

CHF MANAGEMENT IN PRIMARY CARE

10 Things to Know About HFrEF (Heart Failure with Reduced Ejection Fraction)

- Dr. Ashwin Padiyath and Dr. Karen Chu
- Friday September 18, 2026

INTEGRATING CARE.
BOLD IMPACT.

Facilitator/Presenter Disclosures

Affiliation (financial or otherwise) with a for-profit or not-for-profit organization:

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- Any direct financial relationships including receipt of honoraria: [None]
- Memberships on advisory boards or speakers' bureau: [None]
- Funded grants, research, or clinical trials: [None]
- Patents for drugs or devices: [None]
- Other: [None]

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- Any direct financial relationships including receipt of honoraria: [none]
- Memberships on advisory boards or speakers' bureau: [none]
- Funded grants, research, or clinical trials: [none]
- Patents for drugs or devices: [none]
- Other: [none]

Disclosure of Financial Support

This program has not received any financial or in-kind support from any external organizations.

Mitigating Potential Bias

No potential sources of bias were identified by the Scientific Planning Committee.

BEAM Collaborative Objectives

By attending the BEAM Collaborative sessions, participants will be able to:

1. Identify and collectively problem solve around barriers to integrated care and unmet needs
(Contributes to the improvement of comprehensive, continuity-based, and patient-centred health care delivered in teams, organizations, and systems)
2. Increase knowledge to support care coordination/service navigation *(Establishes plans for ongoing care and timely consultation when appropriate)*
3. Increase knowledge to support complex medical management of chronic conditions
(Contributes generalist abilities to address complex, unmet patient or community needs, and emerging health issues, demonstrating community-adaptive expertise)

September 18, 2026 Session Objectives

By attending this BEAM Collaborative session, participants will be able to:

1. Discuss the definition, prevalence and epidemiology of HFrEF
2. Review the relevant steps involved in diagnosing and investigating HFrEF
3. Understand the evidence-based therapies to treat HFrEF including common challenges
4. Discuss when and how to refer to cardiology

10 Key Takeaways

1. Defining HF
2. Key clinical signs and symptoms of HF
3. Initial investigations
4. Interpreting the echo report
5. Non-pharmacologic therapies
6. Pharmacologic therapies: foundational and adjunct
7. Tackling complications
8. 3-month reassessment & device therapy
9. Fitness to drive
10. When to refer

1. Defining HF

Heart failure is a national clinical crisis

750,000+

Active Prevalence

More than 750,000 Canadians are currently living with diagnosed HF.

100,000+

Annual Incidence

Over 100,000 new diagnoses are made in Canada every single year.

50% ~

5-Year Mortality

Worse prognosis than many common cancers; only 50% survive past 5 years.

⚠ Clinical Warning: The 1-month mortality rate following a first heart failure hospitalization is approximately 11%.

Stages of Heart Failure

STAGE A

At Risk for HF

High risk due to comorbidities (HTN, Diabetes, CAD) but NO structural heart disease or clinical symptoms.

STAGE B

Pre-Heart Failure

Asymptomatic structural heart disease (LVEF $\leq$ 40%, LVH, chamber enlargement) but NO symptoms.

STAGE C

Symptomatic HF

Current or prior clinical signs and symptoms of heart failure associated with structural heart disease.

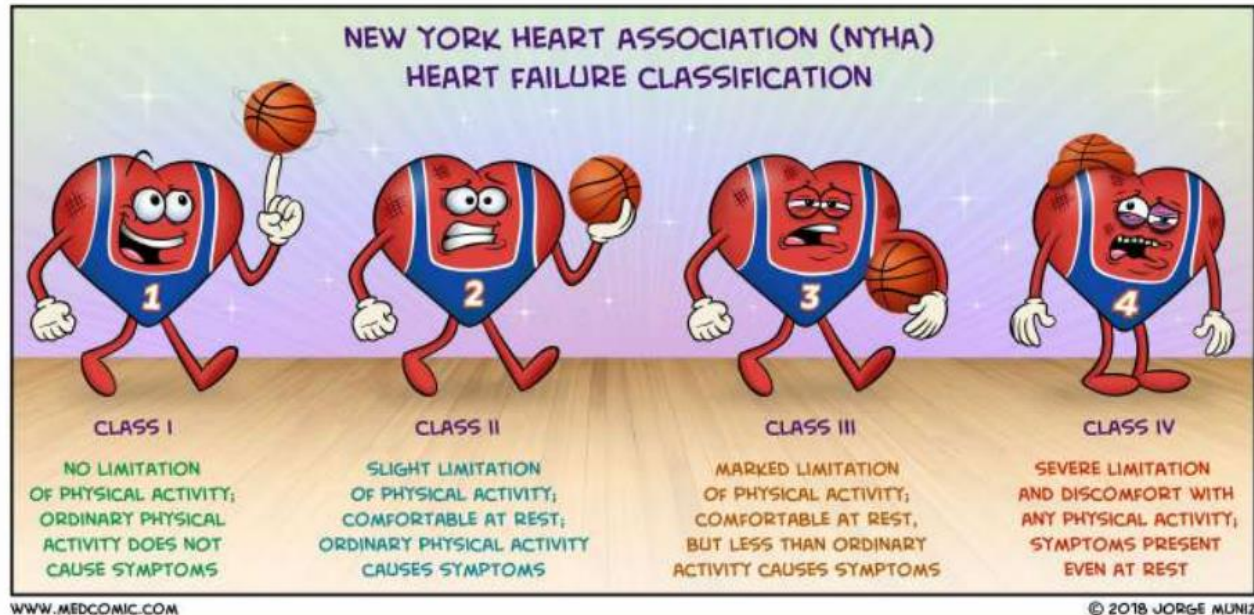
STAGE D

Advanced HF

Refractory symptoms requiring specialized advanced interventions (inotropes, mechanical support, palliative care).

 Staging progresses in one direction only – i.e. a patient with resolved symptoms on therapy is still classified as Stage C

NYHA Classification



 NYHA classes shift back and forth frequently in response to therapeutic interventions

Types of HF

Classifications by Ejection Fraction (LVEF)

- **CCS 2025:**

HFrEF (Reduced): LVEF $\leq 40\%$

HFnrEF (Non-Reduced): LVEF $> 40\%$ (simplifies mildly reduced and preserved)

- Previously HFrEF ($<40\%$), HFmrEF (40-49%), HFpEF ($\geq 50\%$)

- **New 2026 ESC:**

HFrEF (Reduced): LVEF $< 50\%$ (enables earlier medical therapy)

HFpEF (Preserved): LVEF $\geq 50\%$

Terminology Alert: HFpEF and diastolic dysfunction are NOT interchangeable! Most elderly patients have diastolic dysfunction on echo, but only a fraction have clinical HFpEF

Case Presentation — George walking into your office

A typical primary care referral presenting with progressive cardiorespiratory symptoms:

Patient Profile: George, 66-year-old male with a 3-week history of progressive shortness of breath on walks.

Comorbidities: Essential hypertension (on Amlodipine 5 mg daily) and Type 2 Diabetes.

Social History: Former smoker (quit 5 years ago, 30 pack-year history).

Office Vitals: Blood Pressure 138/82 mmHg, HR 88 bpm (regular), SpO2 94% on room air.

Clinical Question: What key findings should we actively look for to clinch a heart failure diagnosis?

2. Clinching the Diagnosis

Bedside History Questions to Uncover Hemodynamic Stress

- Orthopnea: "How many pillows do you use to sleep comfortably at night?"
Identifies acute supine pulmonary venous congestion
- PND: "Do you wake up coughing or gasping for air 1-2 hours after falling asleep?"
Highly specific for interstitial pulmonary alveolar edema
- Bendopnea: "Do you feel short of breath within 30 seconds of tying your shoes?"
Clinical surrogate for elevated cardiac filling pressures
- Fluid Retention: "Have you gained >2 lbs in 24 hours or >5 lbs in 1 week?"
Direct sign of fluid overload prior to visible peripheral edema

2. Clinching the Diagnosis

Bedside Physical Examination: High-Yield Triage Signs

- **Elevated JVP & Abdominojugular Reflux:**

Specificity >90% for elevated right-atrial & left-ventricular filling pressures

- **Third Heart Sound (S3 Gallop):**

Specificity >90% for systolic dysfunction, elevated pressures, and volume overload

- **Pulmonary Rales (Bi-basilar crackles):**

Highly specific in acute settings; often absent in chronic compensated HF

- **Peripheral Pitting Edema (Ankles/Sacral):**

Sensitive but poorly specific; can be caused by amlodipine or venous reflux

3. Initial Investigations

Initial Lab Panel: CBC, electrolytes, renal function (creatinine/eGFR), fasting glucose, HbA1c, TSH, ferritin and transferrin saturation, urine ACR

- Ferritin <100 or Ferritin 100-299 + Tsat <20% = iron deficiency

12-Lead ECG: Prior Q waves, LBBB (QRS > 130 ms), or atrial fibrillation

Chest X-Ray: Pulmonary venous redistribution, pleural effusion, cardiomegaly

Ambulatory Natriuretic Peptides: Use ambulatory cutoffs to rule out stable HF

- **HF Unlikely:** BNP < 50 pg/mL or NT-proBNP < 125 pg/mL.
- **HF Likely (Order Echo!):** BNP ≥ 50 pg/mL or NT-proBNP ≥ 125 pg/mL.

Caveats: NTproBNP can be falsely low in obesity; elevated in age, AF, or CKD

As outpatient NTproBNP is OHIP covered BNP is not

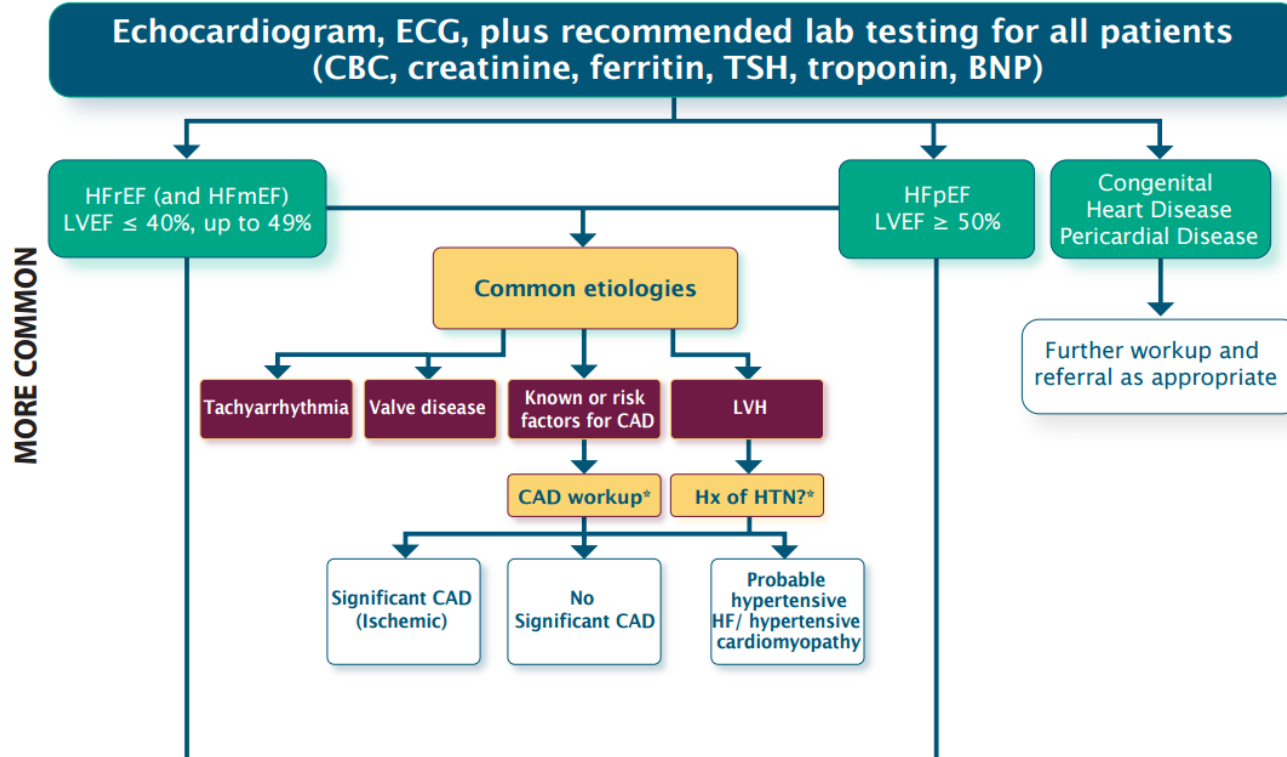
4. Deciphering the Echo Report

Echocardiographic Parameter	Clinical Cutoff	Primary Care Clinical Significance
1. Ejection Fraction (LVEF)	$\leq 40\%$ (CCS) $< 50\%$ (ESC)	Simpson's biplane (quantitative) is preferred over visual estimation
2. Diastolic Filling Pressures	Average $E/e' > 13$	Mitral annulus velocity (e') and inflow (E) ratio. Crucial physiological surrogate indicating elevated LV filling pressures.
3. Left Atrial Size	$LAVI > 34 \text{ mL/m}^2$	Left Atrial Volume Index indexed to BSA. Indicates chronic left ventricular diastolic pressure and volume overload.
4. Left Ventricular Geometry	LV mass index $>115 \text{ (M)}, >95 \text{ (F)}$	Left Ventricular Hypertrophy (LVH) indexed to body surface area. Represents chronic pressure overload (e.g., long-standing HTN).
5. Right-Sided Pressures	RVSP $> 35 \text{ mmHg}$ TR velocity $> 2.8 \text{ m/s}$	Right Ventricular Systolic Pressure and Tricuspid Regurgitation velocity. Elevated RVSP suggests secondary pulmonary hypertension.

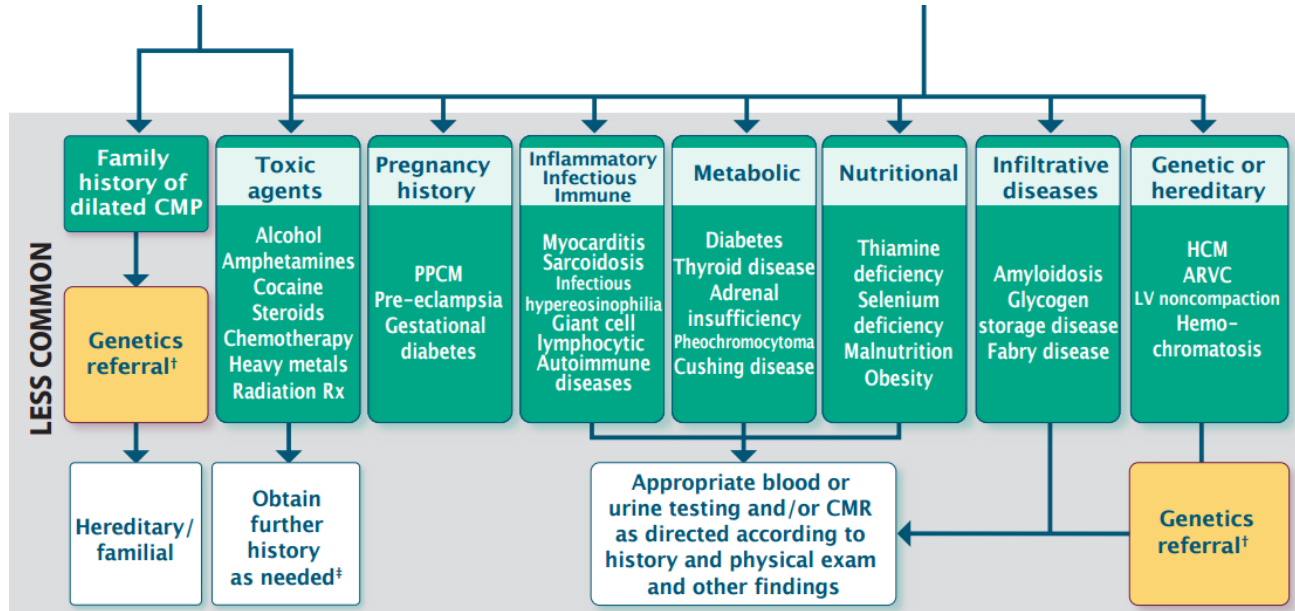
Case Presentation — George's diagnostic findings

- 12-Lead ECG: Normal sinus rhythm, HR 86 bpm, Left Ventricular Hypertrophy (LVH)
- Outpatient NT-proBNP: 420 pg/mL
- Echocardiogram: LVEF 32%, global LV hypokinesis, dilated left ventricle with normal valves, and an average E/e' ratio of 15. No regional WMAs.
- Outpatient Labs: Creatinine 105 $\mu\text{mol/L}$, eGFR 58 mL/min/1.73m² (mild CKD), Potassium 4.2 mmol/L, HbA1c 7.1%.
- Iron Profile: Serum Ferritin 45 ng/mL, TSAT 15%

4. Determining Etiology



4. Determining Etiology



* Patients may have mixed etiology of HF

† A detailed medical and family history may guide investigations and should be completed in all patients (see recommendation 19)

‡ Direct testing based on pre-test probability, availability and expertise.

ARVC, arrhythmogenic right ventricular cardiomyopathy; CAD, coronary artery disease; CBC, complete blood count; CMP, cardiomyopathy; CMR, cardiac magnetic resonance; ECG, electrocardiogram; HCM, hypertrophic cardiomyopathy; HFmEF, HF with a mid-range ejection fraction; HFpEF, HF with preserved ejection fraction; HFrEF, HF with a reduced ejection fraction; HTN, hypertension; LV, left ventricle; LVEF, left ventricular ejection fraction; LVH, left ventricular hypertrophy; NP, natriuretic peptide; PPCM, peripartum cardiomyopathy; TSH, thyroid stimulating hormone

4. Determining Etiology — Always rule out ischemia first

Coronary Artery Disease (CAD): Accounts for approximately 60% of all HFrEF cases. Must rule out ischemia in all newly diagnosed patients.

- **Workup Path:** Perform stress imaging (Stress Echo or Stress MIBI) or refer directly for coronary angiography depending on patient risk.

Other common questions to ask:

- Longstanding hypertension? → Hypertensive CM
- Uncontrolled AF/FL? → Tachycardia-induced CM
- Recent infections/autoimmune → Myocarditis
- Toxin exposure (EtoH, stimulants, chemotherapy)? Toxin-mediated CM
- +FHx? → Familial CM

George's Workup: Coronary angiogram shows normal coronaries → Non-Ischemic Cardiomyopathy – possibly hypertensive CM

5. Non-Pharmacologic Intervention

- **Dietary sodium:** Restrict to $\leq 2,500$ mg/day (keep individual meals <600 mg)
- **Fluid intake:** Restrict to 1.5-2L per day
- **Daily weights:** Track every morning; titration alert if >2 lbs/day or >5 lbs/week
- **Exercise:** Walk daily at a conversational pace (avoid heavy lifting/straining)
- **Meds to avoid:** e.g. For pain, avoid NSAIDs → recommend Acetaminophen
- **Mental health:** Actively screen for anxiety/depression (affects 20% of patients)

6. Pharmacologic Intervention: Foundational Therapy

Quadruple Therapy is the gold standard of care to reduce cardiovascular mortality:

Pillar 1: SGLT2 Inhibitor

Pillar 2: Beta-Blocker

Pillar 3: MRA (Mineralocorticoid Receptor Antagonist)

Pillar 4: ARNI (Angiotensin Receptor/Nepriylsin Inhibitor)

The Clinical Shift: Do NOT use a 'strict sequential' approach. Start all 4 pillars concurrently in parallel at low doses and optimize to target doses within 3 months (STRONG-HF showed safe in 2-6 weeks).

Pillar 1: SGLT2 Inhibitors (Dapagliflozin / Empagliflozin)

Evidence-Based Agents and Dosing:

- **Dapagliflozin (Forxiga):** 10 mg daily
- **Empagliflozin (Jardiance):** 10-25 mg daily

Key Points:

- **Benign eGFR 'Dip':** Benefit is preserved down to an eGFR of 20-30. Expect a benign, transient eGFR drop of up to 15% in the first 1-3 months (stabilizes and resolves)
- **Genital Mycotic Infections (GMIs):** Occur in 10-15% of women. Teach perineal hygiene; treat infections with local antifungals without routinely discontinuing the SGLT2i
- **Sick Day Rules:** Hold during acute dehydrating illnesses (gastroenteritis, inability to eat/drink) to avoid euglycemic DKA

Start right away. No EF required.

Pillar 2: Beta-Blockers

Evidence-Based Agents & Dosing:

- **Bisoprolol:** Start 1.25 mg daily → Target 10 mg daily
- **Carvedilol:** Start 3.125 mg BID → Target 25 mg BID
- **Metoprolol CR/XL:** Start 12.5-25 mg daily → Target 200 mg daily.

Key Points:

- **Initiation:** Start ONLY when the patient is hemodynamically stable and euvolemic
- **Titration:** Titrate slowly, doubling the dose only every 2 to 4 weeks ('low and slow')
- **Patient counselling:** Counsel that mild transient fatigue resolves inside 1-2 weeks
- **Airway Safety:** Highly selective beta-1 blockers (e.g., Bisoprolol) are safe in COPD/Asthma

Pillar 3: MRAs (Mineralocorticoid Receptor Antagonists)

Evidence-Based Agents & Dosing:

- **Spironolactone:** Start 12.5 mg daily → Target 25 to 50 mg daily.
- **Eplerenone:** Start 25 mg daily → Target 50 mg daily.

Key Points:

- **Potassium & Renal Safety Limits:** Avoid starting MRAs if Potassium is > 5.0 mmol/L or baseline eGFR is < 30
- **Mandatory Lab Monitoring:** Check serum creatinine and potassium within 1-2 weeks of starting or changing MRA doses
- **BP:** MRAs have minimal blood-pressure lowering effects - easy to initiate even in patients with borderline low blood pressure
- **Gynecomastia:** If a male patient develops painful gynecomastia on spironolactone, switch to selective MRA eplerenone.

Pillar 4: ARNI (Sacubitril-Valsartan)

Evidence-Based Dosing:

- Starting Dose: 50 mg PO BID or 100 mg PO BID (24/26 mg or 49/51 mg)
- Target Dose: 200 mg PO BID (97/103 mg)

Key Points

- **Dosing Caveat:** Start at low-dose (50 mg BID) if the patient is on low-dose RAASi, has a baseline SBP < 110 mmHg, or severe renal impairment
- **Survival Superiority:** ARNI is preferred first-line or as an early switch over ACEi/ARBs due to clinical benefits
- **36-Hour Washout Rule:** Stop ACEi and wait at least 36 hours before starting ARNI to prevent life-threatening angioedema. From ARB: Stop ARB and start ARNI at next dose; no washout is required.

What about diuretics?

Options:

- **Furosemide** 20-40 mg PO daily/BID (*titrate to lowest possible dose to maintain dry weight*)
- **Metolazone** 2.5-5 mg q48H or daily
 - To be taken 30 minutes prior to Furosemide dose
- **Bumetanide** 1 mg = Furosemide 40 mg

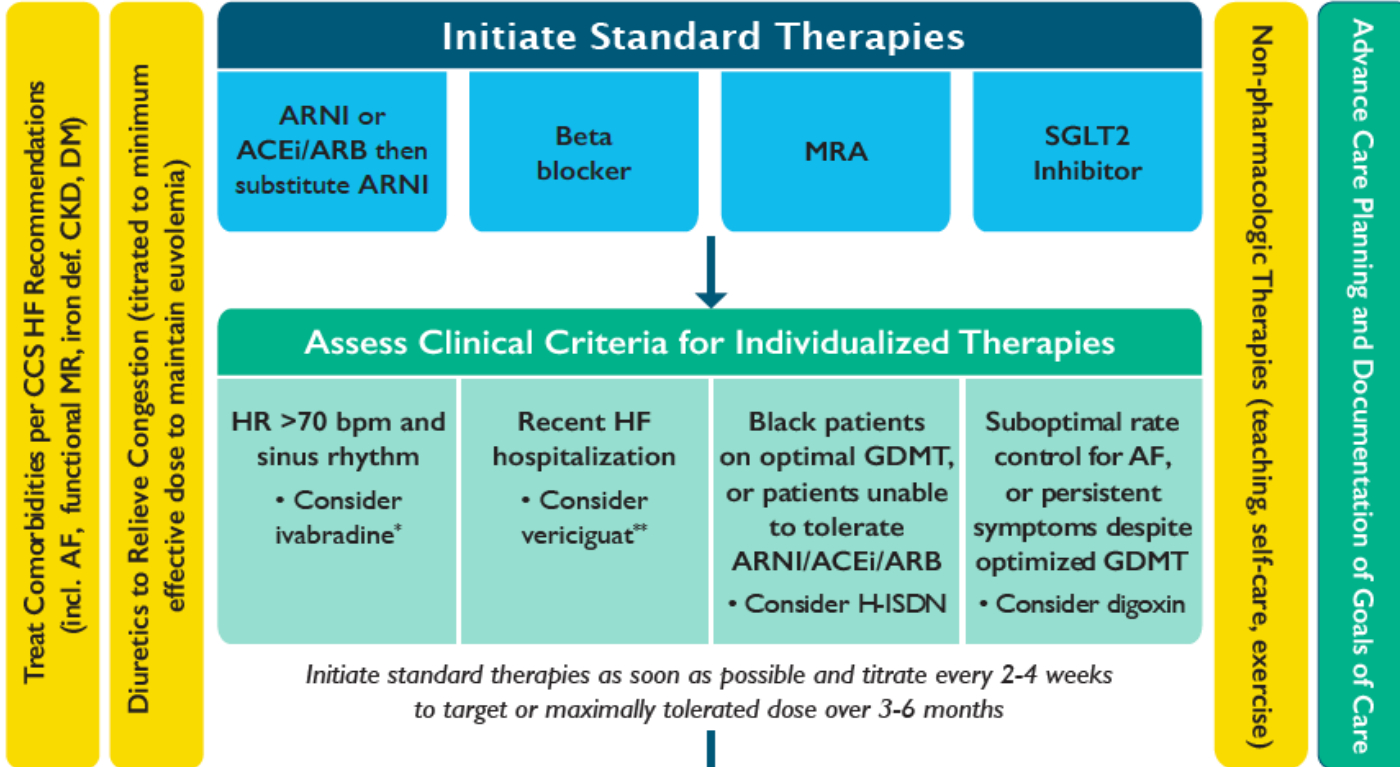
Key Points

- Is there evidence?
- What if patient is hypotensive?
- When do you start them in relation to GDMT? Do other agents have diuretic properties?

Adjunct Therapies

- **IV Iron Replacement (Symptomatic HFrEF & Iron Deficiency)**
 - Ferritin <100 ng/mL, or 100-299 ng/mL with TSAT <20% (or TSAT <20% regardless of ferritin)
 - Clinical Benefit: Infuse IV iron regardless of anemia to improve QoL and reduce hospitalizations
- **OSA**
 - Screen for OSA; treat predominant OSA with CPAP/ASV to improve symptoms and QoL
- **Hypo/hyperthyroidism**
 - Correct hypo- or hyperthyroidism regularly to optimize cardiac function and prevent decompensation

HFrEF: LVEF $\leq 40\%$ and Symptoms



7. Tackling complications

1. Scenario A: Borderline Hypotension (SBP < 100 mmHg)

- Asymptomatic: Reassure, monitor, and continue parallel GDMT titration
- Symptomatic: Hold non-GDMT vasodilators (amlodipine); space out BB and ARNI; reduce loop diuretics if euvoletic (dry)
- Note: SGLT2i and MRAs do not significantly lower BP and can be safely continued

2. Scenario B: Ambulatory Hyperkalemia (Potassium > 5.0 mmol/L)

- Potassium restricted diet
- Potassium 5.1-5.5 mmol/L: Review low-potassium diet; optimize SGLT2i; consider oral binders
- Potassium > 5.5 mmol/L: Temporarily hold MRA or down-titrate ARNI; hold NSAIDs

GDMT = guideline-directed medical therapy

7. Tackling complications

3. Scenario C: Severe CKD (eGFR <30):

- SGLT2 inhibitors remain safe and nephroprotective down to eGFR of 20
- Avoid initiating MRAs/Entresto (Spironolactone/Eplerenone) due to severe hyperkalemia risk
- Safe to use Hydralazine + ISDN (H-ISDN)
 - Hydralazine (start 10 mg PO TID)
 - Isosorbide Dinitrate (start 10 mg PO TID)

Case Presentation — Optimizing George at his 3-month follow-up

Medication Profile: Successfully initiated on Sacubitril-Valsartan 50 mg BID, Bisoprolol 1.25 mg daily, Spironolactone 12.5 mg daily, and Empagliflozin 10 mg daily.

Parallel Titration: Titrated to half-maximal target doses at 6 weeks. eGFR is stable at 54 mL/min/1.73m², Potassium is 4.6 mmol/L.

Hemodynamic Tolerance: Blood pressure remains stable at 112/72 mmHg, HR is 68 bpm in sinus rhythm.

Symptom Burden: Symptoms have significantly improved to NYHA Class II. Walking distance has doubled.

Repeat echo: LVEF has improved from 32% to 52%.

Clinical Question: Since George is completely asymptomatic and his EF is normal, can we stop his medications?

8. 3 Month Reassessment

HFimpEF Definition: LVEF that has improved from $\leq 40\%$ to $>40\%$ and $\geq 10\%$ compared to initial.

The Clinical Temptation: George's LVEF has recovered to 55%. He feels fantastic. Can we stop or down-titrate his heart failure medications?

⚠ THE GOLDEN RULE: DO NOT WITHDRAW GDMT!

- High Relapse Risk: Withdrawing GDMT in patients with recovered heart function leads to a 44% clinical relapse rate (remodeling, rising BNP, or recurrent symptoms) within 6 months.
- Remission, Not Cure: A normal EF does not mean their heart is cured. It means their heart failure is in deep remission maintained by neurohormonal blockade. Maintain GDMT lifelong.

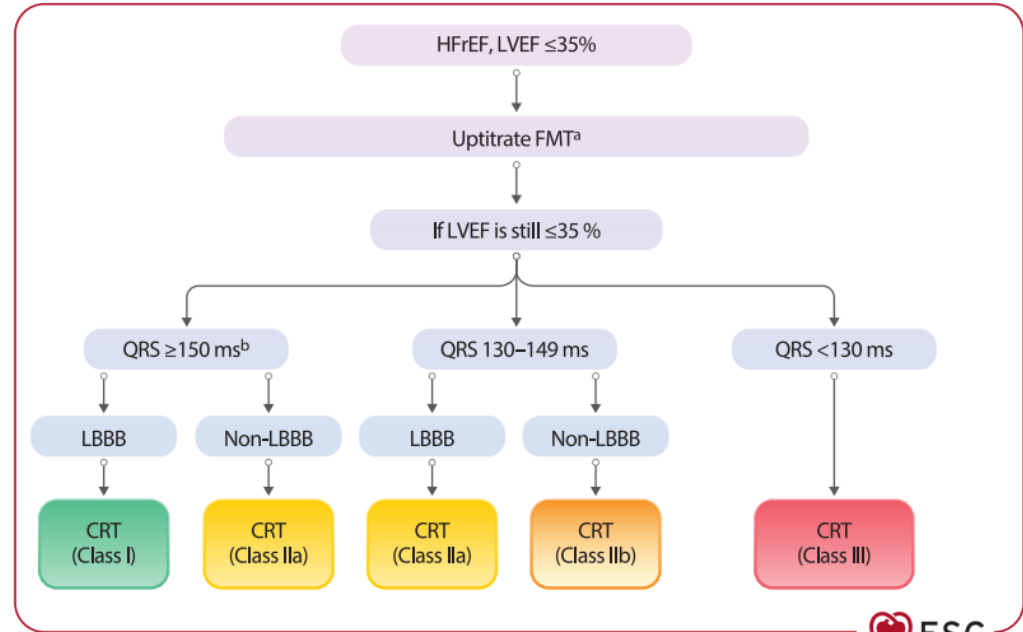
GDMT = guideline-directed medical therapy

8. 3 Month Reassessment

No improvement in LVEF. Anything else to optimize?

HFrEF Device Therapies

- Primary Prevention ICD:
Persistently reduced LVEF $\leq 35\%$ to reduce sudden cardiac death (SCD) risk
- Cardiac Resynchronization (CRT):
Indicated for sinus rhythm, LVEF $\leq 35\%$, and LBBB with QRS ≥ 130 ms OR non-LBBB with QRS ≥ 150 ms



9. Fitness to Drive

Private Driving

NYHA Class I-III: NO restrictions on private driving.

NYHA Class IV: Disqualified from private driving until stabilized.

Primary Prevention ICD: Restricted for 1 week post-implant (DREAM-ICD data).

ICD Shock (Disabling): Restricted for 3 months post-event.

Commercial Driving

The Ejection Fraction Cutoff: Disqualified from commercial driving if LVEF < 30% — even if completely asymptomatic (NYHA Class I).

NYHA Class III & IV: Disqualified from commercial driving.

ICD in situ: Any commercial driver with an ICD implanted is permanently disqualified.

Brennan Risk Formula: Commercial drivers are bound by a strict 1% annual sudden incapacitation threshold (vs. 22% for private drivers).

10. Referral Pathways — Wait-time benchmarks

Urgency	Wait-Time	Specific Clinical Scenarios
Emergent	Within 24 Hours	Acute severe myocarditis, cardiogenic shock, new-onset acute pulmonary edema.
Urgent	Within 2 Weeks	New diagnosis of unstable decompensated HF, progression to NYHA Class IV, post-hospitalization/ER visit.
Semiurgent	Within 6 Weeks	New stable compensated heart failure (NYHA Class II-III), worsening HF despite standard therapy.
Routine	Within 12 Weeks	Stable chronic heart failure (NYHA Class I-II) on fully optimized GDMT.

GDMT = guideline-directed medical therapy

Advanced HF Specialist Referral — The I NEED HELP Mnemonic

I — IV Inotropes: Outpatient dependence on chronic/intermittent infusion

N — NYHA IIIB / IV: Persistent severe symptoms or elevated peptides

E — End-organ dysfunction: Wening creatinine/renal function or hepatic congestion

E — Ejection fraction $\leq 35\%$: Severe dysfunction despite ≥ 3 months optimized GDMT

D — Defibrillator shocks: Any appropriate shocks or complex ventricular arrhythmias

H — Hospitalizations > 1 : HF admissions or ER visits within last 12 months

E — Edema: Refractory congestion despite escalating loop diuretic doses

L — Low blood pressure: Persistent SBP < 90 mmHg or resting tachycardia

P — Prognostic limits: Progressive down-titration of GDMT due to renal/BP limits

GDMT = guideline-directed medical therapy

MGH Heart Function Clinic



Heart Function Referral Form

Reason for Referral		Patient Information	
Previous Medical History		Name	Patient
		DOB	Label
		MRN	
		HC #	
HF Risk Assessment (check all that apply)		Other Medications	
☐ ≥2 admissions for heart failure in last 12 months ☐ 2 visits to the ER for HF in last 12 months ☐ Kidney disease or BP limitations to titration of medications ☐ Patients being discharged with a new diagnosis of heart failure for rapid reassessment ☐ HF post-myocardial infarction			
Medications		Allergies	
Furosemide ☐ mg (daily / bid / tid) ACEI Y / N No ARB Y / N No Beta-blocker Y / N No ☒ MRA Y / N No ARNI Y / N No SGLT2 inhibitor Y / N No ☒			
Baseline Characteristics		Blood Chemistry	
LVEF (%) – pls repeat echo if >6 mos	NYHA I II III IV ☐ ☐ ☐ ☐	Na	Hb TSH
HF Etiology	Weight	K	A1c Ferritin
		Cr	NTproBNP
		Date Taken	

Refer to **community cardiologist** for:

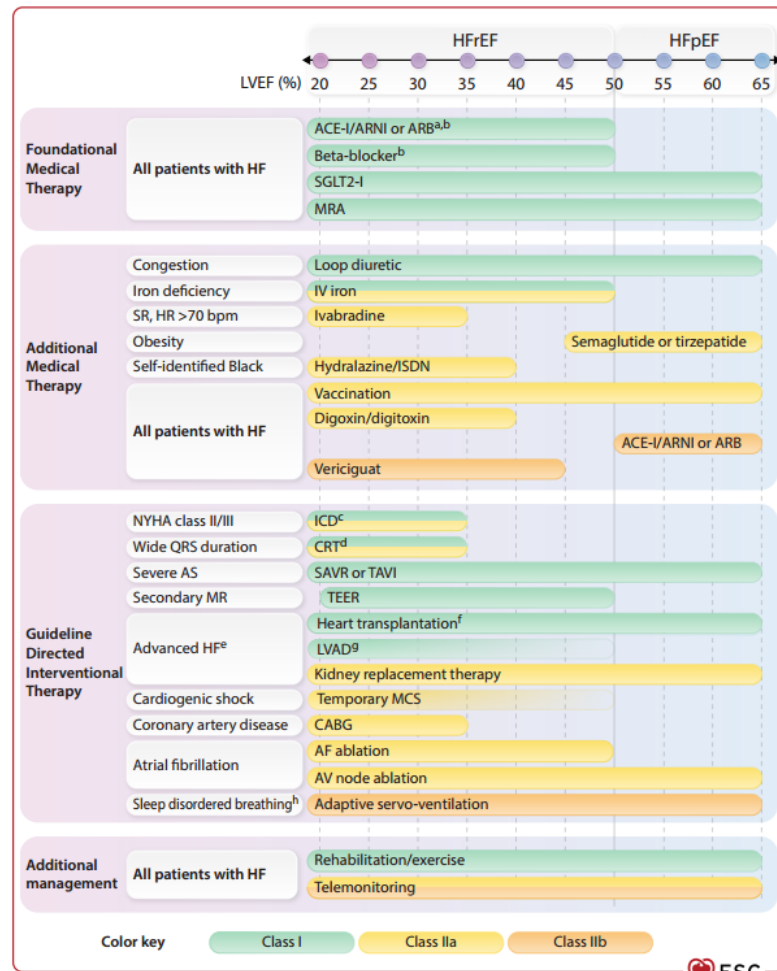
- Ischemia or other diagnostic assessment
- Diagnostic uncertainty
- New diagnosis of HF

Refer to **advanced HF clinic** for:

- Severe LV dysfunction
- NYHA III-IV symptoms
- Multiple comorbidities complicating care
- Recurrent ED visits/hospitalizations

10 Key Takeaways

1. Defining HFrEF
2. Key clinical signs and symptoms of HF
3. Initial HF investigations
4. Echo checklist
5. Non-pharmacologic therapies: diet, exercise
6. Pharmacologic therapies: foundational and adjunct
7. Tackling complications: hypotension, hyperkalemia, CKD
8. 3-month reassessment & device therapy
9. Fitness to drive
10. When to refer



Roundtable Discussion

- System-level barriers and provider needs identified during the session
- Collective problem-solving around barrier/needs leveraging existing resources.



Thank you for participating in today's session

Please Complete the Session Evaluation

<https://forms.cloud.microsoft/r/ygYRQ5EYrZ>

September 18, 2026 Evaluation
Form - BEAM Collaborative



This activity has been certified by the College of Family Physicians of Canada and the Ontario Chapter for up to 4 Mainpro+® Certified Activity credits. This session has been certified for 1 credit.

Resources Shared During Session

- Canadian Cardiovascular Society – Pocket Guides
 - <https://ccs.ca/pocket-guides/>
- Canadian Cardiovascular Society App
 - <https://ccs.ca/iccs-app/>
- Session Recording: Available Until November 23, 2026
 - [Bridging Expertise Across Medicine \(BEAM\) Collaborative-20260918_080414-Meeting Recording.mp4](#)

Additional CHF Resources/Handouts

- University of Ottawa Heart Institute, Heart Failure guide
 - <https://www.ottawaheart.ca/sites/default/files/documents/heart-failure-a-guide-for-patients-and-caregivers-2024.pdf>
- Living With Advanced Heart Failure Booklet
 - https://ourhearthub.ca/wp-content/uploads/2024/02/LWAHF_Booklet_PRINT-compressed.pdf
- University of Ottawa Heart Institute Daily Weight Tracker
 - <https://www.ottawaheart.ca/sites/default/files/legacy/images/Patients-Visitors/Guides/TAVI-Guide/tavi-daily-weight-tracker.pdf>