

# Heart Failure

**H**eat failure develops when the heart as a pump malfunctions. **Systolic heart failure** is the inability of the heart to squeeze enough blood from the **ventricles** (heart chambers) to supply the body's needs. **Diastolic heart failure** results from the inability of the heart muscle to relax in between heartbeats, causing a backup of blood in the heart's chambers and in the blood vessels. Both systolic and diastolic heart failure can cause **edema** (fluid) to build up in the lungs and the rest of the body. The heart tries to make up for this malfunction by **dilating** (enlarging the heart chambers) or becoming **hypertrophic** (thickening of the heart walls). For individuals older than 65 years, heart failure is the most common cause of hospitalization. The May 13, 2009, issue of *JAMA* contains an article about heart failure.

## SIGNS AND SYMPTOMS

- Fatigue or weakness
- Shortness of breath during physical activity
- Difficulty breathing when lying in a flat position
- Waking at night feeling short of breath
- Swollen neck (**jugular**) veins
- Abdominal swelling (**ascites**) from excess fluid
- Lower leg or foot swelling (**pedal edema**)
- **Palpitations** (sensation of fast or irregular heartbeat)

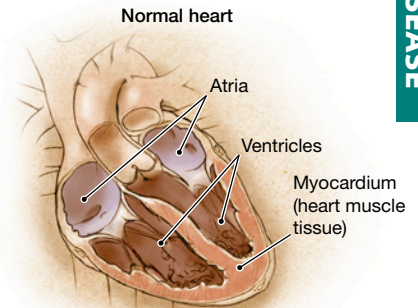
## DIAGNOSIS AND TESTING

A detailed medical history and physical examination often reveal whether a person has heart failure. Testing may include a chest x-ray to look for **cardiomegaly** (an enlarged heart), **pulmonary edema** (fluid in the lungs), or **pleural effusion** (collection of fluid around the lungs). Other tests commonly include an **electrocardiogram** (tracing of the heart rhythm) and an **echocardiogram** (ultrasound examination showing the heart structures and function of heart valves).

## TREATMENT

Treating heart failure depends on the reasons why heart failure developed. It is important to work with your doctor to find the best treatment plan, including an exercise program.

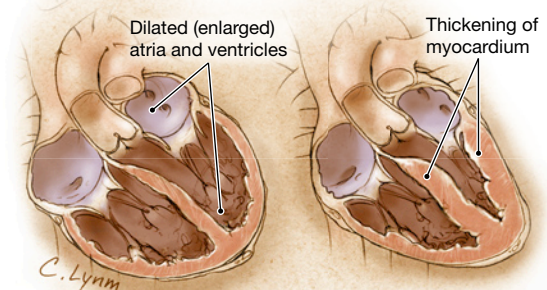
- A low-sodium diet is prescribed to decrease fluid retention.
- Medications used to treat heart failure often include **beta-blockers** that allow the heart to work better, **ACE inhibitors** that lower blood pressure, making the heart pump against less pressure, and diuretics to remove excess fluid.
- Pacemakers and implantable defibrillators may be useful to help the heart contract in a coordinated way and monitor for irregular, life-threatening heart rhythm.
- Surgery may be recommended for heart valve disease or congenital heart disease.
- For persons who have severe advanced heart failure, medications called **inotropes** may be used to help the heart beat more strongly. Use of these drugs often requires an indwelling intravenous catheter. Mechanical devices may be required, such as intra-aortic balloon pumps; left, right, or biventricular assist devices; or the rare use of a mechanical heart pump.
- Heart transplantation may be the final option considered when severe heart failure does not respond to the usual treatments.



Changes in the heart during heart failure

Systolic heart failure

Diastolic heart failure



## FOR MORE INFORMATION

- American Heart Association  
[www.americanheart.org](http://www.americanheart.org)
- National Heart, Lung, and Blood Institute  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

## INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page Index on JAMA's Web site at [www.jama.com](http://www.jama.com). Many are available in English and Spanish. A previous Patient Page on heart failure was published in the June 13, 2007, issue; one on implantable cardioverter-defibrillators was published in the May 2, 2007, issue; and one on cardiac stress testing was published in the October 15, 2008, issue.

Sources: National Heart, Lung, and Blood Institute; American Heart Association

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