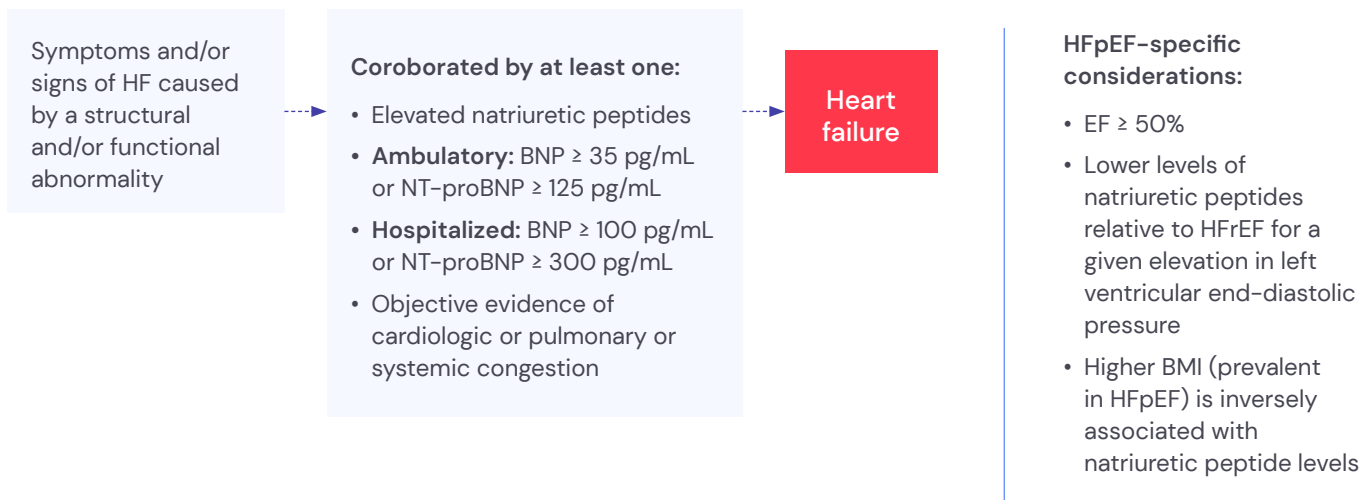


# Defining and diagnosing heart failure

Heart failure is a complex clinical syndrome with symptoms and signs that result from any structural or functional impairment of ventricular filling or ejection of blood. The universal definition requires two elements – symptoms and/or signs of heart failure caused by structural or functional cardiac abnormalities AND at least one of the following: elevated natriuretic peptides or objective evidence of cardiogenic pulmonary or systemic congestion.



## Symptoms of heart failure

Typical symptoms	Less typical symptoms
Breathlessness	Nighttime cough
Shortness of breath lying flat or bending over	Wheezing
Shortness of breath that causes waking up at night	Bloated feeling
Fatigue, tiredness	Increased fullness after eating, decreased appetite
Swelling in the ankles or other parts of the body	Decline in cognitive function
Inability to exercise	Confusion (especially in the elderly)
	Depression
	Dizziness or fainting



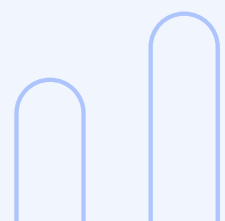
## Signs of Heart Failure

Specific	Less specific
Abnormal heart sounds (third or fourth)	Swelling (ankle, sacral, scrotal)
Enlarged heart with displaced apical pulse	Abnormal breath sounds
Abnormal breathing pattern (Cheyne-Stokes respirations in advanced heart failure)	Unintentional weight gain (>2kg/week)
Elevated pressure in a neck vein (when pressure is applied to the abdomen)	Weight loss with muscle wasting (in advanced heart failure)
Swelling in the ankles or other parts of the body	Heart murmur, fast or irregular heart rate
Inability to exercise	Fast breathing rate
	Enlarged liver with extra fluid in the abdomen
	Cool extremities
	Decreased urine output

## Initial Diagnostic Work-up for Patients with Suspected Heart Failure

For patients with suspected heart failure, an initial diagnostic work-up includes the following. It should take into account patient comorbidities, their suitability for therapy, adverse effects of treatments, potential causes and confounders of their heart failure, severity and prognosis.

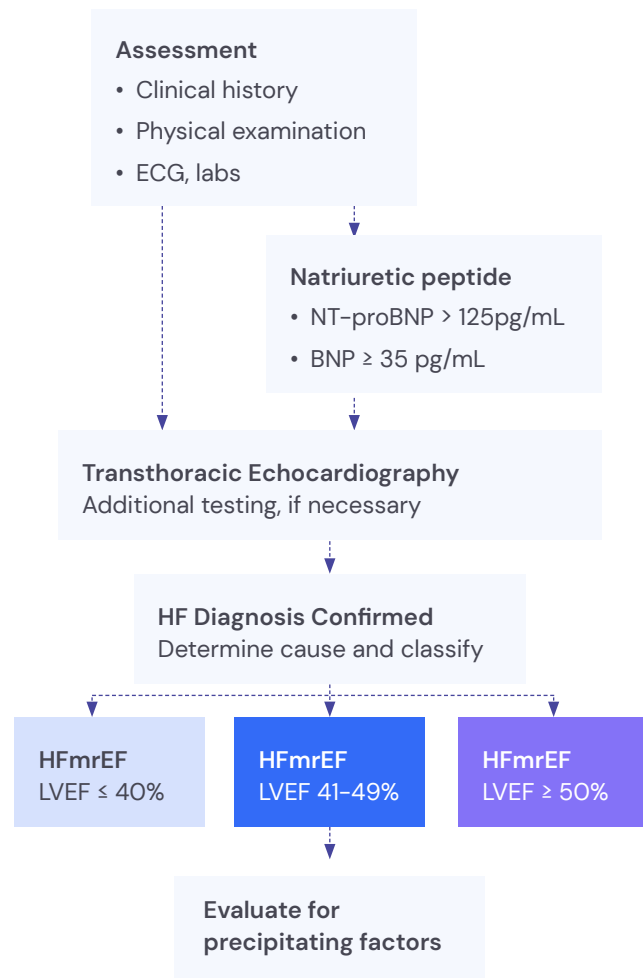
- > CBC
- > Urinalysis
- > Serum electrolytes
- > BUN/creatinine
- > Fasting lipid profile
- > Liver function tests
- > Iron studies
- > Thyroid-stimulating hormone
- > Electrocardiography
- > Cardiac biomarkers (brain natriuretic peptide, N-terminal pro-hormone of brain natriuretic peptide)





# Heart Failure – Diagnostic Algorithm

A critical component of the history and physical examination is to assess for clinical congestion, which immediately guides diuretic therapy. Natriuretic peptide testing is particularly useful when the diagnosis remains unclear after taking a patient's history and performing a physical examination. A transthoracic echocardiogram allows classification of heart failure by left ventricle ejection fraction, as well identifies any structural and/or functional abnormalities to drive further testing and treatments.



## ACC/AHA Stages

There are four ACC/AHA stages outlined, however, the first two stages (A and B) are patients who do not have the clinical syndrome of heart failure. These patients are not symptomatic and are not considered to have heart failure. This is often a point of confusion as echocardiogram reports may contain the phrase "consistent with stage B heart failure". Patients with Stage C symptomatic heart failure either currently have symptoms or previously had symptoms. Asymptomatic patients are considered stage C if they previously had the clinical syndrome of symptomatic heart failure but improved.

Stage A At-risk for Heart Failure	Stage B Pre-Heart Failure	Stage C Symptomatic Heart Failure	Stage D Advanced Heart Failure
<p>Patients at risk for HF but without current or previous symptoms/signs of HF and without structural/functional heart disease or abnormal biomarkers</p> <p>Patients with hypertension, CVD, diabetes, obesity, exposure to cardiotoxic agents, genetic variant for cardiomyopathy, or family history of cardiomyopathy</p>	<p>Patients without current or previous symptoms/signs of HF but evidence of 1 of the following:</p> <ul style="list-style-type: none"> <li>• Structural heart disease</li> <li>• Evidence of increased filling pressures</li> <li>• Risk factors and increased natriuretic peptide levels or persistently elevated cardiac troponin in the absence of competing diagnoses</li> </ul>	<p>Patients with current or previous symptoms/signs of HF</p>	<p>Marked HF symptoms that interfere with daily life and with recurrent hospitalizations despite attempts to optimize GDMT</p>