

STAGING/GRADING of Heart Failure

Left ventricle ejection fraction (LV EF) is used to classify HF

- HF with **reduced** ejection fraction (HFrEF): LV EF $\leq 40\%$
- HF with **mildly reduced** ejection fraction: LV EF 41% - 49% and evidence of HF (elevated cardiac biomarkers or elevated filling pressures)
- HF with **preserved** ejection fraction (HFpEF): LV EF $\geq 50\%$ and evidence of HF (elevated cardiac biomarkers or elevated filling pressures)
- HF with **improved** ejection fraction: LV EF $>40\%$, with previously documented LV EF $\leq 40\%$

ACC/AHA Heart Failure Stages

- Stage A: At risk for HF. No symptoms, structural heart disease, or evidence of elevated cardiac biomarkers, but risk factors are present. Risk factors include hypertension, diabetes, metabolic syndrome, cardiotoxic medications, or having a genetic variant for cardiomyopathy.
- Stage B: Pre-HF. Patients have no signs or symptoms of HF but have structural heart disease, evidence of elevated filling pressures (by invasive or noninvasive assessment), or persistently elevated cardiomarkers in the absence of other reasons for elevated markers, like chronic kidney disease or myocarditis.
- Stage C: Patients with structural heart disease and current or past history of HF symptoms.
- Stage D: Patients with refractory symptoms that interfere with daily life or recurrent hospitalization despite targeted guideline-directed medical therapy.

Based on symptoms, the patients can be classified using the **New York Heart Association (NYHA) functional classification** as follows

- Class I: Symptom onset with more than ordinary level of activity
- Class II: Symptom onset with an ordinary level of activity
- Class III: Symptom onset with minimal activity
 - Class IIIa: No dyspnea at rest
 - Class IIIb: Recent onset of dyspnea at rest
- Class IV: Symptoms at rest