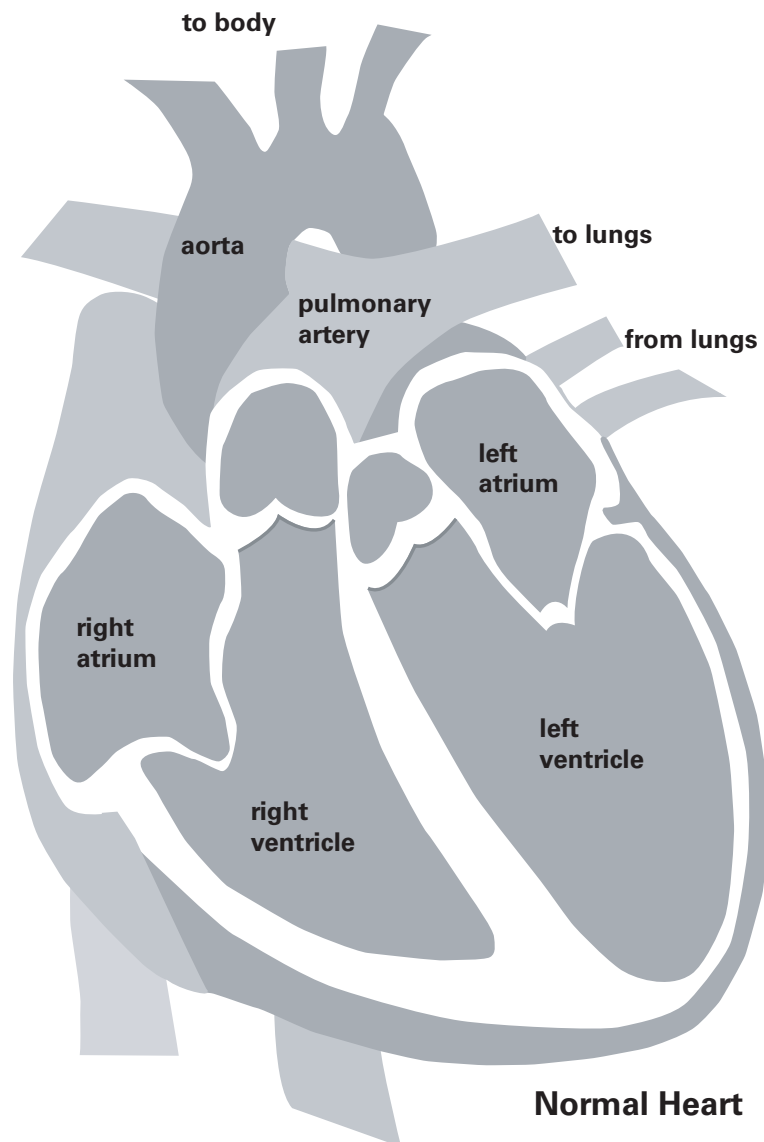
The heart has two independent pumping systems, one on the right side and one on the left side.

Each of these systems has two chambers:

- an atrium (pronounced AY-tree-um).  
Atria is the word used to speak of more than one atrium.
- a ventricle (pronounced VEN-trick-ul)

The atria are located on the top of the ventricles.

The ventricles are the major pumps of the heart. The left ventricle is generally the strongest pumping part of the heart.

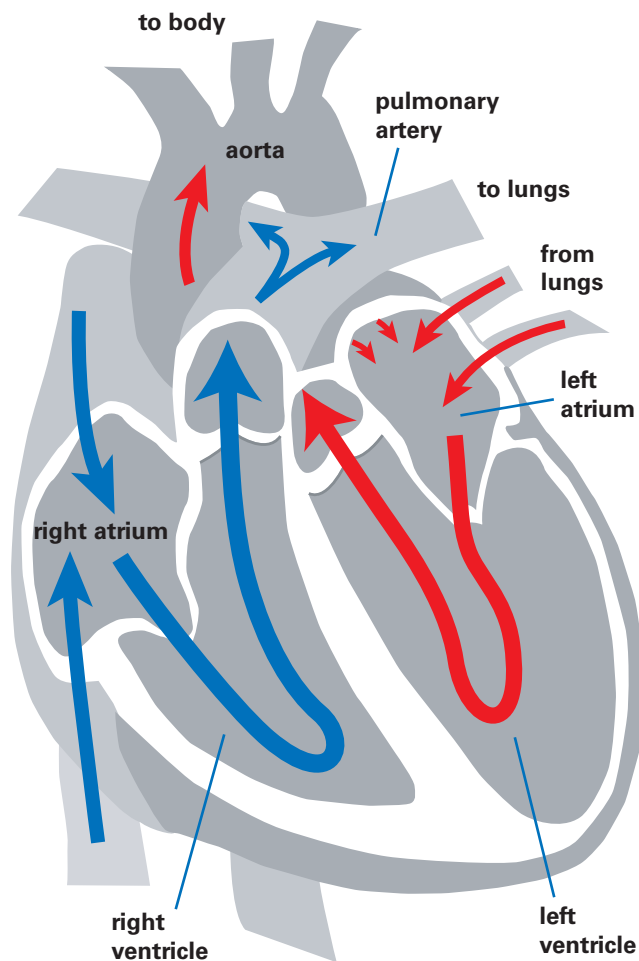


The heart's atria and ventricles are connected by the heart valves.

The valves are flaps that open and close to allow blood to flow from the atrium to the ventricle.

The correct direction for blood flow is from the atrium into the ventricle.

Occasionally blood flow does not follow the correct route. This will be discussed later.



**Normal Blood Flow Through the Heart**

To further understand the role that each side of the heart plays in pumping blood, let's now look at each side individually.

## The right side

The right side of the heart receives blood from the veins of the body. This is "non-oxygenated" or "used" blood. The blood is referred to as used because it already has done its work, delivering oxygen to the far sites of the body before returning to the heart.

The blood is returned to the right side into the first chamber in the top portion, the right atrium. This chamber is able to expand to hold the blood volume that will fill its cavity. When there is enough blood, the tricuspid heart valve allows the blood to flow into the right ventricle (the bottom part of the right side of the heart).

The main function of the right ventricle is to pump the blood to the lungs. The blood needs to return to the lungs to pick up oxygen. We sometimes say that the blood becomes "oxygenated" or "fresh" again. When the pumping action triggers the pulmonary valve, it opens. This allows the blood to flow into the lungs.

In the lungs, the blood picks up oxygen and leaves carbon dioxide behind (which you breathe out). The blood, now rich in oxygen, is sent to the left side of the heart.

## **The left side**

The left side of the heart receives blood from the lungs. This blood is now oxygen-rich. The blood enters the left heart from special veins coming directly from the lungs (pulmonary veins).

The first chamber to receive the blood is the left atrium. As with the right side, when the atrium fills, the valve connecting the atrium and ventricle opens. This allows the blood to pass into the left ventricle. The valve in this case is the mitral valve (pronounced MY-trul).

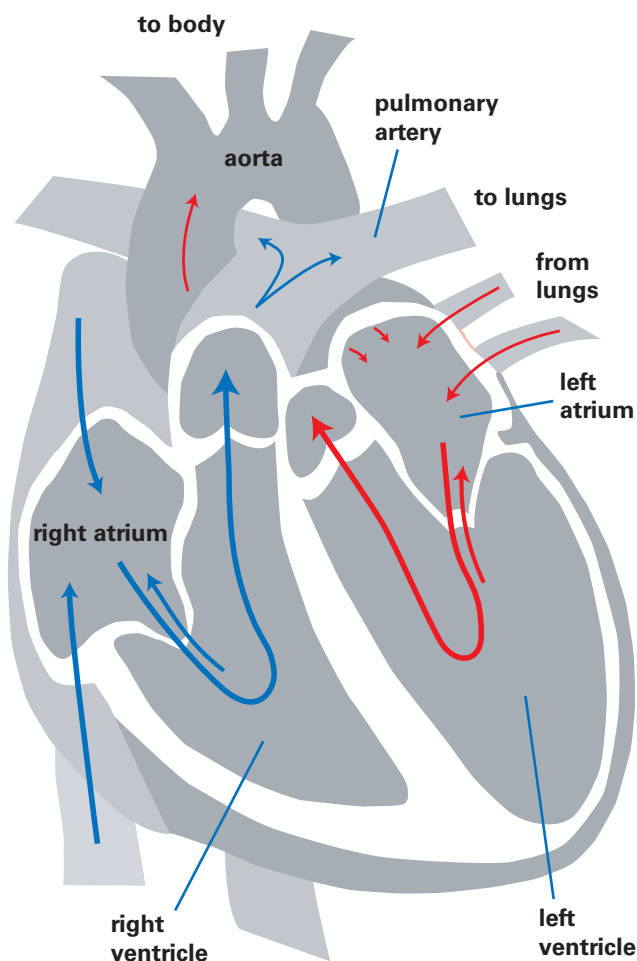
The left ventricle is the strongest pump of the heart. Once blood is collected in the left ventricle, the ventricle contracts and the aortic valve opens. This allows blood to pass into the ascending aorta, the major artery that supplies blood to the entire body. After the oxygen-rich blood is used by the body, it returns to the right side of the heart, and the whole process begins again.

# What Happens to the Heart with HF?

## Blood Flow Through the Body with Heart Failure

When the heart muscle is weakened, it is less forceful in pumping blood throughout the body. This leads to less blood moving out of the heart.

The body has several special ways to try to keep the blood volume constant.



**Weakened Heart with Reduced Blood Flow**

First, the heart's chambers (the atrium and ventricles) stretch to hold more blood. This does help keep blood moving, but only for a while.

Just like a balloon that is stretched again and again, the heart eventually loses its ability to return to its normal shape. Over time, the heart walls become thickened, and the chambers remain enlarged. They become unable to return to their normal size. With thickened heart muscle walls, not enough blood can enter the chamber. This is because of changes in the wall structure and the room available in the chamber.

Over time, your weakened heart moves or pumps less blood with each beat. The normal, rhythmic flow of blood from one chamber to the next slows down. Fluid begins to build up throughout the cycle.

## Effects on the lungs

One area where blood flow begins to back up is the lungs. You may have heard the word "congestion." This refers to the build-up of fluid in the lungs because the heart cannot effectively pump the normal volume of blood through the normal cycle of flow.

## Effects on the kidneys

Another adjustment that your body tries to make to compensate for these changes is to deliver oxygen-rich blood only to the most important organs. These organs are your brain and heart. This means that the kidneys do not receive enough oxygen-rich blood. The kidneys are responsible for helping your body get rid of extra water. Over time, without enough rich blood flow, they cannot perform normally. Then water in your body is no longer regulated as well as it should be.

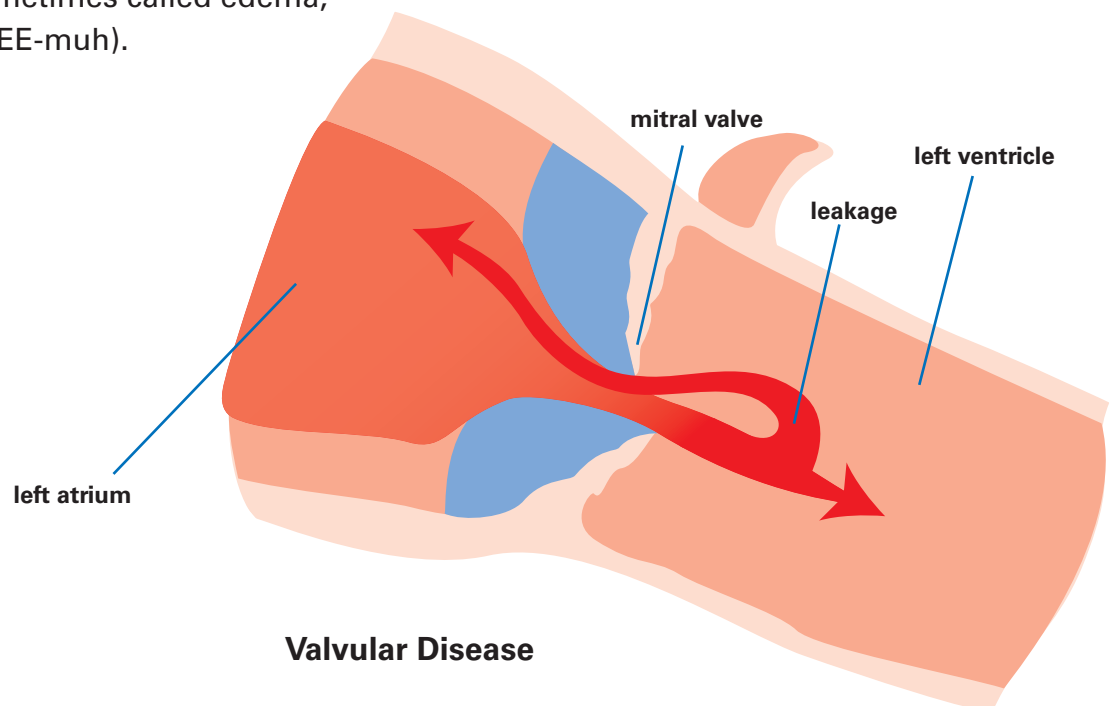
When your kidneys are not working right, excess water may settle in different parts of your body. In addition to your lungs becoming congested, your ankles, feet, and legs may collect excess water. You may have swelling (sometimes called edema, pronounced eh-DEE-muh).

## Effects on the heart valves

Remember that the valves open or close to control the blood flow within the heart. If these valves become narrow (stenosis), a back-up of blood occurs at the valve.

If the valve cannot close properly, a back-flow of blood could occur. This is called regurgitation (pronounced re-gur-ji-TAY-shun).

The mitral valve (between the left atrium and ventricle) often does not work as well during heart failure. Then it leaks blood back into the left atrium. This is known as mitral regurgitation.





# Causes of Heart Failure

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Heart failure usually occurs because a problem makes the heart muscle weak or stiff.

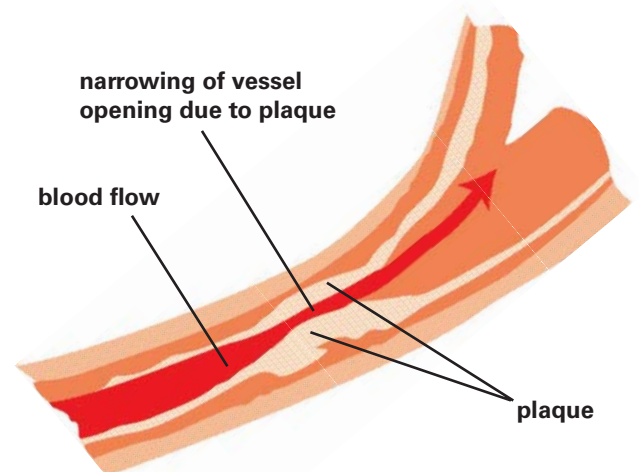
Some of these problems are:

- coronary artery disease, usually with a previous heart attack (myocardial infarction)
- heart muscle disease (cardiomyopathy)
- high blood pressure (hypertension)
- heart valve disease
- severe lung disease

## Coronary artery disease

This disease is the end process of hardening of the arteries (atherosclerosis). It is the most common cause of a heart attack (myocardial infarction). When you have coronary artery disease, the blood vessels that supply oxygen-rich blood to the heart muscle are narrowed by plaque build-up in these vessels. This build-up narrows the opening (lumen) of the vessel, so blood has a difficult time passing through to the heart muscle itself.

As a result, a part of the heart muscle will not get the proper amount of oxygen-rich blood. This part will become too weak to pump the blood effectively. The rest of the heart will have to pick up this work load. This strain and extra work load may lead to the heart getting weaker.

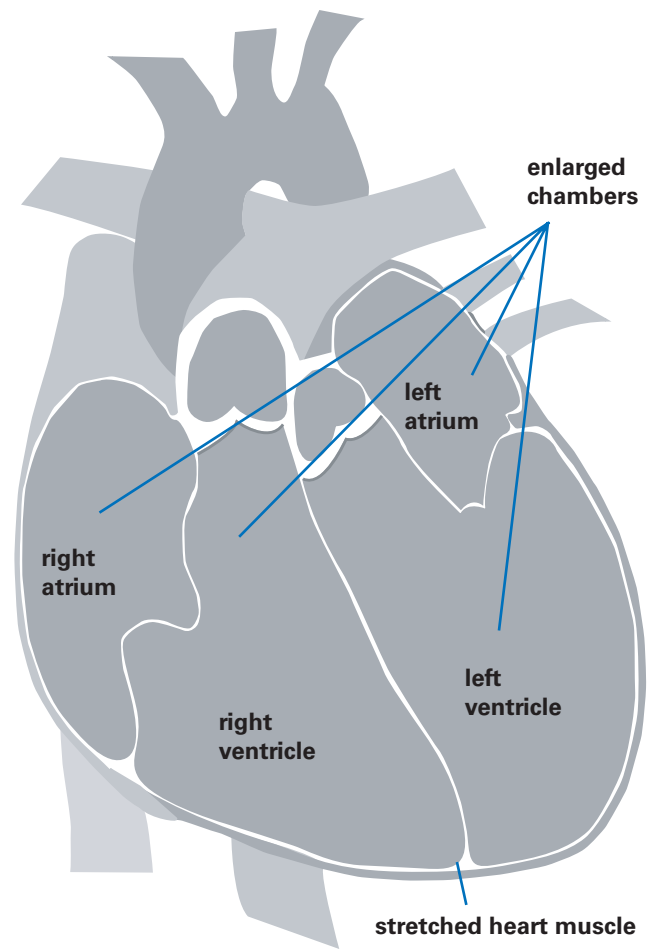


**Coronary Artery Disease**

## Cardiomyopathies

Cardiomyopathies (pronounced KAR-dee-oh-my-AW-pa-theez) are a group of diseases that damage the heart muscle and lead to heart failure. A few kinds of cardiomyopathies exist:

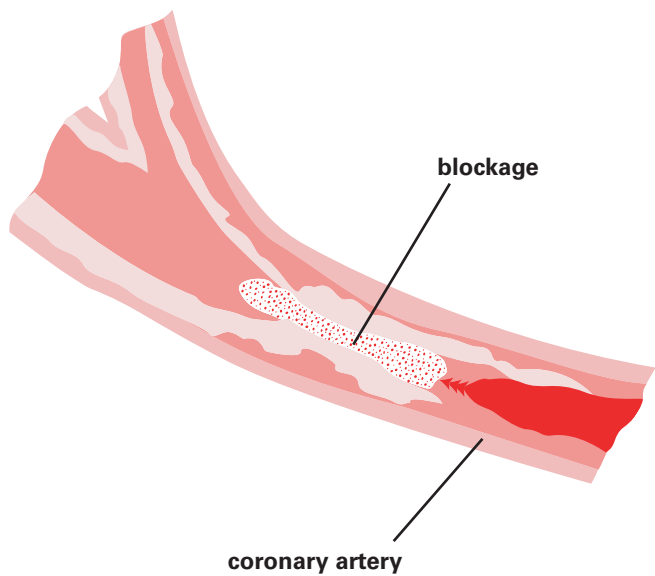
- Dilated (pronounced DYE-lay-ted) cardiomyopathy involves an enlarged heart ventricle. The heart dilates and the muscular wall becomes thin. The overall pumping action is reduced.
- Hypertrophic (pronounced hy-per-TRO-fik) cardiomyopathy also is associated with heart failure. In this case, the heart muscles become thick and contract with difficulty. Because of these difficulties, the heart is not an effective pump.



**Cardiomyopathy**

## Heart attack (myocardial infarction)

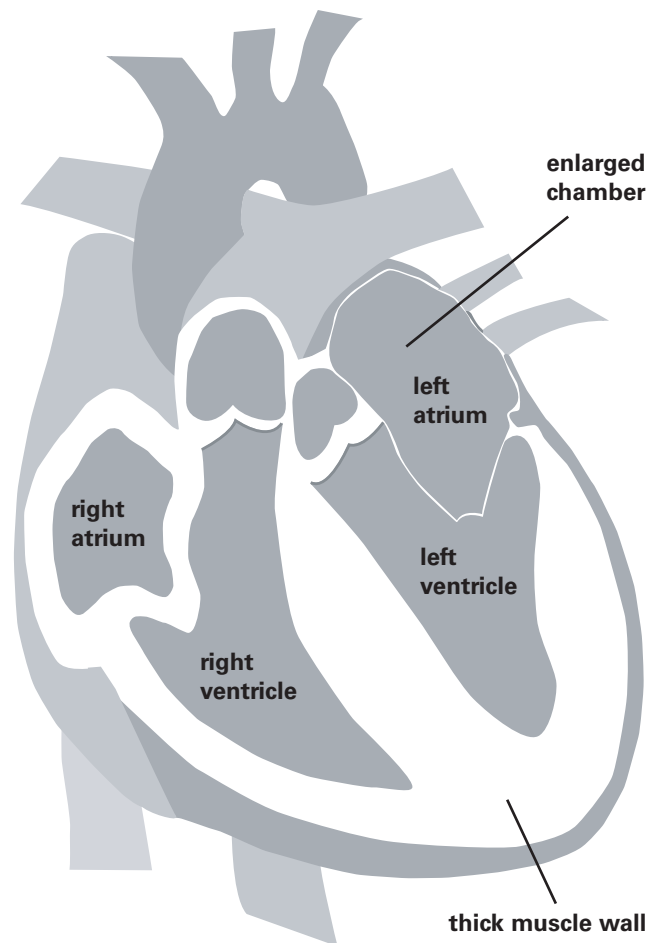
When a coronary artery is completely blocked and blood flow is stopped to part of the heart muscle near that artery, a heart attack occurs. This is referred to as a myocardial infarction (pronounced my-oh-CAR-dee-ul in-FARK-shun). Once this happens, the damage is not reversible. The damaged part of the heart loses its ability to pump. The rest of the heart tries to take on that work load. After some time of doing that extra work, the heart is tired and strained. Eventually, it pumps less blood to the body.



**Heart Attack**

## Hypertension

Blood pressure is the force pushing blood through the vessels of the body. When your blood pressure is high, your body has to work harder to deliver the blood. Because of this extra hard work load, high blood pressure (also known as hypertension) causes the heart muscle to thicken to compensate for the increased blood pressure. These changes put even more strain on the heart. The heart muscle eventually stretches and weakens. Once this occurs, the heart no longer has the ability to fill normally with blood.



**Hypertension**

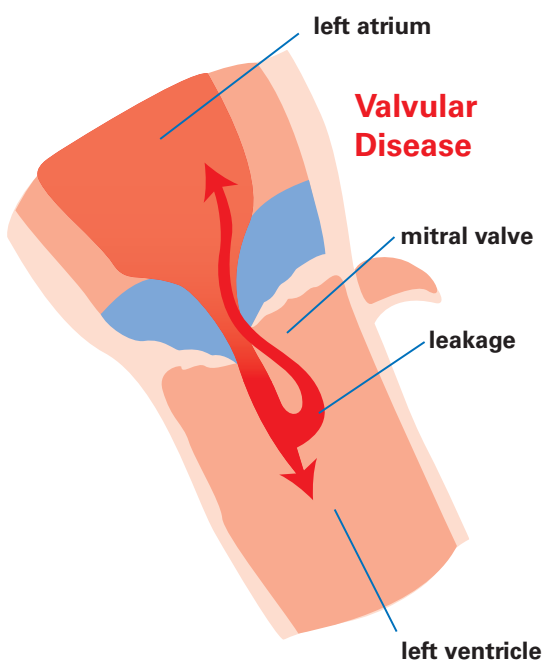
## Heart valve disease

Sometimes the heart valves themselves are not working properly. This can lead to heart failure.

The valves between the chambers of the heart control the flow of blood leaving and entering the heart. Two main types of abnormalities can occur that lead to failure:

- The valves can become narrow (stenosis) and cause a back-up of blood.
- The valves can close improperly, causing blood to leak backward (insufficiency).

Either way, the heart has to work harder. Narrowing of the heart valves forces the heart to pump harder so blood can flow through the narrow (stenotic) area into the next chamber. Extra work also is added when a valve does not close properly.



Over time, both of these extra work-load conditions can lead to heart failure. Sometimes valve problems resulting from rheumatic fever or birth defects can cause heart failure.

## Who Gets HF?

Some people are more likely to get HF than others. A person's risk for getting HF depends on a number of factors.

- age. Older adults are the group most affected by HF. In this age group, HF is the most common reason for hospitalization.
- gender. Men are at higher risk, although the gap narrows with age. Women are more likely to develop HF after a heart attack
- ethnicity. For instance, African Americans are at higher risk than Caucasians.
- family history. A family history of early HF caused by cardiomyopathies may make some people more likely to get the disease.
- chronic alcohol abuse. Chronic alcohol abuse can damage the heart muscles and can cause hypertension and dilated cardiomyopathy.

# Symptoms of HF

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Many of the symptoms of HF are associated with the congestion that develops as fluid backs up into the lungs and leaks into the tissues. This is the form of heart failure called “congestive heart failure.” Other symptoms occur because not enough oxygen-rich blood gets to the body.

## **Symptoms of heart failure may include:**

- fatigue
- shortness of breath
- asthma-like wheezing
- dry, hacking cough, which occurs a few hours after lying down, but stops after sitting upright
- sleep apnea
- pink-tinged froth in the mouth and pale, clammy skin (these suggest fluid in the lungs)
- fluid build-up, first in the feet, next in the ankles and legs, and finally in the lower belly (abdomen)
- weight gain, despite less appetite
- liver enlargement

## **Classification of Severity**

To help doctors label severity of symptoms and determine treatment options, the New York Heart Association developed a classification system to grade HF patients by symptom severity.

### **Class I**

- no limitation of physical activity
- no shortness of breath, fatigue, or heart palpitations with ordinary physical activity

### **Class II**

- slight limitation of physical activity
- shortness of breath, fatigue, or heart palpitations with ordinary physical activity
- comfortable at rest

### **Class III**

- marked limitation of activity
- shortness of breath, fatigue, or heart palpitations with less than ordinary physical activity
- comfortable at rest

### **Class IV**

- severe to complete limitation of activity
- shortness of breath, fatigue, or heart palpitations with any physical exertion
- symptoms appear even at rest

# Common Tests

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Many tests help to evaluate heart failure. Your doctor may order several of these tests for you. The tests include:

- echocardiogram (echo)
- multiple-gated acquisition scan (MUGA)
- heart catheterization (pronounced kath-eh-te-re-ZAY-shun)
- exercise test
- endomyocardial biopsy

## Echocardiogram

The echocardiogram, or echo, is an ultrasound image of your heart. It is used to check your heart structure and function. First, a gel is applied to your chest. A device called a transducer (trans-DOO-sir) is moved over the surface of your chest. The transducer picks up the sound waves from your heart. The sound waves are transmitted to a monitor to display a picture. This test evaluates the heart size, pumping function (sometimes called ejection fraction), and the structure and function of the cardiac valves.

There is no preparation for this test. It does not expose you to radiation. The test takes approximately 30 to 60 minutes to complete.

## MUGA scan

The MUGA scan is a video image of your beating heart. You will be given an IV (intravenous) injection of a radioactive tracer. This is a substance that attaches to your red blood cells. From this test, your doctor will be able to tell how well your heart pumps (ejection fraction). The normal ejection fraction is 55 to 60 percent. Generally, either the echocardiogram *or* the MUGA scan is done.

There are no special instructions to prepare for this test. The tracer does expose you to a small amount of radiation, so it is important to tell your doctor if you are pregnant (or if you may be pregnant), or if you are breast-feeding. This test takes about 30 to 60 minutes to complete.

## Exercise testing

Exercise testing helps to detect the presence of coronary artery disease or to evaluate your exercise tolerance. Various tests may be used.

## ***Cardiac stress***

These tests show whether blood flow to certain areas of the heart is reduced during exercise.

During a stress test, you may walk on a treadmill while your heart and blood pressure are monitored. You will have an IV inserted before you exercise. If you are exercising on the treadmill, you will be asked to walk as long as possible. When you are a minute away from quitting, a radioactive substance will be injected into your vein. If you are unable to walk on a treadmill, a cardiac drug may be given to mimic exercise. Images will be taken both before and after the test.

Your doctor may choose a different cardiac stress test called a stress echocardiogram. During this test, you will exercise on a treadmill while an echocardiogram is being done. This test shows how well your heart pumps during exercise.

## ***Oxygen consumption exercise test (MVO<sub>2</sub>)***

During an oxygen consumption exercise test, you will walk on a treadmill while your heart rate and blood pressure are monitored. You will wear a mouthpiece (similar to a snorkel) or a mask, and you will breathe in and out through it during exercise. You will be asked to exercise as long as you can. This test measures how much oxygen your body is using during exercise. This is an important indicator of how well your heart is working.

## **Heart catheterization**

### ***Right heart catheterization***

During a right heart catheterization, a long, thin tube called a catheter is placed in a vein in your neck or groin. A small wire is threaded through the catheter to the right side of your heart under x-ray guidance. Pressure measurements are made inside the right-side chambers of your heart. Then the amount of blood your heart is pumping is evaluated.

### ***Left heart catheterization***

During a left heart catheterization, a catheter is placed in your groin. A small wire is threaded up to your heart under x-ray guidance. Pressures inside the aorta (the major artery that arises from the heart) and the left ventricle are measured. Dye is injected, and pictures are taken of your left ventricle and coronary arteries. Your doctor will be able to tell if there are any blockages in your coronary arteries.

## **Endomyocardial biopsy**

This procedure is done only in special circumstances. During an endomyocardial (pronounced en-doh-my-oh-KAR-dee-ul) biopsy, a special wire is placed in a vein in your neck. The wire is threaded to the right side of your heart under x-ray guidance. Samples of the heart muscle are removed carefully, so that the physician can study them under a microscope.

# Your Diet: Sodium

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## **Nutrition and Congestive Heart Failure**

What you eat and drink is important in helping you get better. A diet low in sodium and fluid will help keep your heart working its best. You already may be on a special diet for health problems such as coronary artery disease, diabetes, or obesity. You will need to continue following that diet in addition to limiting your sodium and fluids.

It is important to meet with a registered dietitian to develop your own meal plan. He or she can teach you what you need to know about your diet.

The more sodium and fluid you consume, the more fluid you will hold, or retain, in your body. When your body holds fluid, this is called edema (eh-DEE-muh). This can worsen your condition and make it more difficult for your heart to work.

If you are overweight, you may be given a diet to help you lose weight. Losing weight can lessen the work load for your heart.

## **Limiting sodium**

Most doctors recommend limiting your sodium to 2,000 mg (milligrams), or 2 grams, per day. Ask your doctor what is right for you.

How do you know how many milligrams you are getting? One good way is to read food labels carefully.

## **Reading food labels**

Food labels will tell you how much sodium is in the food you eat. These labels are found on all food products except fresh fruits and vegetables. The labels also tells about serving size, fat, cholesterol, carbohydrates, sugar, protein, and calories per serving.

Serving Size is the top information line on the label, right under “Nutrition Facts.” Always look at serving size first. All of the nutrient amounts on the label refer to that amount of food, not the total package. Right below Serving Size, the label shows how many servings are in the package. It is important to multiply the numbers on the label (sodium, fat, calories) by the number of servings you actually eat.

For instance, on this label for Macaroni and Cheese, the Serving Size is 1 cup, and there are 2 servings (or 2 cups) in the package. If you eat the whole package, that is 2 servings. So if you eat 1 cup, you are getting 470 mg of sodium. If you eat the whole package, that’s 940 mg (470 x 2 = 940). If you are limiting your sodium to only 2,000 mg per day, that 940 mg is almost half of what you are allowed for the whole day. So there is a lot of sodium in this package.

### Macaroni and Cheese

<b>Nutrition Facts</b>	
Serving Size 1 cup (228g) Servings Per Container 2	
<b>Amount Per Serving</b>	
<b>Calories</b> 250	Calories from Fat 110
<b>% Daily Value*</b>	
<b>Total Fat</b> 12g	<b>18%</b>
Saturated Fat 3g	<b>15%</b>
<i>Trans</i> Fat 1.5g	
<b>Cholesterol</b> 30mg	<b>10%</b>
<b>Sodium</b> 470mg	<b>20%</b>
<b>Total Carbohydrates</b> 31g	<b>10%</b>
Dietary Fiber 0g	<b>0%</b>
Sugars 5g	
<b>Protein</b> 5g	
Vitamin A	<b>4%</b>
Vitamin C	<b>2%</b>
Calcium	<b>20%</b>
Iron	<b>4%</b>

- ← 1. Read the serving size and number of servings in the container of food.
- ← 2. If you are on a weight loss diet, notice the number of calories per serving of food.
- ← 3. Read the amount of fat, cholesterol, and sodium in each serving of the food.
- ← 4. Many labels will also tell you the amount of vitamins and other nutrients.
- ← The “% Daily Value” shows you how much of the recommended amounts the food provides in one serving, if you eat 2,000 calories a day. For example one serving of this food gives you 20 percent of your total calcium recommendation.

The chart below takes the information from the food label and shows what you get if you eat one serving or two servings.

<b>Example: Servings of Macaroni and Cheese</b>		
	<b>Single Serving</b>	<b>2 Servings</b>
<b>Serving Size</b>	1 cup (228g)	2 cups (456g)
<b>Calories</b>	250	500
<b>Calories from Fat</b>	110	220
<b>Total Fat</b>	12g	24g
<b>Trans Fat</b>	1.5g	3g
<b>Saturated Fat</b>	3g	6g
<b>Cholesterol</b>	30mg	60mg
<b>Sodium</b>	470mg	940mg

### Tips for limiting sodium

- If there are 250 mg of sodium or more in a serving of any food, that's a lot. Avoid it unless you can work it into your daily allowance of 2,000 mg per day.
- Avoid salt. It has the most sodium of any food. One teaspoon of salt has 2,360 mg of sodium. That is more than you should get in a whole day! Even 1/4 tsp. of salt has 590 mg.
- Do not add salt to your food while cooking or at the table. Try using fresh or dried herbs or spices to season your food. Do not use a salt substitute, unless your doctor says you may.
- Avoid snack foods with visible salt on them, such as salted crackers, pretzels, potato chips, and salted nuts.
- Check ingredient lists. Avoid products that contain the following words: salt, sodium, sodium chloride, monosodium glutamate (MSG), brine, broth, corned, pickled, or smoked. These foods generally are high in sodium.
- Always think fresh and eat fresh. Jarred, canned, and boxed foods generally are much higher in sodium than fresh foods.

You will get used to eating in a lower sodium way. It may take many weeks, so keep working hard at changing your eating habits.

# Your Diet: Fluids

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Your doctor probably will have you limit how much you drink. This sometimes is called a fluid restriction. If you are told to limit fluids to 2,000 cc a day, that equals 2 quarts.

Any item that is liquid at room temperature counts. All drinks count, including:

- alcoholic drinks
- coffee
- flavored waters
- fruit drinks
- hot chocolate
- juice
- Kool-Aid
- liquid medicine
- milk
- nectar
- soft drinks (soda pop)
- tea
- water

## Other items that count as fluid

Crushed ice, 1/2 cup .....	1/4 cup fluid
Broth, 1 cup .....	1 cup fluid
Soup, 1 cup .....	3/4 cup fluid
Fruit ice, 1/2 cup .....	1/2 cup fluid
Fruited gelatin, 1/2 cup .....	1/3 cup fluid
Gelatin, plain, 1/2 cup .....	1/2 cup fluid
Ice cream, 1/2 cup .....	1/2 cup fluid
Frozen yogurt, 1/2 cup .....	1/2 cup fluid
Sherbet, 1/2 cup .....	1/2 cup fluid
Milkshake, 1 cup .....	1 cup fluid
Popsicle, 2 halves .....	1/3 cup fluid

## Keeping on track

For at least one day, keep track of how much you drink. If you are limited to 2,000 cc or 2 quarts, fill a 2-quart container of water. Before you drink anything, measure it. Pour out the same amount of water from the container. (You can estimate when you eat out.) This will let you see how much fluid you have left for the day.

Try to use your fluid allowance evenly throughout the day. Make sure you save enough fluid to take the medicines you need to take late in the day.

Weigh yourself each morning. If you gain more than 2 pounds in a day, you may be getting too much sodium or fluid.

## Some tips for when you get thirsty

- Rinse your mouth with water. Spit it out — don't swallow.
- Add lemon juice to ice water or crushed ice.
- Suck on lemon drops or tart hard candies. Or chew a piece of gum. Use sugar-free candy or gum if you have diabetes.
- Suck on a lemon slice.
- Put an ice cube in your mouth to melt. Or eat crushed ice. It takes longer to consume than water. Ice is twice as bulky as water. So you can count 1/2 cup of ice as just 1/4 cup of fluid.
- Eat mandarin oranges, grapefruit sections, or grapes (regular or frozen).

## Fluid restriction guide

This chart may help you understand the amount of fluid you are allowed.

Ounces	Cups	cc
1	2Tbsp	30 cc
4	1/2 cup	120 cc
8	1 cup	240 cc
32	4 cups (1 quart)	960 cc
48	6 cups	1,440 cc
64	8 cups (2 quarts or 1/2 gallon)	1,920 cc

# Daily Weights

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Weighing yourself daily can help you better manage your HF. Because HF can cause your body to hold onto fluid and salt, you may gain weight.

If you weigh yourself every day at the same time, you will be able to notice slight gains in weight. This may be a sign that your heart failure is getting worse.

If you gain 2 or 3 pounds overnight or more than 1 pound each day for 3 days in a row, call your doctor. Tell your doctor's office staff that you are a HF patient and are calling because you have gained weight. Your doctor then will be aware that your symptoms may be getting worse.

Your doctor will decide if you should change any medicines or come in to his or her office.

A few tips:

- Weigh yourself once a day in the morning. The best time is right after you awaken and urinate.
- Wear the same clothes each time you weigh yourself.
- Write down your weight each day on a weight chart (see next page) or an ordinary calendar.



# Weight Chart

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Week of <u>9/1</u> [sample]	150	151	150	150	151	152	151
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							
Week of _____							



# Exercising and Activity

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Regular physical activity helps you feel better. When you are active, it helps the heart and lungs use oxygen better. Physical activity also helps:

- lower your blood pressure
- control your weight
- decrease stress and tension
- boost your energy level

## Get moving!

Choose any activity you enjoy. If you like the activity, you are more likely to continue doing it. Walking is a great choice. It may be more enjoyable if you ask a friend or family member to join you.

Exercise should be guided by common sense:

- Rest before you feel tired.
- Be able to carry on a conversation while you are exercising.
- Rest if you feel short of breath.
- Avoid activities that make you grunt, groan, or strain.

You'll get the most benefit from a regular exercise routine. It is best if you exercise at least 3 days a week.

## Warm up and cool down

Each time you exercise, start with a warm-up. March in place for about 5 minutes, and do some upper-body stretches. At the end of each exercise session, finish with a cool-down period. This may include stretching exercises.

Starting an exercise program can be the hardest part! Once you get started, it's likely that you will continue your program. You'll feel better and have more energy. Your daily activities will seem easier.

## Step it up!

Does your regular routine seem too easy? Are you ready to step it up? You should increase the amount of time you exercise little by little. Ask your doctor before you increase the speed or intensity of your exercise.

Ask your doctor about getting involved in a cardiac rehabilitation program in your local area. These programs have trained staff who can help you:

- increase your exercise tolerance
- decrease HF symptoms
- improve your quality of life

## Ways to Save Energy

- Avoid becoming too tired. Plan ahead so that you are not doing all of your work in one day or at one time during the day.
- Space your activities and work over the whole day. Do some work, then take a break. The trick is to quit while you're ahead, before you feel tired. If you do small amounts of work at a time, you will be able to do more in the long run.
- Sit rather than stand when doing activities such as ironing, washing dishes, shaving, or brushing your teeth.
- At work, take advantage of breaks and lunchtime to sit and rest.
- When doing a task, gather all the supplies you will need. That way, you will avoid making unnecessary trips. Get a small laundry cart with wheels for an easy way to carry items throughout the house.
- When climbing up stairs, put 2 feet on each step. Stop and rest if you feel you need to.
- If you feel tired, dizzy, or short of breath, you need to stop and rest.
- Ask your family and friends for help!
- Even on your good days, it's important to save your energy. When you are feeling good, you may be tempted to overdo things.
- You may have a certain time each day when you feel more energetic. Plan to do difficult tasks during this time. That way, you can take it easy during your low-energy periods.

# Medicines

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## **Drug Types**

Many different types of medicines are used to treat heart failure. Each type does a different job. Each type is sold under several different drug names. Your doctor or nurse will tell you about your medicines – their drug names and what type they are.

## **ACE inhibitors**

ACE stands for angiotensin converting enzyme. ACE inhibitors are medicines that expand blood vessels and allow more blood to flow more easily. They help the heart pump better. They slow the disease process, so that patients may live longer and spend less time in the hospital.

## **ARBs**

ARB stands for angiotensin receptor blocker. ARBs are similar to ACE inhibitors. These medicines expand your blood vessels to help the blood flow through your body more easily. They also ease the work of your heart. Your doctor will order the medicine that is best for you.

## **Beta-blockers**

These drugs help the heart to work better. They help slow down the disease process, so that patients may live longer and spend less time in the hospital.

## **Diuretics**

They remove excess water that causes difficulty breathing and swelling.

## **Digitalis**

This medicine helps avoid fast or skipped heartbeats (palpitations). It helps patients feel better.

## **Vasodilators**

These drugs help open blood vessels to relieve fluid build-up and swelling.

## **Anti-arrhythmic agents**

These drugs help prevent abnormal heart rhythms.

## Tips for Managing Your Medicines

- Ask questions about your medicines. Your doctor, pharmacist, and nurse are here to help you learn about your medicines and why they are important to helping you feel better.
- Check the label. Be sure you are taking the correct medicine and have the correct dosage. Read the directions on the label and follow them.
- Don't take medicine in the dark. To avoid mistakes, always have an adequate amount of light.
- Tell your doctor if you take any over-the-counter-medicines or dietary supplements. These include vitamins, minerals, herbal medicines, and aspirin. Sometimes these can react with other medicines.
- Report any new side effects. You may need to take a different dose of the medicine. Or your doctor may decide to try a different medicine.
- Always carry a list of your medicines. This can help the health team in an emergency.

To help you keep track of your medicines, use a chart like the one on the next page.





# Coping with Heart Failure

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When you have heart failure, you have to make a lot of changes in your life. You have to watch what you eat and drink, and weigh yourself every day. These changes can create stress. Many people have fears about their heart failure. Some feel anxious or blue or angry. These feelings are normal. Here are some things that can help you feel better:

- Try the stress coping techniques in this chapter.
- Talk with family and friends about your feelings.
- Get out and about. Plan to do things with friends or family. Take walks to see the neighbors.
- If sex is a concern for you, talk with your doctor about what is safe for you—and then talk to your partner.
- Join a support group if there is one near you.
- Most importantly, if feelings of anxiety and depression deepen or don't go away, tell your doctor.

## Coping with Stress

Stress affects your mind, body, and overall health. When you are feeling stressed, changes may occur in your body:

- Your blood pressure may increase.
- Your heart rate rises.
- Your immune system does not function as well.

Your body's response to stress could lead to illness.

You can control your stress level by practicing simple relaxation techniques to train your mind to lower your response to the tension. By using relaxation techniques regularly, you can lower the amount of stress hormones in your blood. This will help you protect yourself from the harmful mental and physical effects of stress.

## Breathing

Breathing provides oxygen to your bloodstream and body. When you breathe in, you inhale oxygen. When you breathe out, you exhale carbon dioxide. Your diaphragm (DIE-eh-frag) is a sheet-like muscle that separates your stomach (abdomen) and your chest. Your diaphragm works to help you breathe in and out. When you inhale, the diaphragm lowers, your stomach pushes out, and your chest cavity swells. This gives the lungs more space to expand into and increases the amount of air that you can inhale.

## *Chest Breathing vs. Abdominal Breathing*

As we get older, our breathing gets shallower, and most of us use only the upper parts of our chest to breathe. When you breathe from your chest, you inhale about a teacup of oxygen. Instead, you should breathe from your abdomen. When you breathe from your abdomen, you inhale about a quart of oxygen. The more oxygen you inhale, the better.

How you breathe also affects your nervous system. Chest breathing makes your brain create shorter, more restless brain waves. Abdominal breathing makes your brain create longer, slower brain waves. These longer and slower brain waves are similar to the ones your brain makes when you are relaxed and calm. So, breathing from the abdomen helps you relax quickly.

### ***Practice Abdominal Breathing***

It may be easier to practice abdominal breathing when you're lying down. With practice, you should be able to do abdominal breathing anywhere.

1. Put your right hand on your abdomen, at the navel (belly button), and put your left hand on the center of your chest. You may find it helpful to close your eyes.
2. Inhale through your mouth more deeply than usual, and pay attention to your abdomen. If you are breathing from your abdomen, you should feel your abdomen rise as your lungs fill with air. The hand on your chest should move only slightly. If your chest rises more than your abdomen, then you are breathing from your chest.

3. To change from chest to abdominal breathing, exhale all of the air in your lungs. Keep pushing the air out. When you feel like you can't exhale any more air, pause. Then inhale slowly. When you breathe this way, you push the air out from the bottom of your lungs, and create a vacuum that will pull in an abdominal breath when you inhale.
4. Do steps 2 and 3 again, but this time, breathe in through your nose. Breathing through your nose is better than breathing through your mouth because your nose:
  - warms the air
  - filters the air
  - adds moisture to the air
  - lets you breathe in more air

### **Mini Relaxation Exercise**

A mini relaxation exercise can help you reduce stress and tension immediately. The important part of these exercises is to focus on your breathing. During the exercises, try to breathe from your abdomen. You should feel your stomach rising about an inch as you breathe in, and falling about an inch as you breathe out. Remember, it is impossible to breathe from your abdomen if you are holding your stomach in. Relax your stomach muscles. You can do these exercises with your eyes open or closed.

There are a variety of mini relaxation exercises. Choose the one that works best for you.

The following mini relaxation exercises were adapted from the Mind/Body Medical Institute in Boston, Massachusetts.

- **Exercise #1**

Count very slowly to yourself. Count from 10 down to 0. With the first abdominal breath, say 10 to yourself; with the next breathe, say 9, and so on. If you start feeling light-headed or dizzy, slow down the counting. When you get to 0, see how you are feeling. If you are feeling better, great! If not, try doing it again.

- **Exercise #2**

As you inhale, count to 4 very slowly and say to yourself "1,2,3,4." As you exhale, count backwards very slowly and say to yourself "4,3,2,1." Do this several times.

- **Exercise #3**

After each time you inhale, pause for a few seconds. After you exhale, pause again for a few seconds. Do this for several breaths.

### ***When to Practice***

You can practice the mini relaxation exercises almost anywhere, in any situation, including when you are:

- waiting in line or stuck in traffic
- put on hold during an important phone call
- bothered by something someone has said
- overwhelmed by what you need to accomplish
- in pain

## Prevent swelling

- Take your medicines.
- Cut down on salt and other forms of sodium.
- Raise your legs. This helps drain the fluid away from your legs.
- Wear special elastic stockings. These stockings can keep fluid from collecting in your legs. They should be fitted for you. Your doctor or nurse can recommend the proper type for you.
- Walk regularly. Walking will help the blood to circulate in your legs. If you are unable to walk, flex your leg muscles or wiggle your toes to help with circulation.

## Watch out for infections

You may be more likely to get pneumonia or other illnesses now that you have heart failure. There are some things you can do to help prevent these illnesses:

- Stay away from people who are ill.
- Wash your hands frequently.
- Avoid large crowds.
- Get plenty of rest.
- Get flu and pneumonia shots (check with your doctor first).

# Smoking and Your Heart

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## **Heart and blood vessel disease**

Smoking causes more than 230,000 deaths from heart and blood vessel disease each year in the United States. Another name for heart and blood vessel disease is cardiovascular (KAR-dee-oh-VAS-kyu-ler) disease. Smoking is a major risk factor for getting heart and blood vessel disease. The more you smoke, the greater your risk.

## **Angina**

Smoking affects your heart's arteries. These arteries are called coronary (KOR-un-AIR-ee) arteries. When a coronary artery is blocked, you can get chest pain, or angina (anj-EYE-nuh).

## **Heart attack**

When a blocked artery deprives part of the heart muscle of blood flow, you have a heart attack. Your heart muscle becomes damaged. Most cardiovascular illness and death is due to diseased arteries of the heart.

## **Stroke**

Smoking can lead to stroke. A stroke occurs when blood flow to the brain is blocked. The brain then cannot get enough oxygen. Brain cells begin to die, making parts of your body unable to function. A stroke is sometimes called a brain attack.

## **Aneurysm**

Another problem involves your body's main artery. This artery is called the aorta (ay-OR-ta). Smoking can make the aorta widen and leak, damaging your body and causing death. This is called an aortic (ay-OR-tik) aneurysm (AN-your-izm).

## **Sudden death**

Sudden death happens unexpectedly, with few or no symptoms. Evidence shows that sudden death is related to smoking.

## **Artery disease of the legs**

Smoking can lead to artery disease in the legs. The arteries in the legs are called peripheral (per-IF-er-al) arteries. When the arteries in your legs become narrowed or blocked, walking becomes painful and difficult. Non-healing sores may develop over time from peripheral artery disease.

## Major risk factors

Below is a list of major risk factors for cardiovascular disease. Some risks you can change, and some you cannot change.

Risk factors you can change are:

- cigarette smoking
- high blood pressure
- high cholesterol
- lack of physical activity

Risk factors you cannot change are:

- age
- diabetes
- family history

Cigarette smoking added to other major risk factors gives you much greater risk for cardiovascular disease. When you quit smoking, you lower your risk.

## What smoking does to your heart

Cigarette smoke contains many chemicals that enter your body. Two of these substances are nicotine (NIK-uh-TEEN) and carbon monoxide (muh-NOK-side). They have a big effect on your heart and blood vessels.

- Nicotine makes the heart work harder and need more oxygen:
  - Heart rate increases.
  - Blood pressure increases.
  - Arteries narrow.
  - Blood flow decreases.

- Carbon monoxide reduces the amount of oxygen carried in the blood.
- Carbon monoxide and nicotine damage the walls of the arteries. Fatty deposits build up on the inner walls of arteries. The fatty deposits, called plaque (PLACK), make arteries narrow. The heart has to work harder to pump blood through narrow blood vessels. This process is called hardening of the arteries. Another name is arteriosclerosis (are-TEER-ee-oh-skler-OH-sis).
- Smoking changes blood cholesterol levels. This adds to hardening of the arteries:
  - Total cholesterol increases.
  - Bad cholesterol increase — both VLDL (very low-density lipoprotein) and LDL (low-density lipoprotein).
  - Good cholesterol decreases — HDL (high-density lipoprotein). The anticlogging effect of HDL decreases, too.
  - Fats called triglycerides (try-GLIH-seh-rides) increase — these fats clog arteries.
- Smoking increases blood clotting. Blood clots can block arteries, especially when already narrowed. Blood clots can lead to heart attacks and strokes.
- Smoking increases the risk of abnormal heart rhythms, which may cause sudden death.

## **Low-tar and low-nicotine cigarettes**

What about cigarettes that have low tar and low nicotine? There is no safe cigarette. If you switch to low tar and low nicotine cigarettes, you will probably smoke more. You will also inhale more deeply. Or you will hold the smoke in your lungs longer to get more nicotine from the smoke. You may actually get a higher intake of tar, carbon monoxide, and other harmful substances.

## **Benefits when you quit smoking**

When you quit smoking, you get real benefits. After you stop smoking, your risk of cardiovascular disease starts to decrease almost at once. This is true no matter what your age.

- Within 20 minutes after your last cigarette, your heart rate and blood pressure drop to your normal level.
- Within 8 hours, your carbon monoxide level drops. Your oxygen level rises to your normal level.
- Within 24 hours, your chance of heart attack starts to decrease.

- Within 1 month, your cholesterol levels can start to change. Former smokers and non-smokers have cholesterol levels that are similar.
- After you stop smoking, your risk of getting blood clots decreases.
- Within 1 year, your risk of heart attack is reduced more than 50 percent.
- Within several years, your risk of heart disease may be the same as that of a person who has never smoked.

Even if you've had a heart attack or have heart disease, you will benefit. When you quit smoking:

- After a heart attack, you reduce your chance of another heart attack by 50 percent.
- After coronary angioplasty (AN-jee-oh-PLAS-tee), you greatly reduce your risk of death and future heart attacks. Angioplasty uses balloons to open clogged heart arteries.
- After heart bypass surgery, you reduce your risk of angina, heart attack, and a second bypass.

**It's never too late to quit smoking.**

## How second-hand smoke affects your heart

When people are smoking, the air around them is polluted with tobacco smoke. This is called second-hand smoke. Second-hand smoke comes from 2 sources. The burning end of the cigarette produces smoke, and the smoker exhales smoke.

When you are near a person smoking, you breathe second-hand smoke. Evidence shows that second-hand smoke can increase risk of heart and blood vessel disease. An estimated 39,000 people die each year from cardiovascular disease caused by second-hand smoke.

### Stay away from second-hand smoke.

The following materials are available at <http://patienteducation.upmc.com>

- Deep Breathing (Smoking Cessation)
- Journey to a Smoke-Free Life (Guide to Quit Smoking)
- Smoke-Free Living and Diabetes
- Smoking and Diabetes
- Smoking and Your Digestive System
- Smoking and Your Heart
- Smoking and Your Lungs
- Smoking Facts
- Tips to Quit Smoking

#### **If you want help to stop smoking:**

- Classes may be available in your community. Call 1-800-553-UPMC (8762) to find out more.
- If you are an inpatient at a UPMC hospital:
  - Ask your nurse if the hospital has the UPMC patient education TV channel, which features a video about quitting smoking.
  - Ask to talk one-on-one with a smoking cessation counselor.
- Go to UPMC's patient education website (<http://patienteducation.upmc.com>). Under the Smoking category is *Journey to a Smoke Free Life*, a 42-page guide that can help you devise a successful strategy to quit smoking, as well as other materials about the dangers of smoking and other health topics. You can print out any or all of these materials.
- Additional resources are available from the toll-free Pennsylvania Department of Health Quit Line. Call 1-877-724-1090.

**Notes:**



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For help in finding a doctor or health service that suits your needs, call the UPMC Referral Service at 412-647-UPMC (8762) or 1-800-533-UPMC (8762).

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