

## Heart Failure Care

For full Guideline please go to website: <http://www.bcguidelines.ca>

### Prevention

- Risk factors: hypertension, IHD, diabetes, dyslipidemia, tobacco use.
- Do not screen routinely in the asymptomatic but consider echo if multiple risk factors.
- If asymptomatic and LVEF < 40%, prescribe ACEI and consider  $\beta$ -blockers (especially with history of IHD).

### Diagnosis

- Maintain high index of suspicion as HF is underdiagnosed.
- Two types: (1) systolic HF (SHF) and (2) HF with preserved systolic function (HFPSF).
- Both types have HF signs/symptoms: fatigue, fluid retention, dyspnea.
- SHF = LVEF < 40%; HFPSF = LVEF  $\geq$  40%. SHF has poorer prognosis.

### Evaluation (beyond thorough history and physical examination)

- Assess volume status, risk factors, comorbid conditions; assign NYHA Class\*.
- Lab: CBC; serum albumin, AST, creatinine, eGFR, electrolytes, FBS, lipids, TSH; ECG; urinalysis, microalbuminuria ( a marker of underlying endothelial dysfunction); BNP where available and when diagnosis is unclear.
- Imaging: CXR; trans-thoracic echo (radionuclide ventriculography okay but less desirable).
- If diagnosis is unclear, consider therapeutic trial and/or specialist referral.

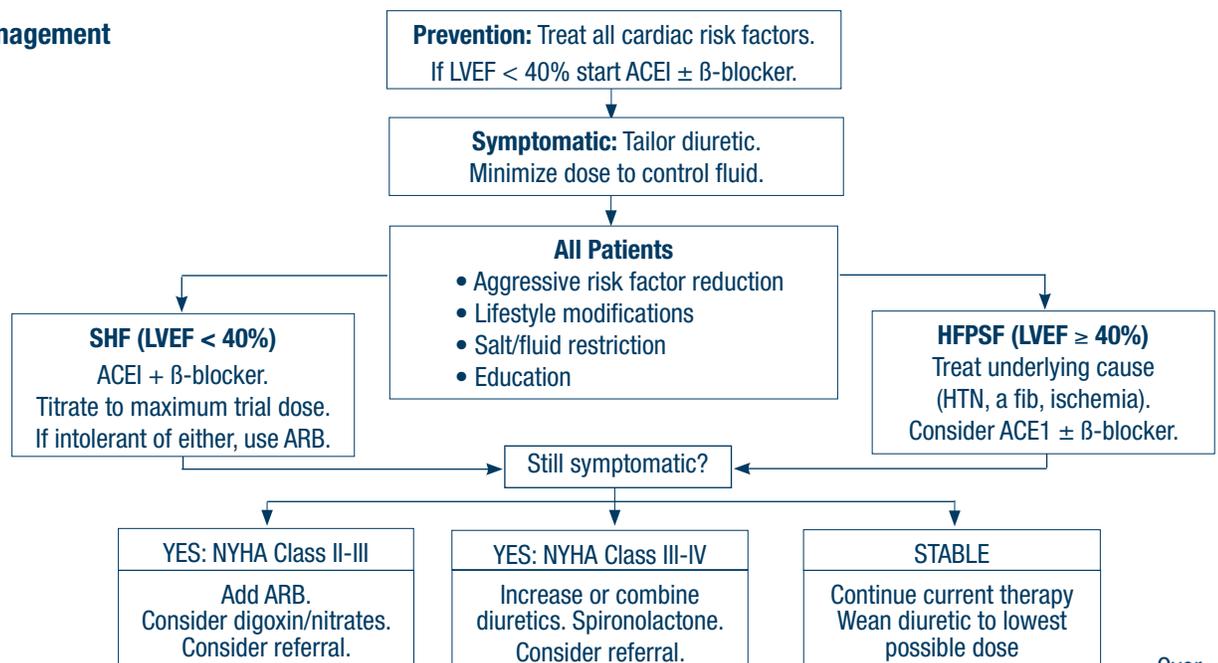
\*New York Heart Association (NYHA) HF classification

Class	Severity
Class I	Asymptomatic
Class II	Symptoms with ordinary activity
Class III	Symptoms with less than ordinary activity
Class IV	Symptoms at rest

### Non-pharmacologic management

- Identify substitute decision maker and address advance directives as soon as appropriate, and revisit as needed.
- Weight: Patient to weigh daily and respond to gain  $\geq$  2.5 kg/week initially &  $\geq$  1 kg/week thereafter.
- Sodium: Goal of 2-3 g of sodium/day.
- Fluid intake: With hyponatremia or severe fluid retention limit to 6-8 cups/day fluid including frozen items & fruit.
- Alcohol:  $\leq$  1 drink/day (1 drink = wine 150 ml, beer 350 ml, mixed drink 50 ml).
- Exercise: If stable HF, attempt regular aerobic (goal 30-45 minutes most days) and anaerobic (resistance).
- Immunization: influenza annually & current pneumococcal pneumonia vaccine.
- Collaboration amongst providers, e.g., nurse, pharmacist, dietitian, cardiac exercise therapist.

### Pharmacologic management



## Indications for referral

- To medical specialist if: cause of HF unknown; suspicion of IHD or valvular disease as primary cause; severe HF refractory or hard to control; symptomatic arrhythmias; LVEF  $\leq$  35% (possible cardioverter-defibrillator implant); consideration for heart transplant or cardioverter-defibrillator; serum sodium  $<$  132 mmol/L despite water restriction.
- To nephrologist if renal function impaired or deteriorating without apparent cause.
- To geriatric specialist or Long-Term Care Manager if comorbidities or issues with drug management, cognition, etc.
- To Heart Function Clinics, Cardiac Rehab, Risk Reduction Centres, Chronic Disease Management where available.

## Management of acute HF

- Identify and treat precipitating causes, e.g., arrhythmia, ischemia, infection, compliance issues.
- Assess perfusion (cold or warm) and volume status (wet or dry).
- Assess vital signs and O<sub>2</sub> saturation often; consider bladder catheterization and invasive monitoring.
- Provide O<sub>2</sub> for all with hypoxia.
- For warm and wet (well perfused; volume overload):
  - IV diuretics: Furosemide, initially double usual oral dose; reassess in 60-90 minutes and titrate dose.
  - Vasodilators: Nitroglycerin SL, IV or PO; nitroprusside IV.
  - Morphine as needed to relieve subjective dyspnea – watch for respiratory/circulatory depression.
- For cold and wet (poorly perfused) = cardiogenic shock:
  - Positive inotropes: Dobutamine 2-5  $\mu$ g/kg/min (preferred) or milrinone 0.25  $\mu$ g/kg/min and titrated.
  - If low comorbid disease, consider early transfer to tertiary care for circulatory mechanical support.
- Once stabilized consider combined IV diuretics and inotropes plus vasodilators.

## Management of HF with comorbid conditions

- Chronic kidney disease:
  - Stable renal function: standard therapy ACE-I, ARB or spironolactone; monitor K<sup>+</sup> and creatinine often.
  - Declining renal function/persistent volume overload: Assess for reversible causes, e.g., meds, infection, hypovolemia, hypotension.
  - Renal impairment (creatinine increase  $>$  30%; eGFR  $<$  30mL/min or  $<$ 45 mL/min with unknown cause). Refer.
- Anemia (Hb  $<$  110 g/L; generally symptomatic at Hb  $<$  90 g/L)
  - Investigate and treat underlying cause.
  - Replace substrate deficiencies, e.g., iron, B12, folate.
  - No evidence for use of erythropoietin (or darbepoetin).
  - If anemia and advanced symptoms persist, consider blood transfusion.

## Management during intercurrent illness

- Pneumonia/COPD: Continue  $\beta$ -blockers, ACE-I, ARBs at usual dose unless not tolerated; if concerned, briefly decrease to 50% of dose; do not abruptly discontinue these medications.
- Acute dehydrating illness: Promptly evaluate renal function and electrolytes and adjust medications as needed.
- Surgery: Ensure evaluation by a physician experienced in peri-operative HF management.
- Gout: Oral colchicine  $\pm$  prednisone; avoid NSAIDs; prevent gout with allopurinol or reduced diuretic doses.

## Prognosis

- Poor prognostic factors include: recurrent hospitalization for acute HF, age  $>$  75 years, female, ventricular arrhythmias and atrial fibrillation, NYHA Classes III & IV, LVEF  $<$  35%, marked LV dilatation, high BNP, sodium  $<$  132 mmol/L, hypocholesterolemia.
- The Seattle Heart Failure model is useful: <http://depts.washington.edu/shfm/>