OUTPATIENT
HEART FAILURE **DIAGNOSIS** ALGORITHM

Kingston Health Sciences Centre

Link for Common Patient Questions?

Heart Failure Suspected

Initial Clinic Visit

Please note:
Diagnosis and management can occur simultaneously in patients who are symptomatic with a high suspicion for HF. See management algorithm (click here to go to management algorithm).

Clinical Assessment

History	Physical
• Duration of symptoms. • SOB/orthopnea/PND • Fatigue/weakness • Dependent edema • Weight gain • Abdominal distension • Exercise intolerance • Cough • Cool extremities • Chest pain • Palpitations • Syncope	• Mental status • Heart rate • Heart rhythm • Blood pressure • SpO2 • Weight • Heart sounds • Murmurs? • Elevated JVP? • Crackles? • Pitting edema? • Abdominal distension?

Red Flags
- SOB at rest
- Hypoxia
- Signs of PE or MI
- Prolonged chest pain.
- Fainting
- Confusion

Emergency Treatment
Advise patient to attend the nearest Emergency Department for assessment. Please follow-up within one week of discharge to reassess suitability for pathway.

Disposition

For Primary Care Providers
You can be eligible for **HF incentive fee code (Q050A - $125)** if the following requirements are met:
1) ≥ 2 visits/year
2) Use guideline-based management (e.g. this pathway)
3) Document clinical progress using flowsheet (link)

Appropriate for Pathway
Patient does not have any red flags. Please order the following testing concurrently.

Expedite your Echo using this Req IE
1) Signs AND Symptoms of HF
2) No Echo done within 1 year
3) Positive BNP or NTproBNP

Initial Investigations

Echocardiogram/ECG
Please click here for a list of local providers where patients can be referred for standard Transthoracic Echocardiograms and ECGs. **Ask for LV systolic/diastolic function + valvular disease assessment.**

Chest X-Ray
Please click here for a list of local providers where patients can be referred for chest X-rays.

NT-pro BNP
All labs will test **NT-proBNP** (not BNP) at no cost to the patient.
NTproBNP ≥125 is suggestive of HF.

Other Labs
- CBC (± ferritin)
- Electrolytes, creatinine
- TSH (free T4 if abnormal)
- Hemoglobin A1C, glucose.
- Lipid panel

Diagnosis

Heart Failure Diagnostic Criteria
- Clinical syndrome compatible with heart failure. **AND:**
- 1) NT-proBNP >125 pg/ml **OR:**
- 2) Evidence of systolic or diastolic dysfunction on echocardiogram.

Heart Failure Diagnosed?

No → **Consider Alternative Causes**
- Consider alternative causes of the patients symptoms.
- If diagnostic uncertainty consider referral to General Internal Medicine for assessment.

Yes

Initiate treatment if patient symptomatic while secondary invesitgations underway. Click here for management algorithm

Determine Cause

Secondary Investigations

Ischemia
If able to exercise --> (**exercise stress Echo** or **stress MIBI).** If unable to exercise --> dobutamine Echo or Persantine MIBI. Click here for list of local ischemia testing providers.
- If positive for ischemia refer to Cardiology.
- If equivocal or unclear report then eConsult.

Click here for instructions for Cardiology referral.
e-Consult for instructions on e-Consult referral.

Arrhythmia
If palpitations or syncope on Hx, new Afib or frequent PVCs on ECG) --> **order 48-72 hour Holter monitor.** Click here for list of local Holter Monitor providers.
- If new Afib diagnosed start anticoagulation and a beta blocker (i.e. bisoprolol) for rate control.
- If PVC burden ≥10% refer to cardiology.
- If other results with unclear significance consider e-Consult.

Family History
If there is **≥1 first-degree relative** (sibling, parents or children) with **non-ischemic cardiomyopathy or sudden cardiac death** then send referral directly to Medical Genetics at KHSC.
- Click here for instructions for KHSC Medical Genetics referral.

Hormonal/Metabolic
Check TSH and ferritin (iron studies if ferritin elevated). If evidence of hypo/hyperthyroidsim treat accordingly ± Endocrinology referral. If T-Sat ≥60% for men, ≥50% for women refer to Hematology for workup of hemochromatosis.
- Click here for instructions for Endocrinology referral.
- Click here for instructions for Hematology referral.

Toxins/Addictions
If patient drinking more than six alcoholic drinks a day for 5 to 10 years or uses cocaine or methamphetamine consider addictions referral.
- Click here for instructions for Addictions Medicine referral.

Cause Identified or Above Causes Ruled Out

Proceed to Heart Failure Management Algorithm

Need Help?
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3) Patients can call the HF Clinic at: 613 544 3400 x23352

OUTPATIENT
HEART FAILURE **MANAGEMENT** ALGORITHM

Kingston Health Sciences Centre

Link for Common Patient Questions?

Heart Failure Diagnosed/Clinically suspected

Assess Suitibility to Remain on Pathway

Alarm Features
- Worsening dyspnea *(despite diuretic escalation).*
- *Edema* + Weight gain (2kg in 2 days or 2.5kg in 1 week).
- *Symptomatic* low BP (SBP less than 90 mmHg).
- Persistent postural lightheadedness *(despite decreasing diuretics).*
- Unexplained tachycardia/increased HR above baseline

Assess Patient
- Confirm diagnosis **(see Dx pathway)**
- Presence of red flags?
- Degree of shortness of breath (*NYHA Class*)
- Volume overload symptoms (PND, orthopnea, abdominal and/or leg swelling)
- Hypovolemia symptoms (orthostatic dizziness, excess thirst, concentrated urine, low BP, decreased weightt)
- Change in symptoms (better/worse?)
- BP and HR (sitting and standing), weight, O2 sat
- JVP, crackles, ascites, peripheral edema.
- Serum creatinine/eGFR, sodium, potassium.
- NT-proBNP
- Echocardiogram

Red Flags
- SOB at rest
- Hypoxic
- Signs of PE or MI
- Prolonged chest pain
- Fainting
- Confusion

Call EMS

Patient requires in-person visit + blood work within 1-2 week.

If patient is elderly or frail, consider home and community care

Click here for community resources

Diuretics

Diuretics to Improve Congestion *(only if patient is volume overloaded)*
- I.e. Furosemide (Lasix) - Suggested starting dose for Lasix-naive patients is 20mg daily for eGFR >60, 40mg daily for eGFR 30-60 and 60mg daily for eGFR <30.
- Titrate to minimum effective dose to maintain euvolemia.

Evidence Based Standard Pharmacotherapy

*Initiate standard therapies as soon as possible. Titrate every 2-4 weeks to target or **maximally tolerated** dose of each medication by 3 - 6 months from intial assessment.*

Link for Medication Guide

Consider referral to cardiac rehab for both preserved and reduced ejection fraction (link)

Heart Failure with Reduced Ejection Fraction (LVEF ≤40%)

Step #1 - Start Entresto (or ACEi/ARB) Details

~4 Weeks → Start Entresto 24/26mg BID (if eGFR ≥30) and titrate up every 2 weeks if tolerated (monitor BP, Cr/K+) to target 97/103mg BID.

Step #2 - Start Beta Blocker Details

~6 Weeks → Start Bisoprolol 2.5mg daily and titrate up every two weeks if tolerated (monitor BP and HR) to target 10mg daily.

Step #3 - Start MRA (ie Spironolactone) Details

~4 weeks → Start Spironolactone 12.5mg daily(if eGFR ≥30) and titrate up in 4 weeks if tolerated (monitor BP, Cr and K+) to target 25mg daily.

Step #4 - Start SGLT2 Inhibitor Details

~2 weeks → Start Empagliflozin 10mg daily or Dapagliflozin 10mg daily (if eGFR ≥20).

Heart Failure with Preserved Ejection Fraction (LVEF >40%)

Step #1 - Start SGLT2 Inhibitor Details

Start Empagliflozin 10mg daily or Dapagliflozin 10mg daily (if eGFR ≥20).

Step #2 - Comorbidity management Details

(i.e. OSA, DM, HTN, obesity, anemia.)
For obesity, consider GLP-1 RA e.g. semaglutide
Consider the following medications as first-line to control BP:
- MRA (i.e. Spironolactone)
- ARB (i.e. Candesartan)
- Beta-Blocker (i.e. Bisoprolol) if EF 40-49%.

Step #3 - Diuretics for Symptoms

Titrate diuretics to lowest dose effective to maintain euvolemia.

Note: It is better to be on small doses of multiple medications than a full dose of one medication only.

Reassess

Patient on Target or Maximally Tolerated Doses of Standard Therapy
- Repeat echo in 3 months after reaching target or maximally tolerated doses.

Follow-Up

Arrange Follow-Up
- Follow-up minimum of 3 months for diuretic assessment and screening for alarm features/red flags.
- Repeat echocardiogram every 1-3 years or if change in clinical status.

Referral Indications

Indications for Referral

Community Cardiology *Click here* for Community Cardiology referral instructions.
- Uncertain HF diagnosis (after work-up is completed)
- New HF in a patient known to the community cardiologist
- HF with new or worsening chest pain concerning for ischemia.
- Patients with LVEF less than 35% after 3 months of optimal medical therapy to consider ICD and/or cardiac resynchronization therapy (CRT) -could also send to HF Clinic-

Heart Function Clinic *Click Here* for Heart Function Clinic referral instructions.
- HF with moderate-to-severe or severe valvular heart disease
- Worsening kidney disease (increase in creatinine by ≥30%) while adjusting HF medications.
- Persistent NYHA class III/IV (advanced symptoms) despite optimal medical therapy.
- Persistent congestive symptoms despite high diuretic dose (> total of Lasix 120 mg daily).
- HF with serious arrhythmias (ventricular tachycardia, ICD shocks, difficult to control atrial fibrillation)
- Recent hospitalization for decompensated heart failure in the past year.

Need help?

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Need Help?

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OUTPATIENT

HEART FAILURE **MANAGEMENT** ALGORITHM

Kingston Health Sciences Centre

Dear colleagues,

As part of implementing the integrated care pathway for Heart Failure (HF), KHSC in partnership with FLA-OHT are pleased to facilitate **expedited Echo to be performed within 2 weeks** for patients you suspect to have heart failure if they meet ALL the following criteria

- 1. **Has ≥1 HF symptoms** and **≥1 sign** of HF (edema, crackles, elevated JVP, etc)
- 2. **No prior echo within 1 year.**
- 3. **Positive NT proBNP (≥125 ng/L) or BNP (≥50 ng/L)**
- **(**Note: If there are signs of significant volume overload, or patient has difficulty accessing timely lab work, then echo can be ordered simultaneously with the NT pro BNP)

Please write "HF Pathway" on the requisition and fax it to Hotel Dieu Hospital Echo lab at 613-546-7138

For any questions about HF diagnosis, management, or referral indications, please see the pathway document on QR code

Religious Hospitallers of Saint Joseph of the Hotel Dieu of Kingston
HOTEL DIEU HOSPITAL

166 Brock Street
Cardiology, Floor Brock 2
Telephone: 613-544-3400 Ext. 22340
Fax: 613-546-7138

Type of test:

- ☐ Echocardiogram
- ☐ Treadmill Exercise Test
- ☐ Holter Monitor ☐ 48-hour ☐ 24-hour
- ☐ Ambulatory Blood Pressure *(non-insured)*
- ☐ Electrocardiogram
- ☐ Other: _____

KGH KINGSTON GENERAL HOSPITAL

76 Stuart Street
Cardiology, Floor FAPC 3
Telephone: 613-549-6666 Ext. 63980
Fax: 613-548-1387

Type of test:

- ☐ Dobutamine Stress Echocardiogram
- ☐ Treadmill Stress Echocardiogram
- ☐ Transesophagel Echocardiogram
- ☐ Pediatric Echocardiogram
- ☐ Fetal Echocardiogram
- ☐ Other: _____

Clinical information/reason(s) for test:

Please write HF pathway in the requisition

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OUTPATIENT

HEART FAILURE **MANAGEMENT** ALGORITHM

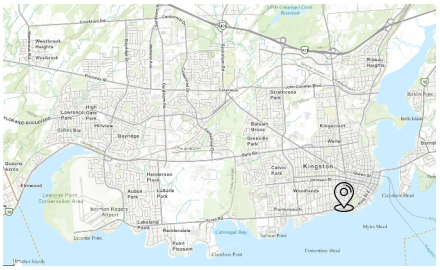
Kingston Health Sciences Centre

List of Providers Offering **Transthoracic ECHOCARDIOGRAMS** and **ECGs**

KINGSTON

Kingston Health Sciences Centre

Requisition Link



For Healthcare Providers
Kingstonhsc

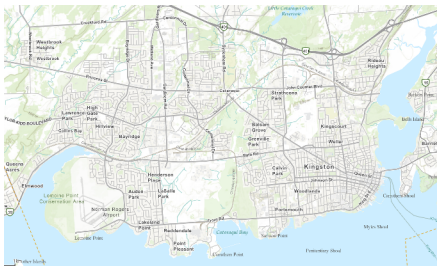
Expedited KHSC Echo Criteria (within 2 weeks)

If your patient meets all of the following criteria then they qualify for an expedited (within 2 weeks) echocardiogram at KHSC. Please click here for ordering instructions.

1. Has ≥1 HF symptoms and ≥1 sign of HF (edema, crackles, elevated JVP, etc)
2. No prior echo within 1 year.
3. Positive NT proBNP (≥125 ng/L) or BNP (≥50 ng/L).

Apex Heart Centre

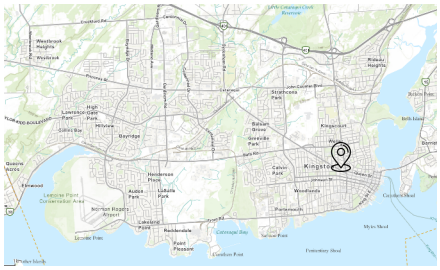
Requisition Link



APEX Heart Centre, Cardiology Clinic in Kingston, ON
APEX Heart Centre

Kingston Heart Clinic

Requisition Link

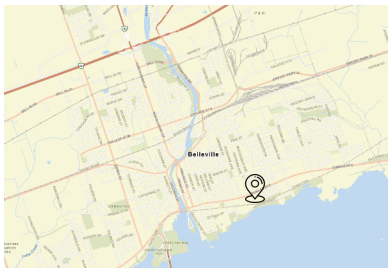


KINGSTON HEART CLINIC
Kingstonheartclinic

BELLEVILLE

Belleville General Hospital

Requisition Link



Diagnostic Requisitions - Physicians only
Qhc

PERTH AND SMITH FALLS

Perth and Smith Falls

Requisition Link

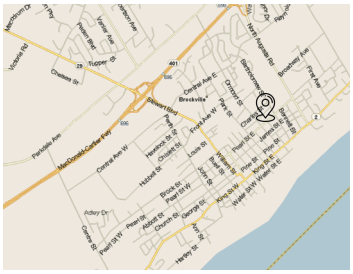
Perth and Smiths Falls District Hospital

About Us Patient & Families

BROCKVILLE

Brockville General Hospital

Requisition Link

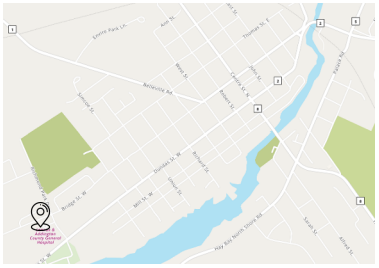


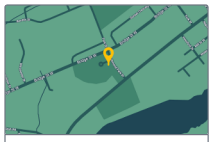
Patient Referral Forms and Requisitions
Brockvillegeneralhospital

NAPANEE

Lennox and Addington County General Hospital

Requisition Link





LACGH Patient Requisition Forms
Napanee

Life Labs ECG Requisition: Requisition Link.

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HEART FAILURE **MANAGEMENT** ALGORITHM

Kingston Health Sciences Centre

CARDIOLOGY REFERRALS

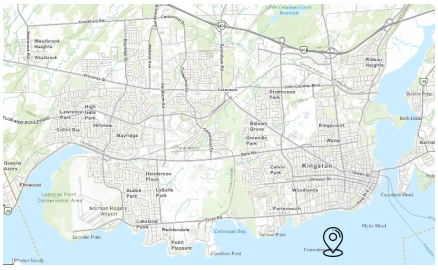
Kingston Health Sciences Centre (Kingston): Referral Link.
Apex Heart Centre (Kingston): Referral Link.
Kingston Heart Clinic (Kingston): Referral Link.
Belleville Cardiology Services Group: Referral Link.

List of Providers Offering **CHEST X-RAYS**

KINGSTON

Kingston Health Sciences Centre

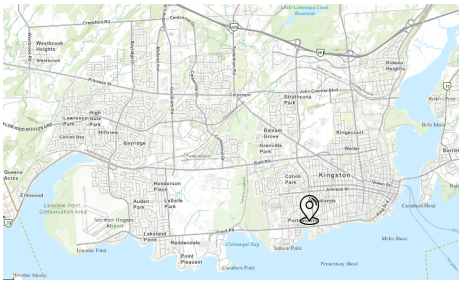
Requisition Link



Imaging referral forms
Kingstonhsc

Kingston Imaging Services

Requisition Link

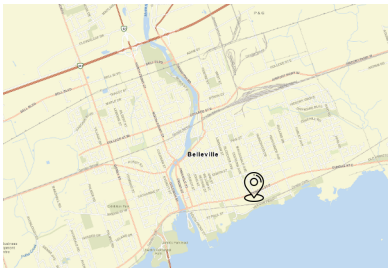


Kingston Imaging Services (KIS): X-Ray & Ultrasound Services
Kingston Imaging Services (KIS): X-Ray & Ultrasound Services

BELLEVILLE

Belleville General Hospital

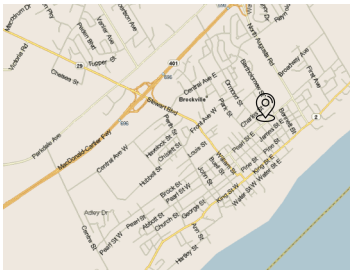
Requisition Link



BROCKVILLE

Brockville General Hospital

Requisition Link

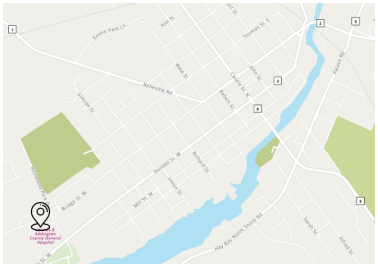


Patient Referral Forms and Requisitions
Brockvillegeneralhospital

NAPANEE

Lennox and Addington County General Hospital

Requisition Link



LACGH Patient Requisition Forms
Napanee

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OUTPATIENT

HEART FAILURE **MANAGEMENT** ALGORITHM

Kingston Health Sciences Centre

List of Providers Offering **Stress/Dobutamine Echocardiograms**

Kingston Health Sciences Centre: Requisition Link
Apex Heart Centre: Requisition Link
Kingston Heart Clinic: Requisition Link
Belleville General Hospital:

If patient not expected to be able to achieve 85% of maximum predicted heart rate on a treadmill then consider ordering dobutamine stress echocardiogram

If patient has left bundle branch block on ECG please order persantine MIBI (see below)

List of Providers Offering **Stress/Persantine MIBI**

Kingston Health Sciences Centre: Requisition Link
Kingston Heart Clinic: Requisition Link

If patient not expected to be able to achieve 85% of maximum predicted heart rate on a treadmill then consider ordering persantine MIBI.

If patient has patient has **asthma** please order exercise or dobutmine stress echocardiogram.

List of Providers Offering **Holter Monitors**

Home Cardiographics: Requisition Link
Apex Heart Centre: Requisition Link
Kingston Heart Clinic: Requisition Link
Belleville General Hospital: Requisition Link

Provider Offering help for **Substance Use Disorder**

KCHC Street Health Centre: Requisition Link

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HEART FAILURE **MANAGEMENT** ALGORITHM

Kingston Health Sciences Centre

Source: CCS/CHFS 2021 Heart Failure Guidelines Update ; Canadian Diabetes Association

ARNI/ACEi/ARB

Angiotensin Receptor-Neprilysin Inhibitor (ARNi)

Medication Name	Starting Dose	Titration	Target Dose
1. Sacubitril / Valsartan (Entresto)	24mg / 26mg PO BID *49mg / 51mg PO BID*	q2 weeks	97mg / 103mg PO BID

** Start 49mg / 51mg PO BID if patient previously on moderate-high dose of ACEi/ARB (i.e. >10mg/day of Enalapril or >160mg/day of Valsartan.

- Concomitant use of ACEi is contraindicated. Allow 36-hour washout period when switching from ACEi to ARNI. No washout period is necessary when switching from ARB.
- Note recommended in patients with prior history of ACEi induced angioedema.
- For renal dosing consult appropriate drug reference manual. It is recommended to check renal function/electrolytes after starting.

Entresto Limited Use Code: **497**

Angiotensin-Converting Enzyme Inhibitors (ACEi)

Medication Name	Starting Dose	Titration	Target Dose
1. Perindopril	2 - 4mg PO daily	q1 - 2 weeks	4 - 8 mg PO daily
2. Ramipril	1.25 - 2.5mg PO BID	q2 weeks	5mg PO BID
3. Enalapril	1.25 - 2.5mg PO BID	q1 - 2 weeks	10 - 20mg PO BID
4. Lisinopril	2.5 - 5mg PO daily	q1 - 2 weeks	20 - 35mg PO daily
5. Trandolapril	1 - 2mg PO daily	q1 - 2 weeks	4mg PO daily

Angiotensin Receptor Blockers (ARBs)

Medication Name	Starting Dose	Titration	Target Dose
1. Candesartan	4 - 8mg PO daily	q1 - 2 weeks	32mg PO daily
2. Valsartan	40mg PO BID	q1 - 2 weeks	160mg PO BID

Beta Blocker

Beta Blockers

Medication Name	Starting Dose	Titration	Target Dose
1. Bisoprolol	1.25mg PO daily	q1 - 2 weeks	10mg PO daily
2. Carvedilol	3.125mg PO BID	q1 - 2 weeks	25 - 50mg PO BID
3. Metoprolol (CR/XL)	12.5 - 25mg PO daily	q1 - 2 weeks	200mg PO daily

MRA

Mineralocorticoid Receptor Antagonists (MRAs)

Medication Name	Starting Dose	Titration	Target Dose
1. Spironolactone	12.5mg PO daily	2 - 4 weeks	25 - 50mg PO daily
2. Eplerenone	25mg PO daily	4 weeks	50mg PO daily

SGLT2i

Sodium-Glucose Transport Protein 2 Inhibitors (SGLT2i)

Medication Name	Starting Dose	Titration	Target Dose
1. Dapagliflozin	10mg PO daily	N/A	10mg PO daily
2. Empagliflozin	10mg PO daily	q4 - 12 weeks	10 - 25mg PO daily

GLP-1 RA

Glucagon Like Peptide Receptor Agonists (GLP-1 RA)

Medication Name	Starting Dose	Titration	Target Dose
1. Semaglutide	0.25 mg SC weekly	Q4 weeks	1.7 - 2.4 mg for obesity 0.5 (or 1.0 for diabetes)
2. Liraglutide	0.6 mg SC daily	Q1 week	3.0 mg for obesity 1.2 (or 1.8 for diabetes)

***It is recommended that renal function and electrolytes be monitored 2 weeks after starting ACE/ARB/ARNI/MRA/SGLT2i**

****Please see drug reference manual for appopriate monitoring and renal dosage of medications.**

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MINISTRY OF HEALTH AND LONG-TERM CARE
Primary Health Care Team

FACT SHEET

Title: **HEART FAILURE MANAGEMENT INCENTIVE**

Date: **April 2008**

Eligible Patient Enrolment Models (PEMs):

- ☑ Family Health Networks (FHNs)
- ☑ Family Health Groups (FHGs)
- ☑ Comprehensive Care Models (CCMs)
- ☑ Group Health Centre (GHC)
- ☑ St. Joseph's Health Centre (SJHC)
- ☑ Family Health Organizations (FHOs)
- ☑ Rural and Northern Physician Group Agreement (RNPGA)
- ☑ South Eastern Ontario Academic Medical Organization (SEAMO)
- ☑ Community Health Center (CHC)
- ☑ Community Sponsored Agreement Blended Salary Model (BSMs)

Appendix E, Section 3.2 of the Memorandum of Agreement (MOA) between the Ministry of Health and Long-Term Care and the Ontario Medical Association (OMA) includes provisions for a New Chronic Disease Management Incentive effective January 1st, 2008. Information and guidelines on how to submit for the Heart Failure Management Incentive are provided below.

- The Heart Failure (HF) Management Incentive fee code Q050A is a one hundred twenty five dollar ($125) annual payment available to physicians in the Patient Enrolment Models (PEMs) listed above for coordinating, and documenting all required elements of care for enrolled heart failure patients. This requires completion of a flow sheet to be maintained in the patient's record that includes the required elements of heart failure management consistent with the Canadian Cardiovascular Society Recommendations on Heart Failure 2006 and 2007.

- A physician is eligible to submit for the Heart Failure Management Incentive annually for an enrolled heart failure patient once all the required elements of the patient's heart failure care are documented and complete. This may be achieved after a minimum of two patient visits.

- Physicians may choose to use the attached Heart Failure Patient Care Flow Sheet or one similar to track a patient's care. All the required elements must be recorded. It is intended that the flow sheet be completed over the course of the year to support a planned care approach for heart failure management.

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Flow Sheet Requirements:

The flow sheet must track the following:

- Comprehensive physical examination
- Laboratory monitoring of Na+, K+, serum creatinine and eGFR
- Patient education for modifiable risk factor reduction and self-management
- Pharmacologic management for appropriate use of first-line, symptom relief and preventive medications

Physicians will be required to coordinate care and ensure that all elements are documented in the flow sheet. Other interdisciplinary providers may assist in providing some elements of care and completing and maintaining the integrity of the flow sheet.

- To claim the Heart Failure Management Incentive, a physician may submit a Q050A fee code for an enrolled heart failure patient once per 365 day period. The Q050A may be submitted separately or in combination with other fee schedule codes once all required elements are completed.

- The Heart Failure Management Incentive (Q050A) is payable for patients enrolled with the billing physician. **Note**: In models that have group enrolment, a physician is eligible to submit and receive payment for the Q050A for patients affiliated to him/her by virtue of the physician's acknowledgement on the *Patient Enrolment and Consent to Release Personal Health Information* (E/C) form.

For more information, please contact your local Ministry office or your Ministry site team contact at 1-866-766-0266.

BRITISH COLUMBIA MEDICAL ASSOCIATION | Guidelines & Protocols Advisory Committee

CONGESTIVE HEART FAILURE FLOW SHEET

This Flow Sheet is based on the Guideline, *Heart Failure Care*
Web site: http://www.BCGuidelines.ca

BRITISH COLUMBIA The Best Place on Earth | Ministry of Health

NAME OF PATIENT	SEX ☐ M ☐ F	TYPE OF HEART FAILURE ☐ Systolic (EF ≤40%) ☐ Diastolic (EF >40%)	DATE OF BIRTH	AGE AT DIAGNOSIS

CARE OBJECTIVES

RISK FACTORS AND CO-MORBID CONDITIONS

☐ Obesity ☐ Smoker ☐ Alcohol
☐ Diabetes ☐ HTN ☐ CAD ☐ Cardiomyopathy ☐ Atrial fib ☐ Asthma ☐ COPD ☐ Renal disease
☐ Other: _____

Baseline Investigations (✓ when done; normal or add values prn)

☐ FBG: _____ ☐ TSH: _____ ☐ eGFR: _____ ☐ AST: _____ ☐ Albumin: _____ ☐ CBC: _____ ☐ U/A: _____
☐ ECG _____ ☐ CXR _____ ☐ Echo (date): EF _____ % EF _____ %

SELF MANAGEMENT (Discuss with patient)

☐ Define management goals (Lifetyle; Risk factor reduction; Treat co-morbid conditions)
☐ Monitor & reduce symptoms
- Daily weights
- Goal weight: _____
- Fluid intake (4-8 cups per day)
- Sodium (2-3 gram per day)
- Avoid alcohol
- Exercise (20-30 mins 3-4 X/week)

☐ Heart Failure Patient Guide
☐ End-of-life directives

VISITS (3 - 6 MONTHS)

DATE	BP	WEIGHT Lbs | Kg	LABS (most recent) Na	K	eGFR	SYMPTOMS REVIEW; EXAM NOTES; MEDICATIONS	*NYHA CLASS
						BASELINE REVIEW OF CLINICAL STATUS AND MEDICATIONS (SET TARGET DOSES)	

REMINDERS: Review Na/fluid intake and activity levels

TREATMENT RECOMMENDATIONS (SEE REVERSE)

VACCINATIONS

Annual Flu: DATE _____ DATE _____ Pneumovax: DATE _____

*NYHA CLASS	SEVERITY
I	No symptoms
II	Symptoms with ordinary activity
III	Symptoms with less than ordinary activity
IV	Symptoms at rest

HLTH/BCMA 6000 (REV. 04/07)

BILLING CODE: 14051 DIAGNOSTIC CODE: 428 BILLING → DATE _____ DATE _____

Heart Failure Medications: A Patient & Caregiver Guide

Understanding Guideline-Directed Medical Therapy for Heart Failure with reduced ejection fraction (HFrEF)

CHFS SCIC

Canadian Cardiovascular Society

HeartLife FOUNDATION

The Heart Hub
Learn, Connect, Empower.

In this guide

- **What guides heart failure medication choices?** 1
  - What is Guideline-Directed Medical Therapy? 1
  - Why optimal medication matters 2
  - Challenges with optimizing medications 2
- **What is optimal medication?** 3
  - Standard medications for HFrEF 4
    - Common side effects 6
    - Severe side effects 6
- **Getting to optimal medication** 7
  - How are medications introduced? 7
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- **Beyond optimal medication** 9
  - How does my health care team measure my response to treatment? 9
  - Ongoing evaluations with your team 10
  - Managing your care and medications 11
- **Glossary of terms** 12
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What guides heart failure medication choices?

If you've been diagnosed with heart failure with reduced ejection fraction (HFrEF), you may be wondering about your treatment options. Many medications are available to treat heart failure depending on your individual health and needs.

This guide has been created to:

- **Explain what medications may be recommended** to treat your symptoms and improve your quality of life.
- **Support your conversations with your health care team**, including your doctors, nurses, pharmacists, and others.
- **Help ensure that you receive the best heart failure care available** by understanding practice guidelines and advocating for them in your care.

Heart failure with reduced ejection fraction (HFrEF)

Heart failure caused by a problem with the pumping function of the heart, called 'reduced ejection fraction'.

What is Guideline-Directed Medical Therapy?

The Canadian Cardiovascular Society (CCS) sets the standards for optimal heart failure care in Canada, known as "Heart Failure Guidelines."[1] In 2021, the CCS updated its treatment guidelines for **people living with heart failure with reduced ejection fraction (HFrEF).** These are the guidelines that your health care team follow to treat heart failure.

The Heart Failure Guidelines recommend that, whenever possible, people with HFrEF be treated with 4 different medications early after their diagnosis. **This combination of medications is known as "guideline-directed medical therapy".** Additional medications may also be recommended, depending on your health and risk factors.

Note: The Guidelines were last updated in 2021. The next update may include new or additional recommendations for patients with a **higher or 'preserved' left ventricular ejection fraction (HFpEF).**

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[1] *McDonald, M., Virani, S., Chan, M., Ducharme, A., Ezekowitz, J. A., Giannetti, N., ... & Yip, A. M. C. (2021). CCS/CHFS heart failure guidelines update: defining a new pharmacologic standard of care for heart failure with reduced ejection fraction. Canadian Journal of Cardiology, 37(4), 531-546.* https://www.onlinecjc.ca/article/S0828-282X(21)00055-6/fulltext

Why optimal medication matters

Using all 4 guideline-directed medical therapy (GDMT) medications together could help you live 5 to 8 years longer.[1] People who are able to take 4 GDMT medications also experience a better quality of life and fewer hospital stays than people taking fewer GDMT medications.

Challenges with optimizing medications

Despite clear and important benefits, studies suggest only 4 in 10 people living with heart failure are being treated with optimal medication.[2] The reasons for this may include:

Knowledge

New research is always coming out and guidelines are updated every few years. It can be hard for health care providers and patients to stay 'up to date' with the latest treatment research. People with heart failure may also not fully understand their condition or how it should best be managed.

Uncertainty

Patients and/or providers may be unsure if they should change or add new medications. They may not realize the benefits of optimizing medications, or may not want to take additional pills everyday. Patients may not feel confident that their providers are up-to-date on their condition and needs.

Ability to access care

In Canada, most people with heart failure do not receive care from a heart failure specialist. Many face difficulties accessing care when it is needed most. GDMT requires close management by your health care provider.

Drug costs

Not having coverage for your medications can be costly, particularly for newer medications. This can limit treatment choices.

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[2] *Tromp J, Ouwerkerk W, van Veldhuisen DJ, et al. A systematic review and network meta-analysis of pharmacological treatment of heart failure with reduced ejection fraction.* JACC: Heart Failure. *2022;10(2):73-84. doi:10.1016/j.jchf.2021.09.004. https://pubmed.ncbi.nlm.nih.gov/34895860/*

What is optimal medication?

The Canadian Heart Failure Guidelines currently recommend the use of 4 different types of medications for people with HFrEF, where possible. These include:

1. Angiotensin receptor-neprilysin inhibitors **(ARNI)** (sacubitril-valsartan), angiotensin converting enzyme inhibitors **(ACEi)** ("prils"), or angiotensin-receptor blockers **(ARBs)** ("sartans")
2. **Beta-blockers** ("lols")
3. Mineralocorticoid receptor antagonists **(MRAs)**
4. Sodium-glucose cotransporter-2 **(SGLT2)** inhibitors ("flozins")

Each of these 4 medications works in a unique way, and they work best when used together. On average, each of these medications adds an extra 1 to 2 years of life.[1]

ARNI, ACEi, ARBs

Commonly used drugs:[3]

ARNI	Sacubitril-valsartan (Entresto™)
ACEi (*"prils"*)	Perindopril, ramipril
ARB (*"sartans"*)	Candesartan, valsartan

How they work:

They reduce salt and water retention and open up blood vessels. This makes it easier for your heart to pump blood to your body.

What to watch out for:

- Symptoms of low blood pressure.[4]
- ACEi and ARNI may cause a dry cough.
- Routine bloodwork to check kidney function and potassium (risk of high potassium).

Beta-Blockers

Commonly used drugs:

- Bisoprolol
- Carvedilol
- Metoprolol

How they work:

They block **adrenaline** so your heart does not have to work as hard and beat as fast.

What to watch out for:

- Symptoms of low blood pressure or heart rate.[4]
- You may feel tired (low energy) when you first start this medicine. This will get better as your body gets used to the medicine.
- Do not stop this medicine suddenly unless your healthcare provider tells you to. Your heart may race if you stop it suddenly.

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[3] This does not represent a comprehensive list of medications within these classes. In particular, different provinces/territories may use other ACEi not listed here.

[4] **Low blood pressure**: You may feel lightheaded, faint, or nearly faint, especially when you stand or sit up suddenly.
Low heart rate: You may feel tired, lightheaded, or faint or nearly fainting. Talk with a member of your healthcare team if you experience these symptoms and find them bothersome.

MRAs

Commonly used drugs:

- Eplerenone (Inspra™)
- Spironolactone

How they work:

They block stress hormones that make the heart stiff and cause scarring.

What to watch out for:

- Expect ongoing bloodwork for kidney function and potassium (risk of high potassium).
- Spironolactone: You may experience swelling of your breasts or tenderness. This is more common in men, and occurs in 9 out of 100 people.

SGLT2 Inhibitors

Commonly used drugs:

Dapagliflozin (Forxiga™)

Empagliflozin (Jardiance™)

How they work:

They help lower stress on your heart.

What to watch out for:

- Genital yeast infection or bladder infection (less than 1 in 100 people). You can reduce this risk by paying close attention to your hygiene.
- Expect ongoing bloodwork for kidney function.
- This medicine is also used to treat diabetes. Other diabetes medicines may need to be adjusted when you take this medicine.

What is optimal medication?

Common side effects

You may also experience other common symptoms that are not serious but still noticeable. They can include:

- Insomnia or problems sleeping
- Problems with your stomach and digestion
- Sense of unease
- Feeling dizzy or lightheaded
- Feeling tired

You may also experience worry or anxiety through this process. Some side effects go away or become less bothersome with time. Some will continue. If you are concerned about a side effect, speak to your health care provider. Be aware that these symptoms are not always due to medications.

Severe side effects

Severe symptoms, such as extreme weakness, dehydration or losing consciousness, may require immediate medical attention.

MEDICATION	SEVERE SIDE EFFECTS	WHAT TO DO
ACEi, ARNIs	1 in 500 people may experience a severe allergic reaction called angioedema. This involves **swelling of the face, tongue, lips, and hands.**[5]	***Seek immediate medical attention.***
Beta-blockers	If you have a history of asthma or COPD (also known as chronic bronchitis/emphysema), beta-blockers may make you feel **wheezy or short of breath**.	***Contact your health care provider immediately.***
ACEi/ARB/ARNIs, SGLT2 inhibitors, MRAs	If you develop another illness and as a result are **not able to eat or drink**, or if you are experiencing a lot of **vomiting or diarrhea**, **contact your health care provider**.	***Contact your health care provider.***
SGLT2 inhibitors	1 in 1,000 people may experience a serious condition called 'ketoacidosis' while taking SGLT2 inhibitors during times of medical stress or illness. **Signs of ketoacidosis include dehydration, nausea and excessive fatigue.**	*This can be **life-threatening if not treated** and requires **admission to hospital and stopping this medication.***

You should make sure your **family and/or caregiver** are aware of severe side effects from your medications, and what to do if you need help.

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[5] *Makani, H., Messerli, F. H., Romero, J., Wever-Pinzon, O., Korniyenko, A., Berrios, R. S., & Bangalore, S. (2012). Meta-analysis of randomized trials of angioedema as an adverse event of renin-angiotensin system inhibitors.* The American Journal of Cardiology, *110*(3), 383–391. https://doi.org/10.1016/j.amjcard.2012.03.034

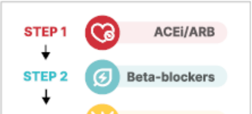
Getting to optimal medication

It is crucial that medications be started as soon as possible after heart failure diagnosis. There is no single best approach to starting and increasing your medications. Your health care team will work with you in making these decisions. Factors such as blood pressure, kidney function, medication coverage and possible side effects all play a critical role.

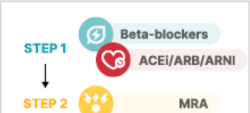
How are heart failure medications introduced?

Generally, new medications are started at a low dose and increased over time until you reach your **maximally targeted dose**. Two common ways to start and increase medications are shown below. The goal is that people with HFrEF should be on all 4 guideline-directed medications, at a maximally tolerated dose for them, within 3 to 6 months from their initial diagnosis.

a. Strict sequential



b. In parallel



a. Strict sequential: Introducing medications one at a time before adding a new drug. This typically requires 6 months or more.

b. In parallel: Introducing and increasing medications all at once. All steps achieved within 4 weeks.

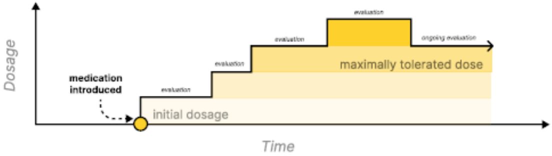
Depending on your unique health situation, your health care team may use either approach, or a **combination approach,** to best suit you and your needs. Your team may not follow this sequence; it will be adapted to your unique situation.

The **maximally tolerated dose** is the dose that you can take without having bothersome side effects such as dizziness, low blood pressure and light-headedness. Not everyone can tolerate a full dose, also known as a **target dose**. Your care provider may have to reduce or stop other medications that have less proven benefit (like **diuretics**) in order to maximize doses of GDMT.

How are medications increased?

Medications are introduced at low doses and gradually, based on your response. This process is called "titration." During titration, your health care provider will assess your symptoms, ask about any side effects and monitor your bloodwork as needed. The doses of your medication may be adjusted (increased or decreased) based on your response.

Here is how titration works:



Titration: Medication titration consists of adjusting a dose every 1 to 4 weeks, depending on how well you are tolerating changes and on the timing of follow-up appointments with your health care team.

You play an essential role during titration by communicating how you are feeling with your care provider. Do not adjust medications without guidance from your health care team.

Beyond optimal medication

There is no "one-size-fits-all." For some people, optimal medical therapy will mean fewer medications than the 4 in the guidelines. You could need to avoid a medication due to a **contraindication** or because of how it interacts with another drug you are taking. People with heart failure are often on medications to treat other conditions, such as high cholesterol ("statins"), or to reduce the risk of blood clots ("blood thinners"). You might also be prescribed other medications not described here like water pills or diuretics, digoxin or ivabradine.

How does my health care team measure my response to treatment?

After you are on maximally tolerated doses of your medication for 3 to 6 months, your health care provider will discuss ordering an **echocardiogram or other diagnostic test** with you to reassess your ejection fraction. Those results may guide next steps, such as a referral for **pacemaker, implantable cardioverter defibrillator (ICD), or a cardiac synchronization therapy device (CRT or CRT-D)**. You may not need any further drug changes, or you may need to consider other medications to help your heart.

Beyond optimal medicaion

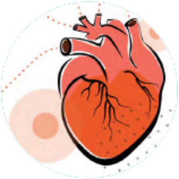
Ongoing evaluations with your team

Most people with heart failure will need to continue medications long-term, many for the rest of their lives. In addition to taking medications as prescribed, learning about self-care is an important part of managing heart failure. Note any new symptoms, side effects or changes in your quality of life. Talk to your health care provider about how you feel you are managing.

Never adjust your own medications without guidance from your health care team.

Ask questions, take notes and make sure you feel comfortable with the treatment options being offered and chosen.

Resources that may be helpful to you, your caregiver or family:



Health Quality Ontario's Heart Failure Conversation Guide

HeartLife's Toolkit

The Heart Hub

Ted Rogers Centre for Heart Research & Peter Munk Cardiac Centre

Beyond optimal medication

Managing your care and medications

- Take medications as prescribed by your healthcare team.
- Know what side effects to watch out for and discuss them with your health care provider in a timely fashion.
- Do not adjust your medications unless instructed by your health care team.
- Be patient and understand that it may take time for your body to adapt to certain medications.
- If you are vomiting, experiencing diarrhea, or are dehydrated you may need to stop taking some medications for a short time.
- If you are not sure what to do with your medications when dehydrated, ask your healthcare team about sick day management of your medications.
- Work with your team to determine the best treatment.
- Try to be consistent with the time of day that you take your medication. Timing when you take your medication with another activity that you do at the same time everyday, such as brushing your teeth, can be helpful.
- Keep a list of the name, dosage, how often, and why you take each of your medications in your wallet or on your phone.
- Keep a list of everyone on your heart failure team (doctors, pharmacists, peer support, caregivers) and carry it with you to appointments.
- Don’t take over-the-counter medicine, vitamins, or supplements without checking first with your doctor or pharmacist. Medications to **AVOID** include:
  - Anti-inflammatory medications, like ibuprofen (Advil™, Motrin™) or naproxen (Aleve™).
  - Decongestant pills (“cold & sinus”) that include pseudoephedrine or phenylephrine.
  - Acetylsalicylic acid (Aspirin), except for the 81-mg dose if prescribed or recommended by your healthcare team.
- Notify your healthcare team if any changes are made to your medicines by a different provider.

Glossary of terms

Adrenaline

Also known as "epinephrine", this is a chemical messenger that controls the sympathetic nervous system and causes the "fight or flight" response.

Contraindication

Anything (i.e., a symptom or medical condition) that is a reason for a person to not receive a particular treatment or procedure because it may be harmful.

Diuretics

Diuretics (commonly called 'water pills') rid the body of excess fluid, help to reduce swelling and bloating and make it easier to breathe.

Echocardiogram

An echocardiogram (ECHO) is an ultrasound of the heart that shows details of the heart's structure and function.

Guideline-directed medical therapy (GDMT)

Wherever possible, HF Guidelines recommend that people with HFrEF be treated with 4 different types of medications early after diagnosis. This combination of medications is known as GDMT.

Heart failure with preserved ejection fraction (HFpEF)

Heart failure occurring as a result of a problem with the heart's ability to relax, called 'preserved ejection fraction.'

Heart failure with reduced ejection fraction (HFrEF)

Heart failure caused by a problem with the pumping function of the heart, called 'reduced ejection fraction'.

Maximally tolerated dose

The maximal dose of a medication that you can tolerate without experiencing side effects such as dizziness, low blood pressure and light-headedness.

Target dose, optimal dose

A target, or "optimal" dose, is the goal dose of medication recommended by the heart failure treatment guidelines.

Partners & acknowledgements

This guide was created by a group of patient and clinical advisors, representing organizations that aim to improve heart failure care for all people in Canada.

Thank you to our advisory committee:

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We acknowledge our partner organizations:

CHFS SCIC

The Canadian Heart Failure Society (CHFS) provides a forum for cardiovascular professionals to exchange ideas, advance knowledge, improve practice and care delivery in the prevention, diagnosis, and management of all Heart Failure phases and complications. CHFS is an affiliation of CCS, providing guidance for medical trainees and advocating for heart failure patients, their families, and professionals.

Canadian Cardiovascular Society

The Canadian Cardiovascular Society is the national voice for cardiovascular clinicians and scientists, representing more than 2,300 cardiologists, cardiac surgeons and other heart health specialists across Canada. We advance heart health for all by setting standards for excellence in heart health and care, building the knowledge and expertise of the heart team, and influencing policy and advocating for the heart health of all Canadians.

HeartLife FOUNDATION

HeartLife Foundation is Canada's first – and only – national patient-led Heart Failure organization. HeartLife's mission is to transform the quality of life for people living with heart failure by engaging, educating, and empowering a global community to create lasting solutions and build healthier lives.

Peter Munk Cardiac Centre UHN

The Heart Hub

Peter Munk Cardiac Centre (PMCC) at University Health Network (UHN) is a world leader in the diagnosis, care and treatment of patients with both simple and complex cardiac and vascular disease.

The Heart Hub is the patient and caregiver education site of the Ted Rogers Centre for Heart Research at UHN.

Kingston Health Sciences Centre

Patient conversation guide (commonly asked questions)

- **What is heart failure?**

Heart failure (also known as congestive heart failure) is a common condition. Despite its name, heart failure does not mean that your heart will fail and suddenly stop working. Rather, heart failure means the heart is either weak or too stiff to provide enough blood to the rest of the body.
The heart pumping (squeezing) function is measured by what we call "ejection fraction". Basically, the ejection fraction is the percentage of blood that the heart pumps in every beat. Normal ejection fraction is between 55-60% (NOT 100%). Your body depends on the heart's pumping action to deliver oxygen- and nutrition to the rest of the body. When the cells are nourished properly, the body can function normally.
With heart failure, the weakened heart can't supply the cells with enough blood. This results in fatigue and shortness of breath and sometimes coughing. Everyday activities such as walking, climbing the stairs, or carrying groceries can become difficult. Heart failure is also sometimes called congestive heart failure because fluid can start to build up in various parts of the body.

Some patients can have heart failure even if their ejection fraction is normal. This is caused by heart stiffness and inability to relax properly. As you can imagine, if you try to inflate air into a stiff balloon, it will not accommodate all the air you try to inflate. In the body, if the heart is stiff, it cannot accommodate the blood that it receives from the lungs, legs, and rest of the body. The blood then moves backwards into the lungs, filling them with water which causes shortness of breath, back into the legs, causing leg swelling, and sometimes back into the belly, causing bloating, loss of appetite, and in some situations nausea. Some patients complain of shortness of breath at night, because when they lie flat the gravity brings more blood to the heart from the legs and rest of the body which causes accumulation of lung water.

Causes of Heart Failure
- High blood pressure
- Blood clots or plaque in the arteries of the heart (previous heart attacks)
- Valve problems
- Genetic conditions
- Virus infection of the heart
- Alcohol and some types of toxic medications

It often takes years for heart failure to develop. Heart failure is a serious condition, but has available treatments. **Many people with heart failure can lead a full, enjoyable life when the condition is managed with medications and healthy lifestyle changes.** It's very important to understand and follow the treatment plan developed by your health care team. When you make healthy changes, you can feel a lot better and enjoy life much more!

Kingston Health Sciences Centre

- **What is the prognosis of my condition? What are the chances that I would survive heart failure?**

Heart failure is *not a death sentence!* With medications and lifestyle modification, many patients can live a long life. The prognosis (chance of survival) varies substantially based on many factors; including the degree of heart weakness, the burden of symptoms, kidney function, anemia, ability to take heart medications etc. Even with the knowledge of all of the above factors, accurate prediction of survival is difficult/at times impossible. Rather than becoming preoccupied with predictions, many patients find solace in the fact that there are many things ***THEY can*** do to improve their condition and lead fulfilling lives. See the next question.

- **Is there anything I can do to improve my condition?**

There are many things you can do to help improve your condition. These include regular moderate physical activity (like walking – brisk walking 4-5 times a week), eating a heart healthy diet that is low in salt, reducing stress and anxieties, quitting smoking and decreasing alcohol consumption. Many patients can benefit from formal exercise "cardiac rehab" programs. Remembering to take your annual flu shot, COVID boosters when indicated and pneumonia shots are also important. Finally, it is crucial to take your medications as prescribed to prevent progression of the disease.

Below is a list of practices recommended for patients with heart failure

- Taking your medication as prescribed.
- If you smoke, quit. And avoid second-hand smoke
- Walking 4-5 times a week.
- Avoid alcohol if you have been told that your heart failure is caused by excess alcohol use. Otherwise, limit your alcohol intake.
- Controlling your blood glucose and blood pressure.
- Choosing less salty foods. Follow a heart healthy diet.
- Measuring and recording your blood pressure, heart rate and weight daily (not essential for all patients, do it if advised by your healthcare provider)
- Getting a yearly flu vaccine.
- Getting a pneumonia vaccine (pneumovax) every 10 years
- Get good sleep and rest.
- Manage stress
- Join cardiac rehabilitation if possible.

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- **How much activity is too much, will I harm my heart if I go up and down the stairs?**

Having heart failure does not mean restricting activity. In fact, exercise is essential to help strengthen the heart. It helps increase energy levels and makes the whole body healthier. Studies show that moderate exercise helps decrease the risk for needing hospitalization for worsening heart failure.

Benefits of exercise

Exercise is an important part of controlling your heart failure. Regular physical activity helps you:
- Feel less tired
- Feel less short of breath
- Sleep better
- Manage glucose levels
- Have more energy to do what you love doing
- Control stress and anxiety, and feel happier
- Have less difficulty with daily activities
- Feel more confident and in control

How to Get Started with Walking

Exercise should be fun, easy to do and become part of your everyday life. Walking is one of the best exercises for improving your health. Begin with short periods of walking at a slow pace. Gradually increase the length of time before increasing your speed.

Guidelines when beginning to exercise
- Start with walking on level ground and avoid hills.
- Light conversation should be possible while walking.
- Start/finish with a warm-up/cool-down (e.g., slower walking, seated or standing exercises).
- Wait at least one hour after a meal before exercising.
- Exercise at a time of day when you feel rested— for many people it is in mornings
- Avoid extreme heat or cold. Consider walking indoors like in a mall.
- Avoid heavy lifting or pushing.
- You should reach your resting heart rate within 10 minutes of completing exercise. If not, reduce the time or intensity of exercise next time.

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- **I feel fine, why does my healthcare provider keep adding more medications for my heart?**

Heart failure patients will need multiple medications. Some medications are intended to relieve shortness of breath/swelling and some are used to strengthen the heart. Even after heart function recovery, most patients will need these medications for the rest of their lives to keep their heart strong. Do not be discouraged, however! After adequate treatment of heart failure, most patients feel much better, have more energy, become less short of breath and are able to enjoy their lives. Taking medications become part of their routine and does not interfere with their activities. Also, once the body adapts to taking these medications, the side effects which may have been felt in the beginning often disappear. Some heart failure patients work in heavy manual jobs like construction, farming, and athletics and are not limited by their disease (as long as it is well controlled with medications and receive clearance from their healthcare providers).

Remember, your health care team has carefully chosen the types of medications and dosages you need based upon your present condition. It is important to recognize that not all patients with heart failure take the same medications.

The goal of heart failure treatment is to help you live longer, and enjoy better quality of life. These medications can lessen tiredness (fatigue), shortness of breath and swelling. It can also help improve your energy level so you can be physically active. Of course, each medication has some potential side effects, also. Your healthcare provider will counsel you about them before starting each treatment

- **Can I have sex?**

It is normal for patients with heart failure (and their partners) to feel anxious about resuming sexual activity. Sexual activity is not dangerous to your heart. In general, if you can walk up two flights of stairs or walk briskly, you can resume your regular sexual activity. The following tips may be helpful:
- Engage in sex when you are well-rested and relaxed.
- Avoid sex after eating a big meal or drinking alcohol.
- Have sex in a comfortable room that is not too hot or too cold.
- Choose less stressful positions and techniques.

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- **Can I drink a glass of wine?**

For most patients with stable heart failure, drinking 1 glass of wine every once in a while, (few days a month for example) should be okay as long as you keep track of the total fluids that you drink trying not to exceed 2 liters per day. In some cases, heavy alcohol use is the cause of heart failure therefore your health care team may advise you to abstain from alcohol completely. Also, if you are having worsening symptoms of heart failure (shortness of breath with minimal exertion and increasing leg swelling), then it is best to avoid alcohol until your symptoms improve.

- **My healthcare provider started me on blood pressure medication, but my blood pressure is normal. Why was this done?**

Many of the medications used to treat Heart Failure can also be used to treat high-blood pressure, however you do not need to have high blood pressure to benefit from these medications. The effectiveness of these medications to treat Heart Failure (with or without high-blood pressure) has been demonstrated in large clinical trials.

- **My healthcare provider started me on a diabetes medication (e.g. Jardiance or Forxiga), but I do not have diabetes, why was this done? And will this cause my blood sugar to be very low?**

Jardiance and Forxiga are part of a key class of medications used to treat Heart Failure. In the past, they were used to treat diabetes, but new studies showed them to also treat heart failure, improve quality of life and survival in patients with heart failure. You do not need to have diabetes for this medication to be effective. Also, it is extremely rare for these medications to cause hypoglycemia (low blood sugar) in patients without diabetes.

- **They tell me I have blockages in my arteries causing heart failure, but I never had a heart attack. How is that possible?**

Coronary artery disease is a common cause of Heart Failure. Coronary artery disease is caused by a build-up of cholesterol in the walls of the heart arteries over time. When this cholesterol build-up causes a clot to form in the artery it is called a Heart Attack. Some patients with coronary artery disease never experience a Heart Attack (or have silent heart attacks without pain). If the coronary artery disease is severe enough that it blocks blood flow down the arteries, this can cause the heart muscle to weaken over time, leading to Heart Failure.

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- **What diet should I be on? What are strategies I can use in the kitchen to cook with low salt and still enjoy a flavourful meal? Can I ever have pizza?**

The most important part of diet management is to avoid excess salt (sodium). Even foods that do not taste salty are often very high in sodium, and it is important to read the label of all foods you buy to make sure they are not high in sodium. It is recommended that you try to limit your sodium to <2,000mg/day to avoid water build-up in your body. If you need help adjusting your diet then you can ask to be referred to cardiac rehabilitation program because it includes dietician support. Pizza is often very high in salt when ordered from restaurants or bought ready-made and frozen from grocery stores. Home-made pizza can be made with less salt and is often flavourful. Many patients report that using herbs and spices could often makes for a tasteful meal that is low in salt. Remember, most highly processed foods are very high in sodium and it is important to read the label carefully as they may not taste particular salty, yet still be very high in sodium

- **What about driving, am I allowed to drive?**

Private driving is okay for most people with heart failure. If you are unable to carry out any physical activity without heart failure symptoms, or have shortness of breath at rest, you should not drive. In small number of heart failure patients depending on other conditions they have (e.g. having a heart attack, or receiving a shock from defibrillators (the pacemakers which can provide shocks), their doctors may advise them not to drive for a certain period of time.

- **When do I need to see a cardiologist?**

Your family healthcare provider can manage your Heart Failure and will refer you to a Cardiologist if your symptoms are changing or they are otherwise concerned. If you are admitted to hospital with Heart Failure, then you may be booked to see a Cardiologist for review after discharge. In most cases, you can be managed fully by your family healthcare provider with the guidance from cardiologists when needed.

Kingston Health Sciences Centre (KHSC) has provided a comprehensive protocol for your family healthcare provider to use as a guide in managing heart failure. Cardiologists at KHSC are available to your family healthcare providers by telephone and electronic consultation to discuss more complicated cases. Of course, the option of referral for in-person assessment by cardiologist is always available for patients who need it.