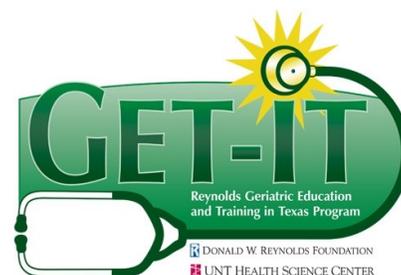




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ELDER CARE

A Resource for Providers



Heart Failure – Diagnosis

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Heart failure (HF) is a major health problem in the US. More than 5 million Americans have HF, and each year some 300,000 individuals die from it. The direct and indirect costs of HF exceed \$35 billion per year.

HF is more common with increasing age. In fact, one in every 100 people over 65 have HF, and 80% of people hospitalized with HF are over 65. HF is the most common diagnosis made in hospitalized older adults.

This issue of Elder Care is the first of two that will be devoted to HF. This issue will review the approach to diagnosis of HF. Another issue will discuss treatment of HF in outpatient settings.

Clinical Presentation

HF occurs when the heart is unable to relax and fill with blood (diastolic HF), unable to contract and eject blood normally (systolic HF), or both. The most common cause of systolic HF in the US is myocardial infarction (MI). The most common cause of diastolic HF is hypertension.

Symptoms of HF include shortness of breath, exercise intolerance, and/or edema. Older patients, however, may have more subtle symptoms, such as fatigue or weakness. Many older individuals believe exercise intolerance or fatigue is part of normal aging, and do not bring the problem to their physician's attention. It is important, therefore, to assess patients' exercise tolerance, often with input from family members,

especially when patients have the key risk factors of MI or hypertension.

Echocardiography

Echocardiography is vital in evaluating patients with known or suspected HF. An echocardiogram will not only distinguish the low ventricular ejection fraction of systolic HF from the poor ventricular relaxation of diastolic dysfunction, it will also identify other causes of HF, such as valvular disease or hypertrophic cardiomyopathy. Patients with HF and severe valve dysfunction should be referred for consideration of valve replacement.

While echocardiography is useful for diagnosis, the results don't always correlate with severity of HF symptoms. For example, some people with very low ejection fractions have minimal symptoms, while others with only minimally depressed ejection fractions can have marked symptoms.

Laboratory Testing

Upon initial diagnosis of HF, a clinician must exclude secondary or non-cardiac causes, including anemia, renal insufficiency, hypoalbuminemia, and thyroid dysfunction (see Table). An electrocardiogram will help to identify evidence of ventricular hypertrophy or previous infarction. A routine chest x-ray is helpful to assess heart size, rule out pulmonary disease, and confirm congestion (effusions, cephalization, Kerley-B lines).

TIPS FOR DIAGNOSING HEART FAILURE IN OLDER PATIENTS

Order an echocardiogram to distinguish systolic from diastolic heart failure, and to detect unsuspected causes of heart failure such as valvular disease.

Refer patients to be evaluated for valve replacement if they have heart failure plus either severe disease in one valve or moderate disease in multiple valves.

Exclude secondary causes of heart failure by ordering tests to assess for anemia, renal insufficiency, hypoalbuminemia, and thyroid dysfunction.

Measure BNP on initial diagnosis of heart failure to help confirm the diagnosis.

Evaluate for coronary artery disease with non-invasive testing for patients with mild symptoms. Consider coronary angiography when patients have significantly decreased ejection fraction.

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B-type natriuretic hormone (BNP) should also be ordered as part of the initial assessment of patients with HF. Different BNP assays have different normal values, and physicians should be familiar with the cut-off levels used in their laboratory. For most assays, a level less than 100 pg/ml is normal and excludes HF as a cause for the patients' symptoms. A level between 100-500 pg/ml suggests a component of HF, and a value over 500 pg/ml makes HF the likely diagnosis. When patients are admitted to the hospital for decompensated HF, higher BNP levels indicate a higher risk of death.

Assessing Coronary Circulation

Coronary artery disease (CAD) is common in older people and may present with the same symptoms as HF. Older HF patients who might be candidates for revascularization should undergo an evaluation for coronary ischemia. For patients with normal or mildly decreased systolic function, non-invasive testing (nuclear medicine scan, stress echocardiography) is acceptable. For those with an ejection fraction below 40% and normal renal function, consideration should be given to cardiac catheterization to assess for multi-vessel disease amenable to revascularization.

Testing Recommended for Patient with a Suspected New Diagnosis of Heart Failure	
Test	Purpose
Echocardiogram	Distinguish systolic from diastolic dysfunction Identify valvular heart disease, hypertrophic cardiomyopathy, pericardial effusion, or other unsuspected causes of impaired cardiac function May demonstrate segmental ventricular wall motion defect suggestive of coronary ischemia
Hemoglobin level	Identify high-output failure due to anemia
Chemistry panel	Identify renal failure or hypoalbuminemia as cause of fluid retention
Electrocardiogram (EKG)	Evaluate for hypertrophy or pathologic Q waves indicative of CAD.
Thyroid function tests	Identify high-output failure due to hypothyroidism
B-type natriuretic peptide	Confirm presence of heart failure with level >500 pg/ml; exclude heart failure with level < 100 pg/ml. Higher levels predict worse outcomes for patients hospitalized with acutely decompensated heart failure.
Chest x-ray	Rule out pulmonary pathology, assess heart size, confirm pulmonary congestion.

References and Resources

1. Hunt SA, Abraham WT, Chin MH, et al. ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Available at: <http://www.acc.org/clinical/guidelines/failure//index.pdf>.
2. Fonarow GC, Peacock WF, Phillips CO, et al. Admission B-Type natriuretic peptide levels and in-hospital mortality in acute decompensated heart failure. JACC 2007;49:1943-1950.



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