

Summary of Recommended Guideline

CHF: Standard Drug Therapy

Key Highlights from the Recommended Guideline

- An ACE inhibitor plus a β -blocker are standard therapy for CHF
- Titrate these drugs to their maximal dosage, as tolerated by the patient, to reduce mortality and morbidity from CHF

Scope: Health professionals involved in the care of heart failure patients

What is the current recommended standard drug therapy for my heart failure patients?

- Aggressively manage cardiovascular risk factors [**Level of Evidence: Class I, Level A**]
- Assess each patient for specific contraindications and side effects to ACE inhibitors and β -blockers. [**Level of Evidence: Class I, Level C**]
- Prescribe an ACE inhibitor together with a β -blocker for heart failure patients with Left Ventricular Ejection Fraction (LVEF) of < 40% and symptoms of heart failure unless a specific contraindication exists. [**Level of Evidence: Class I, Level A**]
- Start drug therapy as soon as possible after relieving acute symptoms and titrate slowly to the highest tolerated target dose. [**Level of Evidence: Class I, Level A for ACE inhibitors, Class I, Level B for β -blockers**] See table below.
- Start ACE inhibitors as soon as safely possible in patients with acute myocardial infarction (AMI), continue indefinitely if LVEF is less than 40% or if heart failure occurred with the AMI. [**Level of Evidence: Class I, Level A**]

Evidence-based drugs and oral doses as shown in large clinical trials

Drug	Start dose	Target dose
ACE inhibitor		
Captopril	6.25 mg to 12.5 mg tid	25 mg to 50 mg tid
Enalapril	1.25 mg to 2.5 mg bid	10 mg bid
Ramipril	1.25 mg to 2.5 mg bid	5 mg bid*
Lisinopril	2.5 mg to 5 mg od	20 mg to 35 mg od
Beta-blocker		
Carvedilol	3.125 mg bid	25 mg bid
Bisoprolol	1.25 mg od	10 mg od
Metoprolol CR/XL†	12.5 mg to 25 mg od	200 mg od
ARB		
Candesartan	4 mg od	32 mg od
Valsartan	40 mg bid	160 mg bid

Aldosterone antagonist		
Spironolactone	12.5 mg od	50 mg od
Eplerenone†	25 mg od	50 mg od
Vasodilator		
Isosorbide dinitrate	20 mg tid	40 mg tid
Hydralazine	37.5 mg tid	75 mg tid
*The Healing and Early Afterload Reducing Therapy (HEART) trial (165) showed that 10 mg once a day (od) was effective for attenuating left ventricular remodelling; †Not available in Canada. ACE Angiotensin-converting enzyme; ARB Angiotensin receptor blocker; bid Twice a day; CR/XL Controlled release/extended release; tid Three times a day		

Excerpted from Arnold, J.M.O., Liu, P., Demers, C. et al. and the Canadian Cardiovascular Society. (2006, January). Canadian Cardiovascular Society consensus conference recommendations on heart failure 2006: Diagnosis and management. *Canadian Journal of Cardiology*, 22(1), 23-45. Used with permission.

What drugs should I use if standard therapy is contraindicated or not tolerated?

- If a drug with proven mortality or morbidity benefits does not appear to be tolerated by the patient (e.g., low blood pressure, low heart rate or renal dysfunction), consider reducing doses of, or discontinuing, other concomitant drugs with less proven benefit to allow better tolerance of the proven drug. **[Level of Evidence: Class I, Level B]**
- Use angiotensin receptor blockers (ARBs) in patients who cannot tolerate ACE inhibition, although renal dysfunction and hyperkalemia may recur. **[Level of Evidence: Class I, Level A]**
- Consider using an ARB as adjunctive therapy to ACE inhibitors among patients for whom beta-blockers are contraindicated or not tolerated. **[Level of Evidence: Class IIa, Level B]**
- Consider using an ARB instead of an ACE inhibitor in post-myocardial infarction patients with acute heart failure or LVEF<40%. **[Level of Evidence: Class I, Level B]**
- Consider isosorbide dinitrate plus hydralazine for heart failure patients unable to tolerate other recommended standard therapy. **[Level of Evidence: Class IIb, Level B]**

What drugs should I add if standard therapy is optimized but insufficient to relieve symptoms?

- Add an ARB to an ACE inhibitor for patients with persistent heart failure symptoms who are at increased risk of hospitalization. **[Level of Evidence: Class I, Level A]**
- Consider isosorbide dinitrate plus hydralazine in addition to standard therapy for African-Americans with systolic dysfunction. **[Level of Evidence: Class IIa, Level A]**
- Consider spironolactone for patients with an LVEF less than 30% and either severe symptomatic chronic heart failure **[Level of Evidence: Class I, Level B]**, or acute heart failure following acute myocardial infarction **[Level of Evidence: Class IIa, Level B]**, unless there is renal dysfunction or hyperkalemia.
- In patients in sinus rhythm who continue to have moderate to severe persistent symptoms, use digoxin to relieve symptoms and reduce hospitalizations. **[Level of Evidence: Class I, Level A]**

- Once acute congestion is cleared, use the lowest minimal dose of loop diuretic, such as furosemide, that is compatible with stable signs and symptoms. **[Level of Evidence: Class I, Level C]**
- Consider cautiously adding low dose metolazone or a thiazide among patients with persistent volume overload despite optimal other medical therapy and increases in loop diuretics. **[Level of Evidence: Class IIb, Level B]**

For which drugs do I need to exercise special caution in my heart failure patients?

- Drugs that reduce contractility or cause fluid retention can worsen heart failure
 - Therefore use caution with NSAIDs, coxibs, thiazolidinediones, negative inotropic calcium channel blockers, antiarrhythmics. **[Level of Evidence: Class I, Level B]**

Levels of Evidence


Class I	Evidence or general agreement that a given procedure or treatment is beneficial, useful and effective.
Class II	Conflicting evidence or a divergence of opinion about the usefulness or efficacy of the procedure or treatment.
Class IIa	Weight of evidence is in favour of usefulness or efficacy.
Class IIb	Usefulness or efficacy is less well established by evidence or opinion.
Class III	Evidence or general agreement that the procedure or treatment is not useful or effective and in some cases may be harmful.

Level A	Data derived from multiple randomized clinical trials or meta-analyses.
Level B	Data derived from a single randomized clinical trial or nonrandomized studies.
Level C	Consensus of opinion of experts and/or small studies.

The above recommendations were derived from the following GAC endorsed guidelines:

Arnold, J.M.O., Liu, P., Demers, C. et al. and the Canadian Cardiovascular Society. (2006, January). Canadian Cardiovascular Society consensus conference recommendations on heart failure 2006: Diagnosis and management. *Canadian Journal of Cardiology*, 22(1), 23-45.

Arnold, J.M.O., Howlett, J.G., Dorian, P., Ducharme, A., Giannetti, N., Haddad, H. et al. (2007, January). Canadian Cardiovascular Society Consensus Conference recommendations on heart failure update 2007: Prevention, management during intercurrent illness or acute decompensation, and use of biomarkers. *Canadian Journal of Cardiology*, 23(1), 21-45.

Rating (out of 4): 

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