

More information on living with heart failure from



Lourdes Cardiology Services

Heart Failure Disease Management

What is a heart failure disease management program?

Even when you are not having symptoms, periodic follow-ups with your health care provider is very important to evaluate your condition and your response to medications. A heart failure disease management program is an outpatient program that will help you manage your heart failure condition and symptoms.

Why should I participate in a disease management program?

A disease management program can provide you with the following benefits:

- Frequent assessment of your current condition, even when you feel fine, to make sure your treatment and medication plan are right for you, according to national treatment guidelines
- An opportunity to optimize recommended medications for heart failure patients
- A chance to improve and maintain your optimum quality of life
- A decrease in hospitalizations and emergency department care
- Help in making and following lifestyle changes to manage your condition
- Answers to your questions
- Heart failure management advice
- Help in arranging palliative nursing care and home care as well as nutrition, pharmacy or social worker support when needed

How can I participate in a heart failure disease management program?

- Talk with your provider about programs that are offered.
- All inpatients at Our Lady of Lourdes Medical Center who have heart failure benefit from Lourdes' Heart Failure Program.
- All Lourdes cardiology services specialists are trained in and experienced in managing heart failure. [Find a Lourdes physician.](#)
- In addition, Lourdes cardiac services at [Associated Cardiology Consultants](#) (856-428-4100) offer a large, advanced, well-established outpatient heart failure program.

What is heart failure?

Heart failure means the heart is unable to pump blood as well as it should. Heart failure does not mean the heart has stopped working.

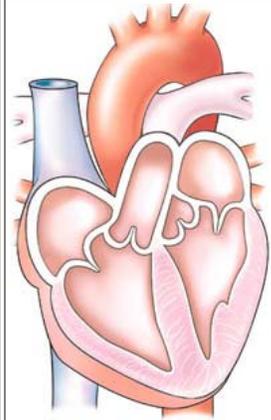
There are two types of heart failure:

Systolic heart failure (systolic dysfunction): occurs when the heart muscle does not contract with enough force, so there is not enough oxygen-rich blood pumped throughout the body.

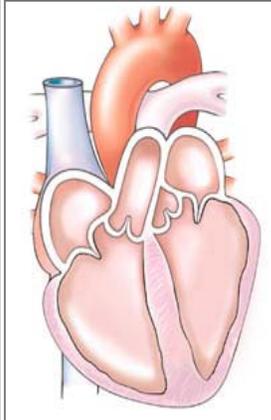
Diastolic heart failure (diastolic dysfunction): occurs when the heart contracts normally but the ventricle does not relax or fill properly, so less blood enters the heart.

- The "poor pump" is unable to keep up with the body's constant need for oxygen and nutrients. In response:
 - The walls of the heart stretch to hold more blood.
 - The heart muscle walls thicken to pump stronger.
 - The kidneys cause the body to retain fluid and sodium. This increases the amount of blood circulating through the heart and blood vessels.
 - The body tries to compensate by releasing hormones that make the heart work harder. Over time, these compensatory mechanisms fail and symptoms of heart failure begin to appear. Like an over-stretched rubber band, the heart's ability to stretch and shrink back decreases. The heart muscle becomes over-stretched and is unable to pump blood effectively.
- Blood backs up into the arms, legs, ankles, feet, liver, lungs or other organs; the body becomes congested. This is called **congestive heart failure**.
- Heart failure is a progressive process, even if no new damage occurs to the heart.

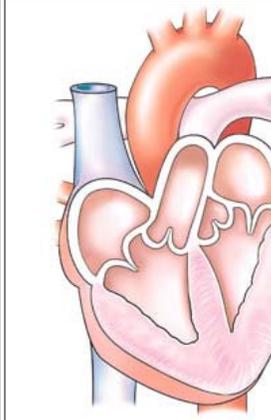
Changes seen with heart failure



Inside the normal heart



the walls of the heart stretch and the chambers dilate



the walls of the heart thicken

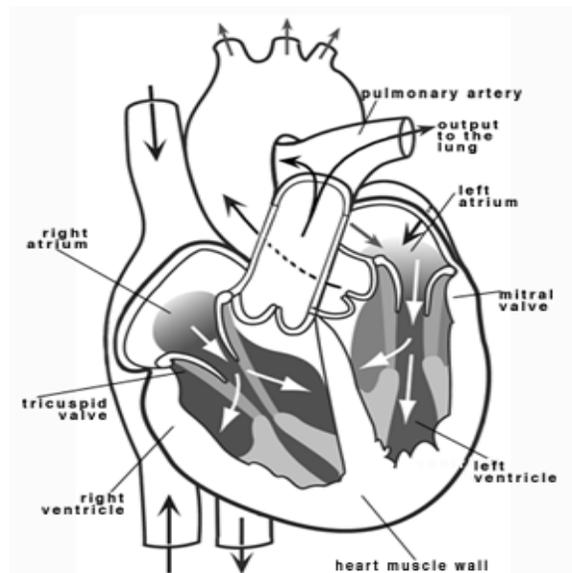
How the Heart Works

A healthy heart beats about 60 to 80 times per minute to pump blood throughout the body. The right and left sides of the heart work together. Blood that is low in oxygen first enters the right upper chamber (right atrium) of the heart. The blood flows from the right atrium to the lower chamber (right ventricle) through the open tricuspid valve. Blood passes through a valve before leaving each chamber of the heart. There are four valves in your heart; valves make sure blood flows in only one direction through your heart. The blood then travels through the pulmonary artery to the lungs where oxygen is added.

Oxygen-rich blood then returns to the left side of the heart. The blood flows from the left upper chamber (left atrium) to the lower chamber (left ventricle) through the open mitral valve.

From the left ventricle, the blood is pumped into a network of arteries (blood vessels) which carry the blood throughout the body.

With heart failure, the heart's pumping power is weaker than normal, causing less blood to move through the heart and to the body.



Causes of heart failure

Heart failure is caused by many conditions that damage the heart muscle, including:

- Coronary artery disease (also called coronary atherosclerosis) -- a disease of the arteries that supply blood and oxygen to the heart. Coronary artery disease occurs when the normal lining of the arteries breaks down, the walls of the arteries thicken and deposits of fat and plaque block the flow of blood through the arteries.
The arteries that supply blood to the heart become severely narrowed and the heart can no longer respond to increased activity. Extra strain on the heart may result in chest pain (angina pectoris) and other symptoms of heart disease.
- Heart attack -- occurs when a coronary artery becomes suddenly blocked, stopping the flow of blood to the heart muscle and damaging it. All or part of the heart muscle becomes cut off from its supply of oxygen. A heart attack can damage the heart muscle, resulting in a scarred area which does not function.
- Cardiomyopathy -- damage to the heart muscle from causes other than artery or blood flow problems. Causes include infections, alcohol or drug abuse.

Heart failure is also caused by conditions that overwork the heart muscle, including:

- High blood pressure (hypertension) -- Blood pressure is the force of blood pushing against blood vessel walls. High blood pressure means the pressure in the arteries is above the normal range.
- Valve disease -- a heart valve that is not working properly and is either leaking or blocking the normal flow of blood.
- Heart defects present at birth
- Diabetes Mellitus
- Chronic kidney disease

In addition, heart failure often occurs when several diseases or conditions are present at once.

How Is Heart Failure Diagnosed?

Heart failure is diagnosed by a physical exam, clinical tests and examining a patient's medical history.

Medical History: Your provider will ask you questions about your symptoms and medical history.

- Activity or exercise tolerance
- Ability to sleep lying flat or without symptoms
- If you have any other health conditions such as diabetes, kidney disease, angina, high blood pressure or other heart problems
- If you smoke
- If you drink alcohol and how much you drink
- What medications you are currently taking

Physical Exam: Your provider will listen to your heart, give you a complete physical exam and look for signs of heart failure as well as any other illnesses that may have caused your heart to weaken.

Tests: Tests can help your provider determine the extent of heart failure. Your provider will tell you which of these tests you should have:

- **Blood Tests:** to evaluate kidney and thyroid function as well as to check cholesterol levels and presence of anemia. Anemia is a blood disorder that occurs when there is not enough hemoglobin (the substance in red blood cells that enables the blood to transport oxygen through the body) in a person's blood.
- **B-type Natriuretic Peptide (BNP) blood test** – BNP: is a substance secreted from the ventricles or lower chambers of the heart in response to changes in pressure that occur when heart failure develops and worsens. The level of BNP in the blood increases when heart failure symptoms worsen, and decreases when the heart failure condition is stable. The BNP level in a person with heart failure (even someone whose condition is stable) is higher than in a person with normal heart function.
- **Chest X-ray:** shows the size of your heart and whether there is fluid build-up around the heart and lungs.
- **Echocardiogram** or Echo: a graphic outline of the heart's movement. During an echo, a wand is placed on the surface of your chest. The wand sends ultrasound waves that provide pictures of the heart's valves and chambers so the pumping action of the heart can be studied. An echo is often combined with an ultrasound to find changes in the blood flow across the heart's valves and the pressure within the heart's chambers.
- **Ejection fraction (EF):** test that determines how well your heart pumps with each beat. This test measures how much blood is pumped out of the heart with each beat, and how much blood pumps through the heart with each beat. A normal EF is generally greater than 50 percent, which means that over half of the blood volume is pumped out of the heart with each beat. An EF of less than 40 percent usually confirms a diagnosis of systolic heart failure. An EF greater than 40 percent means that your heart failure is due to another cause, such as a valve disorder or diastolic dysfunction. Please note, however, that people with diastolic dysfunction can have a normal EF. Systolic dysfunction occurs when the heart muscle doesn't contract with enough force, so there is not enough oxygen-rich blood to be pumped throughout the body. Diastolic dysfunction occurs when the heart contracts normally, but the ventricle doesn't relax properly so less blood can enter the heart. Your provider can discuss which condition is present in your heart.
- **Electrocardiogram (EKG or ECG):** records the electrical impulses traveling through the heart. During the test, small, flat, sticky patches called electrodes are placed on your chest. The electrodes are attached to an electrocardiograph monitor (EKG) that charts your heart's electrical activity on graph paper.

What are the symptoms of heart failure?

Symptoms of heart failure are related to the changes that occur to your heart and body.

Shortness of breath

Occurs with exercise, at rest, or when lying flat in bed.

Fluid backs up in the lungs,

Causes shortness of breath and often, a hacking cough.

Dizziness

Less blood to the brain causes dizziness.

Tiredness (fatigue) and weakness

Less blood to the major organs and muscles causes fatigue.

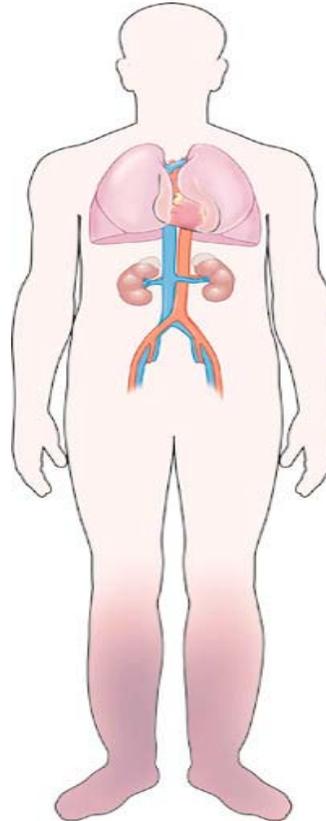
Rapid or irregular heartbeats

The heart beats faster to pump enough blood to the body. This causes a fast or irregular heartbeat.

Swelling in ankles, legs and abdomen and weight gain

Less blood to your kidneys causes the kidneys to retain fluid and water, resulting in edema (swelling) and water weight gain.

Other symptoms: nausea, palpitations, chest pain, waking suddenly at night unable to breathe, changes in sleep pattern.



Your provider will ask you about your symptoms (what they feel like, how strong they are, what causes them and how long they last). Your symptoms may not be related to how weak your heart is. You may have many symptoms and your heart function may be mildly weakened. Or you may have a more severely damaged heart but have no symptoms.

Stages of heart failure

The American Heart Association and American College of Cardiology developed the “Stages of Heart Failure”. This terminology will help you to understand that heart failure is often a **progressive** condition and can worsen over time. These stages are different than the New York Heart Association (NYHA) clinical classifications of heart failure that rank patients as class I-II-III-IV according to the degree of symptomatic or functional limits.

Stage	Definition of Stage	Usual Therapies
Stage A	Those at high risk for developing heart failure includes people with: <ul style="list-style-type: none"> • Hypertension • Diabetes mellitus • Coronary artery disease (including heart attack) • History of cardiotoxic drug therapy • History of alcohol abuse • History of rheumatic fever • Family history of cardiomyopathy. 	<ul style="list-style-type: none"> • Exercise regularly • Quit smoking • Treat hypertension • Treat lipid disorders • Discourage alcohol or illicit drug use • If previous heart attack or current diabetes mellitus or hypertension → angiotensin converting enzyme inhibitor (ACE-I)
Stage B	Those diagnosed with “systolic” heart failure but have never had symptoms of heart failure (usually by finding an ejection fraction of less than 40% on echocardiogram).	<ul style="list-style-type: none"> • Care measures in Stage A + • All patients should be on ACE-I • Beta-blockers should be added • Surgical consultation for coronary artery revascularization and valve repair/replacement (as appropriate)
Stage C	Patients with known heart failure with <u>current or prior</u> symptoms. Symptoms include: <ul style="list-style-type: none"> • Shortness of breath • Fatigue • Reduced exercise intolerance. 	In this group, care measures from Stage A apply, ACE-I and beta-blockers should be used + <ul style="list-style-type: none"> • Diuretics (water pills) • Digoxin • Dietary sodium (salt) restriction • Weight monitoring • Fluid restriction (as appropriate) • Withdrawal of drugs that worsen the condition • Spironolactone when symptoms remain severe with other therapies
Stage D	Presence of advanced symptoms, <u>after</u> assuring optimized medical care	All therapies under Stages A, B and C + evaluation for: <ul style="list-style-type: none"> • Cardiac transplantation • Ventricular assist devices • Surgical options • Research therapies • Continuous intravenous inotropic infusions • End-of-life care

How is heart failure treated?

Together, you and your provider will discuss your treatment options. Heart failure is treated by:

- Heart failure medications may include ACE inhibitors, diuretics, inotropic agents, vasodilators, potassium, beta blockers and other medications as prescribed by your provider.
- Dietary changes including: decreasing the total amount of sodium you consume to 2,000 milligrams (mg) or 2 grams (g) or less per day; eating foods high in fiber and potassium; limiting total daily calories to lose weight if necessary; and limiting foods that contain refined sugar, saturated fats and cholesterol.
- Lifestyle changes including: monitoring your weight by weighing yourself at the same time each day and recording your weight; increasing your activity level (as recommended by your provider); resting more often; planning your activities; losing weight if you are overweight; not smoking or chewing tobacco; avoiding or reducing alcohol.
- Surgery, if needed. Heart failure surgeries include the left ventricular assist device, coronary bypass grafting, mitral valve repair, ventricular surgeries and sometimes heart transplantation.
- Participating in an outpatient Heart Failure Center program.
- Seeing your provider regularly -- during follow-up visits, your provider will review your weight record and list of medications, make sure you are staying healthy and that your heart failure is not getting any worse.

Heart failure treatment is a team effort

Heart failure management is a team effort, and you are the key player on the team. Your provider will prescribe your medications and manage other medical problems. Other team members including nurses, dietitians, pharmacists and social workers will help you achieve success. But it is up to YOU to take your medications, make dietary changes, live a healthy lifestyle, keep your follow-up appointments, participate in an outpatient heart failure program and be an active member of the team.

What is the outlook?

With the right care, heart failure will not stop you from doing the things you enjoy. Your prognosis or outlook for the future will depend on how well your heart muscle is functioning, your symptoms, and how well you respond to and follow your treatment plan.

Everyone with a chronic illness, such as heart failure, should discuss their desires for extended medical care with their provider and family. An "advanced directive" or "living will" is one way to let everyone know your wishes. A living will expresses your desires about the use of medical treatments to prolong your life. This document is prepared while you are fully competent in case you are unable to make these decisions at a later time.