

Guidelines for the Management of Heart Failure

Disclaimer

The Permanente Medical Group (TPMG) Clinical Practice Guidelines (and those developed with CMI) have been developed to assist clinicians by providing an analytical framework for the evaluation and treatment of selected common problems encountered in patients. These guidelines are not intended to establish a protocol for all patients with a particular condition. While the guidelines provide one approach to evaluating a problem, clinical conditions may vary significantly from individual to individual. Therefore, the clinician must exercise independent professional judgment and make decisions based upon the situation presented. While great care has been taken to assure the accuracy of the information presented, the reader is advised that TPMG cannot be responsible for continued currency of the information, for any errors or omissions in these guidelines, or for any consequences arising from their use.

I. Advance Care Planning for Heart Failure

Discuss the nature of heart failure with the patient, as well as the patient's general prognosis.

(Consensus)

Discuss the patient's goals for treatment, and treatment options in terms of prolonging life versus symptom relief.

(Consensus)

Ask the patient to complete an Advance Directive for Health Care and to discuss it with physician and family.

(Consensus)

When appropriate, discuss pre-hospital and hospital DNR orders, and hospice care at home versus in the community.

(Consensus)

II. Use of Diuretics

Loop diuretics are recommended for the management of hypervolemia in Heart Failure. Use the minimal dosage needed to restore normal volume status.

(Consensus)

Use combination loop and thiazide-type diuretics if the patient is unresponsive to loop diuretics alone.

(Evidence-based)

III. Vasodilators in Left Ventricular Systolic Disorder (LVSD)

A. Use of Renin-Angiotensin System Inhibitor/Blockers and/or Vasodilators

It is strongly recommended that ACE inhibitors be given to patients with LVSD.

(Evidence-based)

If the patient is intolerant to ACE inhibitors due to cough, allergy, or angioedema; angiotensinreceptor blockers (ARBs) are a recommended alternative. However, if ACEI-induced angioedema is severe, use caution when ARBs are used.

(Evidence-based)

If both ACE inhibitors and angiotensin-receptor blockers are contraindicated, the combination of hydralazine and isosorbide dinitrate is recommended.

(Evidence-based)

Consider adding hydralzaine/isosorbide dinitrate for patients with systolic heart failure who have uncontrolled hypertension or refractory symptoms felt due to vasoconstrictions.
(Consensus)

The routine addition of ARBs to ACE inhibitors is not recommended. ARBs may be added to ACEIs for specific indications, such as uncontrolled hypertension or insufficient vasodilation although hydralazine/isosorbide is preferred.
(Consensus)

B. Target Dosage of ACE Inhibitors

It is recommended that the target dose of ACEIs be at least that used in major clinical trials in patients with LVSD:

- lisinopril 20 mg daily
- captopril 50 mg three times daily
- enalapril 10 mg twice daily

(Evidence-based)

C. Appropriate Creatinine Level for Prescribing ACEIs

ACE inhibitors can be used for patients with serum creatinine levels up to 2.5 mg/dl.
(Evidence-based)

Use of ACE inhibitors in patients with serum creatinine levels higher than 2.5 mg/dl should be determined on a case-by-case basis.
(Consensus)

D. Combination Aspirin and ACE Inhibitors

Aspirin (low-dose) is recommended for patients taking ACEIs for LVSD if they have concomitant CVD.
(Evidence-based)

IV. Beta-Blockers in LVSD

A. Use of Beta-Blockers in Addition to Standard Treatment

Beta-blockers are strongly recommended for patients with LVSD NYHA class II to IV, or with asymptomatic LVSD (NYHA class I) and concomitant CAD.
(Evidence-based)

Beta-blockers are recommended for patients with asymptomatic (NYHA class I) LVSD without concomitant CAD.
(Consensus)

B. Determination of Which Beta-Blockers to Use to Treat Patients with LVSD

Carvedilol, metoprolol extended release or bisoprolol are the recommended choices of beta-blockers for patients with LVSD.

(Evidence-based)

Metoprolol tartrate (short-acting formulation), titrated to maximum tolerated dosage, is an acceptable but less well-established alternative to carvedilol, metoprolol extended release or bisoprolol.

(Consensus)

C. Use of Beta-Blockers for Patients with LVSD and Concomitant Asthma or COPD

Cardioselective beta-blockers (metoprolol or bisoprolol) are recommended for patients with LVSD and concomitant mild to moderate asthma or COPD. Discuss the risks and benefits of treatment, and instruct the patient to report any increase in airway symptoms.

(Evidence-based)

Carvedilol is an acceptable but less well-established option in patients with well controlled asthma or COPD.

(Consensus)

V. Aldosterone Antagonism

In addition to standard treatment, spironolactone is recommended for patients with LVSD, EF = 35%, NYHA class III or IV, and no contraindications.

(Evidence-based)

Spironolactone is recommended for patients with LVEF = 40%, recent MI, either diabetes or signs of heart failure, and no contraindications.

(Consensus)

It is an acceptable but less well-established option to use spironolactone in patients with EF = 40%, any symptoms of Heart Failure, and no contraindications.

(Consensus)

For most patients, a dose of spironolactone of 25 mg daily or less is recommended. High doses may increase risk of serious hyperkalemia.

(Evidence-based)

Eplerenone may be used as an alternative to spironolactone if gynecomastia is problematic.

(Evidence-based)

VI. Digoxin

Digoxin may be added to standard therapy of ACE inhibitors, diuretics, and beta-blockers for heart failure, to improve symptoms and reduce hospitalization. Digoxin is not recommended for patients with few or no symptoms of heart failure who are in normal sinus rhythm, because it does not reduce mortality.
(Evidence-based)

Because of possible toxicity, which may be more common in women, and for maximum benefit, use lower doses of digoxin, and consider maintaining serum digoxin levels to no more than 0.8 ng/ml.
(Consensus)

VII. Oral Anticoagulation - Coumadin

Coumadin is recommended for patients with LVSD and atrial fibrillation, unless contraindicated.
(Evidence-based)

The routine use of coumadin for patients with LVSD in normal sinus rhythm has not been established. Its use should be based on a determination of the potential risks and benefits of treatment.
(Consensus)

The use of coumadin is an option for LVSD patients in normal sinus rhythm, and with left ventricular thrombus on echocardiography or a history of thromboembolism.
(Consensus)

VIII. Calcium Channel Blockers

Amlodipine or felodipine (second generation dihydropyridine calcium channel blockers) may be used for the treatment of angina pectoris or hypertension in patients with LVSD.
(Evidence-based)

Generally, calcium channel blockers (CCBs) other than amlodipine and felodipine should be avoided in patients with LVSD.
(Evidence-based)

IX. Device Therapy

Consider referral for ICD assessment if 1) LVEF $\leq 35\%$ and not expected to improve, 2) class II or III symptoms (class IV if CRT eligible), 3) prognosis > 1 year, and 4) to prevent sudden cardiac death. Consider referral for CRT, if 1) LVEF $\leq 35\%$, 2) class III or IV symptoms, 3) LBBB ≥ 120 msec in width.

(Consensus)

X. Heart Failure with Preserved Ejection Fraction (Diastolic Heart Failure)

In patients with heart failure with preserved ejection fraction, treat the following concomitant conditions according to local and national guidelines: hypertension, rhythm abnormalities, ischemia, and edema.

(Consensus)

XI. Behavioral Change Measures

A. Sodium Restricted Diet

Moderate sodium restriction, 2 to 2.4 grams (2,000 to 2,400 mg) per day, is recommended for patients with heart failure in order to assist in volume management, unless a low-sodium diet is contraindicated. It is recommended that clinicians reinforce and/or increase sodium restriction when fluid retention requires increasing doses of diuretics.

(Consensus)

B. Moderate Physical Activity with Heart Failure

Light to moderate aerobic activity and resistance training is recommended for patients with stable heart failure, unless contraindicated.

(Evidence-based)

C. Alcohol Restriction with Heart Failure

It is recommended that patients with alcoholic cardiomyopathy be counseled to abstain from alcohol completely.

(Consensus)

In the absence of alcoholic cardiomyopathy, a complete prohibition of light to moderate drinking, especially for patients with ischemic heart disease, is not supported by available evidence. (Moderate drinking is defined as no more than one drink a day for women or two drinks a day for men.)

(Consensus)

It is recommended that patients who consume more than 14 drinks per week be strongly encouraged to reduce their consumption.

(Consensus)

It is recommended that drinking not be encouraged for patients who do not already consume alcohol, because of the deleterious effects of alcohol abuse.
(Consensus)

XII. Pharmacological Management of LVSD Based on Patients' Race/Ethnicity or Gender

For females and non-white populations, management of ACE inhibitors, beta-blockers, spironolactone, and combination hydralazine and isosorbide dinitrate should not be different from that in males and whites.
(Consensus)