# HEART FAILURE

**Heart failure poses a significant burden for patients. Hospital re-admissions can be as high is 30% within 6 months and are associated with higher patient mortality. Regular patient follow-up, fluid/ sodium management education, and monitoring of medication regimes can reduce re-admission rates up to 25% and improve quality of life.**

Source: Adapted from Arnold JMO, Liu P, Demers C, et al. Canadian Cardiovascular Society Consensus conference recommendations on heart failure 2006: Diagnosis and management. Can J Cardiol 2006;22(1):23-45.[35]

## DIAGNOSIS OF HEART FAILURE

**Screen high risk populations:**
- Known coronary artery disease or previous MI
- DM (12% pts with DM have HF; 30% pts with HF have DM)
- Chronic Kidney Disease
- Alcoholism
- Obesity (each 1-unit increase in BMI increases risk of HF by 5% (7% in women))
- Personal or family history of cardiomyopathy
- Recently discharged from hospital with HF or other cardiac reason for admission

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**Signs and symptoms of Heart Failure include:**
- Exertional dyspnea and/ or fatigue
- Dependent edema
- Orthopnea/ PND
- Crackles
- New or increased murmur
- Elevated JVP

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**If Heart Failure is suspected, consider the following diagnostic tests:**
- ECG
- Chest x-ray
- CBC, Creatinine, Electrolytes
- Echocardiogram (include ejection fraction)
- BNP if available

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**It is unlikely to be HF if *all* of the following criteria are met:**
- Normal echocardiogram
- Normal JVP
- No fluid retention: no peripheral edema, no abdominal bloating
- No crackles

**It is probably HF if *any* of the following criteria are met:**
- Any history of cardiomyopathy
- Orthopnea, PND
- Increased JVP
- Positive echo:
  - Abnormal EF ***or,***
  - Grade II to IV diastolic dysfunction, ***or,***
  - Moderate to severe valve abnormality
- Positive chest x-ray:
  - Evidence of pulmonary edema ***or,***
  - Enlarged heart

**Diagnosis of HF needs further clarification if:**
- Progressive, unexplained symptoms
- Patient has risk factors for HF (see box above) but does not meet other diagnostic criteria
- Credible alternative diagnoses exist
- Echocardiogram shows:
  - Grade I or mild diastolic dysfunction
  - Wall motion abnormality
  - Any mild valve abnormality.

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- Identify and manage risk factors
- Follow symptomatology at appropriate intervals
- Patient education: monitor for symptoms, dietary sodium precautions

BNP = B-type natriuretic peptides
CBC = complete blood count
DM = Diabetes Mellitus
ECG = electrocardiogram
EF = ejection fraction
HF = heart failure
JVP = jugular venous pressure
MI = myocardial infarction
PND = paroxysmal nocturnal dyspnea
TSH = thyroid stimulating hormone

# HEART FAILURE MANAGEMENT

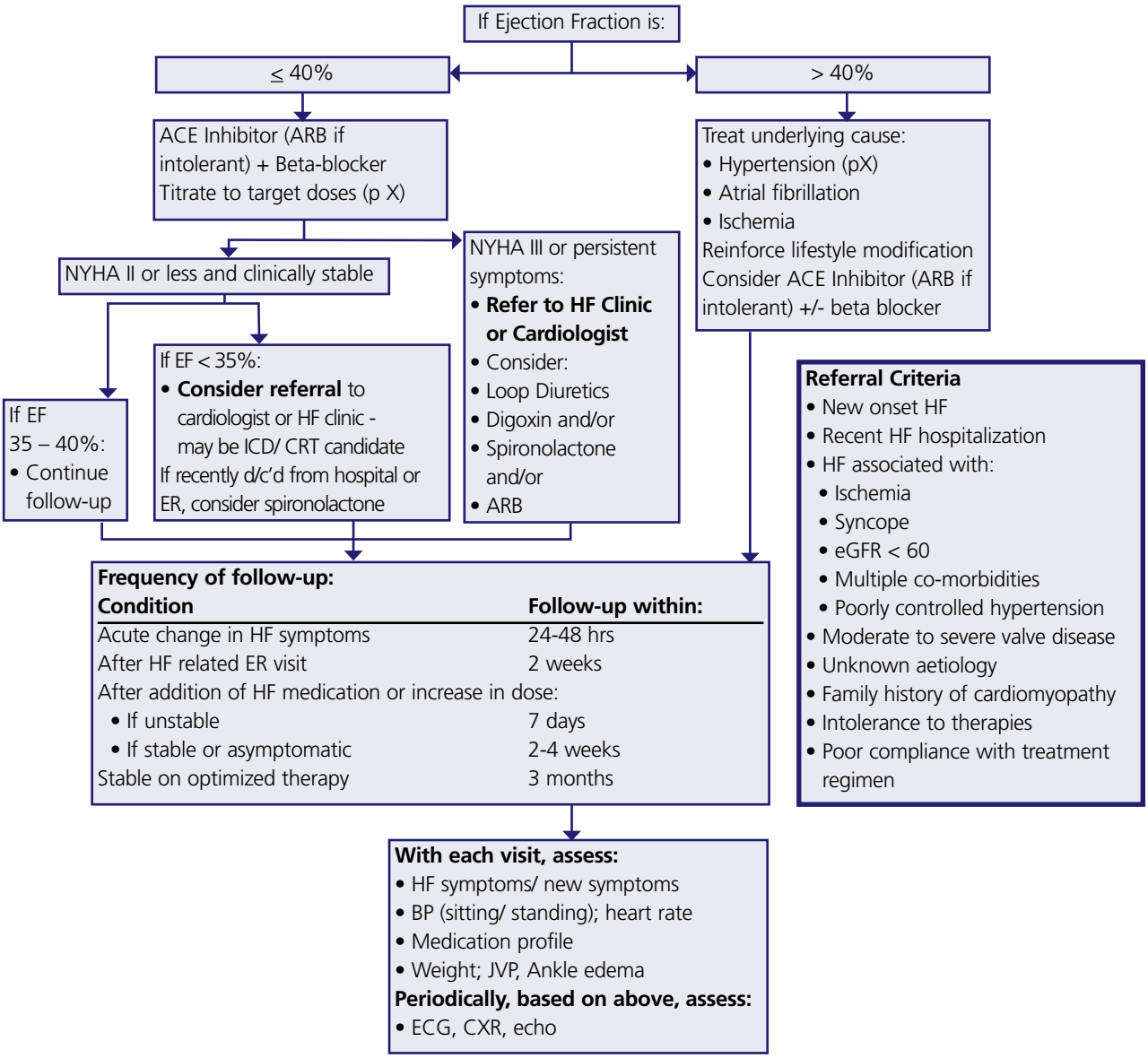
**ALL PATIENTS WITH HEART FAILURE REQUIRE SELF-MANAGEMENT EDUCATION WHICH INCLUDES THE FOLLOWING:**

| Warning Signs and Symptoms | Lifestyle | Treatment Regimen |
|---|---|---|
| • Dyspnea; when flat, during sleep, with less exertion<br>• Fatigue with less exertion<br>• Symptoms at rest<br>• Sudden weight gain<br>• Lightheaded/faint<br>• Prolonged palpitations | • Eliminate added salt and sodium foods<br>• Avoid encouraging oral fluids<br>• Weight daily if fluid retention<br>• Attain BMI: 18.5 – 24.9 or aim for 5 – 10% weight loss<br>• Engage in regular tolerated activity<br>• Quit smoking<br>• Manage cardiovascular risk factors<br>- Hypertension<br>- Lipids<br>- Diabetes | • May require medications such as:<br>1. ACE-I/ ARB<br>2. Beta blocker<br>3. Spironolactone, which<br>• Improve survival<br>• May be prescribed in combinations<br>• May require dosage adjustments<br>• Will likely be required over the long term<br>• May produce common side effects<br>• May require referral for consideration of ICD or CRT |

**Tailored exercise programs may lead to improvements in quality of life; even in pts with end-stage HF. Consider referral to cardiac rehabilitation in all clinically stable patients with NYHA I – III (See Community Resource section following).**

| Special Considerations |
|---|
| **Sleep Apnea and HF:**<br>• The prevalence of sleep apnea in HF patients can be as high as 50%<br>• HF patients with sleep apnea do not complain of daytime sleepiness<br>• Suspect sleep apnea in HF patients with paroxysmal atrial fibrillation, obesity, drug-resistant hypertension, and otherwise unexplained pulmonary hypertension.<br>• Refer patients with suspected sleep apnea to sleep lab for definitive diagnosis and management |
| **Renal Failure and HF**<br>• Refer patients with combined heart failure and renal dysfunction |
| **Palliative Care and HF:**<br>• Initiate regular discussion with patients and family regarding advanced care planning<br>• Refer patients with persistent, advanced symptoms despite optimal therapy to ensure HF management is optimized<br>• Maintaining patients on HF meds may help with symptom management. These should not be discontinued when palliative care is being considered unless not symptomatically tolerated as can occur in end-stage disease. |

# HEART FAILURE MANAGEMENT



## NEW YORK HEART ASSOCIATION (NYHA) FUNCTIONAL CLASSIFICATION OF HEART FAILURE SYMPTOMS*

| Class | Patient Symptoms |
|---|---|
| Class I (Mild) | No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnea (shortness of breath). |
| Class II (Mild) | Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnea. |
| Class III (Moderate) | Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnea. |
| Class IV (Severe) | Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased. |

*This system relates symptoms to everyday activities and the patient's quality of life.

## HEART FAILURE MEDICATION TITRATION**

| Medication | Start Dose | Target Dose | Precautions |
|---|---|---|---|
| **ACE Inhibitor** | | | • Initiate ACE inhibitor or ARB if creatinine <180 and stable (≤25% change within the last 3 – 6 months) and K <5.2.<br>• Check electrolytes and creatinine weekly x 2; then biweekly x 2 and with any change in diuretic or dose of ACE inhibitor/ ARB. |
| 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 | |
| **ARB** | | | |
| Candesartan | 4 mg od | 32 mg od | |
| Valsartan | 40 mg bid | 160 mg bid | |
| **Beta blocker** | | | |
| Carvedilol | 3.125 mg bid | 25 mg bid | • Titrate until resting heart rate <65 beats per minute or the development of symptoms related to bradycardia. |
| Bisoprolol | 1.25 mg od | 10 mg od | |
| Metoprolol | 12.5 mg to 25 mg bid | 200 mg bid | |
| **Other** | | | |
| Spironolactone | 12.5 mg od | 25 mg od | • Not recommended in patients already prescribed combination ACE inhibitor *and* ARB therapy.<br>• Same monitoring of electrolytes and creatinine as in the ACE inhibitor/ARB section<br>• Avoid combination with other K sparing diuretics.<br>• Discontinue use if K >5.2. |

** i.e. Adapted from CCS consensus conference recommendations on heart failure 2006: Diagnosis and management.[35]

# COMMUNITY RESOURCES - HEART FAILURE

**Clinic/Program:** **University of Ottawa Heart Institute Heart Function/ Transplantation Clinic**
Contact: Tara Hetherington
Tel: 613-761-5363 Fax: 761-4375
Director: Dr. H. Haddad

**Description:** Clinic provides immediate and long term, multi-disciplinary care for patients with all degrees of heart failure. Within the clinic, patients have access to comprehensive diagnostic evaluations.

**Appropriate for:** Individuals with all degrees of heart failure

**Hours:** Mon to Fri: 8:00 a.m. - 4:00 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Fax referral form to: 613-761-4375.
Include relevant patient history and most recent test results.
Clinic will notify patient of appointment date and time.

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**Clinic/Program:** **University of Ottawa Heart Institute Cardiac TeleCare**
Medical Lead: Dr. Lisa Mielniczuk
Contact: Christine Struthers, APN Cardiac Telehealth
Tel: 613-761-4134 Fax: 613-761-4158

**Description:** Home telehealth technologies such as telehome monitoring and automated calling are used to provide access to specialized services and follow-up to chronic cardiac patients living at home. Data such as weight & vital signs as well as responses to automated questions are transmitted to a UOHI central database which is monitored by an advanced practice nurse.

**Appropriate for:** Individuals with heart failure, hypertension, ACS

**Hours:** Mon to Fri: 8:00 a.m. - 4:00 p.m.

**Language:** Home monitor may be programmed to 8 languages: French, English, French Canadian, Hindi, Italian, Spanish, Deutch, Portuguese. Automated calls are made in English or French.

**Cost:** N/A

**Referral:** Allied health and/or physician referral accepted.

**Clinic/Program:** **Queensway Carleton Hospital Heart Failure Clinic**
3045 Baseline Road Ottawa, ON K2H 8P4
Tel: 613-721-2000 ext. 2961 Fax: 613-721-4763
Website: http://www.qch.on.ca
Physicians: Dr. T. McKibbin, Dr. R. Grewal, Dr. G. Tsimiklis
Contact: Joanna Steele

**Description:** The clinic is both an information resource and patient management provider. For Heart Failure information sessions, contact Joanna Steele. For medical management, referral is required.

**Appropriate for:** Individuals with heart failure

**Hours:** Tues & Wed: 12:30 p.m. - 4:00 p.m., Thurs: 8:30 a.m. - 12:00 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Doctor referral is required. Include any echo, MUGA, ECG, or other pertinent test results along with patient history in referral information. Patients who require ongoing management of their heart failure must have a physician referral. Please fax the Heart Failure Referral Form to the attention of the Heart Failure Clinic at 613-721-4763. Referral form available online at http://www.qch.on.ca click on congestive heart failure clinic, then health professionals to download form.

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**Clinic/Program:** **Cornwall Community Hospital Heart Failure Clinic**
Medical Lead: Dr. P. DeYoung
Contact: Marion Watt, Nurse Practitioner
Tel: 613-938-4240 ext. 4190 Fax: 613-938-5375

**Description:** Provides comprehensive teaching and follow up to patients with heart failure. Teaching focus includes medication, self-monitoring of weight, blood pressure, pulse, edema, and lifestyle changes (diet, smoking, physical activity). Works closely with family practitioners and specialists in managing patients who are newly diagnosed or recently hospitalized with heart failure. Follows patients every 1 to 2 months until stable and knowledgeable. Remains available for follow up phone call advice and review when necessary.

**Appropriate for:** Patients with heart failure

**Hours:** Tues to Fri: 8:00 a.m. to 6:00 p.m.

**Language:** English, French

**Cost:** N/A

**Referral:** Physician referral required.
Fax referal form and results of any recent tests to 613-938-5375.

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**Clinic/Program:** **Hôpital Montfort Cardiac Rehabilitation Programs**
713 Montreal Road, Ottawa, ON K1K 0T2
Tel: 613-746-4621 ext. 3130 or 613-842-0541 Fax: 613-842-9473

**Description:**

**(1) On-Site Supervised Program**
- 1- to 4-month program
- Supervised on-site, twice-weekly exercise sessions
- Medical and cardiovascular risk assessment
- Education sessions
- Referral to services such as nutrition and psychological as needed

**(2) Case-Managed Home Program**
Provides flexibility for those unable to participate in hospital-based program
- 4-month program
- Tailored program focused on your personal heart health goals
- Medical and cardiovascular risk assessment
- 3-4 appointments at Montfort Hospital, remainder by phone or in person as desired
- Individual home exercise program - **no supervised exercise sessions**

**Appropriate for:** Patients with myocardial infarction, acute coronary syndrome, recent PCI and/ or bypass surgery

**Hours:** Vary

**Language:** English, French

**Cost:** N/A

**Referral:** Physician referral required.
To refer: Complete referral form; attach most recent tests; fax to clinic; and advise patient that hospital will contact directly with date and time of first appointment.

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**Clinic/Program:** **Cornwall Community Hospital Respiratory & Heart Failure Rehabilitation Program**
840 McConnell Ave., Cornwall, ON K2H 5S5
Contact: Sylvie Belanger
Tel: 613-938-4240 ext. 3104

**Description:** A 3-month program; patients attend two times per week. Includes education, personalized advice, disease management training, endurance training.

**Appropriate for:** Anyone with any type of respiratory disease or heart failure

**Hours:** Variable

**Language:** English, French

**Cost:** N/A

**Referral:** Physician or nurse practioner referral

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**Clinic/Program:** **University of Ottawa Heart Institute (UOHI)**
Cardiac Rehabilitation Programs
40 Ruskin Street, Ottawa, ON K1Y 4W7
Tel: 613-761-4572 Fax: 613-761-5336

**Description:** All of our program options include: coronary risk factor assessment, access to follow-up evaluation after three and twelve months, access to nutrition workshops, referral to services such as: nutritional counseling, stress management, smoking cessation, vocational counseling, psychological counseling, social work counseling.

**(1) On-Site Supervised Program**
- 2-3-month program
- Supervised on-site, twice-weekly exercise sessions (1 hour/ session)
- Medical assessment by cardiac rehabilitation physician
- Classes are supervised by a physiotherapist and a nurse.
- Different class intensities based on your needs.

**(2) Case-Managed Home Program**
Provides flexibility for those unable to participate in hospital-based program

- 3-month program
- Tailored program focused on your personal heart health goals
- Weekly phone call that lasts approximately 30 minutes each
- Individual home exercise program - **no supervised exercise sessions**

**(3) Brief Program**
- Only for those patients that are able to exercise independently with no supervised exercise sessions and no on going follow-up
- Exercise evaluation and tailored home exercise program

**Appropriate for:** Patients with myocardial infarction, acute coronary syndrome, recent PCI and/ or bypass surgery.

**Hours:** Vary

**Language:** English, French

**Cost:** N/A

**Referral:** Physician referral required.
Please contact phone number 761-4572 and a referral form will be sent by fax.

**Clinic/Program:** **Pembroke Regional Hospital Cardiac Rehabilitation Program**
705 Mackay Street, Pembroke, ON
Tel: 613-732-3675 ext. 8091 Fax: 613-732-6350

**Description:**
- 3-6 month program, modeled after UOHI on-site program
- Supervised on-site, twice-weekly exercise sessions
- Education sessions
- Medical assessment
- Referral to a dietitian or social worker as needed
- Case-managed home program also available
- Home program also available

**Appropriate for:** Patients with myocardial infarction, acute coronary syndrome, recent PCI and/ or bypass surgery.

**Hours:** Vary

**Language:** English

**Cost:** N/A

**Referral:** Physician or nursing referral required.
Complete referral form; attach most recent tests; fax to clinic; and advise patient that hospital will contact directly with intake appointment time and send out an information package to the patient.

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**Clinic/Program:** **Hawkesbury & District General Hospital Supervised Program**
1111 Ghislain Street, Hawkesbury, ON
Tel: 613-632-1111 ext. 177
Contact: Natalie Aupin

**Description:**
- 12-week walking program
- Supervised on-site, twice-weekly exercise sessions
- Education sessions (4 Fridays in a row)
- Bilingual staff
- One to one prevention clinic

**Appropriate for:** Patients with myocardial infarction, acute coronary syndrome, recent PCI and/ or bypass surgery.

**Hours:** Vary

**Language:** English, French

**Cost:** N/A

**Referral:** Contact clinic for information or physician referral

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**Clinic/Program:** **Brockville Cardiovascular Program: Cardiac Rehabilitation and Vascular Risk Management**
75 Charles Street, Brockville, Ontario, K6V 1S8
Phone: 613-345-5645 ext. 1414 Fax: 613-345-8348
Contact: Margriet Debruyn, ext. 1166

**Description:** This program provides individualized exercise, education (diabetes, nutritional), and counselling designed to help clients reduce their risk of facing future cardiac problems.

**Appropriate for:** Cardiac patients requiring secondary prevention and cardiac rehabilitation

**Hours:** Exercise days are Wed & Fri: 9:00 a.m. - 12:00 p.m.
Assessment day is Fri: 1:00 p.m. - 3:00 p.m.

**Language:** English

**Cost:** N/A

**Referral:** Physician referral is required.
Please fax referral along with pre-treatment and most recent lipid profile, diabetic profile, reports on angiogram, angioplasty, surgery, or other cardiac procedures. Once referral is received, patients are contacted and arrangements to attend intake are made.

## NOTES