Save Thais from Heart Diseases 2019

UPDATE HEART FAILURE MANAGEMENT

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Definition of HF

Heart failure is a clinical syndrome characterized by typical symptoms that may be accompanied by signs caused by a structural and/or functional cardiac abnormality, resulting in a reduced cardiac output and/ or elevated intracardiac pressures at rest or during stress.

กลุ่มอาการที่ประกอบด้วยอาการและอาการแสดงที่เกิดจากความผิดปกติของโครงสร้างหรือการทำงานของหัวใจ

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

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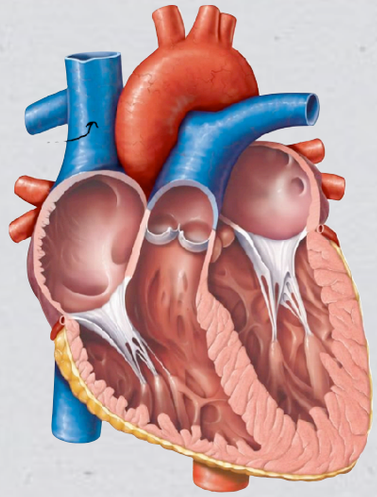
Diseased Myocardium

- Ischemic heart disease
- Toxic damage
- Immune-mediated & inflammatory damage
- Infiltration
- Metabolic derangements
- Genetic abnormalities



HF

Abnormal loading condition

- Hypertension
- Valve and myocardium structural defects
- Pericardial & endomyocardial pathologies
- High output states
- Volume overload

- Tachyarrhythmias
- Bradyarrhythmias

Arrhythmias

Definition of heart failure

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Type of HF		HFrEF	HFmrEF	HFpEF
Criteria	1	Symptoms ± Signs	Symptoms ± Signs	Symptoms ± Signs
	2	LVEF < 40%	LVEF 40-49%	LVEF ≥ 50%
	3	-	1. Elevated levels of natriuretic peptides 2. At least one additional criterion: a. relevant structural heart disease (LVH and/or LAE) b. diastolic dysfunction	1. Elevated levels of natriuretic peptides 2. At least one additional criterion: a. relevant structural heart disease (LVH and/or LAE) b. diastolic dysfunction

Signs may not be present in the early stages of HF (especially in HFpEF) and in patients treated with diuretics.

BNP > 35 pg/ml and/or NT-proBNP > 125 pg/mL.

ACCF/AHA Stages of HF

Stage A	At high risk for HF but without structural heart disease or symptoms of HF
Stage B	Structural heart disease but without signs or symptoms of HF
Stage C	Structural heart disease with prior or current symptoms of HF
Stage D	Refractory HF requiring specialized interventions

2013 ACCF/AHA Guideline for the Management of Heart Failure.*Circulation*. 2013;128:e240-e327.

Symptoms of HF

Typical

Breathlessness
Orthopnoea
Paroxysmal nocturnal dyspnoea
Reduced exercise tolerance
Fatigue, tiredness, increased time to recover after exercise
Ankle swelling

Less typical

Nocturnal cough
Wheezing
Bloated feeling
Loss of appetite
Confusion (especially in the elderly)
Depression
Palpitations
Dizziness
Syncope
Bendopnea[53]

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Signs of HF

More specific
Elevated jugular venous pressure
Hepatojugular reflux
Third heart sound (gallop rhythm)
Laterally displaced apical impulse

Less specific
Weight gain (>2 kg/week)
Weight loss (in advanced HF)
Tissue wasting (cachexia)
Cardiac murmur
Peripheral oedema (ankle, sacral, scrotal)
Pulmonary crepitations
Reduced air entry and dullness to percussion at lung bases (pleural effusion)
Tachycardia
Irregular pulse
Tachypnoea
Cheyne Stokes respiration
Hepatomegaly
Ascites
Cold extremities
Oliguria
Narrow pulse pressure

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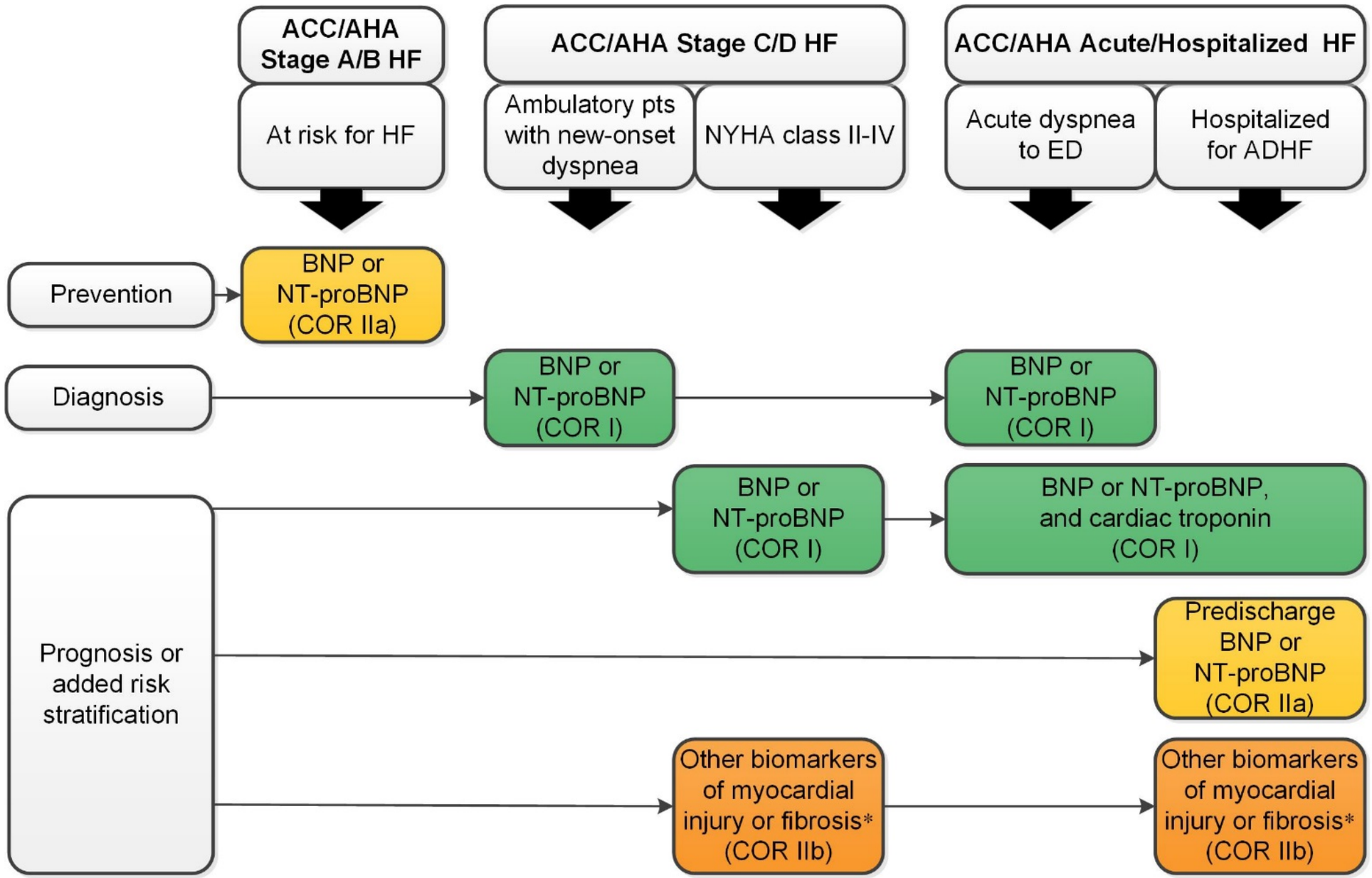
Biomarkers Indications for Use



*Other biomarkers of injury or fibrosis include soluble ST2 receptor, galectin-3, and high-sensitivity troponin.
ACC indicates American College of Cardiology; AHA, American Heart Association; ADHF, acute decompensated heart failure; BNP, B-type natriuretic peptide; COR, Class of Recommendation; ED, emergency department; HF, heart failure; NT-proBNP, N-terminal pro-B-type natriuretic peptide; NYHA, New York Heart Association; and pts, patients.

Diagnostic algorithm for a diagnosis of heart failure of non-acute onset

PATIENT WITH SUSPECTED HF[a]
(non-acute onset)

ASSESSMENT OF HF PROBABILITY

1. Clinical history:
History of CAD (MI, revascularization)
History of arterial hypertension
Exposition to cardiotoxic drug/radiation
Use of diuretics
Orthopnoea / paroxysmal nocturnal dyspnoea

2. Physical examination:
Rales
Bilateral ankle oedema
Heart murmur
Jugular venous dilatation
Laterally displaced/broadened apical beat

3. ECG:
Any abnormality

ASSESSMENT OF HF PROBABILITY

All absent

≥1 present

Assessment of natriuretic peptides not routinely done in clinical practice

NATRIURETIC PEPTIDES

- NT-proBNP ≥125 pg/mL
- BNP ≥35 pg/mL

No

HF unlikely: consider other diagnosis

Yes

ECHOCARDIOGRAPHY

Normal[b,c]

If HF confirmed (based on all available data): determine aetiology and start appropriate treatment

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Sodium restriction

- Association between sodium intake and hypertension, LV hypertrophy, and CVD
- AHA recommendation for restriction of sodium to 1,500 mg/d appears to be appropriate for most patients with stage A and B HF.
- Patients with stage C and D HF, currently there are insufficient data to endorse any specific level of sodium intake, clinicians should consider some degree (eg, <3 g/d) of sodium restriction in patients with stage C and D HF for symptom improvement.

Weight loss

- Obesity is defined as a BMI ≥30 kg/m²
- Morbidly obese patients may have worse outcomes
- Patients with HF who have a BMI between 30-35 kg/m² have lower mortality & hospitalization rates than those with a BMI in the normal range.
- Cardiac cachexia independently predicts a worse prognosis
- Symptomatic improvement after weight reduction in obese patients with HF

Activity, exercise prescription, and cardiac rehabilitation

Class I

- **Exercise training (or regular physical activity) is recommended as safe and effective for patients with HF who are able to participate to improve functional status.** ***(Level of Evidence: A)***

Class IIa

- **Cardiac rehabilitation can be useful in clinically stable patients with HF to improve functional capacity, exercise duration, HRQOL, and mortality.** ***(Level of Evidence: B)***

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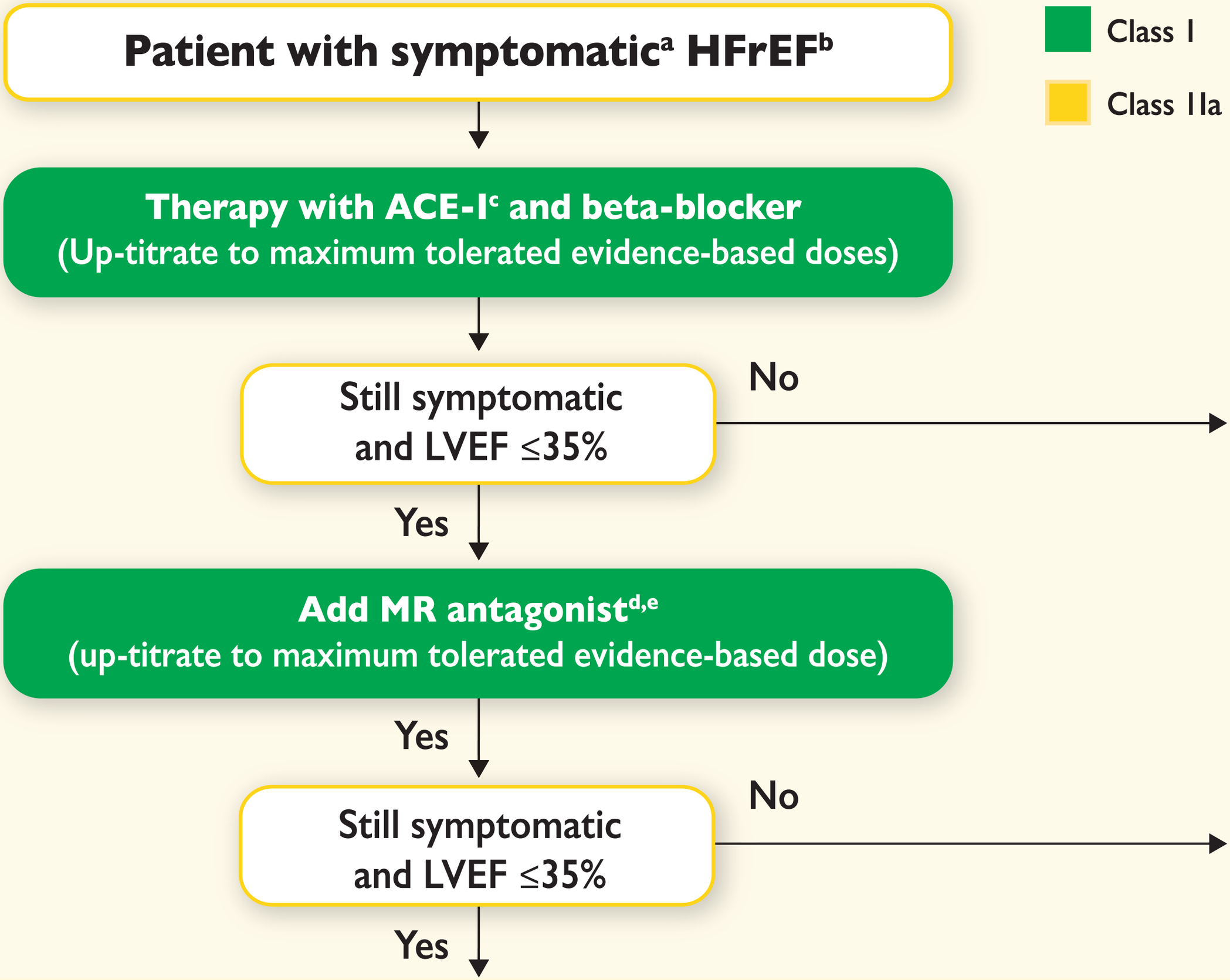

Still symptomatic and LVEF ≤35%

No

Yes

Able to tolerate ACEI (or ARB)[f,g]

Sinus rhythm, QRS duration ≥130 msec

Sinus rhythm,[h] HR ≥70 bpm

ARNI to replace ACE-I

Evaluate need for CRT[i,j]

Ivabradine

These above treatments may be combined if indicated

Resistant symptoms

Yes

No

Consider digoxin or H-ISDN or LVAD, or heart transplantation

No further action required
Consider reducing diuretic dose

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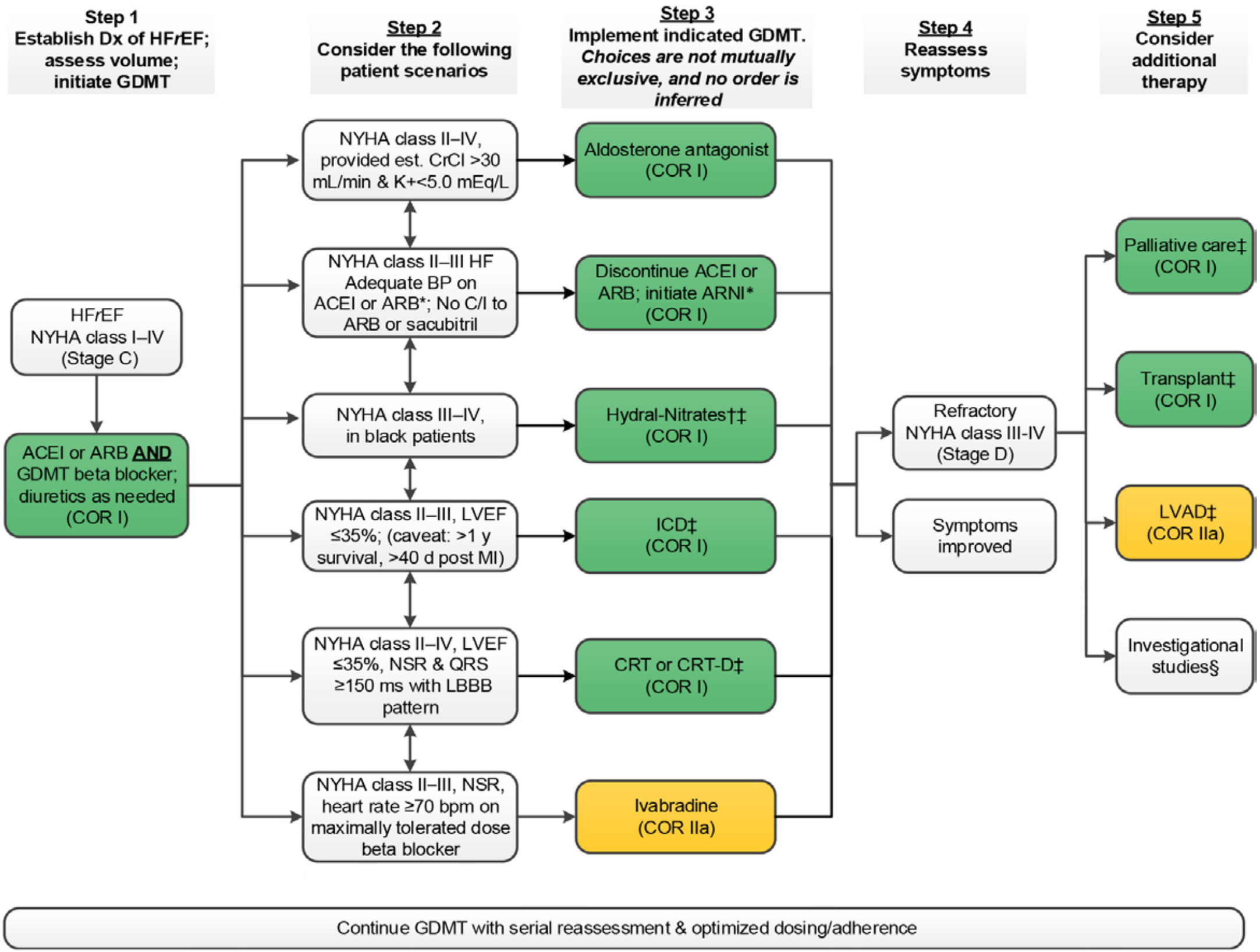
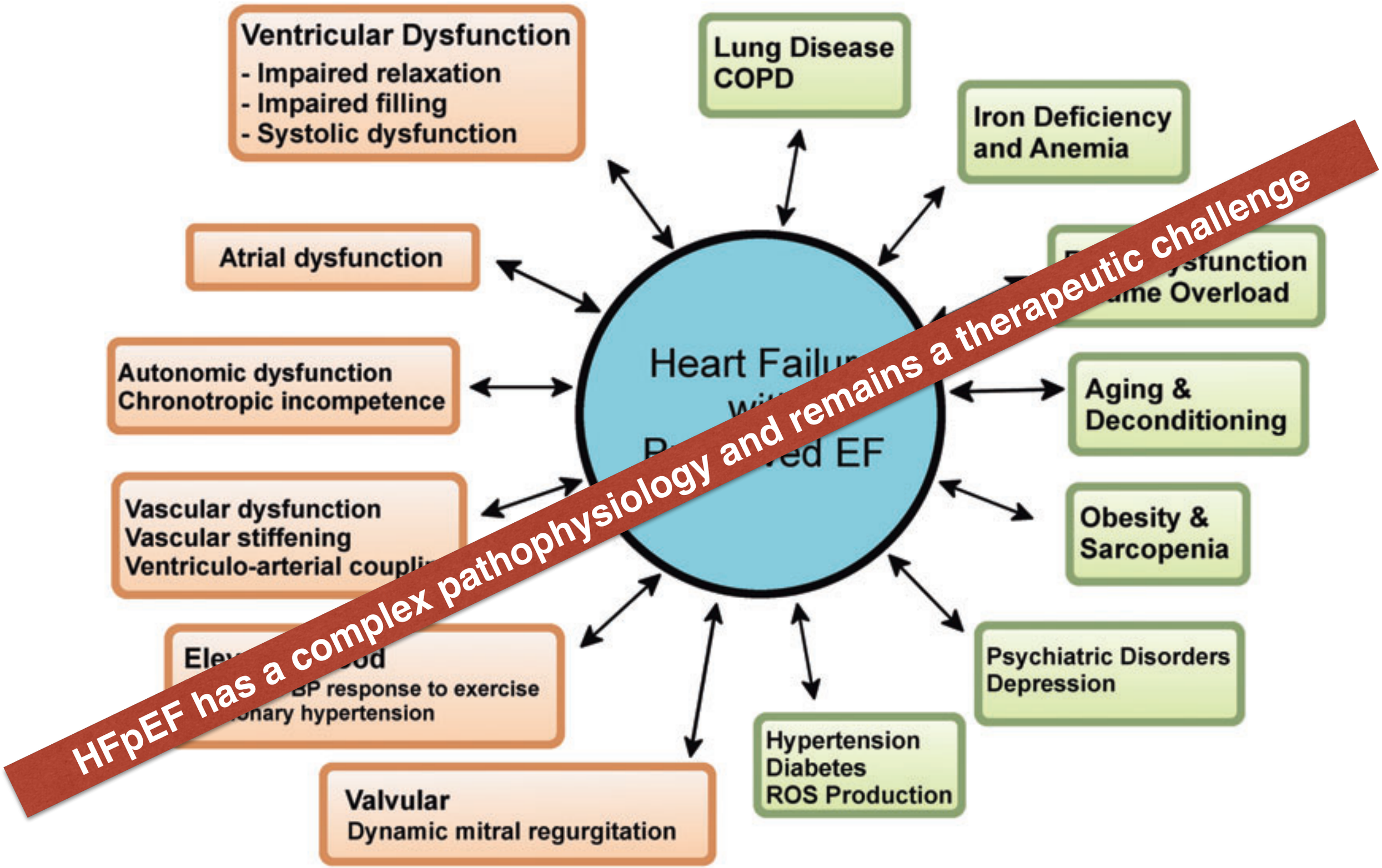
Treatment of HFrEF Stage C and D



2017 ACC/AHA/HFSA focused update of the 2013 ACCF/AHA guideline for the management of heart failure. Circulation. 2017;136:e137– e161.

Heterogeneity of the HFpEF syndrome



Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
IIa	**C**	Coronary revascularization is reasonable in patients with CAD in whom symptoms (angina) or demonstrable myocardial ischemia is judged to be having an adverse effect on symptomatic HF*p*EF despite GDMT.	2013 recommendation remains current.
IIa	**C**	Management of AF according to published clinical practice guidelines in patients with HF*p*EF is reasonable to improve symptomatic HF.	2013 recommendation remains current.
IIa	**C**	The use of beta-blocking agents, ACE inhibitors, and ARBs in patients with hypertension is reasonable to control blood pressure in patients with HF*p*EF.	2013 recommendation remains current.

Pharmacological Treatment for Stage C HF With Preserved EF

COR	LOE	Recommendations	Comment/ Rationale
I	B	Systolic and diastolic blood pressure should be controlled in patients with HF*p*EF in accordance with published clinical practice guidelines to prevent morbidity	2013 recommendation remains current.
I	C	Diuretics should be used for relief of symptoms due to volume overload in patients with HF*p*EF.	2013 recommendation remains current.

Heart failure and co-morbidities

- **Hypertension**
- **Ischemic heart disease**
- **Hyperlipidemia**
- **Diabetes**
- **Anemia**
- **Atrial fibrillation**
- **Chronic kidney disease**
- **OSA/Sleep disturbance**
- **COPD/Asthma**
- **Arthritis/Gout**
- **Obesity**
- **Depression**
- **Dementia**
- **Cancer**
- **Erectile dysfunction**
- **Prostatic obstruction**

European Journal of Heart Failure (2012) 14, 803-869

Anemia

COR	LOE	Recommendations	Comment/ Rationale
IIb	**B-R**	In patients with NYHA class II and III HF and iron deficiency (ferritin <100 ng/mL or 100 to 300 ng/mL if transferrin saturation is <20%), intravenous iron replacement might be reasonable to improve functional status and QoL.	NEW: New evidence consistent with therapeutic benefit.
III: No Benefit	**B-R**	In patients with HF and anemia, erythropoietin-stimulating agents should not be used to improve morbidity and mortality.	NEW: Current recommendation reflects new evidence demonstrating absence of therapeutic benefit.

Hypertension

Treating Hypertension in Stage C HF*r*EF

COR	LOE	Recommendations	Comment/ Rationale
I	C-EO	Patients with HF*r*EF and hypertension should be prescribed GDMT titrated to attain systolic blood pressure less than 130 mm Hg.	NEW: Recommendation has been adapted from recent clinical trial data but not specifically tested per se in a randomized trial of patients with HF.

Hypertension

Treating Hypertension in Stage C HF*p*EF

COR	LOE	Recommendations	Comment/ Rationale
I	C-LD	Patients with HF*p*EF and persistent hypertension after management of volume overload should be prescribed GDMT titrated to attain systolic blood pressure less than 130 mm Hg.	NEW: New target goal blood pressure based on updated interpretation of recent clinical trial data.

Sleep Disorders

COR	LOE	Recommendations	Comment/ Rationale
IIa	**C-LD**	In patients with NYHA class II–IV HF and suspicion of sleep disordered breathing or excessive daytime sleepiness, a formal sleep assessment is reasonable.	NEW: Recommendation reflects clinical necessity to distinguish obstructive versus central sleep apnea.
IIb	**B-R**	In patients with cardiovascular disease and obstructive sleep apnea, CPAP may be reasonable to improve sleep quality and daytime sleepiness.	NEW: New data demonstrate the limited scope of benefit expected from CPAP for obstructive sleep apnea.
III: Harm	**B-R**	In patients with NYHA class II–IV HF*r*EF and central sleep apnea, adaptive servo-ventilation causes harm.	NEW: New data demonstrate a signal of harm when adaptive servo-ventilation is used for central sleep apnea.

METFORMIN → Safe and effective

SGLT2 INHIBITOR → Reduction of CV mortality and HF hospitalizations

GLP-1 ANALOGUES → Reduction of CV mortality
neutral hazardous or beneficial for heart failure

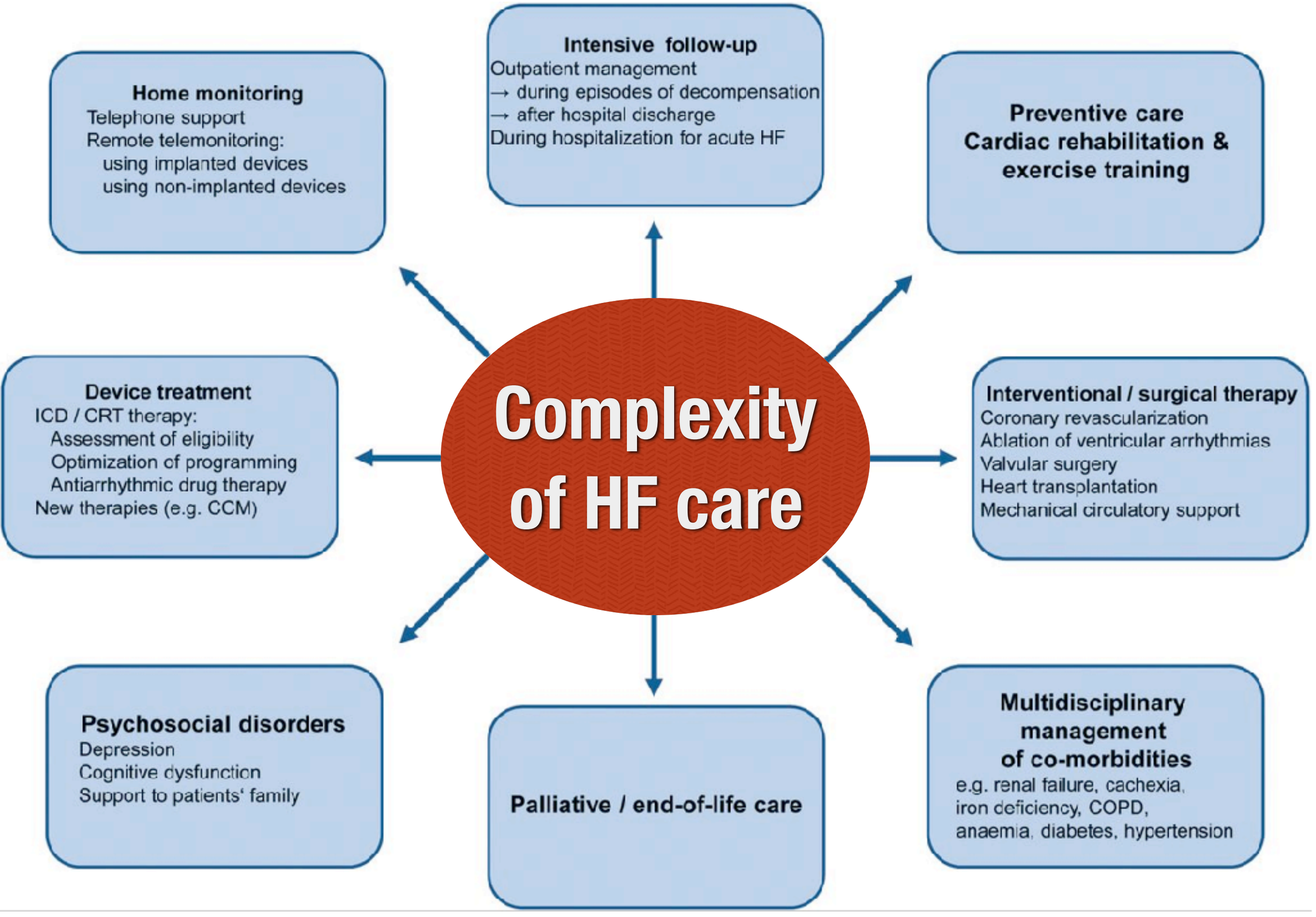
DPP-4 INHIBITORS → Do not reduce of CV mortality, associated with increased risk of HF

SULFONYLUREA

INSULIN

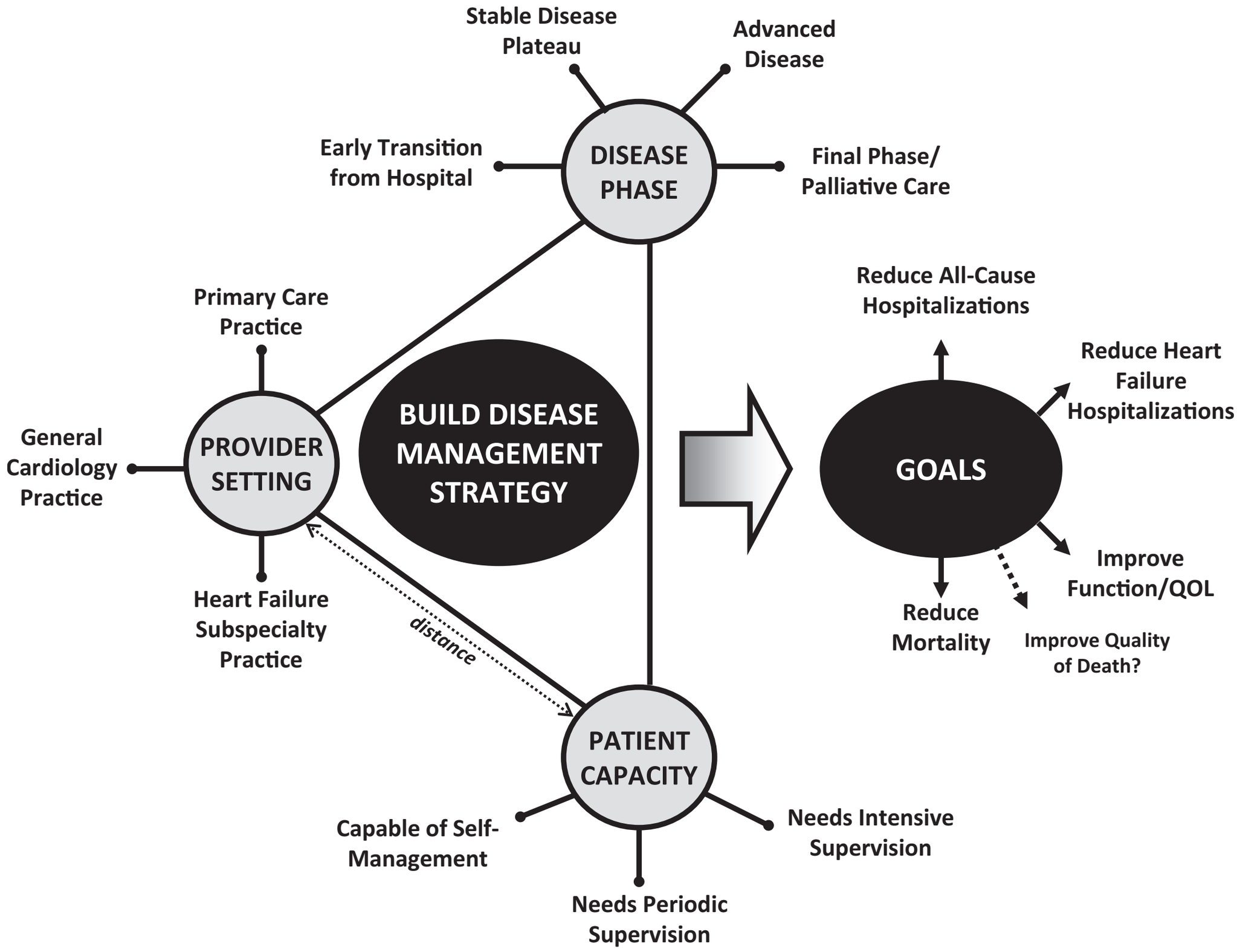
→ Increased risk worsening HF (use with caution)

THIAZOLIDINEDIONE → Increased risk worsening HF & hospitalization (not recommended in patients with HF)



European Heart Journal (2013) 34, 416–418

Variables in design of disease management strategies.



Conception of how the optimal strategy for heart failure management could vary depending on the care setting, patient capacity for self- management phase or severity of disease, and measured outcomes. QOL indicates quality of life.

Desai AS. Home monitoring heart failure care does not improve patient outcomes: looking beyond telephone-based disease management. *Circulation*. 2012;125:828 – 836.

HF clinic involving specialty care & a multidisciplinary team

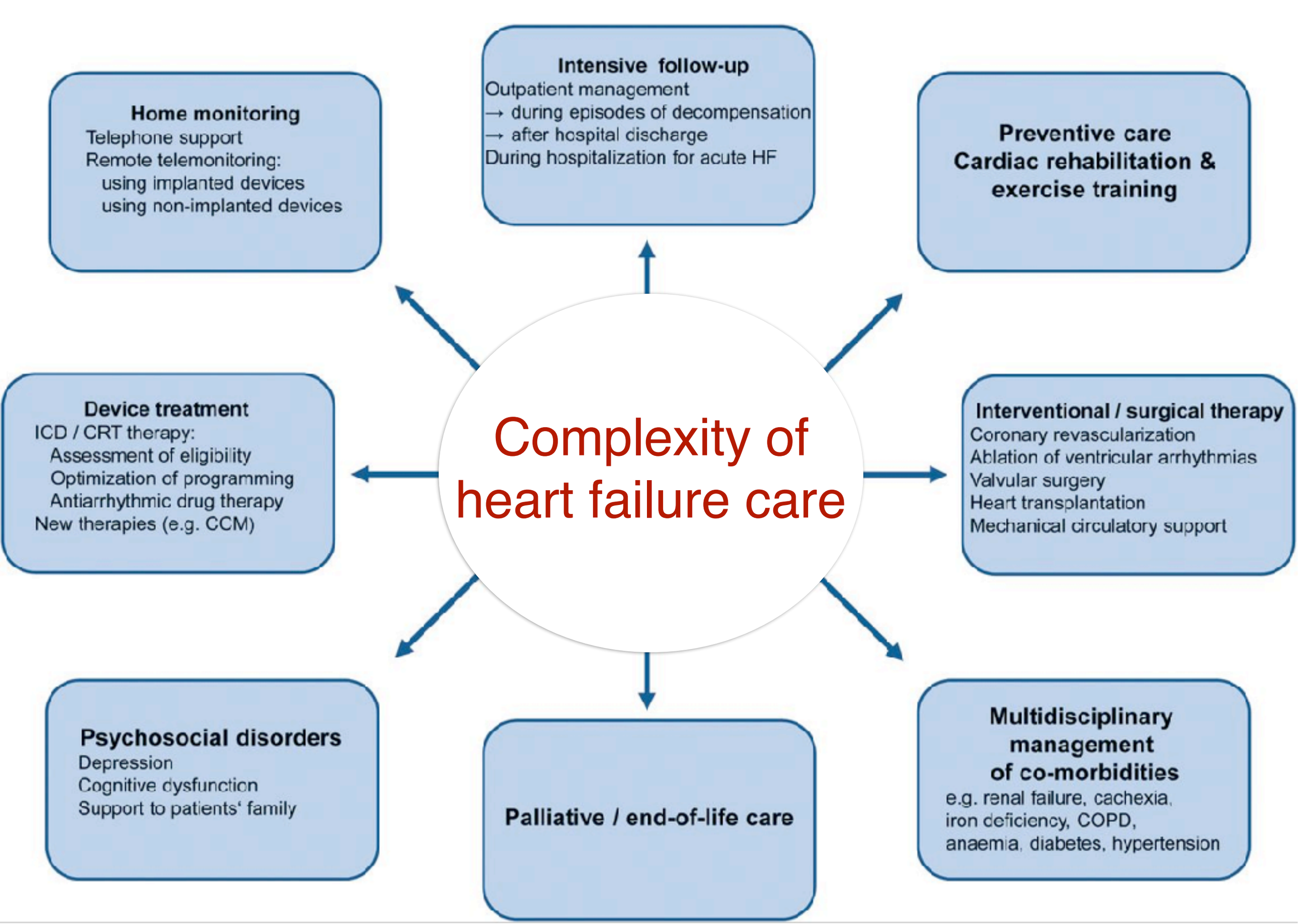
The goals of the HF clinic

- Intensive patient education
- Optimization of drug therapy & evidence-based guideline-recommended therapy
- Specialized follow-up with early recognition of problems
- Identification and management of patients' comorbidities

Fonarow GC. Impact of a comprehensive heart failure management program on hospital readmission and functional status of patients with advanced heart failure. *J Am Coll Cardiol*. 1997;30:725–732.

The European Society of Cardiology (ESC) guidelines recommend the key characteristics of a heart failure DMP as

1. Using a team approach
2. Providing in-hospital and out-hospital care
3. Including discharge planning
4. Using education and counselling strategies, which focus on promoting self-care and teaching behavioural strategies
5. Optimizing medical therapy
6. Prescribing flexible diuretic regimen
7. Directing close attentions to clinical deterioration
8. Providing vigilant follow-up
9. Enhancing access to health care



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Self-care regimen for HF patient

Patient need to understand how to

- ☑ Monitor their symptoms
- ☑ Weight fluctuations
- ☑ Restrict there sodium intake
- ☑ Take their medications as prescribed
- ☑ Stay physically active

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