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THE CARDIOLOGY PATIENT PAGE

Take Heart With Heart Failure

Carol Flavell, ANP; Lynne Warner Stevenson, MD

Don't be discouraged by the word failure. Your heart hasn't failed to pump or stopped beating. Think of your heart as having a handicap that can be managed with the right treatments and lifestyle. There are at least 4 to 5 million people with heart failure in the United States, about half of whom are over 65. Many people with heart failure are able to lead active and satisfying lives. Success with heart failure depends on what you know and do to manage the handicap.

What Is Heart Failure?

Heart failure is a decreased ability of the heart to fill and empty. The major purpose of the heart is to circulate blood, which carries oxygen and nutrients to the body. In a normal heart, 50% to 70% of the blood in the pumping chambers is ejected out to the body with each contraction of the heart muscle. The normal heart has strength far beyond what we need every day. Even when the ejection fraction is low, the heart can often pump well enough for you to enjoy the usual activities in your life (Figure 1).

What Causes Heart Failure?

Anything that causes damage to the heart muscle can lead to heart failure. Damage can be caused by any of the following.

- Heart attacks due to coronary artery disease
- Viral infections
- Some chemotherapeutic agents for cancer
- Illicit drugs
- Excessive alcohol intake
- Genetic abnormalities in families
- Idiopathic cardiomyopathy (the cause is unknown)

Is All Heart Failure the Same?

Heart failure takes several different forms. In *systolic* heart failure, the heart muscle pumps blood out with less strength than normal. Over time, the pumping chambers thin and

enlarge. Blood backs up in the organs, leading to the heart producing the "congestion" of heart failure. In late stages, there is not enough blood pumped around the body to meet the body's needs (Figure 2).

Sometimes the heart grows stiff and cannot relax enough to accept the blood returning to it. This is referred to as *diastolic* heart failure. In patients with stiff hearts, fluid build-up can cause symptoms of heart failure with "congestion," even though the heart's normal pumping function is normal. This type of heart failure is more common in older patients who may also have hypertension and diabetes (Figure 3).

How Is Heart Failure Diagnosed?

Symptoms are the usual first clues to heart failure. When symptoms are present, several tests can be done to confirm the diagnosis and determine the type of heart failure that is present (see box).

Heart Failure Symptoms

- Unusual fatigue with activity
- Shortness of breath with activity
- Difficulty breathing when lying down
- Cough with exercise or lying down
- Ankle swelling
- Loss of appetite and abdominal discomfort
- Fluid weight gain

All of these symptoms are common to many medical conditions and may not indicate heart failure.

One or more of the following tests may be done if heart failure is suspected:

- Chest x-rays can show heart enlargement and build-up of fluid in the lungs.
- Echocardiograms use sound waves to measure the heart's size and its movement during contraction and relaxation and to calculate the ejection fraction.

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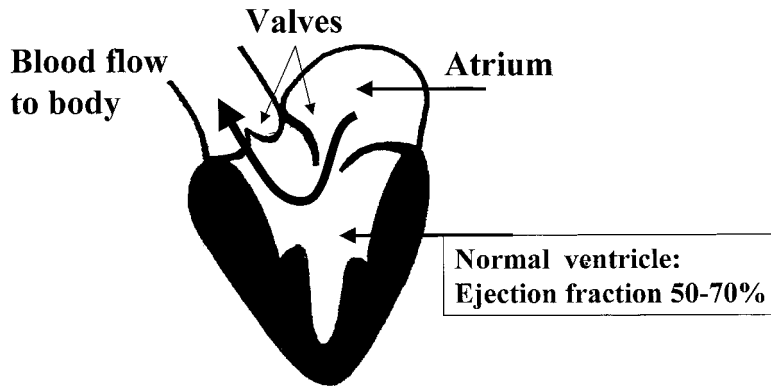


Figure 1. Normal heart. Modified from Braunwald E, ed. *Heart Disease: A Textbook of Cardiovascular Medicine* 5th ed. Philadelphia: Saunders; 1997.

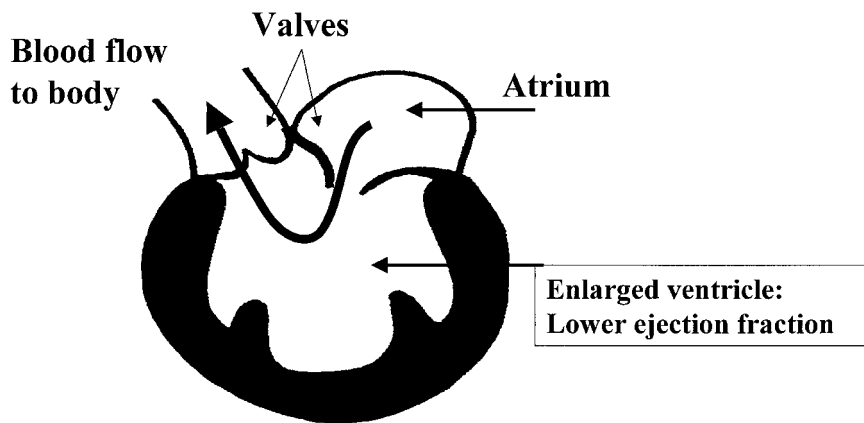


Figure 2. Heart with systolic heart failure. Modified from Braunwald E, ed. *Heart Disease: A Textbook of Cardiovascular Medicine* 5th ed. Philadelphia: Saunders; 1997.

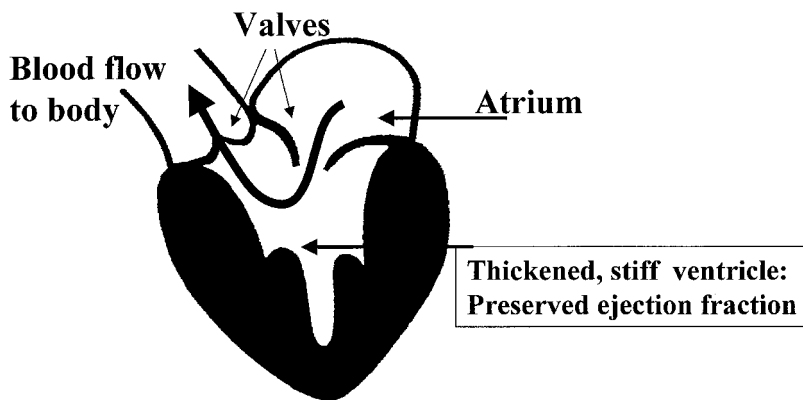


Figure 3. Heart with diastolic heart failure. Modified from Braunwald E, ed. *Heart Disease: A Textbook of Cardiovascular Medicine* 5th ed. Philadelphia: Saunders; 1997.

- ECGs (electrocardiograms) record the electrical activity of the heart and show changes in heart rhythm and wall thickness.
- Heart catheterization involves 2 types of test. In one test, a catheter is inserted into the heart to measure the pressures and flows to see how well the heart is working to fill and empty as a pump. In the other test, dye is injected into the coronary arteries to check for blockages as a possible cause of heart failure. One or both parts may be necessary.
- Other scans may be done using injections of radioactive tracers to look for correctable causes of heart failure.

How Is Heart Failure Treated?

Heart failure can be treated but usually cannot be cured. The cornerstones of treatment are medications and lifestyle changes.

The body is designed to react to sudden emergencies, such as an attack or blood loss, by activating reflexes that make the heart pump harder and faster and fill up with more fluid. These reflexes remain turned on in chronic heart failure, increasing the load on the injured heart and weakening it further. The major medications for heart failure can counteract these reflexes and help the heart work more efficiently.

- ACE inhibitors neutralize the effects of hormones that constrict blood vessels, increase fluid, and alter heart muscle proteins.
- β -Blocking agents block the receptor sites of hormones that make the heart beat hard and fast.
- Diuretics help the kidneys eliminate extra fluid.

- Digoxin may slow a fast heart beat in the case of an abnormal rhythm and increase the force of contraction.
- Potassium and magnesium supplements may be needed to replace the losses of these minerals in the urine when taking diuretics.
- Other medications may be prescribed for related conditions, such as coronary artery disease, clot formation, and irregular heart rhythms.

What Can I Expect?

The outlook for patients with heart failure continues to improve. People are feeling better and living longer. There are more new approaches under investigation now for heart failure than at any time in the past; some of these can be found at www.clinicaltrials.gov. Heart failure is a chronic disease. For the rest of your life, you will need to follow a personalized program of medications and lifestyle. There will be good days and bad days for you as there are for everyone. The goal is to live as fully as possible.

Further Information

For further information, please consult one of the following sources.

- Braunwald E, ed. *Heart Disease: A Textbook of Cardiovascular Medicine*. 5th ed. Philadelphia: Saunders; 1997.
- Silver MA. *Success With Heart Failure*. New York: Plenum Press; 1998.
- www.americanheart.org/chf
- www.abouthf.org
- www.clinicaltrials.gov

Acknowledgment

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What Can I Do to Take Care of Myself?

Take Heart and Take Charge

You will feel better if *you* take charge of your life.

- Learn about heart failure and its causes. Talk with your health care provider. Additional information is available from the following sources:
Silver MA. *Success With Heart Failure*. New York: Plenum Press; 1998.
www.americanheart.org/chf
www.abouthf.org
- Understand how other medical problems, such as diabetes, hypertension, obesity, and lung disease, can affect heart failure and manage them carefully as well.
- Learn about your medications and their side effects and interactions. Set up a medication schedule that works for you. Write down all of your medications and doses. Carry your list with you to your healthcare provider and in case of emergency.
- Weigh yourself at the same time every morning and write it down. A weight increase is often the first sign of fluid build-up.
- Salt (sodium) promotes fluid retention. Limit sodium intake to 2 to 4 grams per day. The typical American diet contains 6 grams per day. Read labels. Consult with a dietitian for more help.
- Monitor your daily fluid intake. Too little and too much can both be problems. Ask your healthcare provider what is right for you.
- Exercise regularly several days a week. It is good for your body, your heart, and your outlook. It is vital to continue making plans and doing the activities that are important to you. Your schedule should also include adequate time for rest.
- Be open to help from others. When facing a new diagnosis, realize that you are not alone, whether you are a patient or caregiver.
- Monitor your symptoms, but do not let them run your life.
- Develop an Action Plan with your healthcare provider. If you develop new or worsening symptoms of heart failure, be sure you know what action you can take yourself, when to call with problems, and when to get emergency treatment.