

# ACE Inhibitors (ACEIs) and ARBs

## For Patients with Heart Failure

### ► INDICATIONS

**ACE Inhibitors (ACEI)** have Class I (LOE A)\* indication for **all** patients with heart failure with reduced ejection fraction (**HFrEF**, defined as EF ≤ 40%) and current or prior symptoms of heart failure (unless contraindicated).

**Unless a contraindication exists, ACEI should be used in combination with beta blockers for HFrEF.**

**Angiotensin receptor blockers (ARBs) are recommended for heart failure patients with HFrEF** (current or prior symptoms) who are ACEI intolerant. Note that:

- ARBs are reasonable alternatives to ACEIs as first-line therapy unless contraindicated (see contraindications at right), especially for patients already taking ARBs for other indications.
- Consider adding an ARB in persistently symptomatic patients already being treated with an ACEI and a beta blocker when an aldosterone antagonist is not indicated or tolerated.

**Routine combined use of an ACEI, ARB, and aldosterone antagonist is potentially harmful for patients with HFrEF due to hyperkalemia.**

**ALTERNATIVE:** An ARB in combination with a neprilysin inhibitor (ARNI), such as sacubitril/valsartan, may be considered in patients with HFrEF who tolerate ACEI/ARB therapy with adequate blood pressure and who are New York Heart Association functional class II-III. Note that this alternative requires a 36-hour ACEI washout before transition (see *Angiotensin Receptor-Neprilysin Inhibitor (ARNI)* clinical guideline).

### ► INITIATION AND MONITORING

**Start an ACEI or ARB at a low dose**, and increase dose every two weeks as tolerated (see table 1 below).

**Titrate to maximally tolerated target doses;** monitor blood pressure, renal function, and potassium one to two weeks after initiation and after titrations.)

If a patient develops an **ACEI-induced cough**, switch to an ARB.

### ► DOSING

**TABLE 1. ACEI AND ARB DOSING FOR HEART FAILURE PATIENTS**

	Initial Dose	Max Dose	Target Dose in Trials
<b>ACEIs:</b>			
Lisinopril (Prinivil/Zestril)*	2.5 to 5 mg daily	20 to 40 mg daily	32.5 to 35 mg daily
Captopril*	6.25 mg, 3 times a day	50 mg, 3 times a day	40.9 mg, 3 times a day
Quinapril (Accupril)	5 mg, 2 times a day	20 mg, 2 times a day	<b>N/A</b>
Enalapril (Vasotec)	2.5 mg, 2 times a day	10 to 20 mg, 2 times a day	8.3 mg, 2 times a day
<b>ARBs:</b>			
Candesartan (Atacand)*	4 to 8 mg daily	32 mg daily	24 mg daily
Losartan (Cozaar)*	25 to 50 mg daily	50 to 150 mg daily	129 mg daily
Valsartan (Diovan)*	20 to 40 mg, 2 times a day	160 mg, 2 times a day	127 mg, 2 times a day

\* Formulary agent of choice

### CONTRAINDICATIONS:

- Patients who have experienced angioedema with previous ACEI use.  
**Note:** Use caution when substituting an ARB in patients who have developed angioedema with ACEIs.
- Women who are pregnant or plan to become pregnant.

### CAUTIONS:

- SPB < 80 mm Hg
- Increased serum creatinine (> 3 mg/dL)
- Bilateral renal artery stenosis
- Elevated serum potassium (> 5.0 mEq/L)

### PATIENT EDUCATION FOCUS:

- Avoid NSAIDs
- Angioedema
- Dry cough with ACEI

\*Class I: Treatment should be used  
Level of evidence (LOE) A:  
Sufficient evidence from randomized trials for efficacy

These guidelines apply to common clinical circumstances, and may not be appropriate for certain patients and situations. The treating clinician must use judgment in applying guidelines to the care of individual patients.

## ► BIBLIOGRAPHY

Yancy CW, Jessup M, Bozkurt B, et al. 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. *J Am Coll Cardiol*. 2013;62(16):e147-239.

Yancy CW, Januzzi JL Jr., Allen LA, et al.; Heart Failure Pathway Writing Committee. 2017 ACC expert consensus decision pathway for optimization of heart failure treatment: Answers to 10 pivotal issues about heart failure with reduced ejection fraction: A report of the American College of Cardiology task force on expert consensus decision pathways. *J Am Coll Cardiol*. 2016;71(2):201-230.