
# DE-MYSTIFYING HEART FUNCTION CLINIC

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SURREY MEMORIAL HOSPITAL/JPOC

# OUTLINE

- Background
- CCS 2017 guidelines
  - Updates in 2020, 2021
- Impact of new drugs on heart failure
- Role of Heart Function Clinic
  - Staff at HFC
  - Patient Journey
  - Referral Criteria

# Background

- 750,000 patients with heart failure
- >100,000 patients diagnosed per year
- >2.8 billion/year in healthcare cost by 2030

# Heart failure leads to frequent hospitalizations

HF is one of the most common causes of hospitalization for patients aged **>65 years** in developed countries[1]

Nearly **44%** of all HF patients are readmitted within **1 year** after discharge[2]

**Length of stay** for HF hospitalization ranges between **5–10 days**[3]

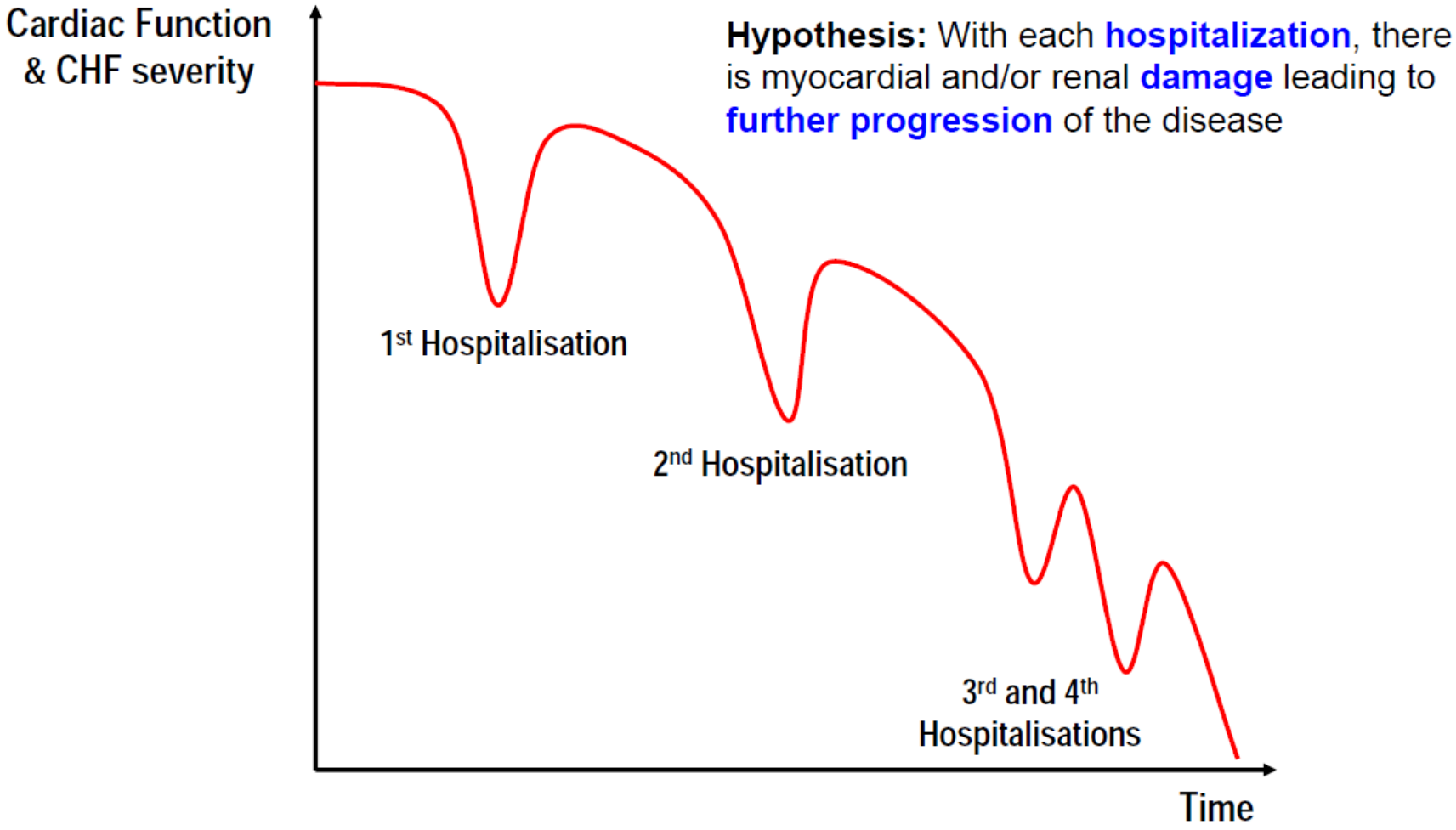
In the USA, **30-day** re-admission rates are **>25%**[4]

In Europe, **re-admission rates** are **~24%** at 12 weeks[5]

HF, heart failure

1. Bui et al. Nat Rev Cardiol 2011;8:30–41; 2. Maggioni et al. Eur J Heart Fail 2013;15:808–17; 3. Ponikowski et al. ESC Heart Fail 2014;1:4-25; 4. Kociol et al. Am Heart J 2013;165:987–94; 5. Cleland et al. Eur Heart J 2003;24:442–63

# Recurring Hospitalizations Impair Outcome



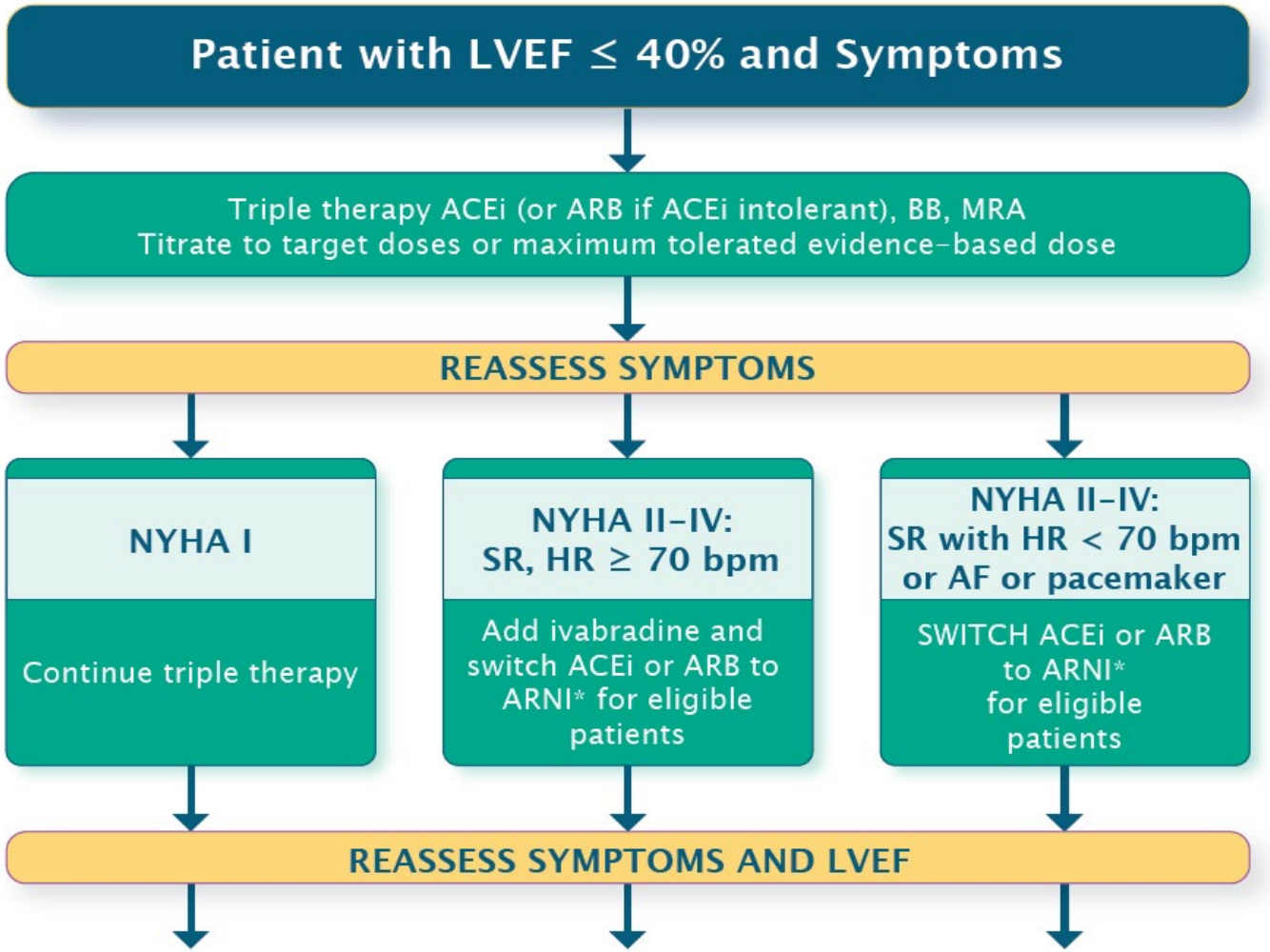

Gheorghiade et al. *Am J Cardiol*. 2005; 96:11-17

# CCS guidelines for HFrEF in 2017

"Triple therapy"

↓

Substitute for ARNI, add ivabradine

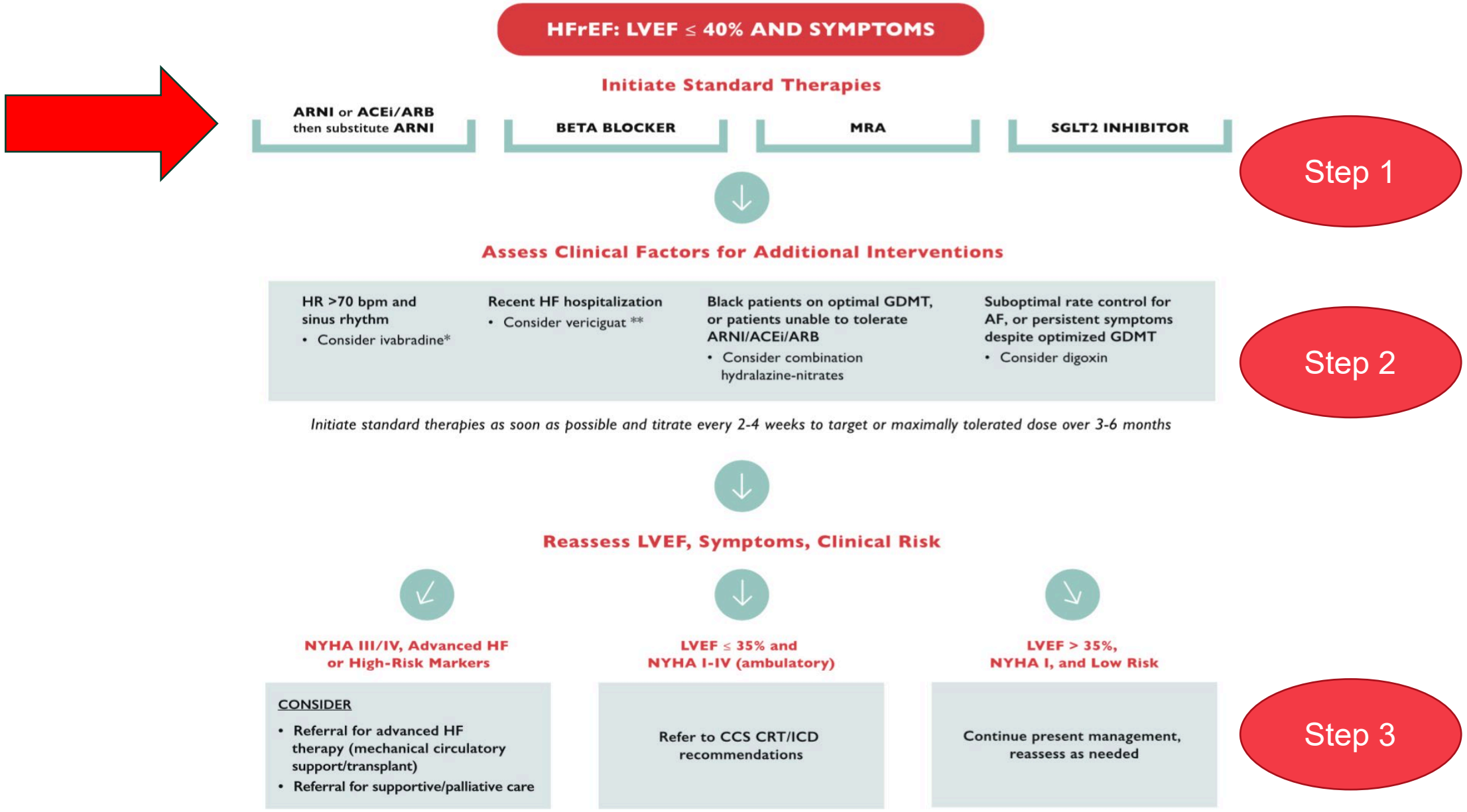



Ezekowitz et al, Can J Cardiol 2017

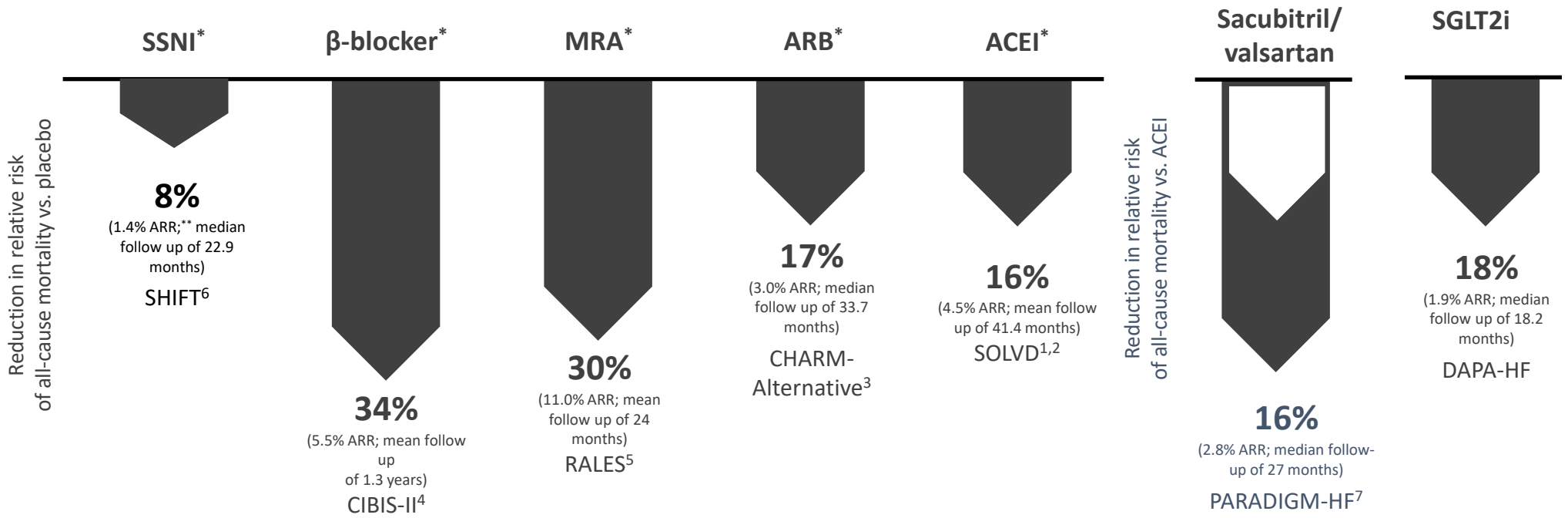
# New evidence for decision making in HFrEF

| Study | Drug | Patients | Primary Outcome | Study Implications |
|---|---|---|---|---|
| PIONEER-HF (and extension study) | Sac-val vs Enalapril | Stabilized after admission with with worsening HF;<br>35% with de novo HF | Change in NT-proBNP values at 8 weeks | Broader use of ARNI in hospitalized and de novo HF patients |
| DAPA HF | Dapagliflozin vs placebo | NYHA II-IV, chronic HF, with or without DM2 | CV death or worsening HF | Addition of SGLT2 inhibitors improves outcomes in broad spectrum of HFrEF patients with or without DM2 |
| EMPEROR Reduced | Empagliflozin vs placebo | High risk NYHA II-IV, chronic HF, with or without DM2 | CV death or worsening HF | |
| VICTORIA | Vericiguat vs placebo | NYHA II-IV, recent worsening HF requiring admission or IV diuretic | CV death or worsening HF | Addition of vericiguat in stabilized high risk patients further improves outcomes |

# New algorithm: 4 pillars instead of 3



# HF therapies that improve overall survival




ACEI, angiotensin-converting-enzyme inhibitor; ARB, angiotensin receptor blocker; ARN, angiotensin receptor neprilysin inhibitor; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; LVEF, left ventricular ejection fraction; MRA, mineralocorticoid receptor antagonist; SSNI, selective sinus nod inhibitor

*On top of standard therapy at the time of the study (except in CHARM-Alternative where background ACEI therapy was excluded) patient populations varied between trials and as such relative risk reductions cannot be directly compared. SOLVD (Studies of Left Ventricular Dysfunction), CIBIS-II (Cardiac Insufficiency Bisoprolol Study II) and RALES (Randomized Aldactone Evaluation Study) enrolled chronic HF patients with LVEF≤35%. CHARM-Alternative (Candesartan in Heart failure: Assessment of Reduction in Mortality and Morbidity) enrolled chronic HF patients with LVEF≤40%; SHIFT (Systolic Heart failure treatment with the If inhibitor Ivabradine Trial) enrolled patients with chronic moderate to severe HF and LVEF≤35%; PARADIGM-HF (Prospective comparison of ARNI with ACEI to Determine Impact on Global Mortality & morbidity in HF) enrolled chronic HF patients with LVEF≤40% (changed to LVEF≤35% by protocol amendment in December 2010); **Not statistically different from placebo

1. McMurray *et al. Eur Heart J* 2012; 33:1787-847. 2. SOLVD Investigators. *N Engl J Med* 1991; 325:293-302. 3. Granger *et al. Lancet* 2003; 362:772-6. 4. CIBIS-II Investigators. *Lancet* 1999; 353:9-13. 5. *Pitt et al. N Engl J Med* 1999; 341:709-17. 6. Swedberg *et al. Lancet* 2010; 376:875-85. 7. McMurray *et al. N Engl J Med* 2014; 371:993-1004.

# Heart Failure referrals

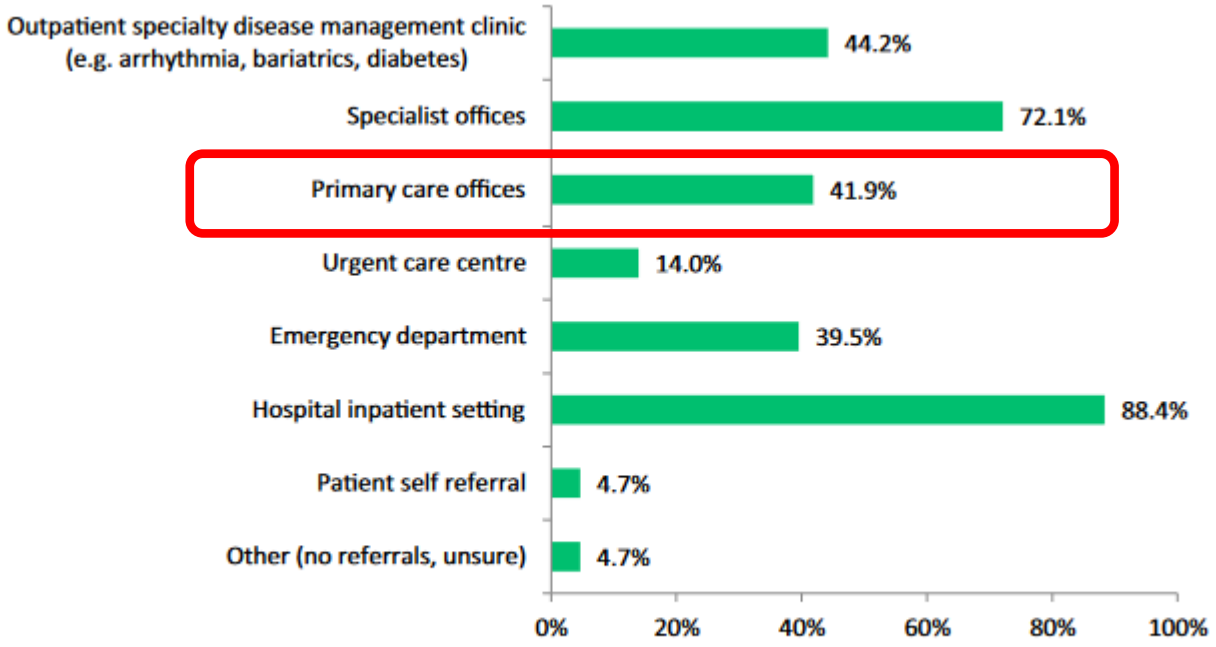
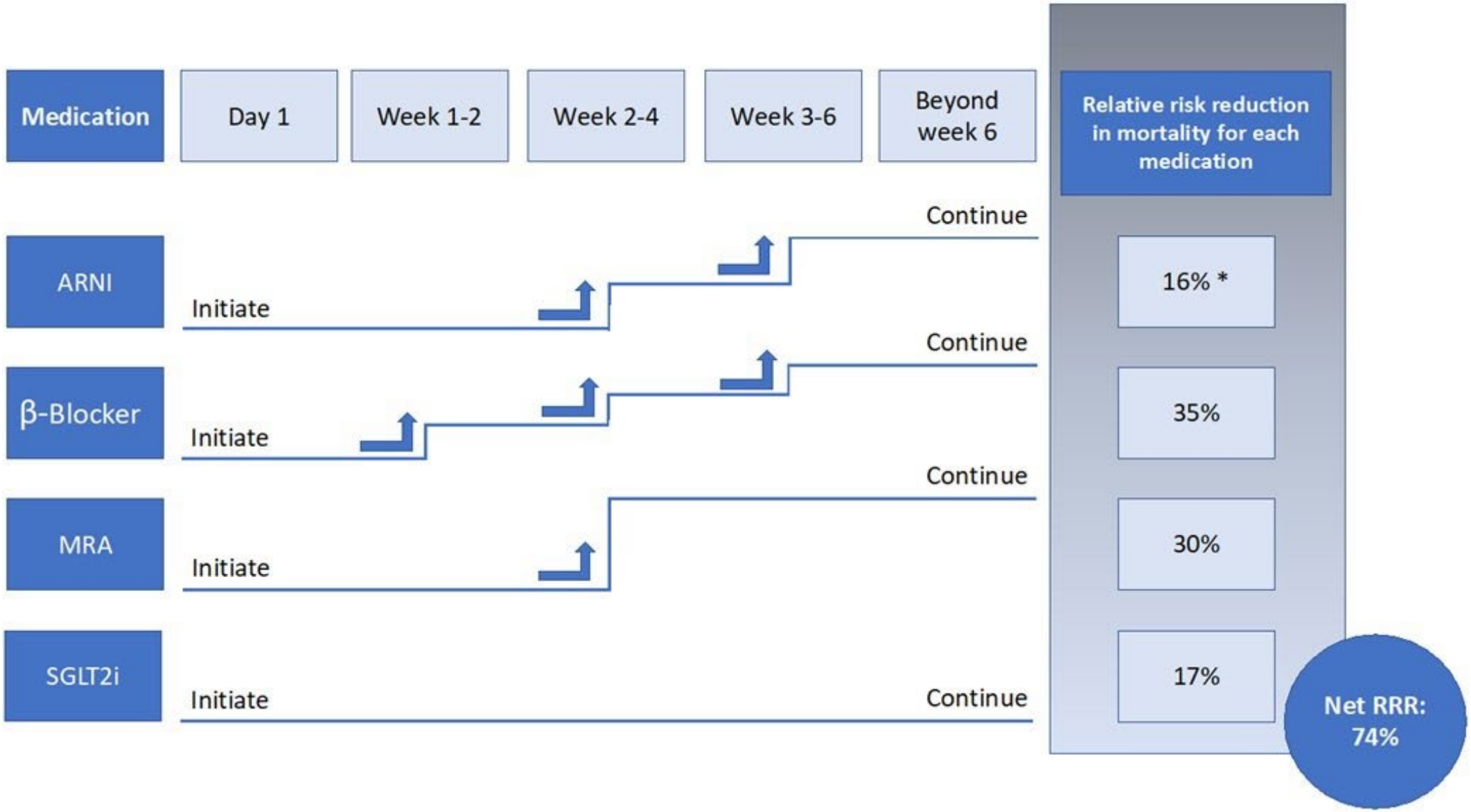



**Figure 1.** Accepted referral sources by clinics across Canada. The figure depicts the distribution and percentage of referral sources to heart failure clinics in Canada.

# Role of heart function clinic



# Heart Function Clinic

- How to refer?
- What we do?
- Who does it?
- What to expect?

# Referring to Heart Function Clinic

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## HEART FUNCTION CLINIC REFERRAL

☐ ARH ☐ BH ☐ JPOCSC ☐ LMH ☐ RCH ☐ RMH

Form ID: MSXX104940C Rev: Feb 20/2020 Page: 1 of 1

| *Patient | *Referring Provider |
|---|---|
| Name: | Name: |
| City, Province: | Phone: |
| Postal Code: | Fax #: |
| Contact #: | MSP #: |
| PHN#: | ☐ GP ☐ NP ☐ ED ☐ In patient |
| DOB: | ☐ Specialist, Specify: |

**Referral Criteria:**

1. Established heart failure of any etiology with an LVEF < 40%
2. LVEF > 40% with sign's and/or symptoms of heart failure, with an elevated BNP or NT-PRO-BNP.

**BNP Reference:**

| *Age* | *NT Pro BNP* |
|---|---|
| <50 YRS | > 450 |
| 50-75 YRS | > 900 |
| > 75 YRS | > 1800 |

| *Indicative of HF* | *BNP* |
|---|---|
| Does not support HF | <100 |
| Borderline Zone | 100-250 |
| Supports HF | 250-400 |
| Strongly supports HF | >400 |

***Primary Community Cardiologist:**

***Reason for Referral:** Wait times are allocated within published benchmarks as listed below.

| | |
|---|---|
| ☐ **Emergent referral - speak with on-call Cardiologist** | **Emergent heart failure consultation is for cardiogenic shock, inotrope/vaso pressor requirements or respiratory distress.** |
| ☐ New diagnosis of heart failure and UNSTABLE **OR**<br>Post MI heart failure **OR**<br>Post hospitalization HF **OR**<br>Progressively worsening HF | **Appointment within 2 weeks** |
| ☐ Heart Failure with symptoms but NOT decompensated, **OR**<br>New diagnosis of heart failure and STABLE | **Appointment within 4 weeks** |
| ☐ Chronic heart failure management **OR**<br>Asymptomatic LV dysfunction | **Appointment within 6 weeks** |

***Every effort is made to maintain benchmark times however timing may vary due to volume of referrals.***

***Care Management:** *all options will be invited to HF Group Education*

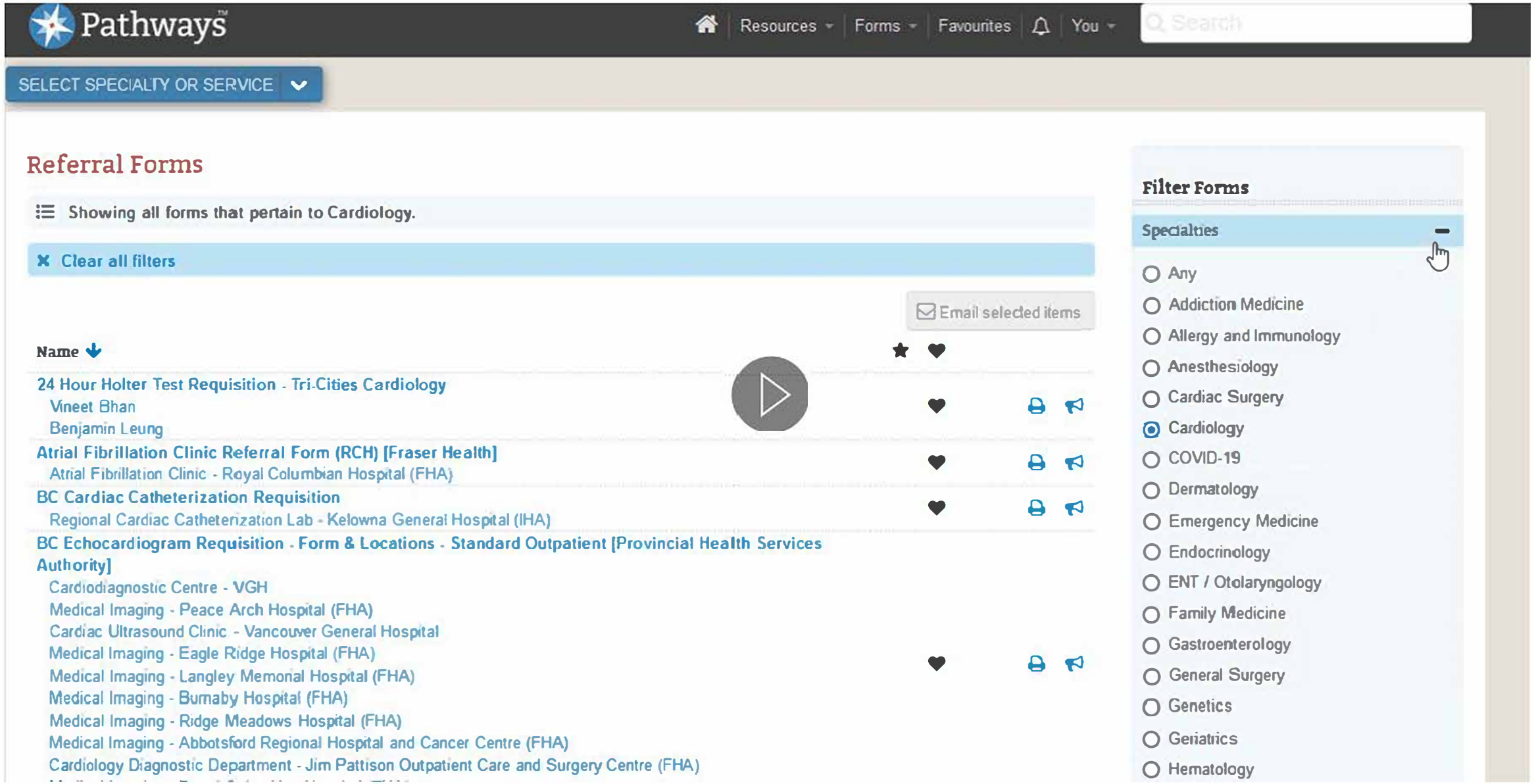
- ☐ Shared care (for 6 months or until discharge criteria met)
- ☐ HF Medication Optimization (Titrations done by Pharmacist, Cardiologist or NP)
- ☐ Education only
- ☐ Advice only (consultation but no changes) Specific question referring provider would like answered?

**Please attach a list of current medications, relevant history and investigations.**
*Primary Language Spoken, if not English, please ensure there is someone with the patient who can speak English

* Referring Physician/ NP:_____ Date:_____ # of pages faxed _____

* Fax: ☐ ARH: 604-851-4782 ☐ BH: 604-412-6189 ☐ JPOCSC: 604-582-3783 ☐ LMH: 604-514-6012 ☐ RCH: 604-528-5067 ☐ RMH: 604-463-1887

***To expedite care PLEASE ensure ALL aspects of this form are completed***


Pathways
Resources
Forms
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You
Search
SELECT SPECIALTY OR SERVICE
Referral Forms
Showing all forms that pertain to Cardiology.
Clear all filters
Email selected items
Name
24 Hour Holter Test Requisition - Tri-Cities Cardiology
Vineet Bhan
Benjamin Leung
Atrial Fibrillation Clinic Referral Form (RCH) [Fraser Health]
Atrial Fibrillation Clinic - Royal Columbian Hospital (FHA)
BC Cardiac Catheterization Requisition
Regional Cardiac Catheterization Lab - Kelowna General Hospital (IHA)
BC Echocardiogram Requisition - Form & Locations - Standard Outpatient [Provincial Health Services Authority]
Cardiodiagnostic Centre - VGH
Medical Imaging - Peace Arch Hospital (FHA)
Cardiac Ultrasound Clinic - Vancouver General Hospital
Medical Imaging - Eagle Ridge Hospital (FHA)
Medical Imaging - Langley Memorial Hospital (FHA)
Medical Imaging - Burnaby Hospital (FHA)
Medical Imaging - Ridge Meadows Hospital (FHA)
Medical Imaging - Abbotsford Regional Hospital and Cancer Centre (FHA)
Cardiology Diagnostic Department - Jim Pattison Outpatient Care and Surgery Centre (FHA)
Filter Forms
Specialties
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Addiction Medicine
Allergy and Immunology
Anesthesiology
Cardiac Surgery
Cardiology
COVID-19
Dermatology
Emergency Medicine
Endocrinology
ENT / Otolaryngology
Family Medicine
Gastroenterology
General Surgery
Genetics
Geriatrics
Hematology

# CCS Benchmarks

| Benchmarks: Treating the Right Patient at the Right Time: Access to Heart Failure Care (Adopted from CCS guidelines) | | | |
|---|---|---|---|
| **Triage Category** | **Access Target** | **Examples of conditions** | **Health care provider** |
| Emergent<br>(very high risk) | <24hrs | • Acute Severe myocarditis<br>• Cardiogenic shock<br>• Transplant evaluation –acutely unstable patient<br>• First episode of acute pulmonary edema<br>• Acute cardiac Valvular regurgitation | • Heart Failure specialist<br>• Cardiologist |
| Urgent<br>(High risk) | <2 weeks | • Progressive heart failure<br>• New diagnosis of heart failure- unstable, decompensated<br>• Post myocardial heart failure<br>• New progression to AHA/ACC class D<br>• Post-hospitalization discharge heart failure | • Heart Failure Specialist<br>• Disease management program (DMP)<br>• Cardiologist |
| Semi urgent | <4 weeks | AHA/ACC Class C<br>New diagnosis of heart failure- stable, compensated | • Heart Failure Specialist<br>• Disease management program (DMP)<br>• Cardiologist<br>• Internist |
| Scheduled | < 6 weeks<br><12 weeks | Chronic heart failure<br>AHA/ACC class A and B | • Family Physician,<br>• Internist,<br>• Cardiologist,<br>• Disease management program (DMP)<br>• Heart failure specialists |

# What do we do?

# HEART FUNCTION CLINIC ROADMAP

## TIME LINE 6 MONTHS

### REFERRAL
- Determine Urgency
- Register For Education Class
- Register For Intake Appointment

### MD INTAKE
- Assessment
- Pre-Printed Orders
- Treatment Plan
- Referrals/Diagnostics

### RN/RX FOLLOWUP
- Implement Plan
- Medication titration
- Diuretic titration
- Continue Education

### MD/NP FOLLOW UP
- Evaluate Plan
- Assessment

### NP FOLLOW UP
- Evaluate Plan
- Assessment

### MD/NP DISCHARGE
- To Community Cardiology
- To Primary Physician

# Team

- Cardiologists
- Registered Nurses
- Nurse Practitioners
- Pharmacists
- Dietitian
- Social worker
- Cardiac rehabilitation

# Staff at HF Clinic at JPOCSC

## Co-Directors of Heart Failure Service


Dr. Tarun Sharma

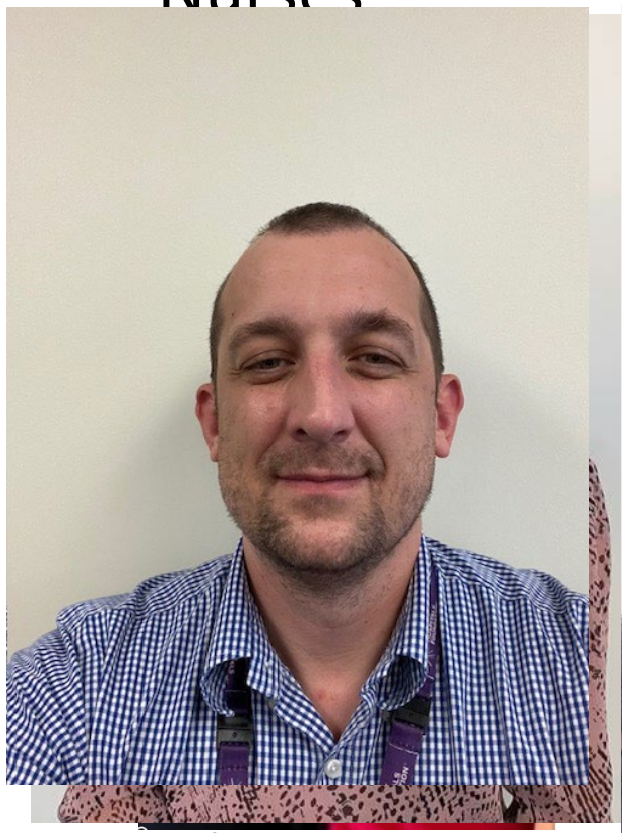
Dr. Calvin Tong

# Staff at HF clinic at JPOCSC

Nurses

Pharmacists

Nurse Practitioners



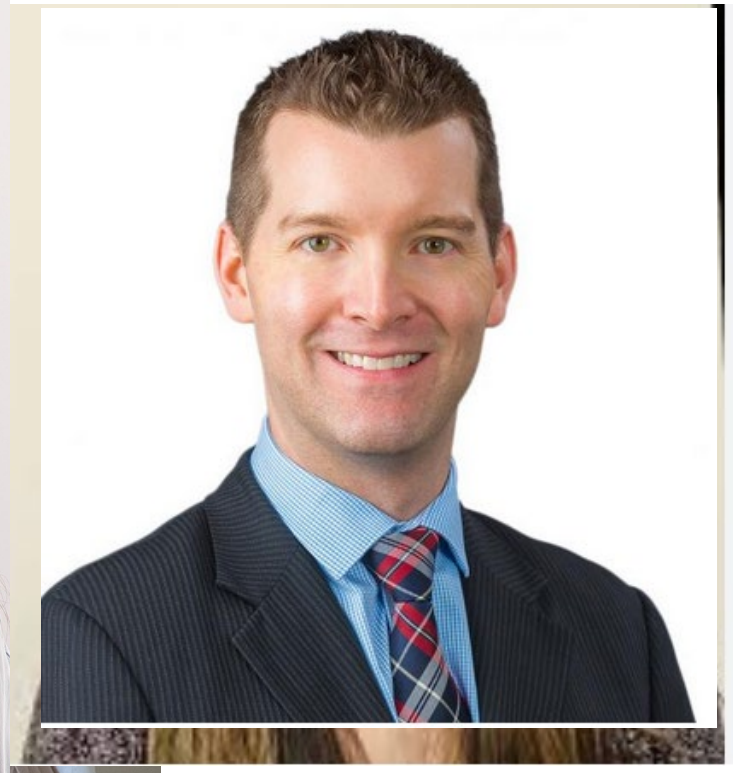
Mark

Roshima

Jeraldine (PCC)

Soomi

Mona



Arden

Pamela

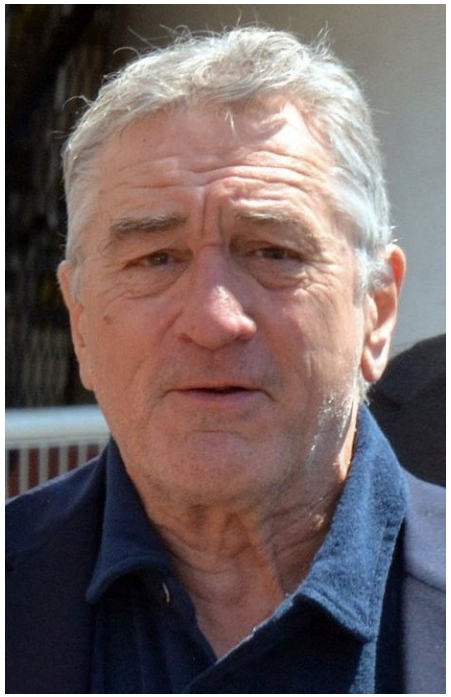
Rohini

Joan

# What to expect

- Starting usual HF therapies
- Investigations as needed (such as workup for CAD, amyloidosis etc)
- Repeat renal function in 10-14 days
- Repeat calls to patients to guide med titration
- Discharge from clinic once on maximal medications
- Patient education regarding self management
- WHAT WE DO NOT DO
  - General cardiology management, hypertension management, atrial fibrillation management

# Case #1:



- 75 year old male
- PMH: CKD (eGFR ~40), HTN
- Home meds: ramipril 5mg daily, HCTZ
- Admitted for 4 week of dypsnea, orthopnea, edema
- Started on Lasix 40mg IV BID with good response
- Echo showed LVEF 35%, global hypokinesis
- Discharged on RAMIPRIL 5mg daily, ATENOLOL 25 mg daily, LASIX 40 mg daily

# When should you refer this patient?

- Right away when seen in office
- In 4 weeks once stable post discharge
- At time of discharge from hospital
- In 3 months after repeat echo

# Case #2

- 51 year old female
- PMH: Type 2 diabetes, hypertension, CKD (eGFR 38), LVEF 55%
- Meds: metformin 500 BID, Glyburide 5 mg daily, ramipril 5mg daily, metoprolol 50mg BID
- Seen in clinic for LE edema.
- Diuresed with Lasix and now stable.

# Do you need to refer this patient to HFC?

- No, patient is stable on diuretic
- Will refer if patient has a hospital admission
- Yes, I will refer now urgently
- Yes, routine referral

# Case #3

- 62 year old male
- PMH: CAD s/p CABG, LVEF 37%, Type 2 diabetes, hypertension
- Meds: metformin 500 BID, Glyburide 5 mg daily, ramipril 10mg daily, metoprolol 50mg BID
- Stable, no symptoms.

# Case #4

- 45 year old male
- Recently diagnosed with Afib with rapid ventricular response
- Echo showed LVEF 45%
- Meds: Metoprolol 25 mg BID, apixaban 5 mg BID
- Stable, no symptoms.

# What would you do?

- Refer to HFC urgently

- Refer to General Cardiology

- Refer to HFC (routine)

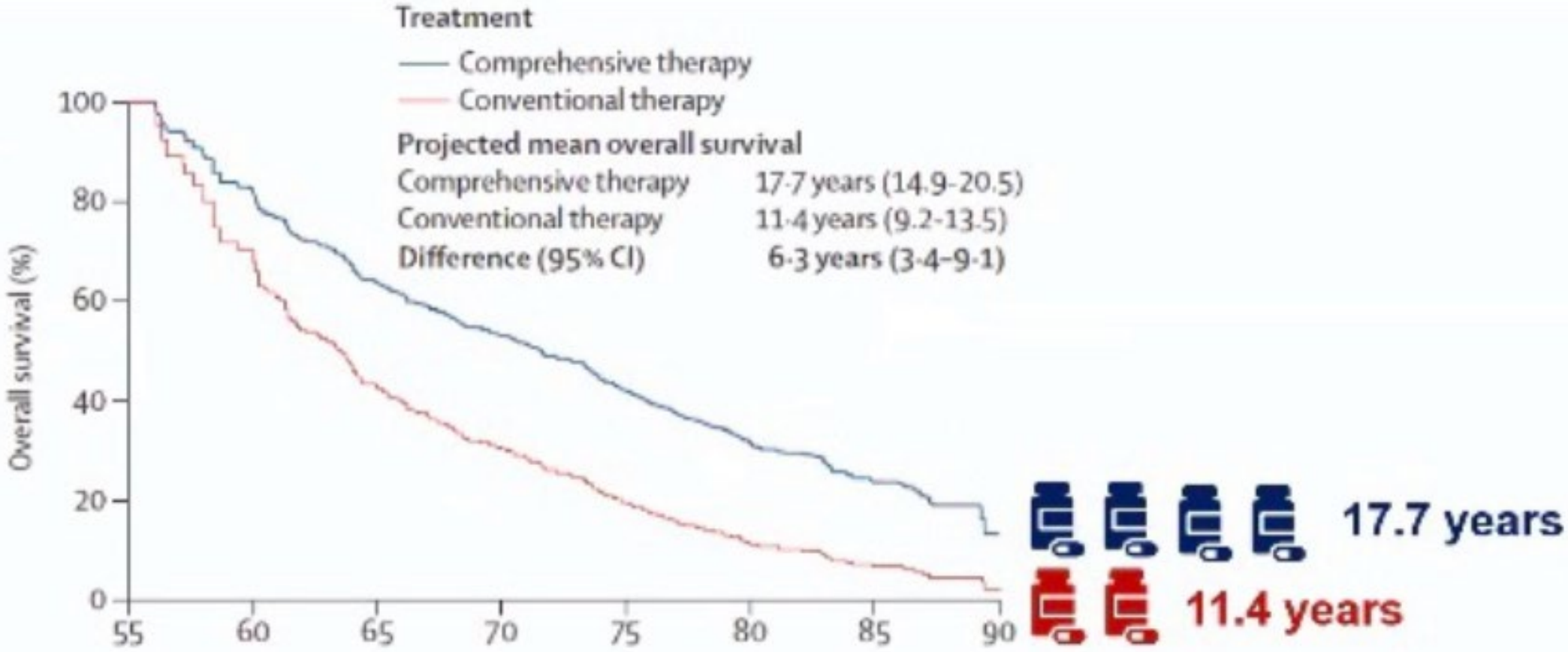
- No referral needed (just rate control patient)
  - And repeat echo

# CONCLUSION

- Significant burden of heart failure
  - Will continue to have periods of worsening despite medications

- Heart Function Clinic (in collaboration with cardiologists) can help with:
  - Medication optimization
  - Patient education
  - Cardiac Rehabilitation
  - Necessary Investigations
  - Social work support
  - Device therapy if needed

- Discharge patients once optimized




**6.3 additional years of overall survival**

Vaduganathan M et al. *Lancet* 2020

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# HEART FUNCTION CLINIC REFERRAL

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Form ID: MSXX104940C Rev: Feb 20/2020 Page: 1 of 1

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