



2007 Heart Failure Guidelines

Is it heart
failure and
what should I do?



Canadian Cardiovascular Society

Leadership. Knowledge. Community.

Suspect Heart Failure

Symptoms

- Breathless
- Fatigue
- Leg swelling
- Confusion*

* especially in the elderly

Signs

- Lung crackles
- Elevated Jugular Venous Pressure (JVP)
- Ankle oedema
- Displaced apex
- 3rd heart sound, 4th heart sound (S3, S4)
- Heart murmur
- Low Blood Pressure (BP)

Risk Factors

- Hypertension
- Ischemic Heart Disease (IHD)
- Valve disease
- Diabetes mellitus
- Heavy alcohol use
- Chemotherapy
- Family History of HF
- Smoking
- Hyperlipidemia

Electrocardiogram (ECG)

- Previous Myocardial Infarction (MI)
- Left Ventricular Hypertrophy (LVH)
- Left Bundle Branch Block (LBBB)
- Abnormal T waves
- Tachycardia

Chest X-Ray (CXR)

- Cardiomegaly
- Pulmonary Venous Redistribution
- Pulmonary oedema
- Pleural effusion
- No lung tumour
- No lung disease

If Heart Failure Diagnosis Remains in Doubt

Echocardiogram (ECHO)

- Left Ventricular Ejection Fraction (LVEF)
- Left Ventricular End-Diastolic Diameter
- Left Ventricular Hypertrophy
- Wall motion abnormalities
- RV Size and function
- Valve dysfunction

Multiple-gated acquisition radionuclide ventriculography (MUGA)

- LV function (EF)
- LV size
- RV size
- Wall motion abn.'s

B-type Natriuretic Peptide (BNP) and NT-proBNP, if available

- **BNP**
 - < 100 pg/ml, HF unlikely
 - > 500 pg/ml, HF likely
- **NT-proBNP**
 - < 300 pg/ml, HF unlikely
 - > 900 pg/ml, HF likely (age 50-75)
 - > 1800 pg/ml, HF likely (age > 75)

REFER

- **Acute & Severe**
 - Emergency Room (ER)
- **Chronic**
 - HF Specialist
 - moderate/severe in 2 weeks
 - mild in 4 weeks

Educate Patient About Heart Failure

Warning Signs and Symptoms

- Dyspnea
 - When flat
 - During sleep
 - With less exertion
- Fatigue with less exertion
- Symptoms at rest
- Sudden weight gain
- Lightheaded/faint
- Prolonged palpitations
- Eliminate added salt

Lifestyle

- No need to push oral fluids
- Lose weight if significant obesity
- Regular tolerated activity
- Reduce cardiovascular risk factors
 - Hypertension
 - Lipids
 - Diabetes Mellitus (DM)
- Weigh daily if fluid retention
- Smoking cessation

Drug and Device Treatment Regimen

- Diuretics, nitrates, digoxin
 - Improve symptoms
- Angiotensin Converting Enzyme Inhibitor (ACE-I)/Angiotensin Receptor Blocker (ARB), Beta Blocker (BB), spironolactone
 - Improve survival
- Combination drug regimen is required
- Most require dose adjustments
- Most will be used long term
- What are the common side effects
- Consider devices with low LVEF or wide QRS

Follow and Refer Your Heart Failure Patient

How Often To Follow

- Acute change in HF symptoms
 - within 24-48 hrs
- After HF hospitalization:
 - within 2 weeks
- After HF ER visit
 - within 2 weeks
- After addition of HF medication or increase in dose
 - if unstable: within 7 days
 - if stable: within 2 weeks
 - if asymptomatic: 1 month
- Stable on optimized therapy
 - 3 months

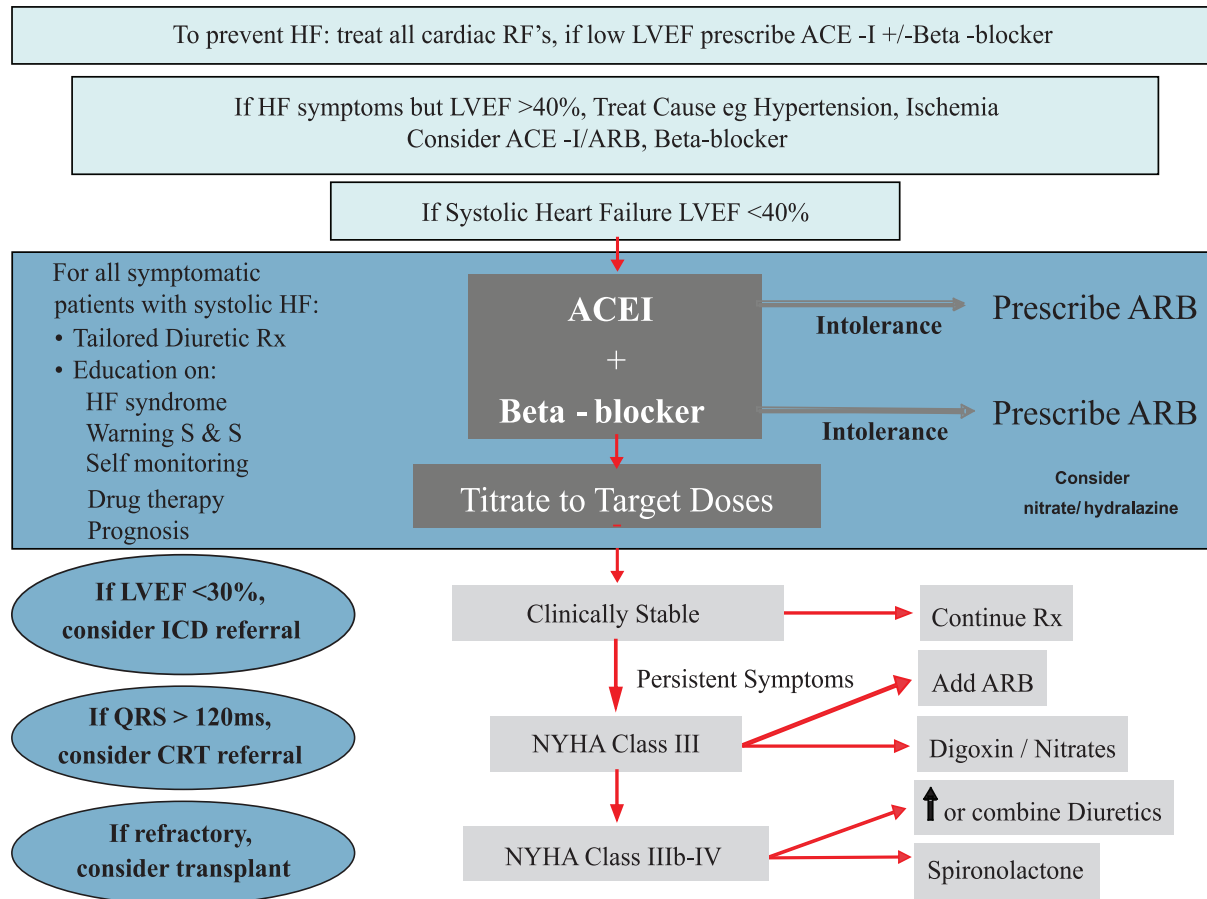
What To Follow

- At each visit record:
 - HF symptoms as per New York Heart Association (NYHA) classification
 - new symptoms
 - body weight
 - Heart Rate (HR)
 - sitting and standing BP
 - JVP
 - ankle oedema
 - auscultate heart & chest
 - check drugs used (prescription and non-prescription)
- Periodic based on above:
 - ECG, CXR, ECHO, BNP

When To Refer

- New onset HF
- Recent HF hospitalization
- HF associated with:
 - ischemia
 - hypertension
 - valvular disease
 - syncope
 - renal dysfunction
 - multiple comorbidities
- Unknown aetiology
- Family history of HF
- Intolerance to therapies
- Poor compliance with treatment regimen

Prevention and Treatment of Heart Failure



Evidence Based Heart Failure Drugs and Doses (mg)*

Drug	Start Dose	Target Dose
ACE Inhibitors		
Captopril	6.25-12.5 mg TID	25-50 mg TID
Enalapril	1.25-2.5 mg BID	10 mg BID
Lisinopril	2.5-5 mg OD	20-35 mg OD
Perindopril	2-4 mg OD	4-8 mg OD
Ramipril	1.25-2.5 mg BID	5 mg BID*
Trandolopril	1-2 mg OD	4 mg OD
Beta-Blockers		
Bisoprolol	1.25 mg OD	10 mg OD
Carvedilol	3.125 mg BID	25 mg BID
[Metoprolol CR/XL**	12.5-25 mg OD	200 mg OD]
ARBs		
Candesartan	4 mg OD	32 mg OD
Valsartan	40 mg BID	160 mg BID
Aldosterone Antagonists		
Spirolactone	12.5 mg OD	50 mg OD
[Eplerenone**	25 mg OD	50 mg OD]
Vasodilators		
Hydralazine	37.5 mg TID	75 mg TID
Isorbide dinitrate	20 mg TID	40 mg TID

* HEART trial showed 10 mg OD was effective to attenuate LV remodeling

** Not available in Canada

CCS Heart Failure Consensus Conference Program

CCS has adopted an innovative 'closed-loop' model of Consensus Conference development for the CCS Heart Failure Consensus Conference Program which accommodates end-user and stakeholder input and evaluation on an ongoing basis.

The development processes identified through this multi-year initiative will be of utility and interest to those dedicated to closing the gap 'between what we know and what we do' in providing heart failure care.

CCS has elicited the support and active participation of 12 national health professional societies and organizations, patient support and advocacy groups, Federal, Provincial and Regional health governments, national health outcomes databases and international information technology and pharmaceutical industries.

To learn more of this important initiative please visit the CCS Heart Failure Consensus Conference Program at **<http://hfcc.ccs.ca>**.

This tool is based on the 'Canadian Cardiovascular Society consensus conference recommendations on heart failure 2006 : diagnosis and management'. JMO Arnold, P Liu, C Demers, et al., Can J Cardiol 2006; 22(1):23-45 and 'Canadian Cardiovascular Society consensus conference recommendations on heart failure update 2007: Prevention, management during intercurrent illness or acute decompensation, and use of biomarkers', JMO Arnold, JG Howlett, P Dorian, et al. Can J Cardiol 2007; 23(1): 21-45.