American College of Cardiology and American Heart Association revised guidelines for the diagnosis of Health failure

TABLE 79-7 ■ DIAGNOSTIC EVALUATION OF PATIENTS WITH HEART FAILURE

Class I (indicated in most patients)

- Complete blood count
- Blood chemistries: electrolytes, creatinine, blood urea nitrogen, glucose, magnesium, calcium, liver function tests, and lipid profile
- Thyroid-stimulating hormone (TSH)
- B-type natriuretic peptide (BNP) or N-terminal pro-BNP level
- Urinalysis
- Chest radiograph and electrocardiogram (ECG)
- Echocardiogram: two-dimensional with Doppler
- Cardiac catheterization and coronary angiography in patients with angina or significant ischemia unless the patient is not eligible for revascularization

Class II (acceptable in selected patients; see text)

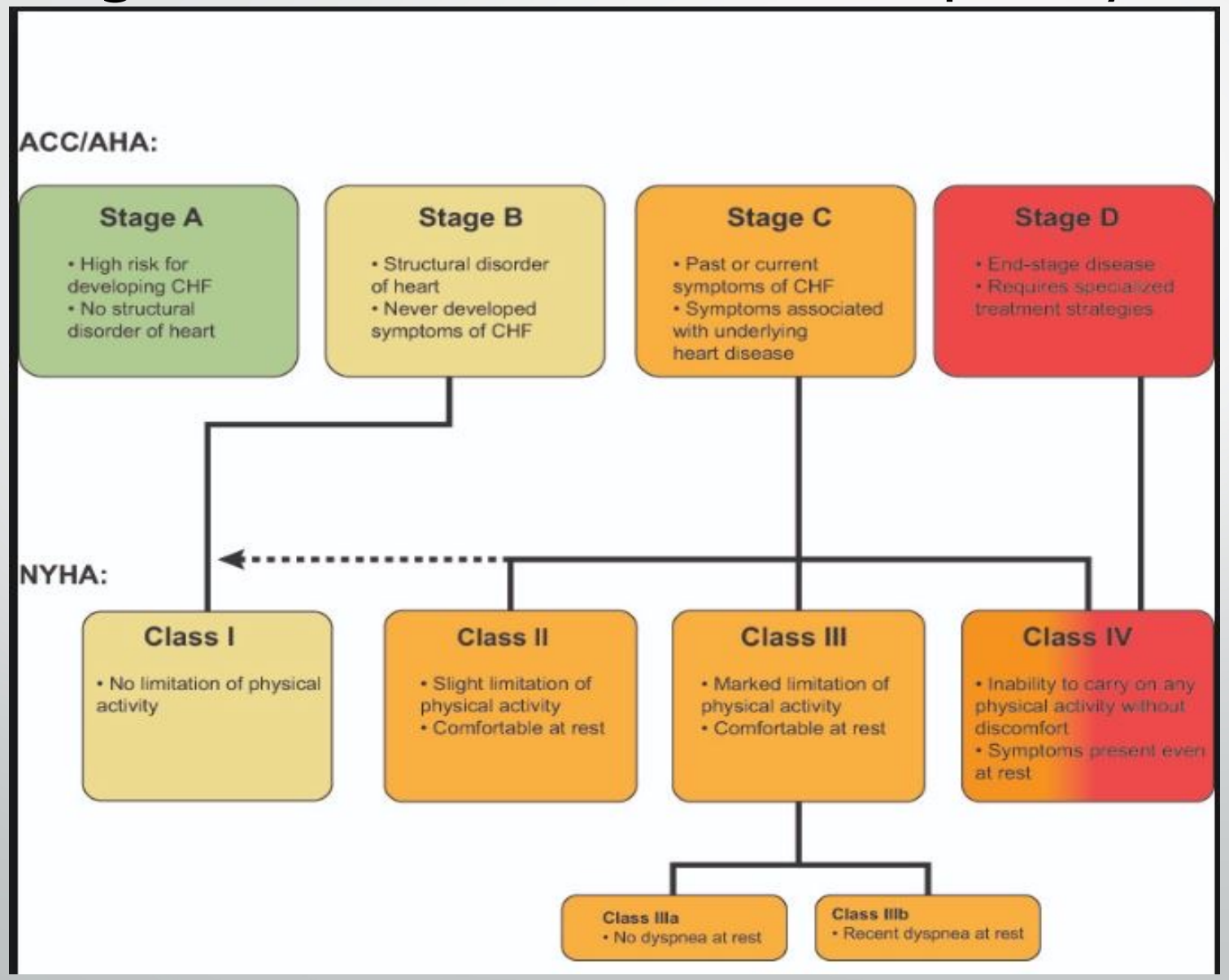
- Serum iron and ferritin
- If suspected, assessment for rheumatologic disease, human immunodeficiency virus, amyloidosis, or pheochromocytoma
- Screening for sleep-disordered breathing
- Stress test to evaluate for ischemia in patients with unexplained heart failure who are potential candidates for revascularization
- Coronary angiography if ischemia may be contributing to heart failure in patients who are potential candidates for revascularization
- Endomyocardial biopsy when a specific diagnosis is suspected that would influence therapy

Class III (not routinely indicated)

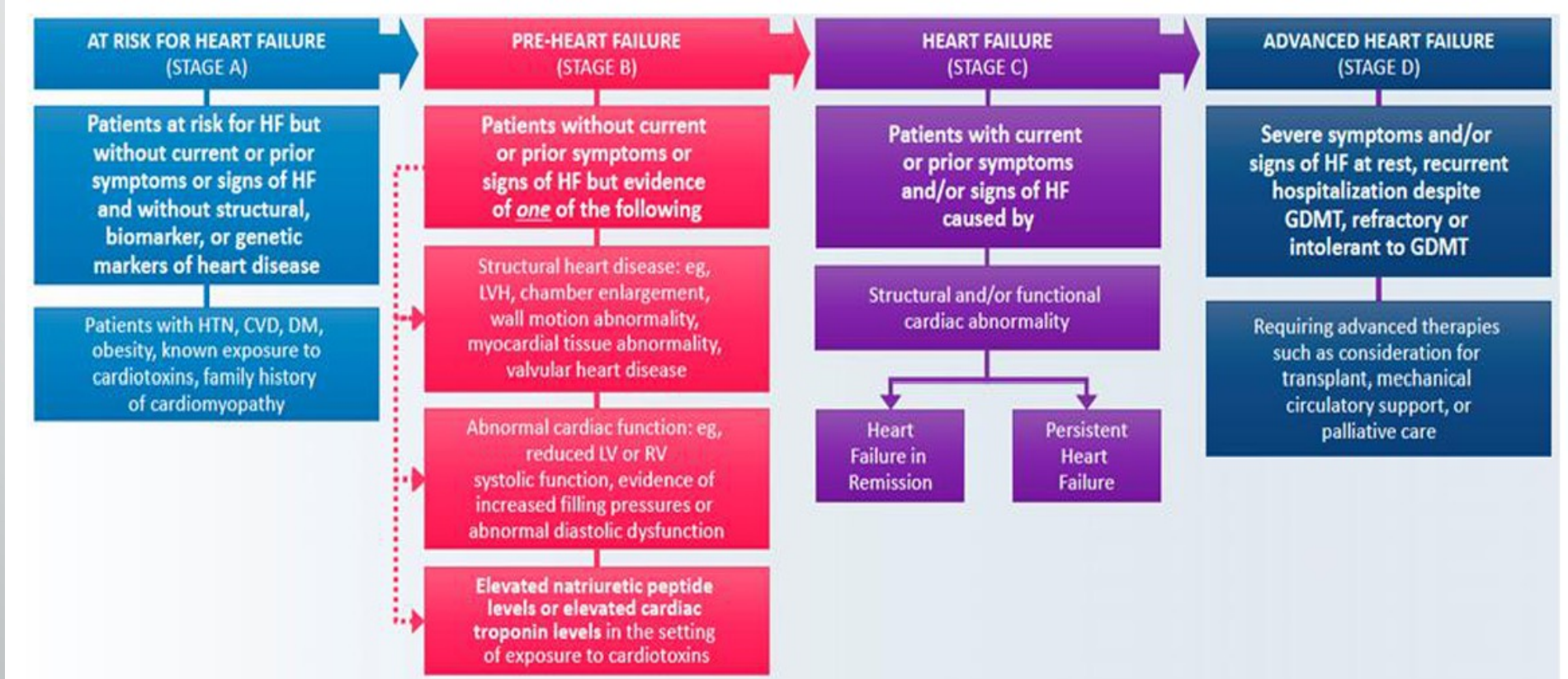
- Routine repeat measurement of left ventricular function in stable patients
- Endomyocardial biopsy as a routine procedure in the evaluation of patients with heart failure

Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure. J Am Coll Cardiol. 2013;62:e147–e239.

Classification of heart failure:ACC/AHA objective stages vs NYHA functional capacity class

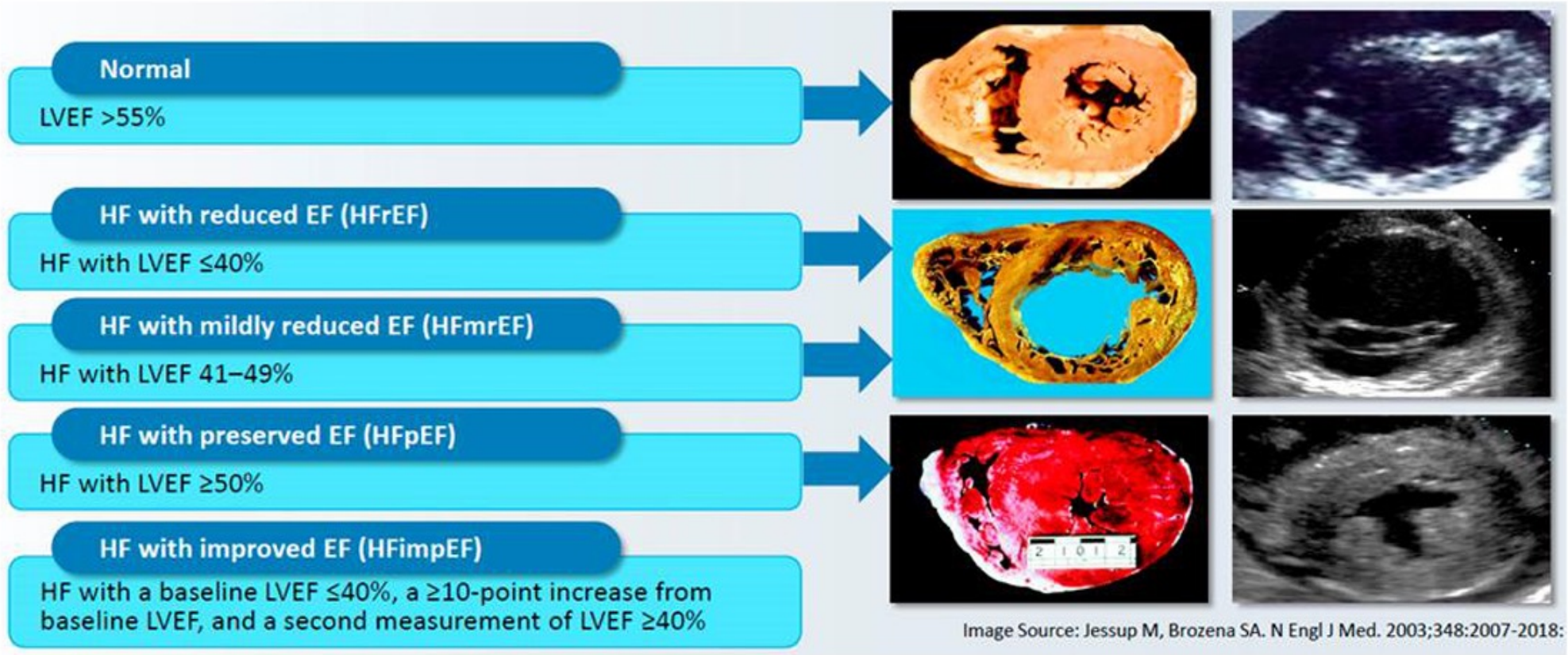


New classification of Heart failure stages

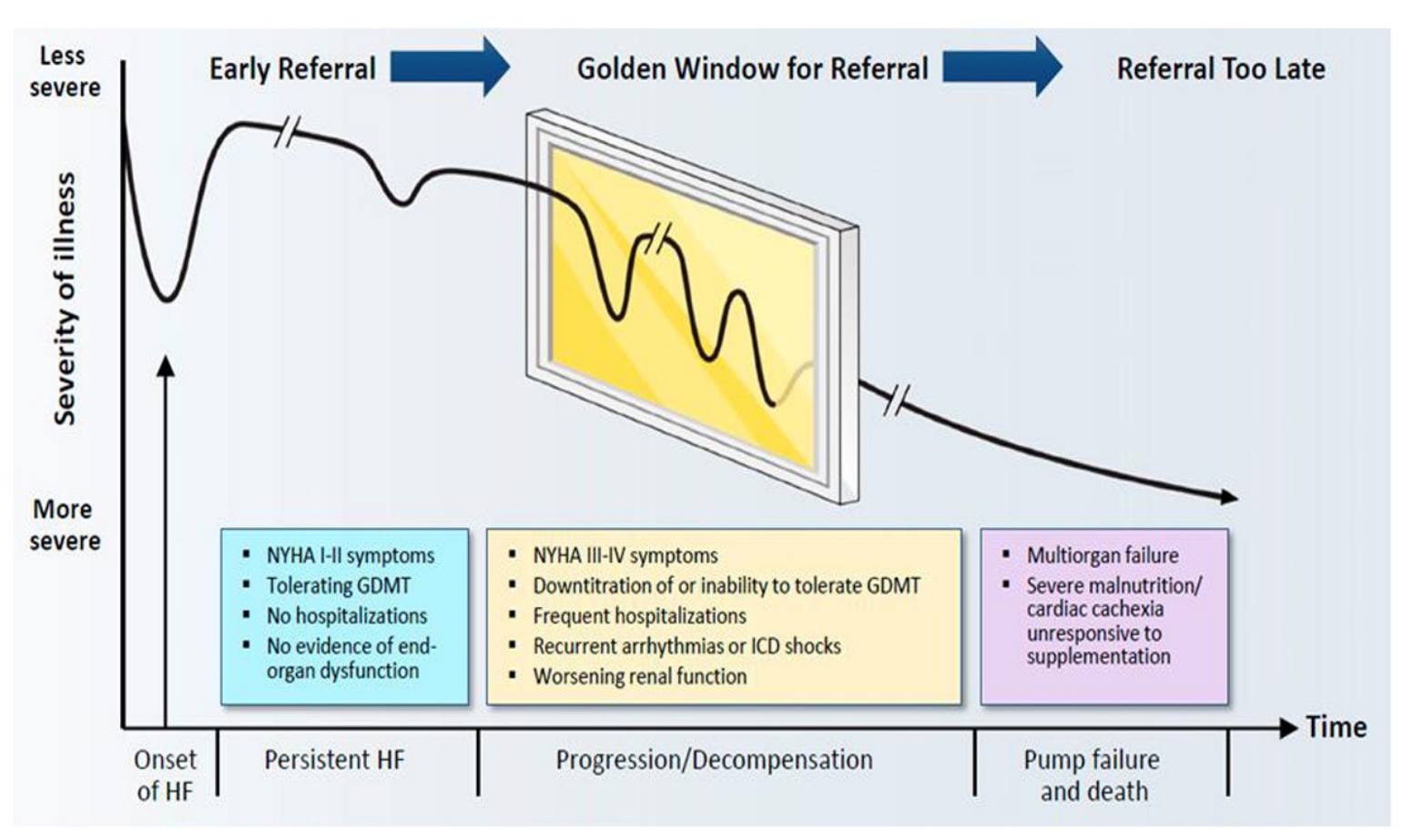


HTN, hypertension; CVD, cardiovascular disease; DM, diabetes mellitus, HF, heart failure; LVH, left ventricular hypertrophy; LV, left ventricle; RV right ventricle; GDMT, guideline-directed medical therapy.

Classification according to left ventricular ejection fraction



Golden window for referral for consideration of advanced HF therapies



HF management approach: Goals

- Improving survival and reducing morbidity
- Improving functional capacity and quality of life (QoL).
- Controlling modifiable Risk factors for HF:
- Physical conditioning by exercise training can improve exercise tolerance, health-related QoL, and HF hospitalization rates in patients with HF.
- A shared decision-making approach is recommended

TABLE 79-8 ■ NONPHARMACOLOGIC ASPECTS OF HEART FAILURE MANAGEMENT

Patient education
• Symptoms and signs of heart failure
• Detailed discussion of all medications
• Emphasize importance of adherence
• Specific information about when to contact nurse or physician for worsening symptoms
Daily weight chart
• Specific directions on when to contact nurse or physician for changes in weight
• Self-management of diuretic dosage based on daily weights in selected patients
• Involve family/significant other when feasible
Dietary consultation
• Individualized and consistent with needs/lifestyle
• Avoidance of excess sodium intake (> 2.3 g/d)
• Avoidance of excess fluid intake (> 2 L/d)
• Weight loss, if appropriate
• Low fat, low cholesterol, if appropriate
• Adequate caloric intake
• Emphasize adherence while allowing flexibility
Medication review
• Heart failure therapy in accordance with guidelines
• Eliminate unnecessary medications
• Simplify regimen whenever possible
• Consolidate dosing schedule
Social services
• Assess social support structure
• Evaluate emotional and financial needs
• Intervene proactively when feasible
Intensive follow-up
• Telephone and/or telemedicine contacts
• Home health visits as needed
• Outpatient clinic
Palliative care consultation in patients with advanced symptoms or frequent hospitalizations
Contact information
• Names and phone numbers of nurse and physician
• 24-hour availability

Management of HFrEF

- targeting the RAAS is a cornerstone of the medical management of HFrEF.
- inhibition of the RAAS with
  - angiotensin receptor-neprilysin inhibitor (ARNI)
  - Or angiotensin converting enzyme (ACE) inhibitors,
  - Or angiotensin receptor blockers (ARBs),
  - **ARNI is now the preferred RAAS inhibitor for HFrEF. (reimbursed by insurance)**
- mineralocorticoid receptor antagonists (MRA)
- in conjunction with evidence-based β-blockers (carvedilol, bisoprolol, metoprolol succinate).
- SGLT2 inhibitor
- Mechanisms of drug actions:
  - **ACE, ARB and ARNI**: inhibit conversion of angiotensin I to angiotensin II, which prevents vasoconstriction and induces relaxation of the vasculature-> decreasing cardiac workload.
  - **MRAs** slow HF progression, prevent/reverse cardiac remodeling, and prevent the development of arrhythmias by blocking aldosterone,

    β-blockers prevents the ventricular remodeling
  - SGLT2 inhibitor: (see following slide)

HFrEF/Systolic Heart failure
Reduced EF less or equal 40-50 %.

- **Chronic treatment**
- TARGETING THE RASS first: IT is the cornerstone of the management of HF
- ARNI is preferred approach above ace or arb (use ot be extremely expensive now it is covered by medicare)
  - Initial: Sacubitril 49 mg/valsartan 51 mg twice daily. Double the dose as tolerated after approximately 2 weeks to the target maintenance dose
  - **ACE inhibitors (ACEIs) or ARB if can tolerate ACEIs. But never both together or in addition with an ARNI**
    - Ace inhibitor for instance:
      - Enalapril: Initial: 2.5 mg twice daily; as tolerated, may increase dose (eg, double) every ≥2 weeks to a target dose of 10 to 20 mg twice dailyFirst-line therapy in individuals with systolic dysfunction. They prevent left ventricular remodeling. The significance of ACEIs and ARBs in those with diastolic heart failure is uncertain.
    - Use an ARB, such as valsartan (Diovan) 20–40 mg PO BID (max: 320 mg/day), if unable to tolerate an ACEI due to side effect, such as cough.
  - Monitor for cough (*excluding ARBs*), renal impairment, angioedema (*rare with ARBs*), and hyperpotassemia.
- **Beta blockers**
  - Example: Start carvedilol at 3.125 mg BID (max: 50 mg/day).
  - Monitor closely for bradycardia, hypotension, and fatigue
- **SGLT2 I:** two approved for HF: **Dapagliflozin (Farxiga)** 10 mg once daily **or Empagliflozin** (Jardiance) **Oral:** 10 mg once daily**Diuretics**
- **mineralocorticoid receptor antagonist (e.g., spironolactone [Aldactone]).**
  - Can be added at any time.
  - Example: Start spironolactone at 12.5–50 mg PO QD.
  - Monitor renal function and electrolytes closely.

ACE inhibitors, ARBs, and ARNIs

- with HFrEF, treatment with sacubitril-valsartan was superior to enalapril in reducing the risk of death and hospitalization due to HF.
- ACE is superior to ARB.
- In patients with chronic symptomatic HFrEF NYHA class II or III who tolerate an ACE inhibitor or ARB, replacement with an ARNI is recommended to further reduce morbidity and mortality.
- An ARNI should not be administered concomitantly or within 36 hours of the last dose of an ACE inhibitor, and it should also not be administered to patients with a history of angioedema.