EDUCATIONAL OBJECTIVES:

Upon completion of this program, participants should be better able to:

1. Review the definition, prevalence, and pathophysiology of heart failure (HF).
2. Describe the recommendations in the 2016 focused guideline update on pharmacologic therapy for HF.
3. Summarize the impact of updated guideline recommendations on HF management.
4. Describe the rationale for individualization of medical therapy in the patient with HF.

Post-Test/Rationale

1. Randomized trials of heart failure treatments have demonstrated significant reductions in mortality in patients with:

   A. preserved ejection fraction
   B. improved ejection fraction
   C. mid- or borderline ejection fraction
   D. reduced ejection fraction***

Correct Answer: D

Studies in patients with preserved ejection fraction (HFpEF) have shown limited benefit for treatment with standard medical therapies. There are limited data on improved and mid-range ejection fraction. Multiple studies have shown reduced mortality risk in patients treated with beta-blockers, ACE/ARB/ARNI, and other modalities.

2. Based on the 2016 Focused Update heart failure guideline, the use of an angiotensin receptor/neprilysin inhibitor (ARNI) is indicated for:

   A. patients who do not tolerate an ACE inhibitor or an ARB
   B. as an add-on to an ACE inhibitor or an ARB in patients who need additional symptom relief
   C. patients who tolerate an ACE inhibitor or an ARB but who remain symptomatic***
   D. patients with Class IV heart failure

Correct Answer: C

ARNI is indicated in patients with Class II or III HF who tolerate an ACE inhibitor or ARB (answers A and D are incorrect). This drug combination contains an ARB so it should not be used concomitantly with ACE/ARB, thus answer B is incorrect.
3. In which of the following conditions can use of an ARNI be considered?

A. creatinine clearance < 50 ml/min ***
B. history of angioedema on an ACE inhibitor
C. concomitant use of an ACE inhibitor
D. history of hypersensitivity to any component of LCZ696

**Correct Answer: A**

Angioedema and hypersensitivity are contraindications, so B and D are incorrect. Because the ARNI contains an ARB, it should not be used concomitantly with an ACE inhibitor and requires a washout period if the patient is already taking an ACE inhibitor.

4. The recommended washout period in patients on an ACE inhibitor who are prescribed the fixed combination sacubitril and valsartan is:

A. 12 hours
B. 24 hours
C. 36 hours ***
D. variable based on the size of the ACE inhibitor dose

**Correct Answer: C**

The approved labeling suggests a washout period of 36 hours after the last dose of an ACE inhibitor before a patient should receive the recommended dose of ARNI (sacubitril and valsartan).

5. Which of the following conditions would rule out the use of ivabradine in patients with heart failure?

A. stable NYHA class II-III
B. blood pressure < 90/50 mmHg ***
C. ejection fraction ≤ 35%
D. resting heart rate ≥ 70 bpm

**Correct Answer: B**

Low blood pressure is one of the contraindications for ivabradine. The other responses (A, C, and D) represent part of the indication for ivabradine, a heart-rate lowering drug, in patients with HF.

6. The target heart rate in patients with heart failure treated with ivabradine is:

A. < 50 bpm
B. 50-60 bpm ***
C. ≥ 70 bpm
D. titrated to lowest tolerated heart rate

**Correct Answer: B**

Ivabradine is indicated for lowering heart rate in patients with bpm ≥ 70, so response C is incorrect. Lowering heart rate below 50 bpm is not recommended so A is incorrect.