

Canadian Cardiovascular Society consensus conference recommendations on heart failure 2006

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The following summary represents highlights of the Canadian Cardiovascular Society Consensus Conference on Heart Failure. Areas of particular interest to pharmacists are identified by the “Rx” icon. The complete document is available at www.ccs.ca/download/consensus_conference/consensus_conference_archives/Arnold_CCS_final.pdf.

Heart failure remains a common diagnosis, especially in older individuals. It continues to be associated with significant morbidity and mortality, but major advances in both diagnosis and management have occurred and will continue to improve symptoms and other outcomes in patients.

Management of heart failure begins with an accurate diagnosis, and requires combination drug therapy, individualization of care for each patient (based on their symptoms, clinical presentation, and disease severity) (Tables 1 and 2), appropriate mechanical interventions, including revascularization and devices, collaborative efforts among health care professionals, as well as the education and cooperation of patients and immediate caregivers. The goal is to translate best evidence-based therapies into clinical practice with a measurable impact on the health of heart failure patients in Canada.

Definition and diagnosis

Many definitions of heart failure have been used, reflecting the existing understanding of the patho-

physiological condition at that time. Heart failure is a complex syndrome in which abnormal heart function results in, or increases the subsequent risk of, clinical symptoms and signs of low cardiac output and/or pulmonary or systemic congestion. Because most evidence-based recommendations are based

TABLE 1 Clinical presentations of heart failure

Common	Uncommon
Dyspnea	Cognitive impairment*
Orthopnea	Altered mentation or delirium*
Paroxysmal nocturnal dyspnea	Nausea
Fatigue	Abdominal discomfort
Weakness	Oliguria
Exercise intolerance	Anorexia
Dependent edema	Cyanosis
Cough	
Weight gain	
Abdominal distension	
Nocturia	
Cool extremities	

*May be a more common presentation in elderly patients

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TABLE 2 Atypical clinical features of heart failure in the frail elderly

Symptoms and syndromes	Signs
Delirium	Ankle edema: may reflect venous insufficiency, drug effects, immobility, malnutrition
Falls	Sacral edema
Sudden functional decline	Pulmonary rales/crackles are nonspecific
Sleep disturbances	
Nocturia or nocturnal incontinence	
Dyspnea less likely if patient is sedentary	

on clinical trials where significant left ventricular systolic dysfunction is present, the term “heart failure” is used to refer to predominant left ventricular systolic dysfunction unless otherwise stated.

Heart failure is common, especially in older patients, and its incidence is predicted to increase. It reduces quality of life, exercise tolerance, and survival. Depending on the severity of symptoms, age, and other factors, heart failure can be associated with an annual mortality of 5% to 50%. A better understanding of the underlying pathophysiological mechanisms, combined with many new treatments developed over the past 20 years, has greatly improved the prognosis; many patients can now hope for long periods of stable, improved symptoms and improved heart function.

Patients may have heart failure even without a history or current evidence of volume overload. Thus, the term “heart failure” is generally preferred over “congestive heart failure” as the clinical diagnosis.

Nonpharmacological management

- To prevent muscle deconditioning, heart failure patients should be encouraged to carry out regular daily physical and leisure activities that do not induce symptoms. Unsupervised strenuous or isometric exercises should be avoided.
- All patients with symptomatic heart failure should restrict their dietary salt intake to a no-added-salt diet (2 g/day to 3 g/day). Patients with more advanced heart failure and fluid retention may be advised to restrict salt intake further to 1 g/day to 2 g/day (low-salt diet). Other causes of

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fluid retention should also be looked for and corrected.

- Concomitant restriction of daily fluid intake to between 1.5 L/day to 2 L/day should be considered for all patients with fluid retention or congestion that is not easily controlled with diuretics, or in patients with significant renal dysfunction or hyponatremia.

- Specialized clinics or disease management programs staffed by physicians, nurses, pharmacists, and other health care professionals with expertise in heart failure management should be used for assessment and management of higher-risk patients.

- Teaching patients to weigh themselves daily and to recognize symptoms of worsening heart failure, and providing an algorithm to adjust their diuretics, are key strategies to clinical stability in patients with recurrent fluid retention.

- Heart failure patients should be immunized against influenza (annually) and pneumococcal pneumonia (if not received in the last six years) to reduce the risk of respiratory infections that may seriously aggravate heart failure.

Drug therapy

- Cardiovascular risk factors should be aggressively managed with appropriate drugs (Table 3) and lifestyle modifications to targets identified in other disease-specific national guidelines. As many patients with HF also have coronary artery disease, specific measures to reduce their risk are indicated, including ASA, statins, and close management of diabetes and hypertension.

- Contemporary evidence-based therapy of HF requires combination therapy. All patients with heart failure and an LVEF (left ventricular ejection fraction) less than 40% should be treated with:

- Angiotensin-converting enzyme (ACE) inhibitor
- Beta-blocker
- Loop diuretic (furosemide) — most patients will require this

- ACE inhibitors and beta-blockers should be titrated to the doses shown to be efficacious in clinical trials, or the maximally tolerated dose.

- Patients who remain symptomatic despite maximum doses of ACE inhibitor and beta-blocker should also receive:



TABLE 3 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		
Spirolactone	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 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; CR/XL: controlled release/extended release

TABLE 4 Drug interactions and additive adverse effects of common medications

Drug	Effect
Calcium channel blockers (nifedipine, verapamil, diltiazem)	Negative inotropic effect
Thiazolidinediones (glitazones)	Cause fluid retention
Antiarrhythmic agents (especially flecainide, propafenone, disopyramide and calcium channel blockers, and less so for amiodarone, dofetilide and ibutilide)	Negative inotropic effect
Doxorubicin	Direct cardiotoxic effect
Nonsteroidal anti-inflammatory drugs, including cyclooxygenase-2 inhibitors (celecoxib)	Cause fluid retention
Beta-blockers	Negative inotropic effect initially

- Spirolactone
- Digoxin
- Angiotensin receptor antagonist
- Patients of African-American descent should also have hydralazine and isosorbide dinitrate added.

Useful websites:

Canadian Cardiovascular Society — www.ccs.ca
 Canadian Congestive Heart Failure Clinics Network — www.cchfcn.org

Polypharmacy

- Members of the health care team must be aware of known drug-drug interactions and should be alert for unexpected drug-drug interactions (Table 4).
- Patients with heart failure are clinically fragile and are especially susceptible to drugs that worsen heart failure symptoms (either by reducing contractility or by causing fluid retention).
- For patients prescribed many medications, consider providing “compliance packaging” for medications to reduce medication errors, especially for elderly or confused patients. ■

