Clinical Practice Guidelines for Heart Failure with Algorithms  

**Purpose:**

Scott & White Health Plan’s (SWHP) Heart Failure Guidelines are designed to improve the management of cardiovascular disease through the use of high quality, personalized, comprehensive health care and to minimize any further progression of the disease state.

**Scope:**

The assessment, management, treatment, and evaluation of members with heart failure

**Guideline:**


**History and Physical Examination.** (Yance et al., 2013, p. e161)

**Class 1.**

1. A thorough history and physical examination should be obtained/performed in patients presenting with heart failure (HF) to identify cardiac and non-cardiac disorders or behaviors that might cause or accelerate the development or progression of HF. (Level of Evidence: C)

2. In patients with idiopathic dilated cardiomyopathy (DCM), a 3-generational family history should be obtained to aid in establishing the diagnosis of familial DCM. (Level of Evidence: C)

3. Volume status and vital signs should be assessed at each patient encounter. This includes serial assessment of weight, as well as estimates of jugular venous pressure and the presence of peripheral edema or orthopnea. (Level of Evidence: B)

**Diagnostic Testing Recommendations.** (Yance et al., 2013, p. e163)

**Class 1.**

1. Initial laboratory evaluation of patients presenting with HF should include complete blood count, urinalysis, serum electrolytes (including calcium and magnesium), blood urea nitrogen, serum creatinine, glucose, fasting lipid profile, liver function tests, and thyroid-stimulating hormone. (Level of Evidence: C)

2. Serial monitoring, when indicated, should include serum electrolytes and renal function. (Level of Evidence: C)

3. A 12-lead ECG should be performed initially on all patients presenting with HF. (Level of Evidence: C)

**Class IIa**

1. Screening for hemochromatosis or HIV is reasonable in selected patients who present with HF. (Level of Evidence: C)

2. Diagnostic tests for rheumatologic diseases, amyloidosis, or pheochromocytoma are reasonable in patients presenting with HF in whom there is a clinical suspicion of these diseases. (Level of Evidence: C)
Recommendations for Noninvasive Cardiac Imaging. (Yance et al., 2013, p. e165)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>COR</th>
<th>LOE</th>
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</thead>
<tbody>
<tr>
<td>Patients with suspected, acute, or new-onset HF should undergo a chest x-ray</td>
<td>I</td>
<td>C</td>
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<tr>
<td>A 2-dimensional echocardiogram with Doppler should be performed for initial evaluation of HF</td>
<td>I</td>
<td>C</td>
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<tr>
<td>Repeat measurement of EF is useful in patients with HF who have had a significant change in clinical status or received treatment that might affect cardiac function or for consideration of devices therapy</td>
<td>Ila</td>
<td>C</td>
</tr>
<tr>
<td>Noninvasive imaging to detect myocardial ischemia and viability is reasonable in HF and CAD</td>
<td>Ilb</td>
<td>(281–285)</td>
</tr>
<tr>
<td>VIability assessment is reasonable before revascularization in HF patients with CAD</td>
<td>Ilb</td>
<td>C</td>
</tr>
<tr>
<td>Radiouclide ventriculography or MRI can be used to assess LV EF and volume</td>
<td>Ilb</td>
<td>C</td>
</tr>
<tr>
<td>MRI is reasonable when assessing myocardial fibrosis or scar</td>
<td>Ilb</td>
<td>(286–288)</td>
</tr>
<tr>
<td>Routine repeated measurement of LV function assessment should not be performed</td>
<td>III: No Benefit</td>
<td>B (289,290)</td>
</tr>
</tbody>
</table>

CAD indicates coronary artery disease; COR, Class of Recommendation; EF, ejection fraction; HF, heart failure; LOE, Level of Evidence; LV, left ventricle; LVEF, left ventricular ejection fraction; and MRI, magnetic resonance imaging.

Recommendations for Invasive Evaluation. (Yance et al., 2013, p. e167)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>COR</th>
<th>LOE</th>
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</thead>
<tbody>
<tr>
<td>Monitoring with a pulmonary artery catheter should be performed in patients with respiratory distress or impaired systemic perfusion when clinical assessment is inadequate</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>Invasive hemodynamic monitoring can be useful for carefully selected patients with acute HF with persistent symptoms and/or when hemodynamics are uncertain</td>
<td>Ila</td>
<td>C</td>
</tr>
<tr>
<td>When ischemia may be contributing to HF, coronary arteriography is reasonable</td>
<td>Ila</td>
<td>C</td>
</tr>
<tr>
<td>Endomyocardial biopsy can be useful in patients with HF when a specific diagnosis is suspected that would influence therapy</td>
<td>Ila</td>
<td>C</td>
</tr>
<tr>
<td>Routine use of invasive hemodynamic monitoring is not recommended in normotensive patients with acute HF</td>
<td>III: No Benefit</td>
<td>B (305)</td>
</tr>
<tr>
<td>Endomyocardial biopsy should not be performed in the routine evaluation of HF</td>
<td>III: Harm</td>
<td>C</td>
</tr>
</tbody>
</table>

COR indicates Class of Recommendation; HF, heart failure; and LOE, Level of Evidence.

Classification of Heart Failure.

**New York Heart Association Functional Classification (NYHA).** Depending upon the degree to which symptoms of angina pain and shortness limit physical activity, the extent of the patient’s HF is classified into one of the following 4 NYHA Classes:

- **Class I.** Patient does not complain of any limitations with ordinary physical activities.
- **Class II.** Patient reports tiredness or shortness of breath with everyday activities such as walking or bending over but is comfortable at rest.
- **Class III.** Patient reports definite limitations such as undue fatigue with almost any activity. Patient may complain of angina, dyspnea, fatigue, &/or palpitations.
- **Class IV.** Patient reports an inability to do virtually any physical activity without significant discomfort. There may also significant signs/symptoms of cardiac problems while the patient is at rest.
Classification of Patients Presenting with Acutely Decompensated Heart Failure.

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<table>
<thead>
<tr>
<th>Congestion at rest?</th>
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<tr>
<td>(e.g. orthopnea, elevated jugular venous pressure, pulmonary rales, S3 gallop, edema)</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>
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“Classification of patients presenting with acutely decompensated heart failure.” (Yance et al., 2013, p. e194)

Recommendations for the Treatment of Heart Failure.

**Stage C HFrEF: evidence-based, guideline-directed medical therapy**

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HFrEF Stage C  
NYHA Class I – IV  
Treatment:
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Class I, LOE A  
ACEI or ARB AND  
Beta Blocker  

For all volume overload, NYHA class II-IV patients:

Add  
Class I, LOE C  
Loop Diuretics

For persistently symptomatic African Americans, NYHA class II-IV:

Add  
Class I, LOE A  
Hydral-Nitrates

For NYHA class II-IV patients, provided estimated creatinine >30 ml/min and K+ <5.0 mEq/L:

Add  
Class I, LOE A  
Aldosterone Antagonist
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“Stage C HFrEF: evidence-based, guideline-directed medical therapy. ACEi indicates angiotensin-converting enzyme inhibitor; ARB, angiotensin-receptor blocker; HFrEF, heart failure with reduced ejection fraction; Hydral-Nitrates, hydralazine and isorbide dinitrate; LOE, Level of Evidence; and NYHA, New York Heart Association.” (Yance, MD, MSc, FACC, FAHA et al., 2013, p. e173)
Indications for CRT therapy algorithm.

Patient with cardiomyopathy on GDMT for ≥3 mo or on GDMT and ≥40 d after MI, or with implantation of pacing or defibrillation device for special indications

- LVEF ≤35%
- Evaluate general health status
- Comorbidities and/or frailty limit survival with good functional capacity to <1 y
- Continue GDMT without implanted device

Acceptable noncardiac health
- Evaluate NYHA clinical status

**NYHA class I**
- LVEF ≤30%
- QRS ≥150 ms
- LBBB pattern
- Ischemic cardiomyopathy
- QRS ≤150 ms
- Non-LBBB pattern

**NYHA class II**
- LVEF ≤35%
- QRS ≥150 ms
- LBBB pattern
- Sinus rhythm
- LVEF ≤35%
- QRS 120-149 ms
- LBBB pattern
- Sinus rhythm
- LVEF ≤35%
- QRS ≤150 ms
- Non-LBBB pattern
- Sinus rhythm
- QRS ≤150 ms
- Non-LBBB pattern

**NYHA class III & Ambulatory class IV**
- LVEF ≤35%
- QRS ≥150 ms
- LBBB pattern
- Sinus rhythm
- LVEF ≤35%
- QRS 120-149 ms
- LBBB pattern
- Sinus rhythm
- LVEF ≤35%
- QRS ≤150 ms
- Non-LBBB pattern
- Sinus rhythm
- LVEF ≤35%
- QRS 120-149 ms
- Non-LBBB pattern
- Sinus rhythm

**Special CRT Indications**
- Anticipated to require frequent ventricular pacing (>40%)
- Atrial fibrillation, if ventricular pacing is required and rate control will result in near 100% ventricular pacing with CRT

Colors correspond to the class of recommendations in the ACCF/AHA Table 1.

Benefit for NYHA class I and II patients has only been shown in CRT-D trials, and while patients may not experience immediate symptomatic benefit, late remodeling may be avoided along with long-term HF consequences. There are no trials that support CRT-pacing (without ICD) in NYHA class I and II patients. Thus, it is anticipated these patients would receive CRT-D unless clinical reasons or personal wishes make CRT-pacing more appropriate. In patients who are NYHA class III and ambulatory class IV, CRT-D may be chosen but clinical reasons and personal wishes may make CRT-pacing appropriate to improve symptoms and quality of life when an ICD is not expected to produce meaningful benefit in survival.

“Indications for CRT therapy algorithm. CRT indicates cardiac resynchronization therapy; CRT-D, cardiac resynchronization therapy-defibrillator; GDMT, guideline-directed medical therapy; HF, heart failure; ICD, implantable cardioverter-defibrillator; LBB, left bundle-branch block; LVEF, left ventricular ejection fraction; MI, myocardial infarction; and NYHA, New York Heart Association.” (Yance, et al., 2013, p. e187)
“Stages in the development of HF and recommended therapy by stage. ACEI indicates angiotensin-converting enzyme inhibitor; AF, atrial fibrillation; ARB, angiotensin-receptor blocker; CAD, coronary artery disease; CRT, cardiac resynchronization therapy; DM, diabetes mellitus; EF ejection fraction; GDMT, guideline-directed medical therapy; HT, heart failure; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; HRQOL, health-related quality of life; HTN, hypertension; ICD, implantable cardioverter-defibrillator; LV, left ventricular; LVH, left ventricular hypertrophy; MCS, mechanical circulatory support; and ME, myocardial infarction.” (Yance et al., 2013, p. e193)
Pharmacological management of patients with newly discovered AF.

Pharmacological management of patients with recurrent paroxysmal AF.

“Pharmacological management of patients with newly discovered AF. AF indicates atrial fibrillation; and HF, heart failure.” (Yance et al., 2013, p. e202)

“Pharmacological management of patients with recurrent paroxysmal AF. AF indicates atrial fibrillation.” (Yance et al., 2013, p. e202)
Yance, MD, MSc, FACC, FAHA, C. W., Jessup, MD, FACC, FAHA, M., Bozkurt, MD, PhD, FACC, FAHA, B., Butler, MBBS, FACC, FAHA, J., Casey, MD, MPH, MBA, FACP, FAHA, D. E., Drazner, MD, MSc, FACC, FAHA, M. H., ... Wilkoff, MD, FACC, FHRS, B. L. (2013). 2013 ACCF/AHA Guideline for the Management of Heart Failure; A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Journal of the American College of Cardiology, 62(16), e147-e239. doi:10.1016/j.jacc.2013.05.019


Developed by: Physicians from the Department of Cardiology.

Reviewed and Approved by: Members of the Quality Improvement Sub-committee.