

## Diagnosis of Congestive Heart Failure (CHF)

by [Michelle Badash, MS](#)

[En Español \(Spanish Version\)](#)

The first step your doctor will take to assess whether you have CHF is to discuss your medical history and conduct a complete physical exam. Afterwards, your doctor may recommend some or all of the following tests to help make the diagnosis and assess the degree of damage:

**Chest X-ray** NEW —An x-ray image will show whether the heart is enlarged, or congestion is present in the lungs.

**Blood Tests** —To check for anemia, thyroid disease, elevated cholesterol and blood lipids, and to evaluate kidney and liver function, electrolytes, and calcium and magnesium levels. In addition, your doctor will check plasma levels of BNP (brain natriuretic peptide) as those are elevated in patients with heart failure.

**Electrocardiogram (EKG or ECG)** —Records the electrical activity of your heart through electrodes attached to the skin. This test will help diagnose heart rhythm problems, muscle abnormalities, and damage to the heart from a [heart attack](#).

**Echocardiogram** —Uses sound waves to produce an image of the working heart. This test helps evaluate the function of the valves and chambers of the heart and determines the amount of blood ejected from the heart with each heartbeat (ejection fraction). An echocardiogram also can detect structural damage, tumors, or excess fluid around the heart.

**Exercise Stress Test** —Records the heart's electrical activity during increased physical activity. It may be coupled with an echocardiogram or nuclear heart scan. Patients who cannot exercise may be given medication intravenously that simulates the effects of physical exertion.

**Nuclear Scanning** —Radioactive material is injected into a vein and observed as it is absorbed by the heart muscle. Areas with diminished flow (and uptake of the radioactive material) show up as dark spots on the scan.

**Coronary Angiography** and **Coronary Catheterization** —Contrast dye is injected via a thin, flexible tube (catheter) that is threaded into the aorta or heart. X-rays are then taken to view blood flow and highlight the arterial blood vessels. This test helps to detect obstruction in the arteries and assess heart function. Testing to check for blockage in the coronary arteries is recommended for some individuals with heart failure, especially younger patients and patients with symptoms of chest pain and [angina](#).

**Electron-beam CT Scan (EBCT) and CT Angiography (CTA)** —EBCT and CTA are used to find blockages in the arteries. With CTA, a small amount of dye is injected into the blood vessels. As the dye passes through the heart, a type of x-ray machine that uses computers helps show any blood flow blockage. EBCT is similar but it takes multiple pictures even faster than the CTA.

**Cardiac Magnetic Resonance Imaging** —This test uses high intensity magnetic fields to generate high resolution images. It can help evaluate large blood vessels, coronary arteries, heart walls, and pericardium. It is also helpful in measuring ejection fraction and evaluating patients for the presence of cardiomyopathy.

### Diagnostic Indicators

As your doctor examines you, he or she will be looking for some characteristic signs of CHF on the physical exam, including:

- Sound of fluid in the lungs (rales)
- Enlargement of the jugular vein in the neck (jugular venous distention)

- Enlargement of the liver (hepatomegaly)
- High blood pressure (hypertension)
- Low blood pressure (hypotension)
- Fast heart rate (tachycardia)
- Edema (swelling of the ankles, legs, feet)
- Fluid in the abdominal cavity ( ascites)
- Fluid in the space between the lungs and ribs ( pleural effusion)

#### REFERENCES:

American Heart Association website. Available at:  
<http://www.americanheart.org/presenter.jhtml?identifier=1200000> .

Hunt SA, Abraham WT, Chin MH, et al. For: American College of Cardiology/American Heart Association Task Force on Practice Guidelines. ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult. *Circulation*. 2005;112:e154.

Lima JA, Desai MY. Cardiovascular magnetic resonance imaging: current and emerging applications. *J Am Coll Cardiol*. 2004;44:1164.

National Heart, Lung, and Blood Institute website. Available at: <http://www.nhlbi.nih.gov/> .

Redfield MM, Rodeheffer RJ, Jacobsen SJ, et al. Plasma brain natriuretic peptide to detect preclinical ventricular systolic or diastolic dysfunction: a community-based study. *Circulation*. 2004;109:3176.

[Previous](#) | [Next](#)

---

Last reviewed September 2011 by Michael J. Fucci, DO  
Last Updated: 9/26/2011