

## Clinical Practice Guideline: Heart Failure

Release Date: August 2016

Next Review Date: 2017

This Clinical Practice Guideline (CPG) was developed by the Quality workgroup of St. Luke's Health Partners Clinical Integration Committee based on feedback and review from Idaho primary and specialty care providers and subject matter experts. It summarizes current medical literature, and where clear evidence is lacking, provides expert advice on the diagnosis and treatment of heart failure. St. Luke's Health Partners recognizes that the responsibility and decision making about care will be made by the healthcare provider in collaboration with his or her patient, taking into account the patient's entire clinical situation, needs, and goals. Practice variation from these guidelines may be appropriate when clinical circumstances arise or when individual patient characteristics indicate that such changes are in the best interest of the patient.

### Recommendation Summary:

St. Luke's Health Partners supports the current recommendations from the 2013 American College of Cardiology (ACC)/ American Heart Association (AHA) guideline for the treatment and care of patients with Congestive Heart Failure and the 2016 ACC/AHA/HFSA (Heart Failure Society of America) Focused update on new pharmacological therapy for heart failure: An update of the 2013 ACCF/AHA Guideline for the management of heart failure.

### Sources:

1. Yancy CW, et al. (2016). 2016 ACC/AHA/HFSA Focused update on new pharmacological therapy for heart failure: An update of the 2013 ACCF/AHA guideline for the management of heart failure. <http://circ.ahajournals.org/content/circulationaha/early/2016/05/18/CIR.0000000000000435.full.pdf>
2. 2013 American College of Cardiology (ACC) and American Heart Association (AHA) guidelines for the Management of Heart Failure. <https://circ.ahajournals.org/content/128/16/e240.extract>
3. Heart Failure Society of America  
[Journal of Cardiac Failure 2010;16:475-539](#)  
[Journal of Cardiac Failure 2010;16:e1-e194](#)
3. 2013 ACO Quality Performance Standards Narrative Measurement Specifications. <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/ACO-NarrativeMeasures-Specs.pdf>

# Medical Management

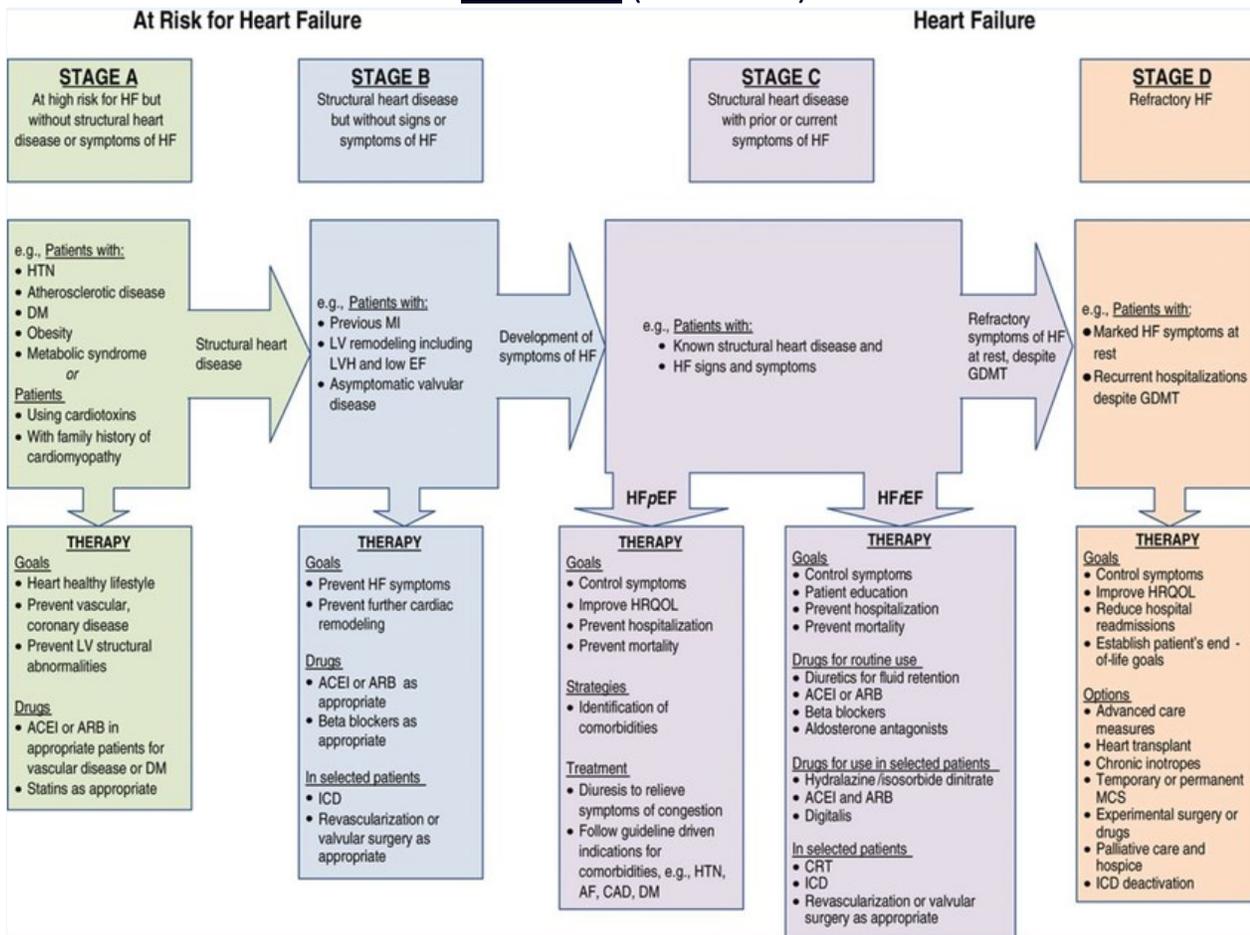
## Diagram A

### Stages in the Development of HF and Recommended Therapy by Stage

ACCF/AHA Stages of HF	NYHA Functional Classification
A. At high risk for HF but without structural heart disease or symptoms of HF	I. Patients with cardiac disease but without resulting limitations of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain.
B. Structural heart disease but without signs or symptoms of HF	II. Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea, or angina pain.
C. Structural heart disease with prior or current symptoms of HF	III. Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity causes fatigue, palpitation, dyspnea, or angina pain.
D. Refractory HF requiring specialized interventions	IV. Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. If any physical activity is undertaken discomfort is increased.

ACCF indicates American College of Cardiology Foundation, AHA, American Heart Association, HF, heart failure, and NYHA, New York Heart Association.

## Diagram A (continued)



- HFpEF (≥50%) Left Ventricular Ejection Fraction = heart failure with reduced ejection fraction
- HFrEF(40%) Left Ventricular Ejection Fraction = heart failure with preserved ejection fraction

### Initial Testing

- Echocardiogram – to assess ventricular function (Systolic and Diastolic), size, wall thickness, wall motion, and valve function
- Lab testing – CBC, CMP, TSH, and B-type Natriuretic Peptide (BNP)
- 12 lead ECG – Left Bundle Branch Block (LBBB), evaluate whether evidence of prior MI
- Chest X-ray – To assess heart size, pulmonary edema and to detect alternative cardiac, pulmonary or other diseases

### Diagnostic Work-up of Heart Failure

- Assess conditions
  - Hypertension
  - Diabetes
  - Obesity
  - Coronary artery disease
  - Peripheral vascular disease or Cerebral vascular disease
  - Valvular heart disease
- Obtain History
  - A thorough history and physical examination should be obtained/performed in patients presenting with Heart Failure
  - Determine functional capacity using New York Heart Association (NYHA) classification system (see Diagram A)
  - Determine the Stage of Heart Failure using the ACCF/AHA classification system (see Diagram A)
- Consider Advance Directives / Physician Orders for Scope of Treatment (POST) Form / Medical Durable Power of Attorney as needed
- Test Findings
  - Sustained arrhythmias
  - Abnormal ECG
  - Cardiomegaly on chest X-ray
  - Perform physical exam

## Optimize Medical/Pharmacological Therapy (Diagrams A, B, C, and D)

- Medications should be considered based on patient symptoms and specific circumstances. Diagrams provided as resources.
- Diuretics in patients with current or recent fluid retention (NYHA Class II-V)
- Beta Blockers (Bisoprolol, Carvedilol or Metoprolol Succinate extended release) (NYHA Class II-IV)
- Start at low doses and monitor for adverse effects
  - Ideally should be started with a *diuretic* in patients with fluid retention
- ACE Inhibitor or Angiotensin Receptor Blocker (ARB) if ACE intolerant
- Aldosterone Antagonists for mod/sever HF (NYHA Class III-IV)
  - EF <35%, or EF <40% (if recent MI with concomitant DM and/or symptoms of HF)
  - Careful monitoring of Renal function and Potassium
    - \* Baseline, 1 week, 1 month then every 3 months
    - \* Contraindicated if:
      - Creatinine >2.0 (in women) or >2.5 (in men) ,GFR <30ml/min, Potassium >5.0
- Continue up-titration of the aforementioned medications to target dose (see Diagram C)
- Digoxin can be beneficial in patients with HFrEF, unless contraindicated, to decrease hospitalizations for HF.
  - Definitions
    - \* HFpEF (≥50%) Left Ventricular Ejection Fraction
    - \* HFrEF (<40%) Left Ventricular Ejection Fraction
- Provide tobacco cessation information or refer to program as appropriate

## Follow-up Visits

- Volume status and vital signs should be monitored at every patient encounter.
  - Weight, peripheral edema and orthopnea
- Repeat 2-D echo only if there has been a significant change in clinical status, a recent clinical event or following a treatment that would be expected to have a significant effect on cardiac function.
- Lipid profile, CBC, BMP at least annually
- Influenza and pneumococcal vaccines as recommended

## Diagram B

### Pharmacological Therapy

	Diuretic	Beta Blocker	Ace Inhibitor (ARB if intolerant)	Aldosterone Antagonist
II (Mild)	X	X	X	
III (Moderate)	X	X	X	X
IV (Severe)	X	X	X	X

- The combination of Hydralazine and Isosorbide Dinitrate is recommended to reduce morbidity and mortality for patients self-described as African Americans with NYHA class III–IV heart failure with reduced ejection fraction receiving optimal therapy with ACE inhibitors and beta blockers, unless contraindicated
- A combination of Hydralazine and Isosorbide Dinitrate can be useful to reduce morbidity or mortality in patients with current or prior symptomatic heart failure with reduced ejection fraction who cannot be given an ACE inhibitor or ARB because of drug intolerance, hypotension, or renal insufficiency, unless contraindicated
- Avoid drugs known to adversely affect HF such as NSAIDs, Thiazolidinedione (Avandia and Actos), and Nondihydropyridine calcium channel blockers like Cardizem and Verapamil (Amlodipine is not Contraindication)

## Devices

- ICD (Implantable Cardioverter Defibrillator) recommended for primary prevention of Sudden Cardiac Death (SCD) to reduce total mortality in selected patients with nonischemic DCM or ischemic heart disease:
  - At least 40 days post MI with LVEF of 35% or less and NYHA class II or III symptoms
  - At least 40 days post MI with LVEF of 30% or less, and NYHA class I symptoms
- CRT (Cardiac Resynchronization Therapy) is indicated for selected patients who have LVEF of 35% or less, sinus rhythm, left bundle-branch block (LBBB) with a QRS duration of 150 ms or greater, and NYHA class II, III, or ambulatory IV symptoms.

## HF Stage D Management (see Diagram A)

- Referral for Advanced or Surgical Therapy with Cardiology Management
  - Mitral repair/replacement /mitral clip
  - Continuous inotropes
  - Left Ventricular Assist Device – permanent or destination
  - Transplant
- Palliative Care Management
  - Palliative Care Consult
  - Hospice planning
  - Outpatient plan for symptom management
  - Discuss inactivation of patient's Implantable Cardioverter Defibrillator (ICD) (if applicable)

## Diagram C

### Pharmacological Therapy

#### ACE Inhibitors

Contraindicated in pregnancy, common side effects include dry cough, hyperkalemia, angioedema, and rash.

Generic Name	Initial Daily Dose	Target Dose
Captopril	6.25 mg tid	50 mg tid
Enalapril	2.5 mg bid	10 mg bid
Fosinopril	5-10 mg daily	80 mg daily
Lisinopril	2.5-5 mg daily	20 mg daily
Quinapril	5 mg bid	80 mg daily
Ramipril	1.25 – mg daily	10 mg daily
Trandolapril	1 mg daily	4 mg daily

#### Angiotensin Receptor Blockers (ARBs)

Similar side effect profile to ACE inhibitors; contraindicated in pregnancy, but with lower incidence of cough, lower incidence of angioedema, higher incidence of hypotension, and similar rates of hyperkalemia.

Generic Name	Initial Daily Dose	Target Dose
Candesartan	4-8 mg daily	32 mg daily
Losartan	12.5-25 mg daily	150 mg daily
Valsartan	40 mg bid	160 mg bid

#### Beta Blockers

Common side effects include bradycardia and hypotension. Exercise caution and titrate appropriately in newly diagnosed, previously untreated patients, and those who have had recent exacerbations.

Generic Name	Initial Daily Dose	Target Dose
Bisoprolol	1.25 mg daily	10 mg daily
Carvedilol	3.125 mg bid	25 mg bid 50 mg bid for patients >85 kg
Metoprolol Succinate CR/XL	12.5-25 mg daily	200 mg daily

#### Aldosterone Antagonists

Common side effects include hyperkalemia, especially in renal dysfunction. Endocrine side effects such as gynecomastia, breast pain and decreased libido are more common with spironolactone than with eplerenone.

Generic Name	Initial Daily Dose	Target Dose
Spironolactone	12.5-25 mg daily	25 mg daily
Eplerenone	25 mg daily	50 mg daily

#### Vasodilators

Side effects are more common in this group of medications, occurring in up to 48% of patients in clinical trials. Common side effects of hydralazine include headache, dizziness, and hypotension. Nitrates share similar side effects and may also be associated with nasal congestion, nausea, vomiting and tachycardia. Slow titration of these medications is recommended to reduce side effects and enhance tolerance.

Generic Name	Initial Daily Dose	Target Dose
Hydralazine	25 mg q 8 hrs	75 mg qid
Isosorbide Dinitrate	20 mg bid	40 mg bid

## Diagram D

### Drugs associated with increased risk of adverse effects in patients with heart failure

Drug/drug class	Adverse effect(s)
<b>Anti-inflammatory medications</b>	
Glucocorticoids	Sodium retention (particularly with fludrocortisone, hydrocortisone)
NSAIDs <sup>¶</sup>	Sodium retention and peripheral vasoconstriction; blunted response to diuretics and angiotensin converting enzyme inhibitors
<b>Cardiovascular medications</b>	
Class I antiarrhythmic agents <sup>*¶</sup>	Negative inotropy; proarrhythmia; increased mortality with IA and IC agents in post-MI trials
Class III antiarrhythmic agents (included sotalol and ibutalide) <sup>*¶</sup>	Proarrhythmia
Calcium channel blockers (other than amlodipine or felodipine) <sup>*¶</sup>	Negative inotropy; neurohumoral activation
Minoxidil <sup>*¶</sup>	Sodium retention; neurohumoral activation
<b>Diabetes medications</b>	
Metformin	Lactic acidosis
Thiazolidinediones <sup>¶</sup>	Sodium retention
<b>Phosphodiesterase inhibitors</b>	
Anagrelide	Palpitations; tachycardia; sodium retention; induction or exacerbation of HF
Cilostazol	Ventricular tachyarrhythmias
<b>Neurologic and psychiatric medications</b>	
Amphetamines <sup>*¶</sup>	Sympathetic agonist activity; hypertension; tachycardia; tachyarrhythmias
Carbamazepine	Negative inotropic effect; bradyarrhythmias
Clozapine	Development of myocarditis and cardiomyopathy
Ergot alkaloids (ergotamine, dihydroergotamine)	Sympathetic agonist activity; valve fibrosis
Pergolide (not available in the US)	Valve fibrosis
Tricyclic antidepressants	Negative inotropic effect; proarrhythmia
<b>Miscellaneous</b>	
Beta-2 agonists	Sympathetic agonist activity; tachyarrhythmias; hypokalemia
Itraconazole	Negative inotropic effect; also can increase serum digoxin concentrations
Licorice	Mineralocorticoid excess: sodium retention and hypokalemia
Sodium-containing preparations (eg, Fleet PhosPho soda)	
Sodium load QT-prolonging drugs (eg, haloperidol, erythromycin)	Proarrhythmia

NSAIDs: nonsteroidal anti-inflammatory drugs; SVR: systemic vascular resistance; HF: heart failure.

\* Evidence from randomized placebo controlled trials.

¶ Increased risk noted in American College of Cardiology/American Heart Association heart failure guidelines (Hunt SA, et al. *Circulation* 2005; 112:e154.).

Data modified from Amabile CM, Spencer AP. *Arch Intern Med* 2004; 164:709.

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## Clinical Care Management

### Consider Specialty Referral

- Physician preference
- Patient preference
- Cardiology
  - Most new diagnoses
  - Ischemic evaluation - New or worsening symptoms of ischemic heart disease
  - Additional diagnostic testing (e.g. cardiac catheterization)
  - Development of a cardiac management plan for patients refractory to medical therapy
- Heart Failure Clinic
  - Consider referral to the heart failure clinic and/or cardiology consultation if patient is refractory to medical therapy [e.g. symptomatic, unable to tolerate HF medications due to bradycardia/hypotension]
- Cardiac Rehab
  - Useful in clinically stable patients with HF to improve functional capacity, exercise duration, mortality and Health-Related quality of life.
- Nephrology
  - Peritoneal dialysis, hemodialysis, or renal management
- Palliative Care
  - Consider Advance Directives/ Physician Orders for Life-Sustaining Treatment (POLST) Form/ Medical Durable Power of Attorney as needed

### Consider Including the Following Individuals on Care Team

- Social Worker
- Care Manager
- Pharmacist
- Dietician
- Behavioral Health Consultant
- Mental Health Provider as needed

### Referral Back to PCP

- Patient preference
- Physician preference

### Lifestyle Modification Recommendations

- Weight Management
- Risk management counseling; tobacco use, alcohol, caffeine
- DASH diet (Dietary Approaches to Stop Hypertension) with sodium reduction
- Stress management
- Tracking daily fluid intake and symptoms
- Chronic disease management diabetes, hypertension
- Physical activity

## Guiding Patient Behavior Change

- Use Motivational Interviewing strategies (see Tools and Resources section)
    - Patient-centered (discuss patient agenda and goals)
    - Guiding style -encourage self-based problem solving
      - \* *“dancing not wrestling, guiding not directing, consulting not instructing”*
    - Active listening – more listening and less talking; reflect what you hear
    - Open ended questions to evoke patient’s desires, concerns and reactions
    - Affirm and acknowledge positive effort and steps
    - Share information in a concise and potent manner (not *lengthy and comprehensive*)- *Evoke, Offer, Evoke pattern*
    - Remember **provider empathy** is key to patient behavior change
  - Goal Setting
    - Focus on where they are *not where they should be*
    - Start with one behavior at a time
    - Help plan small, achievable steps towards goal– think shaping
    - Track progress for accountability– log, emails to nurse, phone app
    - Acknowledge and reward success
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# Reference Material

## Measure to Guide Performance

- **Ambulatory Sensitive Conditions Admissions: Admissions for Heart Failure.** All discharges with an ICD-10 principal diagnosis code for HF in adults ages 18 years and older, for ACO assigned Medicare beneficiaries with HF, with risk-adjusted comparison of observed discharges to expected discharges for each ACO.

## Guideline Adoption and Recommendation

This guideline has been adopted based on nationally and recognized evidenced-based sources. This guideline is based on the most recent medical evidence at the time of the report or on a consensus of panel experts. SLHP adopts guidelines to help providers and patients make decisions about health care for specific conditions, but are not a substitute for professional medical advice.

## United States Preventive Services Task Force (USPSTF): Aspirin Guidelines

1. The USPSTF recommends the use of aspirin for men age 45-79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal hemorrhage.
2. The USPSTF recommends the use of aspirin for women age 55-79 years when the potential benefit of a reduction in ischemic strokes outweighs the potential harm of an increase in gastrointestinal hemorrhage.
3. The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of aspirin for cardiovascular disease prevention in men and women 80 years or older.
4. The USPSTF recommends against the use of aspirin for stroke prevention in women younger than 55 years and for myocardial infarction prevention in men younger than 45 years.

## Pearls for Heart Failure

- Repeat echocardiography only if there has been a significant clinical change
- Consider cardiology consults in newly diagnosed and those patients with refractory symptoms
- Consider cardiac rehab in stable patients
- Stage of disease and symptoms should drive therapy choices
- Routine testing for depression (PhQ-9) and anxiety (GAD-7) with appropriate referral as indicated
- Consider advance directives discussion and documentation
- Utilize a disease registry and pre-visit planning to enhance care

## SLHP Tools and Resources:

- [VA CHF QUERI Comprehensive Heart Failure Toolkit](#)
- [American College of Cardiology Clinical Toolkit: Heart Failure Practice Solutions](#)
- [Advisory Board, Heart Failure Toolkit](#)
- [Lifestyle Changes for Heart Failure](#)
- <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Quality-Measures-Standards.html>
- Miller, W & Rollnick (2013). *Motivational Interviewing: Helping People Change (3<sup>rd</sup> Ed)*. Guilford Press, New York