Heart Failure

National Guideline Summary

This evidence-based guideline summary is based on the 2010 National Heart Failure Guideline. A 2012 review of these recommendations found them to be current. This guideline was developed by the KP National Heart Failure Guideline Development Team (GDT) to assist primary care physicians and other health care professionals in the treatment of heart failure in adults.

Note: The term “heart failure” is used to refer to patients who have either heart failure with left ventricular systolic dysfunction (LVSD) or heart failure with preserved ejection fraction, unless otherwise distinguished.

Pharmacological Management

Diuretics

• Loop diuretics* are recommended for the management of hypervolemia in heart failure. Use the minimal dosage needed to restore normal volume status.

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

* Furosemide, hydrochlorothiazide, and metolazone (Mykrox) are not FDA-approved for heart failure.

VASODILATORS IN LEFT VENTRICULAR SYSTOLIC DISORDER (LVSD)

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

• It is strongly recommended that ACE inhibitors (ACEIs) be given to patients with LVSD.

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

• If both ACEIs and ARBs† are contraindicated, the combination of hydralazine and isosorbide dinitrate is recommended.

• The routine addition of ARBs† to ACEIs is not recommended. If ARBs are added to ACEIs it should be done for specific reasons, such as uncontrolled hypertension or insufficient vasodilation. This recommendation applies whether or not a patient is treated with beta-blockers.

† Valsartan is FDA-approved for heart failure; losartan and candesartan are not.

Target Dose of ACEIs

• Target dose of ACEIs should 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

Appropriate Renal Function for Prescribing ACEIs

• ACEIs can be used for patients with serum creatinine levels up to 2.5 mg/dl or eGFR > 30 ml/min/1.73 m².

• Use of ACEIs in patients with serum creatinine levels higher than 2.5 mg/dl or eGFR < 30 ml/min/1.73 m² should be determined on a case-by-case basis.

Combination Aspirin and ACEIs

• Aspirin (ASA) (81 mg) is recommended for patients taking ACEIs for LVSD if they have concomitant cardiovascular disease (CVD).

BETA-BLOCKERS IN LVSD

Use of Beta-Blockers in Addition to Standard Treatment

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

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

Which Beta-Blockers to Use

• Carvedilol, metoprolol succinate, or bisoprolol‡ are the recommended choices of beta-blockers for patients with LVSD.

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

‡ Not FDA-approved for heart failure.
Beta-Blockers with Concomitant Asthma or COPD

- Cardioselective beta-blockers (metoprolol or bisoprolol) are recommended for patients with LVSD and concomitant well-controlled asthma or COPD. Discuss the risks and benefits of treatment, and instruct the patient to report any increase in airway symptoms.
- Carvedilol is an acceptable but less well-established option for patients with LVSD and well-controlled asthma or COPD.

‡ Not FDA-approved for heart failure.

Aldosterone Antagonism

- In addition to standard treatment, spironolactone is recommended for patients with LVSD, EF < 35%, NYHA Class III or IV, and no contraindications.
- Spironolactone is recommended for patients with LVEF < 40%, recent MI, either diabetes or signs of heart failure, and no contraindications.
- It is an acceptable but less well-established option to use spironolactone in patients with EF < 40%, any symptom of heart failure, and no contraindications.
- For most patients, a dose of spironolactone of 25 mg daily, or less is recommended. High doses may increase risk of serious hyperkalemia.
- Eplerenone may be used as an alternative to spironolactone if gynecomastia is problematic.

Digoxin

- Digoxin may be added to standard therapy of ACEIs, 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.
- 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.

Calcium Channel Blockers

- Amlodipine and felodipine (second generation dihydropyridine calcium channel blockers) are options for the treatment of angina pectoris or hypertension in patients with LVSD.
- The GDT recommends against the use of calcium channel blockers (CCBs) other than amlodipine and felodipine in patients with LVSD.

‡ Not FDA-approved for heart failure.

Pharmacological Management of LVSD Based on Patients' Race/Ethnicity or Sex

- For women and nonwhite populations, management of ACEIs, beta-blockers, and spironolactone should not be different from that in men and whites.
- It is an option to add hydralazine and isosorbide dinitrate to standard heart failure therapy (including ACEIs and beta-blockers) in blacks/African Americans and in patients who require additional vasodilation for uncontrolled hypertension or symptoms.

§ Please see the digoxin recommendation for the use of digoxin in women.

Heart Failure with Preserved Ejection Fraction

- 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.

COMORBID CONDITIONS

Target Blood Pressure

- Target blood pressure for most patients is < 140/90 mmHg. Aim for a lower target blood pressure (< 130/80 mmHg) for patients with:
  - Diabetes mellitus
  - Renal disease
  - Coronary artery disease

Medications to Achieve Target Blood Pressure

- The following medications are recommended in patients with heart failure with preserved ejection fraction to control hypertension:
  - Diuretics
  - ACEIs
  - ARBs
  - Beta-blockers
  - Dihydropyridine CCBs
- The following medications are recommended in patients with systolic heart failure to control hypertension:
  - Diuretics
  - Beta-blockers
  - ACEIs or ARBs if intolerant of ACEIs
  - Hydralazine/isosorbide dinitrate
  - Amlodipine or felodipine
Oral Anticoagulation - Warfarin

• Warfarin is recommended for patients with LVSD and atrial fibrillation, unless contraindicated.
• The routine use of warfarin 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.
• The use of warfarin is an option for LVSD patients in normal sinus rhythm, and with left ventricular thrombus on echocardiography or a history of thromboembolism.

Use of Statins in Heart Failure Patients without Documented Coronary Artery Disease

• Statins should be used in the heart failure population just as they are in the general population. Refer to the KP National Dyslipidemia Guideline.

Use of Thiazolidinediones (TZDs)

• Do not initiate TZDs in heart failure patients unless there are no other alternatives for the treatment of diabetes.
• Stop TZDs in heart failure patients who suffer an exacerbation while on them.
• The GDT makes no recommendations for or against discontinuing TZDs in heart failure patients who remain stable.

Use of Erythropoietin Analogs to Treat Anemia

• The GDT makes no recommendation for or against the use of erythropoietin analogs to treat anemia in heart failure patients.

Omega-3 Supplementation

• For heart failure patients with an ejection fraction less than 40%, omega-3 supplementation (1g per day) is an option following consideration of benefits, risks and costs of the supplement to the patient.**

** Omega-3 supplementation should be not emphasized over drugs with a solid body of evidence demonstrating strong clinical benefit.

Lifestyle Factors

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.

Physical Activity

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

Sleep Apnea

• Routine screening for sleep apnea in heart failure patients is not recommended because of the lack of evidence that screening improves outcomes.
• The GDT makes no recommendation for or against treating sleep apnea in heart failure patients to improve heart failure-related outcomes.

Reassessment of Systolic Performance

• A follow-up measurement of LVEF is recommended after patients have received optimal medical therapy or revascularization if a change in cardiac function would impact candidacy for ICD therapy.
• Repeat measurement of LVEF (after initial confirmation of LVSD) is an option in patients who have had a change in clinical status only if the results would affect therapy.
• Repeat measurement of LVEF (after initial confirmation of LVSD) is not recommended in clinically stable patients when the results will not alter therapy.