From hospital to home: coordinated heart failure care in general practice

7 May 2026

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Australian Government
Eastern Melbourne PHN is primarily funded by the Australian Government through the Department of Health, Disability and Ageing.

Acknowledgement of Country

Eastern Melbourne PHN acknowledges the Wurundjeri people and other peoples of the Kulin Nation on whose unceded lands our work in the community takes place. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. EMPHN is committed to the healing of Country, working towards equity in health outcomes, and the ongoing journey of reconciliation.

Recognition of lived experience

We recognise and value the knowledge and wisdom of people with lived experience, their supporters and the practitioners who work with them and celebrate their strength and resilience in facing the challenges associated with recovery. We acknowledge the important contribution that they make to the development and delivery of health and community services in our catchment.

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Agenda

Welcome • House keeping • Speaker introductions • Scene setting & case study	6.30pm
Heart failure – from hospital to home • Dr Vicki Pandeli – cardiologist • Kirsten Sandstrom – clinical nurse consultant • A/Prof Ralph Audehm – specialist GP • Brian Meier – credentialed pharmacist	6.38pm
Case study • Case study discussion	7.18pm
Q & A and close	7.45pm

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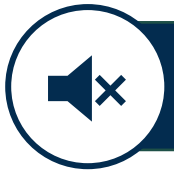
Housekeeping



All attendees to please remain on mute

Q&A will be at the conclusion of the webinar

This webinar is being recorded

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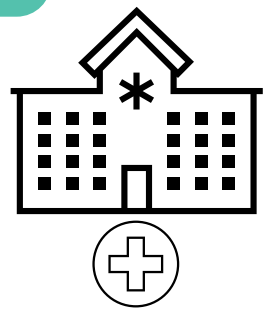
Heart failure – from hospital to home

Anne Gravette
Facilitator, Eastern Melbourne PHN

Dr Vicki Pandeli
Cardiologist



Kirsten Sandstrom
Clinical nurse consultant

A/P Ralph Audehm
Specialist GP

Brian Meier
Credentialed pharmacist

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Setting the scene

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Heart failure prevalence and subtypes indicators – EMPHN level data

Number of RACGP-active patients with an active diagnosis of 'heart failure'

n = 15,916

~1.0% of EMPHN population*

* EMPHN population = 1.62m

Number of RACGP-active patients with current HF-specific beta blocker and no active HF diagnosis

n = 12,746

~0.8% of EMPHN population*

* EMPHN population = 1.62m

Proportion of RACGP-active patients with HF who have classification of heart failure recorded: HFrEF, HFmrEF or HFpEF

HFrEF = 11.7%

HFmrEF = 0.1%

HFpEF = 4.3%

Total = 16.2%

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Guideline-directed medical therapy (GDMT) indicators – EMPHN level data

Proportion of patients* diagnosed with HF on a SGLT2 inhibitor	Proportion of patients* with HFrEF currently prescribed a HF-specific beta blocker	Proportion of HFrEF patients* currently prescribed: ACEI, ARB or ARNI + HF-specific beta blocker + MRA + SGLT2 inhibitor
35.7%	53.5%	18.1%

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* RACGP-active (visited a specific general practice at least three times in the previous two years)

Multidisciplinary team management indicators – EMPHN level data

Proportion of patients* diagnosed with HF who have a GPCCMP developed or reviewed in last 12 months	Proportion of patients* diagnosed with HF who have been referred for a DMMR / RMMR in last 12 months	Proportion of patients* with HF vaccinated against 1. influenza in last 12 months 2. pneumococcal ever 3. COVID-19 in last 12 months
47.5%	DMMR = 4.2% RMMR = 2.7%	Flu = 39.3% P'coccal = 60.9% COVID = 21.8%

* RACGP-active (visited a specific general practice at least three times in the previous two years)

Dr Vicki Pandeli

Cardiologist

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Heart failure

High morbidity and mortality

38 million+ worldwide; 480,000 adult Australians[1]

High healthcare resource burden

2015-16: ~130,000 hospitalisations (1.6%) in Australia)[2]

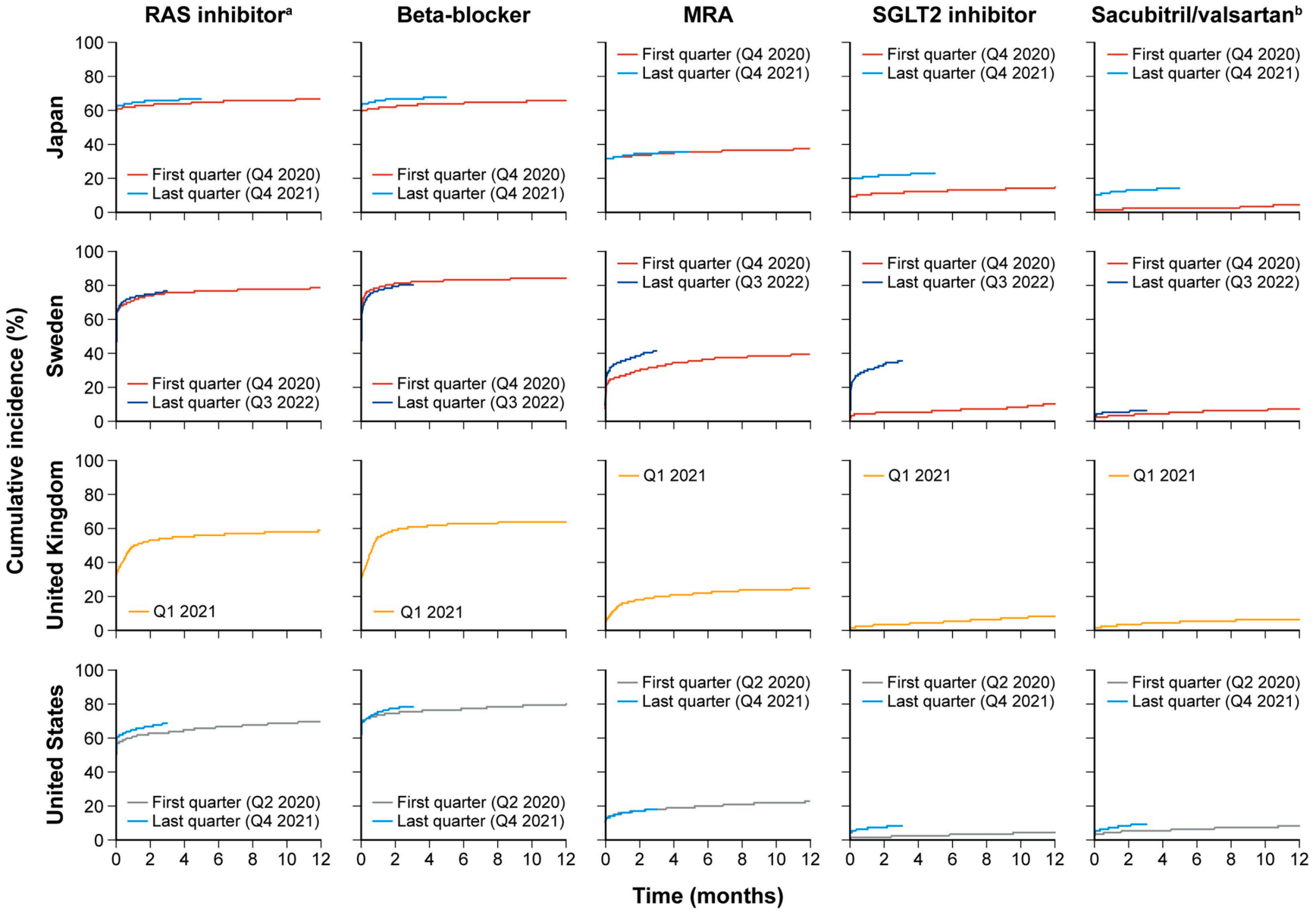
Real-world data show proportion of patients receiving optimal treatment for HFrEF is **low**[3]

Heart failure is a chronic illness requiring lifelong treatment

1. Atherton JJ, Sindone A, De Pasquale CG, et al. National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Guidelines for the Prevention, Detection, and Management of Heart Failure in Australia 2018. Heart Lung Circ. 2018 Oct;27(10):1123-1208.
2. Sindone AP, Haikerwal D, Audehm RG, et al. Clinical characteristics of people with heart failure in Australian general practice: results from a retrospective cohort study. ESC Heart Fail. 2021 Dec;8(6):4497-4505.
3. Driscoll A, Dinh D, Wong J, et al. Impact of Individual Patient Profiles on Adherence to Guideline Directed Medical Therapy in Heart Failure With Reduced Ejection Fraction: VCOR-HF Study. Heart Lung Circ. 2020 Dec;29(12):1782-1789.

Global challenge

HF medication use after first hospitalisation for heart failure discharge based on EHR or claims data (n = 119,350)



1. Bozkurt B, Savarese G, Adamsson Eryd S, et al. Mortality, Outcomes, Costs, and Use of Medicines Following a First Heart Failure Hospitalization: EVOLUTION HF. JACC Heart Fail. 2023 Oct;11(10):1320-1332.

[a] Includes ACEIs, ARBs and sac/val
[b] The sac/val group is a subgroup of the RAS inhibitor group

The ‘vulnerable phase’

‘Vulnerable phase’
= time from HF admission to up to 6 months post-discharge
High risk of readmission and death

Meta-analysis of 13 studies[1]
(67,255 patients hospitalised for HF in Australia, 1990-2016)

All-cause mortality	All-cause readmission
30-day = 8%	30-day = 20%
1-year = 25%	1-year = 56%

Improved post-discharge management is associated with better HF outcomes, with up to 30% of hospital readmissions potentially avoidable[2]

1. Al-Omary MS, Davies AJ, Evans T, et al Mortality and readmission following hospitalisation for heart failure in Australia: a systematic review and meta-analysis. Heart Lung Circ 2018;27:917-927.
2. Chen L, Booley S, Keates AK, et al. Snapshot of heart failure in Australia. Available at: https://www.acu.edu.au/about-acu/news/2017/june/snapshot-of-heart-failure-in-Australia (accessed 19 April 2024).

The crucial role of GPs

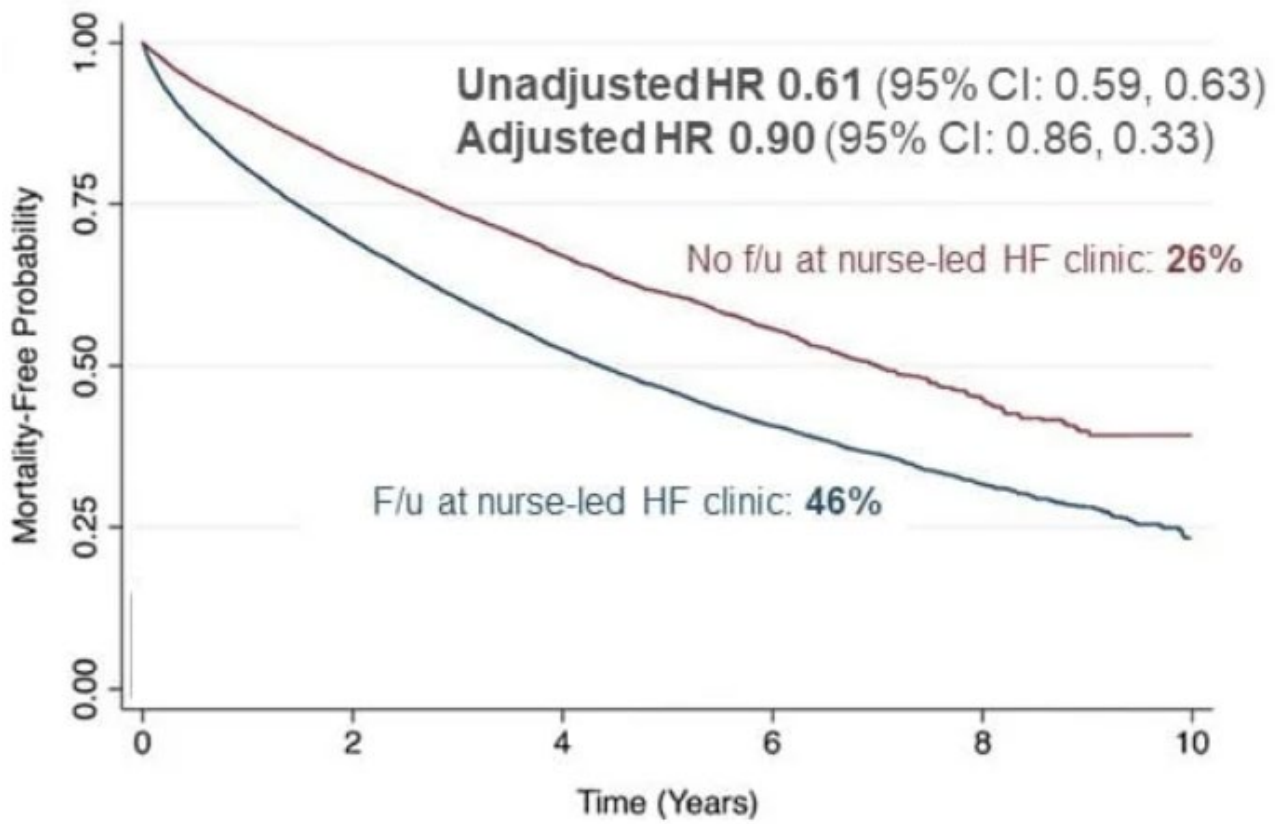
- Of patients hospitalised with HF, only 10-20% are subsequently enrolled in hospital-based disease management programs
- The remaining 80% of patients are mostly reliant upon their GP for ongoing management of their HF[1]

GPs play a fundamental role in addressing the challenges in heart failure diagnosis and management to help patients feel better, live longer, and stay out of hospital

1. Audehm R, Neville AM, Piazza P, et al. Healthcare services use by patients with heart failure in Australia: Findings from the SHAPE study. Aust J Gen Pract. 2022; 51(9):713-720. [Accessed March 2023.]

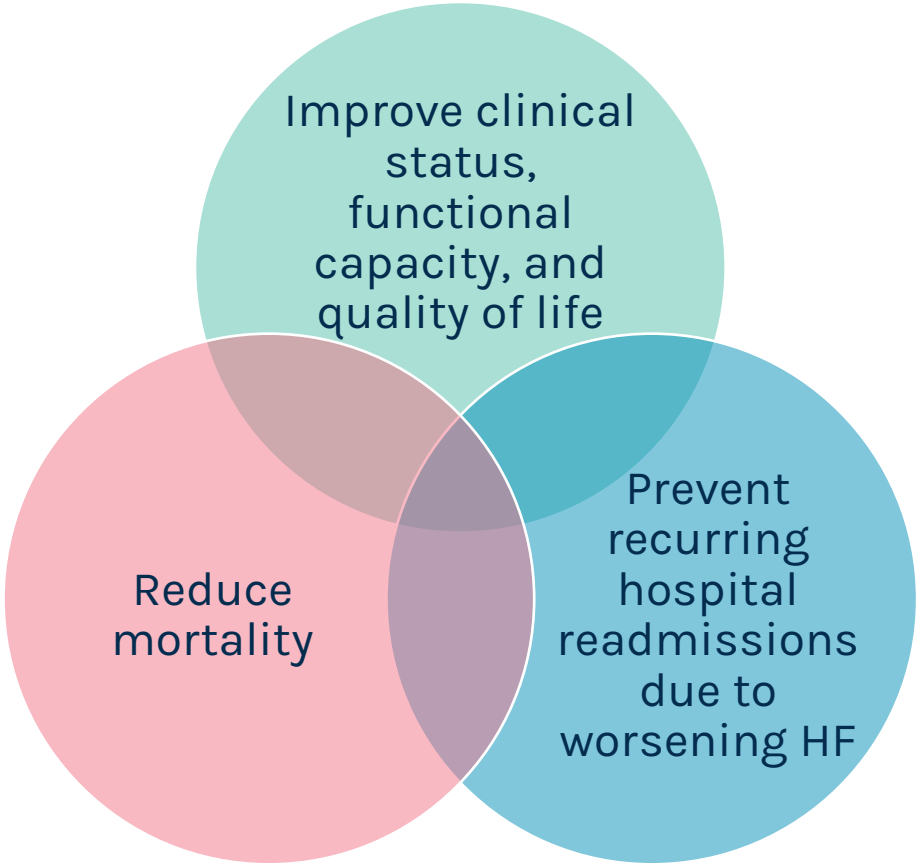
Crucial role of heart failure nurses[1]

Follow-up at nurse-led HF clinic → Improved survival[2]



1. Savarese G, Lund LH, Dahlström U, Strömberg A. Nurse-Led Heart Failure Clinics Are Associated With Reduced Mortality but Not Heart Failure Hospitalization. J Am Heart Assoc. 2019 May 21;8(10):e011737.

Major goals of heart failure management



- Best achieved in patients with **HFrEF** by using the combination of **ARNI, HF beta blocker, MRA, and SGLT2 inhibitor** at optimal doses[1]
- Best achieved in patients with **HFpEF** with **SGLT2 inhibitor**
- In-hospital initiation of therapy is associated with improved outcomes and increases the likelihood of long-term adherence and persistence with treatment
- But dose optimisation across all 4 drug classes cannot generally be realised and **may not be prescribed** during the average length of hospital stay for patients with HF in Australia, which is 6.6 days[2]

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1. Tromp J, Ouwerkerk W, van Veldhuisen DJ. A systematic review and network meta-analysis of pharmacological treatment of heart failure with reduced ejection fraction. JACC Heart Fail. 2022; 10:73-84.
2. Australian Institute of Health and Welfare (AIHW). Disparities in potentially preventable hospitalisations across Australia, 2012-13 to 2017-18. Available at: https://www.aihw.gov.au/reports/primary-health-care/disparities-in-potentially-preventable-hospitalisa/summary (accessed 3 May 2026)

Primary care-led optimisation of heart failure management is…

- Expected and encouraged
- Relatively straight forward
- Applicable irrespective of cause for HF
- Benefits of early and rapid up-titration of medications significantly outweighs potential for harm[1]

When your patient presents ‘stable’, think “**how can I further up-titrate GDMT to target dose?**”

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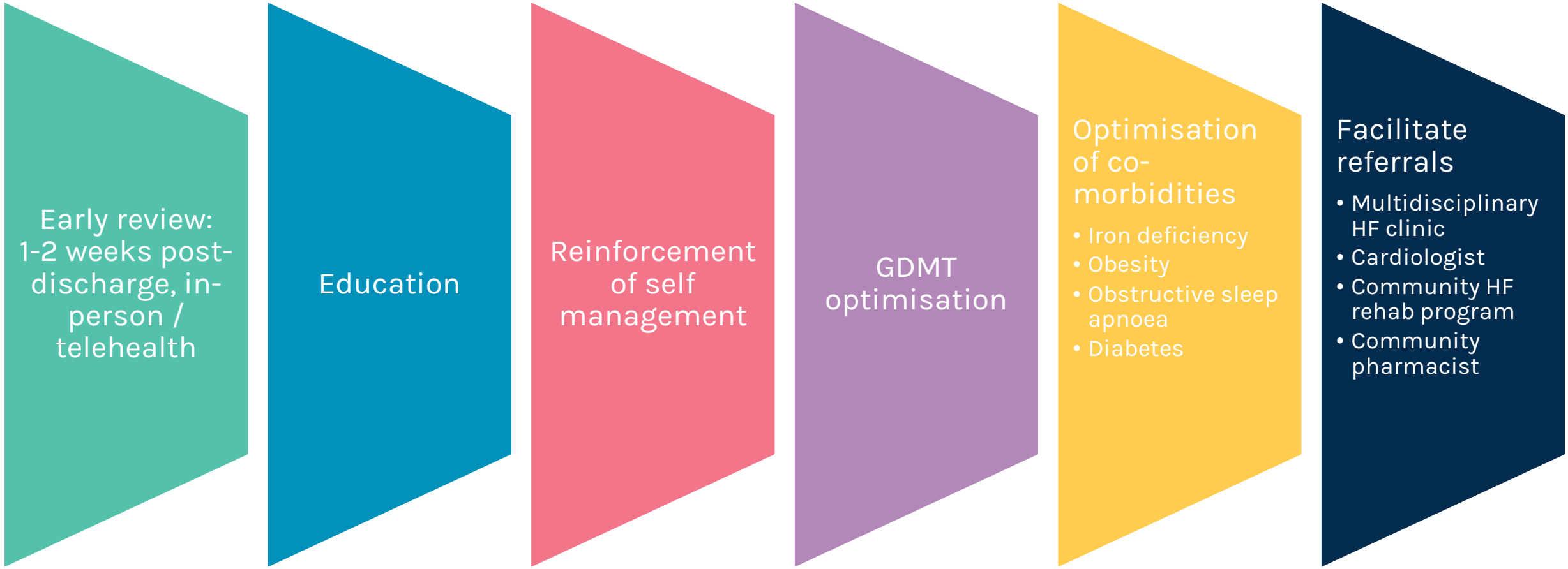
1. Mebazaa A, Davison B, Chioncel O, et al. Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF): a multinational, open-label, randomised trial. Lancet 2022; 400, 1938-1952.

Priority actions for GPs post-discharge



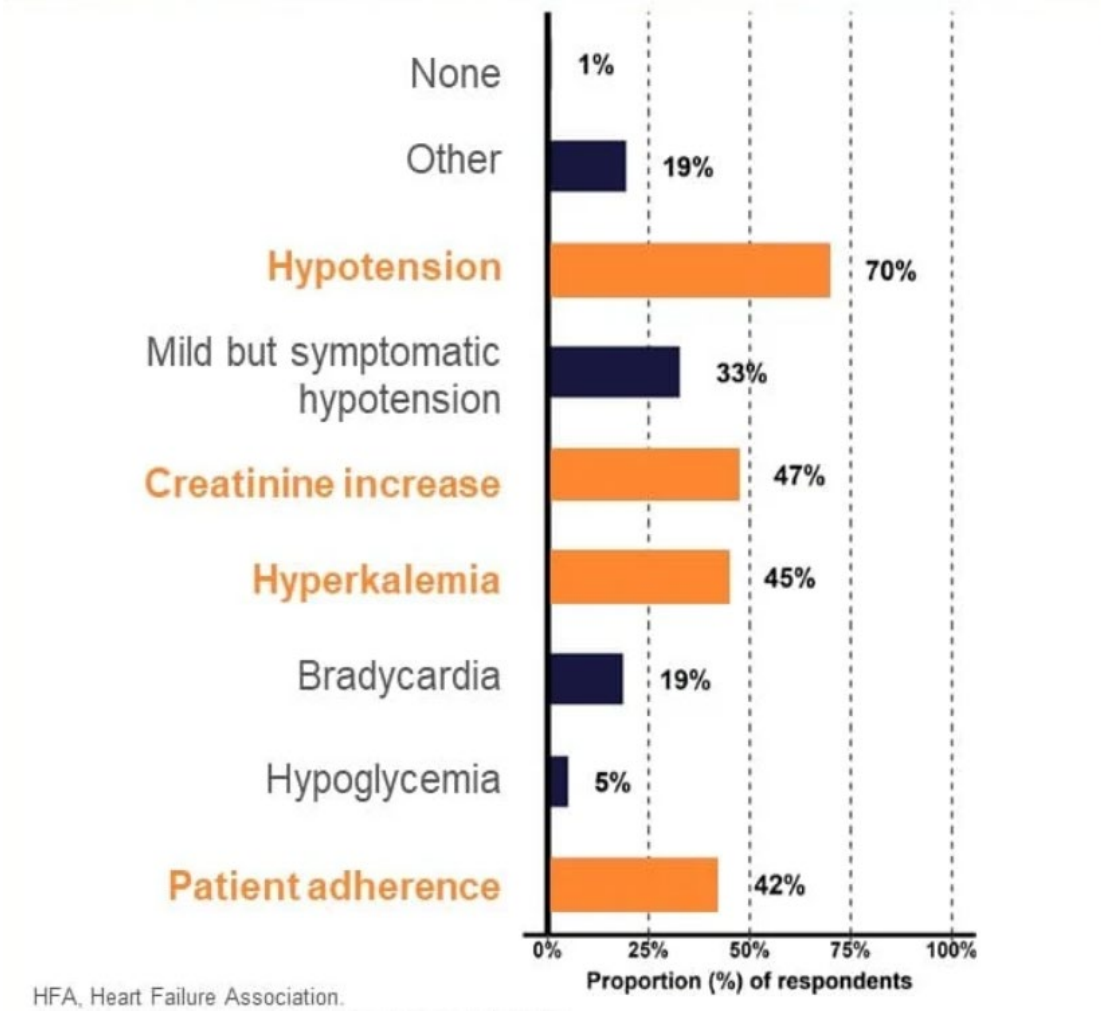
Guideline-directed medical therapy (GDMT) optimisation

- The primary aim is to ensure that patients with HFrEF are taking all recommended 4 foundational classes of therapy at the target or maximally tolerated dose[1]

Benefits of early and rapid up-titration of medications significantly outweighs potential for harm[2]

1. 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 Fail. 2022;10(2):73-84.
2. Mebazaa A, Davison B, Chioncel O, et al. Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF): a multinational, open-label, randomised trial. Lancet 2022; 400, 1938-1952.

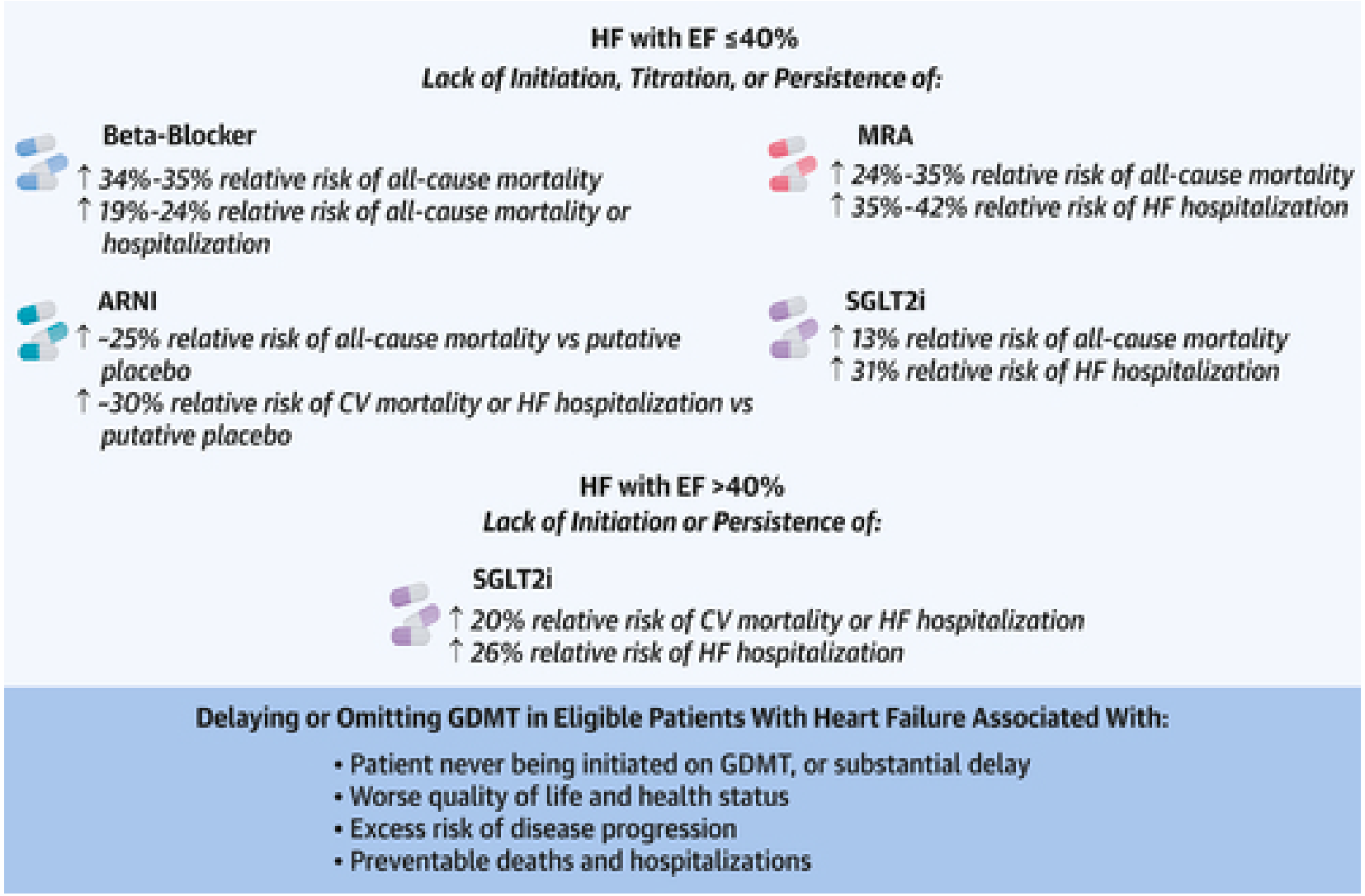
Physician-perceived clinical barriers to implementing GDMT for HFrEF



HFA, Heart Failure Association.

1. Savarese G, Lindberg F, Christodorescu RM, et al. Physician perceptions, attitudes, and strategies towards implementing guideline-directed medical therapy in heart failure with reduced ejection fraction. A survey of the Heart Failure Association of the ESC and the ESC Council for Cardiology Practice. Eur J Heart Fail. 2024 Jun;26(6):1408-1418.

Risk of omission or delay of GDMT



1. Fonarow GC, Greene SJ. Rapid and Intensive Guideline-Directed Medical Therapy for Heart Failure: Strong Impact Across Ejection Fraction Spectrum. J Am Coll Cardiol. 2023 Jun 6;81(22):2145-2148.

THE LANCET

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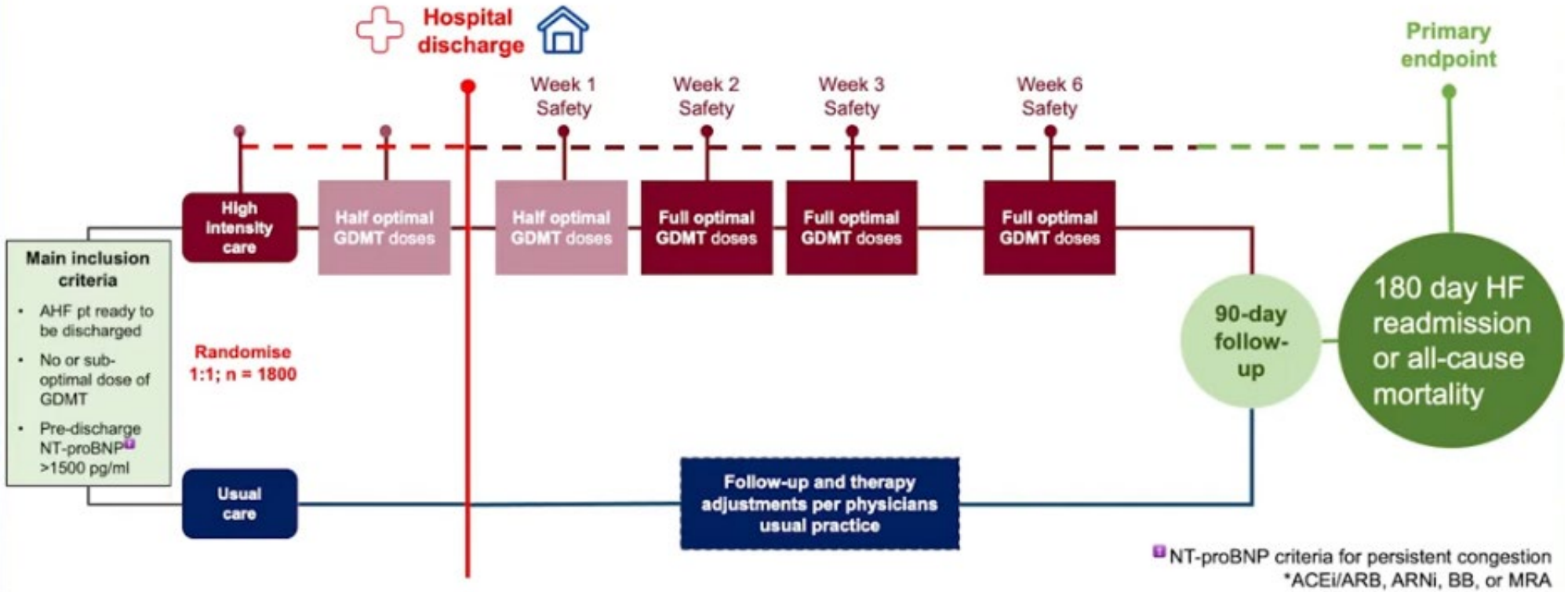
Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF): a multinational, open-label, randomised, trial

Prof Alexandre Mebazaa, MD [a,b] · Beth Davison, PhD [a,c] · Prof Ovidiu Chioncel, MD [d] · Prof Alain Cohen-Solal, MD [a,e] · Rafael Diaz, MD [f] · Prof Gerasimos Filippatos, MD [g] · et al. Show more

Affiliations & Notes Article Info Linked Articles (1)

Study design

STRONG-HF
CONTEMPORARY POST-DISCHARGE MANAGEMENT IN HEART-FAILURE

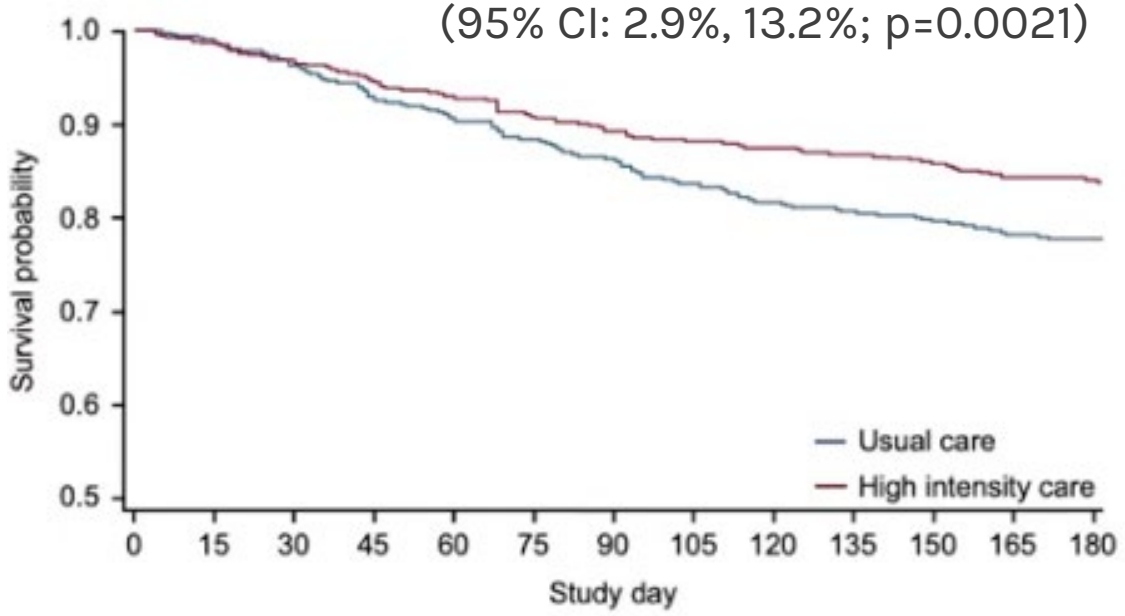


ACEi, angiotensin converting enzyme inhibitors; AHF, acute heart failure; ARB, angiotensin receptor blockers; BB, beta blockers; GDMT, guideline-directed medical therapies; HF, heart failure; MRA, mineralcorticoid receptor antagonists; NT-proBNP, N-terminal pro

Primary endpoint: 180-day HF readmission or death

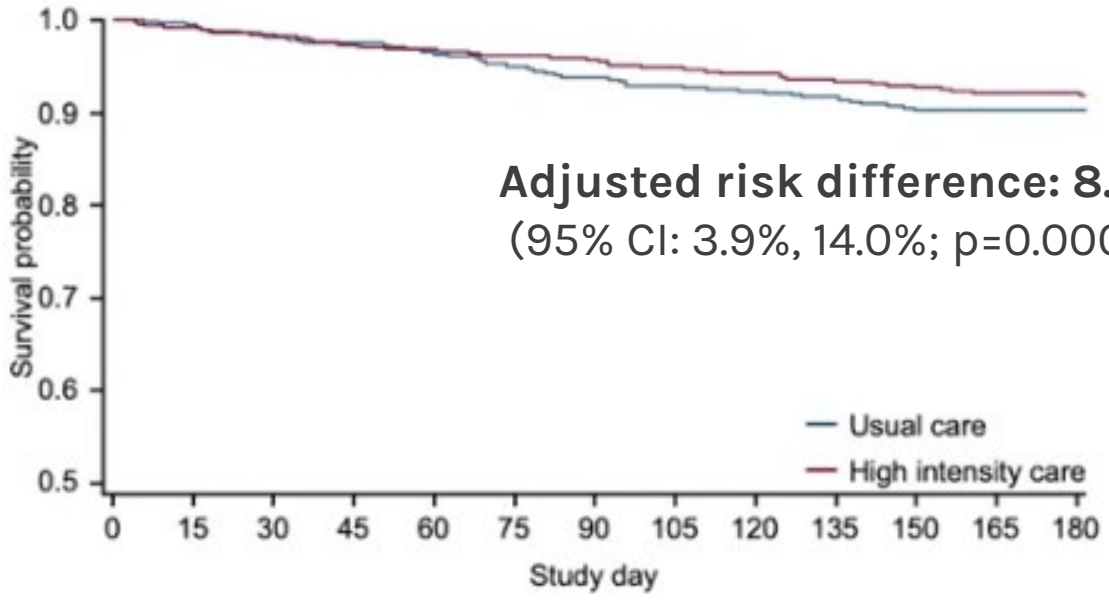
All-cause death or HF readmission through Day 180

Adjusted risk difference: 8.1%
(95% CI: 2.9%, 13.2%; p=0.0021)

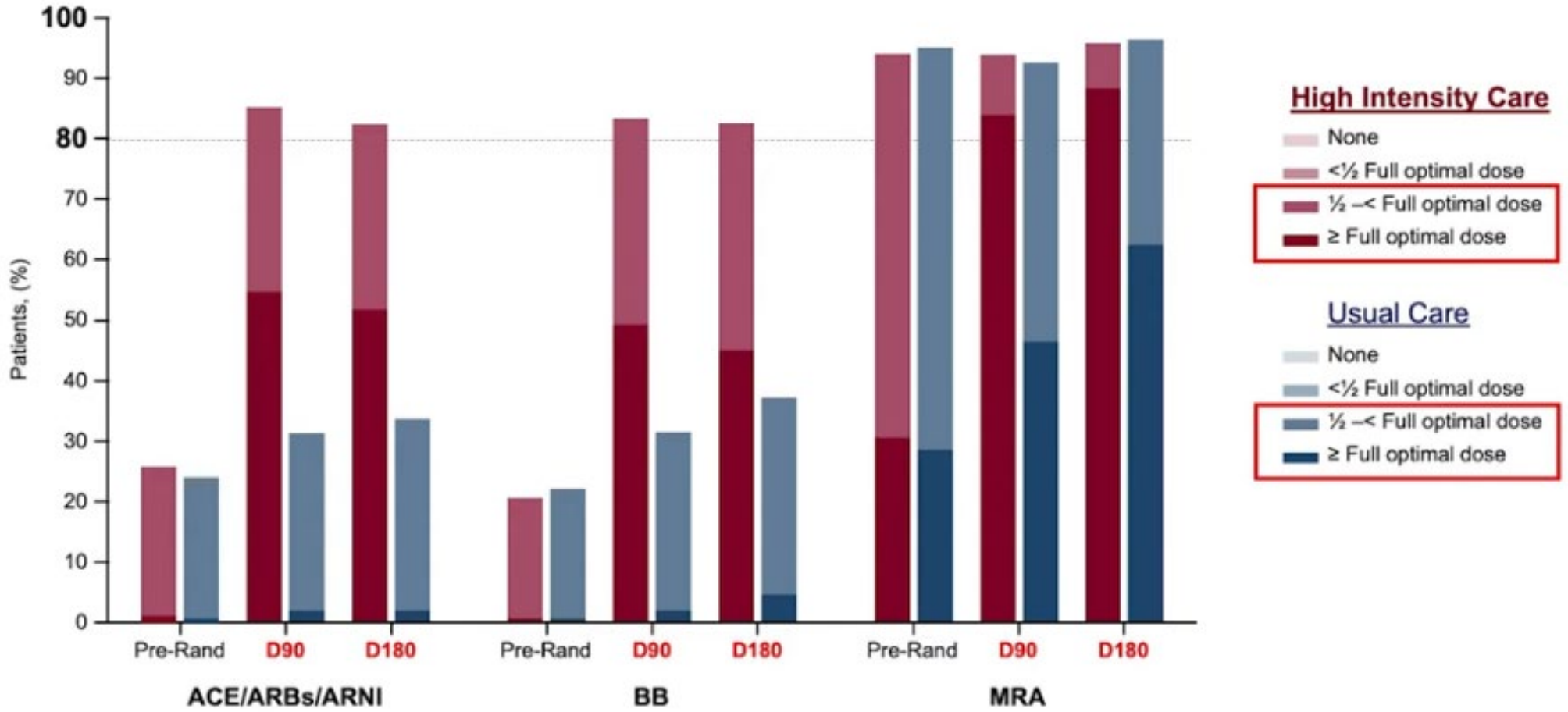


All-cause mortality through Day 180

Adjusted risk difference: 8.9%
(95% CI: 3.9%, 14.0%; p=0.0005)



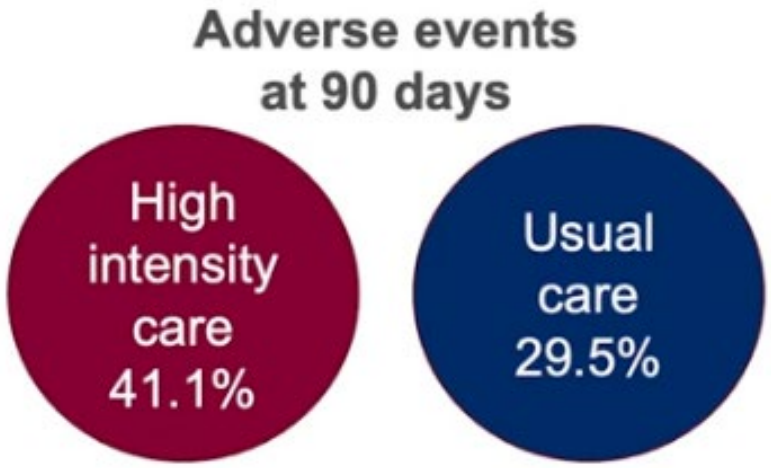
More than 80 % of High Intensity Care: 1/2 to full dose GDMT



STRONG-HF
CONTEMPORARY POST-DISCHARGE MANAGEMENT IN HEART-FAILURE

Safety

- Patients in the high intensity care arm were scheduled for 4 visits, but on averaged received 4.8 visits vs 1 visit for usual care
- No increase in serious adverse events at day 90 was observed in the high intensity care arm compared to usual care



Adverse events at day 90, n (%)	High intensity care (N=542)	Usual care (N=536)
Any adverse event	223 (41.1)	158 (29.5)
Cardiac disorders	99 (18.3)	96 (17.9)
Renal and urinary disorders	20 (3.7)	2 (0.4)
Vascular disorders	35 (6.5)	9 (1.7)

Go forth and PRESCRIBE

The STRONG-HF study[1] demonstrated that an intensive treatment strategy, with rapid up-titration of GDMT and close follow-up:

- reduced symptoms
- improved quality of life
- reduced the risk of 180-day all-cause death or HF readmission compared with usual care
- is safe

Up-titration (to at least 50% of target dose) of HF treatments initiated in hospital should therefore be prioritised as soon as possible after discharge

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1. Mebazaa A, Davison B, Chioncel O, et al. Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF): a multinational, open-label, randomised trial. Lancet 2022; 400, 1938-1952

Facilitate referrals

- Cardiologist

  Triggers for referral or earlier review:

  - Need to de-escalate therapy
  - Persistent EF <35%
  - *Echo 3 months post-commencement of GDMT (Medicare rebate)*
  - Atrial fibrillation
  - Medical Clearance – Work, Transport Victoria
  - Whenever you are worried

- Heart failure Nurse Practitioner
- Other specialists
- Pharmacist
- Exercise program
- Allied Health – dietician
- Emergency Department

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Red flags requiring emergency referral

- Acute pulmonary oedema or severe resting dyspnoea
- Worsening hypotension with signs of hypoperfusion
- Atral fibrillation with rapid ventricular response or ventricular arrythmia
- Suspected acute coronary syndrome (ACS)
- Acute kidney injury (AKI) with hyperkalaemia >6.0mmol/L
- Syncope / unexplained collapse
- Acute confusion or delirium

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Key takeaways

Management of HF follows a continuum

HF management is lifelong

HF outcomes depend on what happens between hospital visits

Optimal treatment for HFrEF is low – we can all do better

Remember the ‘vulnerable phase’

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Kirsten Sandstrom

Clinical nurse consultant

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In-patient journey and early follow-up

Early nurse follow-up prevents deterioration

- **In-patient nurse review**
  - Education, resources
  - Follow-up (private vs public)
  - Medications, PFML
  - Community programs
- **Review in GP clinic within 1-2 weeks post-discharge**
  - Enables **monitoring, education and early escalation**
  - Bridge hospital → GP care
- **(UN)EXPECTED barriers to engagement** are common!

Heart failure out-patient cardiology follow-up

Check discharge summary!

- Usually within weeks of discharge
    - Surveillance
    - Considerations of additional therapies (i.e. device CRT-D, other medications)
    - Referral for diagnostics (i.e. Holter monitor, HeartBug, ambulatory BP)
    - Aetiology work-up (i.e. genetic testing)
    - Advanced therapies
    - Other teams (i.e. renal, respiratory, interventional)
    - Facilitate end of life discussions (palliative care, advance care planning)

Self management – what can your patient do?

- Daily weights
  - ‘Wake, wee, write down’
- Action planning
  - Symptom checking, including swelling
- Escalate ‘red flags’
- Modifiable lifestyle factors
  - Weight loss, exercise, diet

This only works if education is **simple, written and repeated**

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Education: action planning

Heart Foundation

Things to do every day

Only drink _____ litres.
That is about _____ cups.
Don't forget tea, coffee, soups and fruit all count.

Weigh yourself every day.

Write down your weight.
Is it changing much? Up or down?

Eat fewer salty foods and do not add salt to your food.

Try to be active every day.
Do what you can on days when you feel well.
Be active at a comfortable pace, don't get too out of breath.

Remember to take your medicines as prescribed.

Remember to do things that make you happy.
What hobbies do you have? Fishing, gardening, dancing, reading? Or is it time to find something new to do?

Heart Foundation

Take Action

Call your doctor, nurse or health worker within 24 hours if you have any of these symptoms

Ankles, legs or stomach swelling
Your shoes, socks or pants are getting very tight

Weight goes up or down by 2 kg in two days

Bad cough, especially at night
A new cough that won't go away

Your breathing is getting harder
You can only walk _____
You have to sit up to sleep

You feel dizzy or feel like fainting

Heart is racing and won't slow down (palpitations)

Heart Foundation

Take Action

Emergency

Call Triple Zero 000 and ask for an ambulance if you have any of these warning signs of heart attack.

Pain, pressure, heaviness or tightness in your chest, arm(s), back, jaw, neck, shoulder(s).

Chest

Arm(s)

Back

Jaw

Neck

Shoulder(s)

You collapse or black out

It is very hard to breathe or you can't breathe

Education: red flags

- **Must seek medical attention**
  - Palpitations
  - Chest pain
  - ± Diaphoresis
  - Worsening dyspnoea
  - Presyncope / falls
- Possible reasons:
  - Atrial fibrillation
  - Life-threatening arrhythmias
  - Worsening heart function
  - Hypotension / hypoxia
  - Heart attack

Encourage vaccination

Individuals with HF are at **increased risk of respiratory infections**, which may lead to **decompensation**

- Consider age, occupation and demographics
- Comorbidities
- Immunosuppressed individuals (i.e. auto-immune disease, splenectomy, recent febrile illness, chemotherapy)
- Generally, patient with chronic disease need
  - Pneumococcal vaccination—consider type and dosing interval
  - Annual flu vaccine
  - COVID vaccination schedule
  - Other: shingles and RSV prevention

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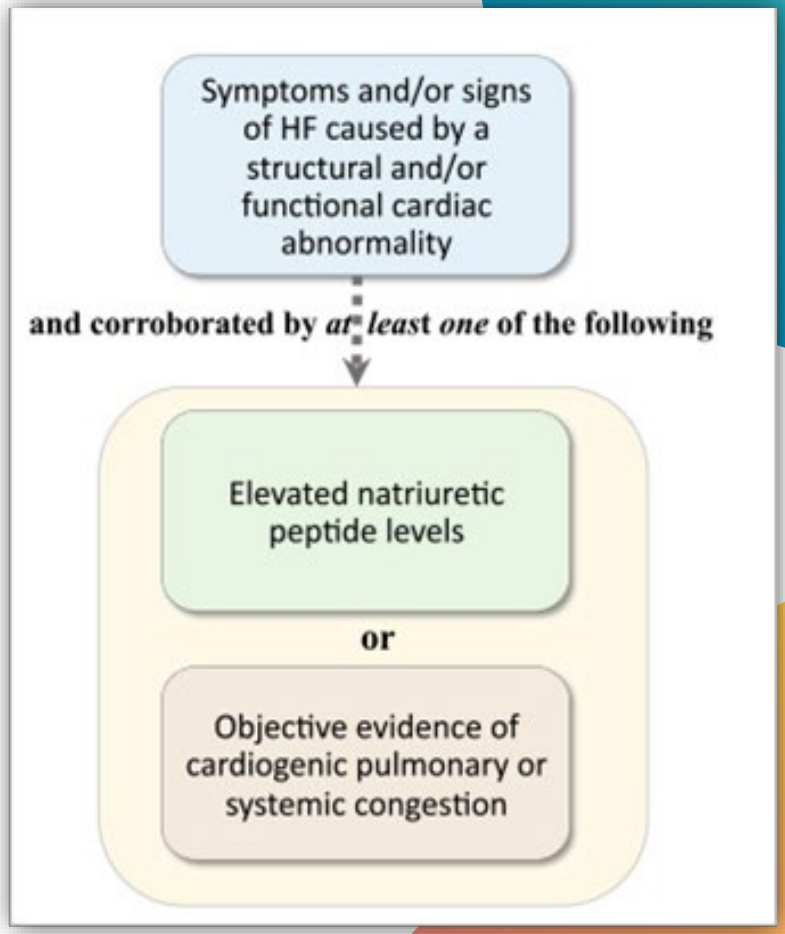
Australian Government
Department of Health, Disability and Ageing

National Immunisation Program
A joint Australian, State and Territory Government Initiative

Nurse-led coordination to reduce readmissions

- **Promote self-management**
- **Reinforce education**
- **Medication adherence**
  - Utilise home medication reviews (HMRs)
  - Management aids
  - Ensure medication list is up-to-date
- **During routine consultations**
  - Check vital signs – BP, heart rate
  - Fluid assessment – consider dry weight aims
  - Does the patient have recent bloods?



1. Atherton JJ, Sindone A, De Pasquale CG, et al. National Heart Foundation of Australia and Cardiac Society of Australian and New Zealand: Guidelines for the prevention, detection and management of heart failure in Australia 2018. Heart, Lung Circ 2018;27(10):1123–208.

Heart failure nurse-practitioner titration clinic

Four pillars of treatment

1. Goal is to facilitate early **GDMT**
2. **Evidenced-based** medications to improve mortality and reduce hospital admissions[1,2]
3. Medication doses start low and are increased every 2–3 weeks until they reach the **highest dose tolerated** or **target dose**.
4. **Education, referral and diagnostics** while awaiting cardiology follow up

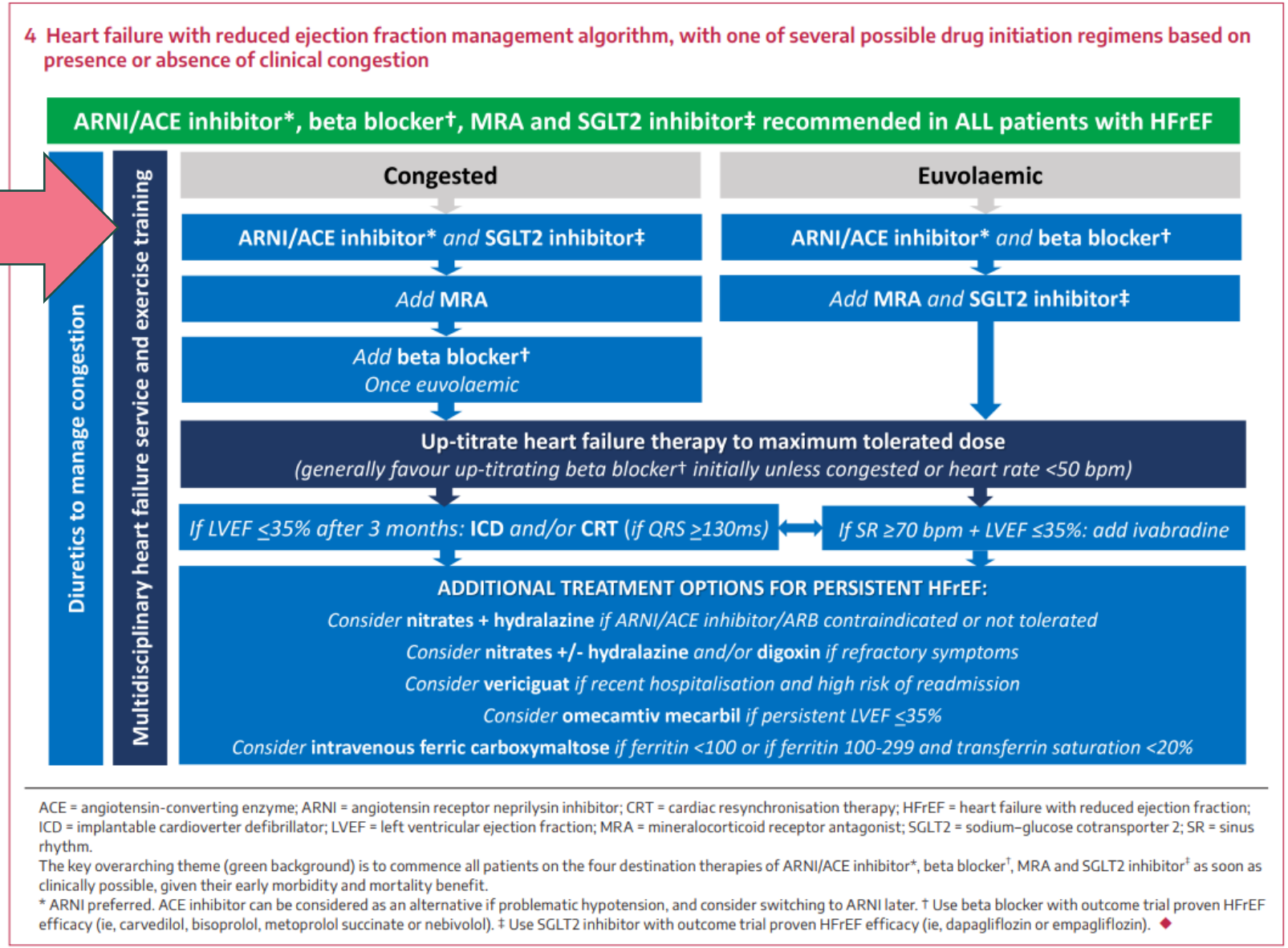
The combination of an angiotensin converting enzyme (ACE) inhibitor, beta-blocker and mineralocorticoid receptor antagonist (MRA) can decrease mortality over 1–3 years by 50–60% .[3,4]

1. Sindone AP, De Pasquale C, Amerena J, et al. Consensus statement on the current pharmacological prevention and management of heart failure. Med J Aust. 2022. 15;217(4):212-217.
2. Atherton JJ, Sindone A, De Pasquale CG, et al. National Heart Foundation of Australia and Cardiac Society of Australian and New Zealand: Guidelines for the prevention, detection and management of heart failure in Australia 2018. Heart, Lung Circ 2018;27(10):1123–208.
3. NPS Medicinewise 2018. Heart failure: Medicines that reduce mortality.
4. Burnett H, Earley A, Voors AA, et al. Thirty Years of Evidence on the Efficacy of Drug Treatments for Chronic Heart Failure With Reduced Ejection Fraction: A Network Meta-Analysis. Circ Heart Fail. 2017 Jan;10(1):e003529.

Heart failure - HFrEF

Cardiac / heart failure rehabilitation

- MDT education
- Research shows 30-60 minutes of moderate intensity, **structured** exercise every day reduces frequency of overall hospital admissions



Some patients will not be able to follow instructions (3 daily checks + action plan) despite lots of education!

- Make regular appointments with these patients so you can monitor them and detect signs of decompensation
- Remember this includes patients that have already been in hospital! Retention of in-hospital education is varied
- Consider a simple HF monitoring template for clinic staff to follow to make it achievable and consistent

Vulnerable patients

- The elderly
- Patients with cognitive decline
- Patients who are isolated
- Patients who don’t speak English
- Patients with low literacy
- Patients who have just been in hospital

Key takeaways

Early follow-up prevents deterioration

Self-management: daily weights, action planning, escalate ‘red flags’, modifiable lifestyle factors

Encourage **vaccination**: increased risk of respiratory infections in HF patients can lead to decompensation

Nurse-led coordination reduces readmissions

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A/P Ralph Audehm

Specialist GP

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Goals of heart failure management[1,2]

- Prevent HF in people at risk
- Slow disease progression and prolong survival
- Reduce hospitalisation for HF
- Relieve symptoms and improve quality of life
- Optimise GDMT

MOST of the goals are achievable in primary care

1. Atherton JJ, Sindone A, De Pasquale CG, et al. National Heart Foundation of Australia and Cardiac Society of Australian and New Zealand: Guidelines for the prevention, detection and management of heart failure in Australia 2018. Heart, Lung Circ 2018;27(10):1123–208.
2. McDonagh TA, Metra M, Adamo M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J 2021;42(36):3599–726.

Primary care management is important – handover

Chronic disease, including HF:

Primary care and care planning:

hospital presentations[1]

Integrated care programs:

hospital presentations[2]

Study of Heart failure in the Australian Primary carE setting (SHAPE)[3]

- Analysis of 1.93 million adult patient records who attended a total of 43 practices between 1 July 2013 and 30 June 2018
- Practices provided care to 2.3 million individual patients over 5 years

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1. Stewart S, Riegel B, Boyd C, et al. Establishing a pragmatic framework to optimise health outcomes in heart failure and multimorbidity (ARISE-HF): A multidisciplinary position statement. Int J Cardiol 2016;212:1–10.
2. Dorling G, et al. B. Vic: McKinsey & Company, 2015. Available at The evidence for integrated care.ashx. [Accessed 16 December 2019].
3. Audehm R, Neville AM, Piazza P, et al. Healthcare services use by patients with heart failure in Australia: Findings from the SHAPE study. Aust J Gen Pract. 2022; 51(9):713-720. [Accessed March 2023.]

Study of Heart failure in the Australian Primary carE setting (SHAPE)[1]

- Patients with HF saw GPs **14.4 times** per annum on average
- **<60%** had a General Practice Management Plan (GPMP)
- **<3%** of those GPMPs were reviewed annually or more frequently
- **<50%** of patients had been referred to a cardiologist

"Patients with HF visit their GP frequently, with many not reaching guideline therapy nor referred to cardiologists. Low use of care planning and reviews presents an opportunity for GPs to improve care."

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1. Audehm R, Neville AM, Piazza P, et al. Healthcare services use by patients with heart failure in Australia: Findings from the SHAPE study. Aust J Gen Pract. 2022; 51(9):713-720. [Accessed March 2023.]

Queensland heart failure medication optimisation plan[1]

Monitoring recommendations (see overleaf for guidance)

- Check blood pressure (BP) including postural drop and heart rate (HR) each visit
- ACEI/ARB/ARNI/MRA*: check serum potassium (K^+), renal function 1-2 week/s after commencing or titrating (if K^+ is high recheck in 48 hours). For MRAs check every 4 weeks for 12 weeks, at 6 months, then 6-monthly
- SGLT2i*: before commencing check volume status and for type 1 diabetics seek endocrinologist approval
- Diuretic dose changes beyond 3 days require medical review and checking of blood chemistry and volume status
- Iron: Order Hb*, CRP*, ferritin & transferrin saturation at first assessment and every 3-6 months if iron deficient

The 4 drug classes that reduce heart failure mortality & morbidity		**Combination therapy is more effective than a single medication at a higher dose BUT avoid simultaneous up titration**		
Class*	Medication name	Current dose/ frequency	Target dose/frequency	Schedule / Instructions
ACEI **ARB** **ARNI**		mg	mg	Washout for 36 hours or more if switching from ACEI to ARNI or vice versa Increase dose by: mg every week(s)
Beta-blocker	☐ Bisoprolol ☐ Carvedilol ☐ Metoprolol XL ☐ Nebivolol	mg	mg	Increase dose by: mg every week(s)
MRA	☐ Eplerenone ☐ Spironolactone	mg	mg	Increase dose once stable on other heart failure medications.
SGLT2i	☐ Dapagliflozin ☐ Empagliflozin	mg	N/A	A transient fall in eGFR (up to 30%) is common and not usually clinically significant. Withhold if perioperative or unwell/fasting.
Medications that provide symptom relief				
Diuretic	☐ Furosemide ☐ Bumetanide ☐ Patient has a diuretic action plan			Adjust diuretic dose according to clinical assessment (e.g., increase dose 50 –100% if fluid overloaded)
Iron infusion	Date of infusion (if given): _____ (oral iron is ineffective with heart failure) ☐ Please check iron studies (see monitoring above). Give an iron infusion if ferritin is less than100 µg/L *or* 100-299 µg/L with a transferrin saturation below 20%. Contact hospital if unable to provide infusion			
Notes:				

1. Queensland Government. Heart Failure (HF) Medication Optimisation Plan. https://www.health.qld.gov.au/__data/assets/pdf_file/0018/428121/Medn_Titration.pdf. [Accessed May 2025]

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Titrating treatment for HFrEF

Four pillars of HF treatment

For symptomatic stable HFrEF with eGFR >30mL/min per 1.73 m^2

ACEI or ARB or ARNI*	Beta blocker	MRA	SGLT2 inhibitor

Adapted from: Evans et al and Straw et al.[1,2]
*ARNI must not be co-administered with an ACE inhibitor or an ARB.[3]

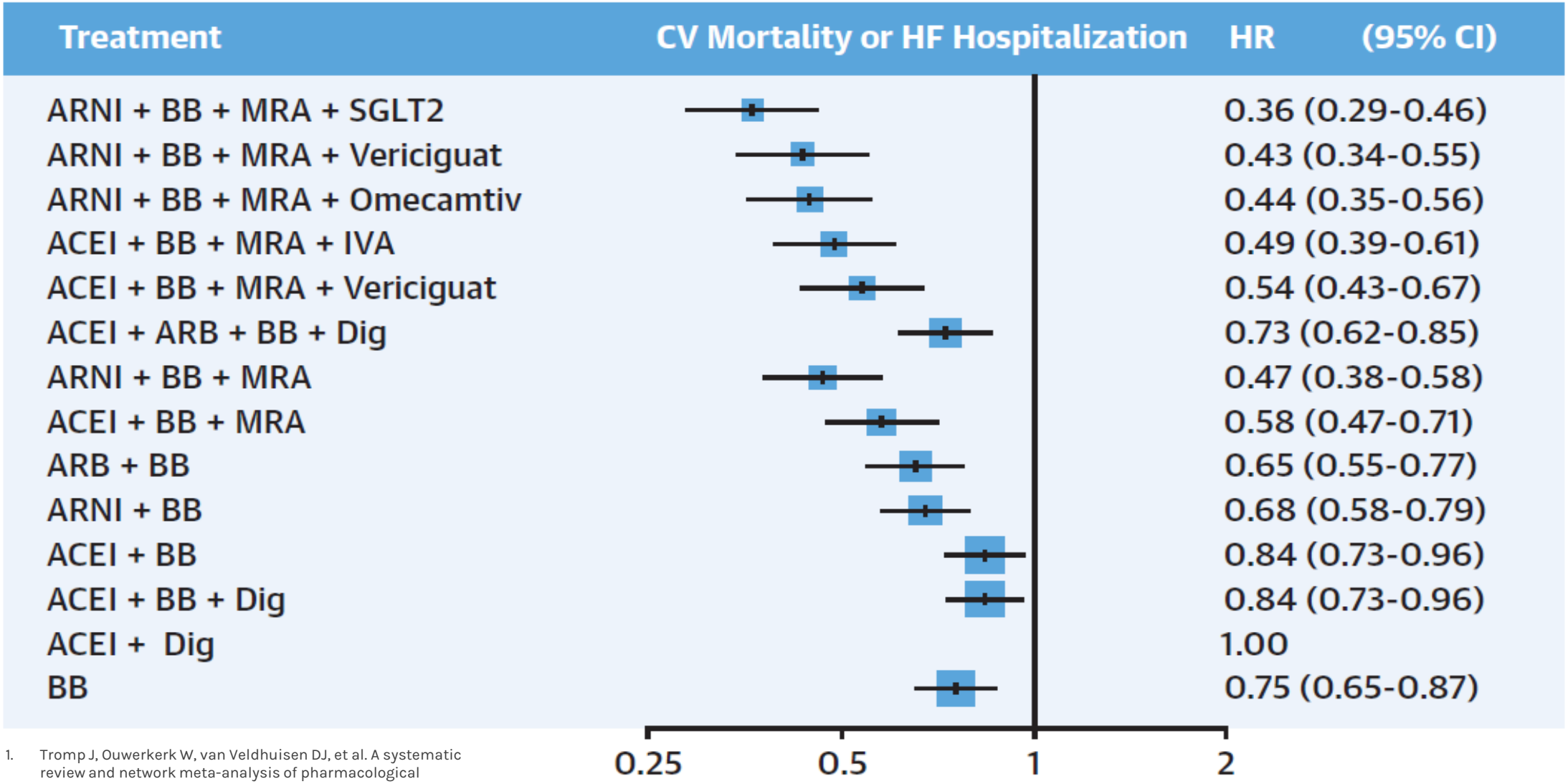
Incorporate all four classes of medication early and **rapidly** as the foundation of medical treatment for HFrEF **simultaneously** rather than sequentially[4-6]

Treat to targets.
Titrate HFrEF medications to reach their **maximum target doses** or maximum tolerated dose[4-6]

The target, or maximally tolerated doses, should be reached **within 3–6 months** from diagnosis of HF[6]

1. Straw S, McGinlay M, Witte KK. Four pillars of heart failure: contemporary pharmacological therapy for heart failure with reduced ejection fraction. Open Heart 2021;8(1)e001585.
2. Evans M, Morgan AR, Whyte MB, et al. New Therapeutic Horizons in Chronic Kidney Disease: The Role of SGLT2 Inhibitors in Clinical Practice. Drugs 2021;81:1243–55.
3. Sacubitril/valsartan. Australian Product Information. Last revised 23 November 2020.
4. McDonagh TA, Metra M, Adamo M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J. 2021;42(36):3599–726.
5. Maddox TM, Januzzi JL, Allen LA, et al. 2021 Update to the 2017 ACC expert consensus decision pathway for optimization of heart failure treatment: Answers to 10 pivotal issues about heart failure with reduced ejection fraction. J Am Coll Cardiol. 2021;77(6):772–810.
6. McDonald M, Virani S, Chan M, et al. CCS/CHFS heart failure guidelines update: defining a new pharmacologic standard of care for heart failure with reduced ejection fraction. Can J Cardiol. 2021;37(4):531–46.

Benefits of medications



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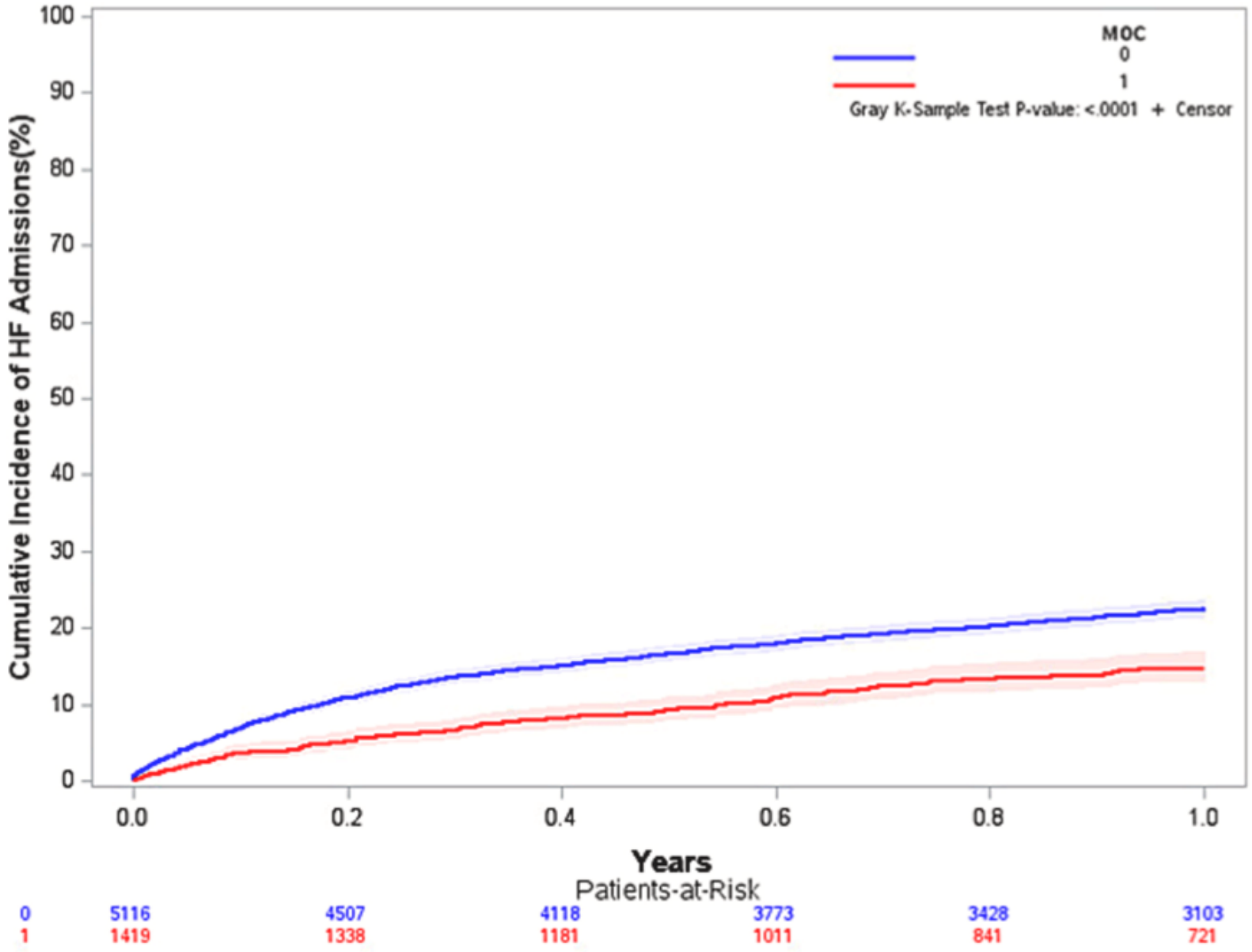
1. Tromp J, Ouwerkerk W, van Veldhuisen DJ, et al. A systematic review and network meta-analysis of pharmacological treatment of heart failure with reduced ejection fraction. JACC Heart Fail. 2022;10(2):73-84.

Early is key

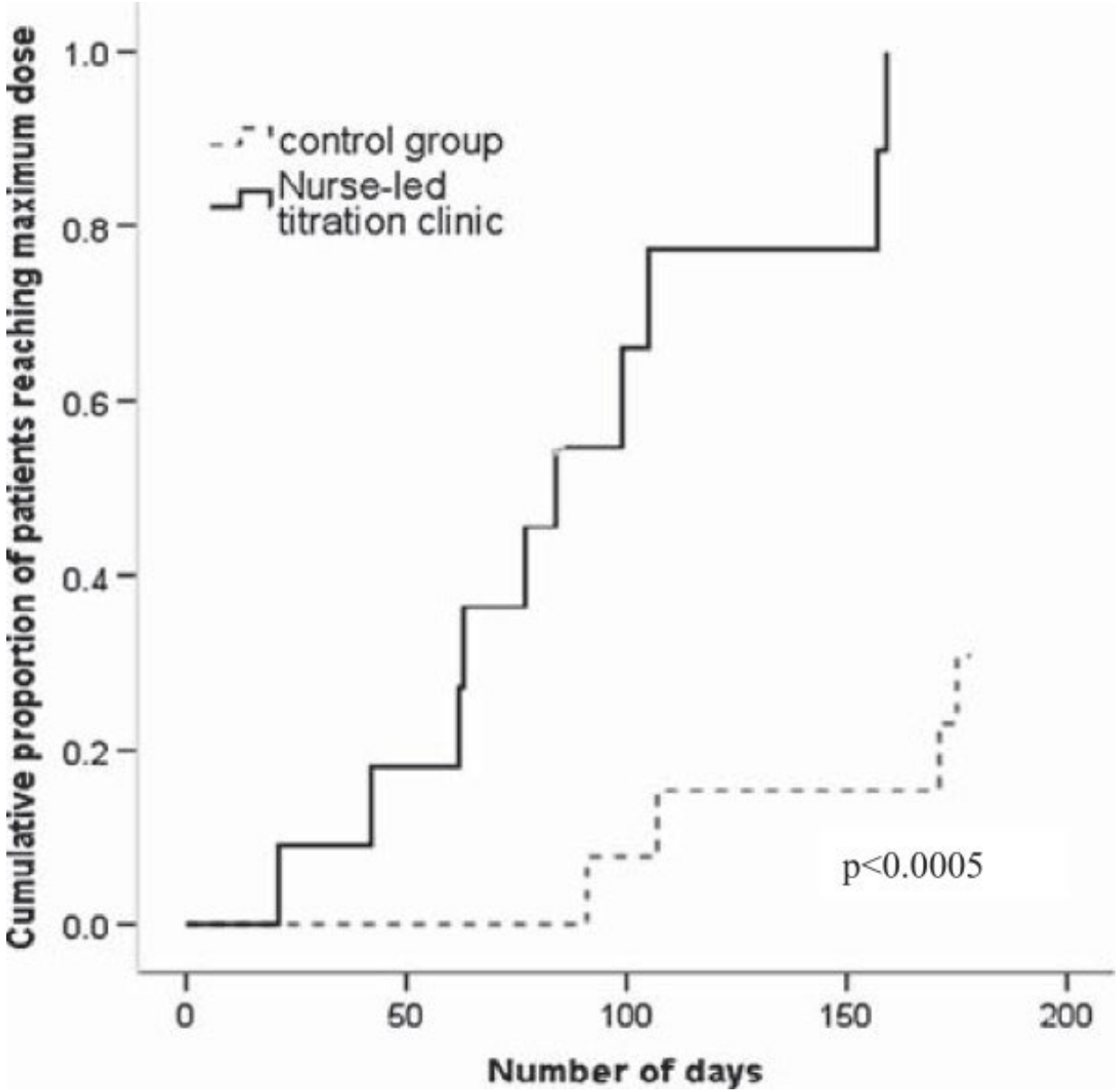
MOC versus control received quadruple therapy (49% vs 19%), ARNi (62% vs 45%), BB (92% vs 88%), MRA (69% vs 45%), and SGLT2i (68% vs 35%).



1. Coons JC, Kliner J, Mathier MA, et al. Medication optimization clinic decreases hospitalizations and mortality for patients with heart failure with reduced ejection fraction. Am Heart J Plus. 2024 Oct 16;47:100470.

Fig. 1. Kaplan-Meier analysis cumulative incidence function for heart failure hospitalizations at 12 months (MOC vs. control). CON = control group; MOC = Medication Optimization Clinic group.

Using nurses to help



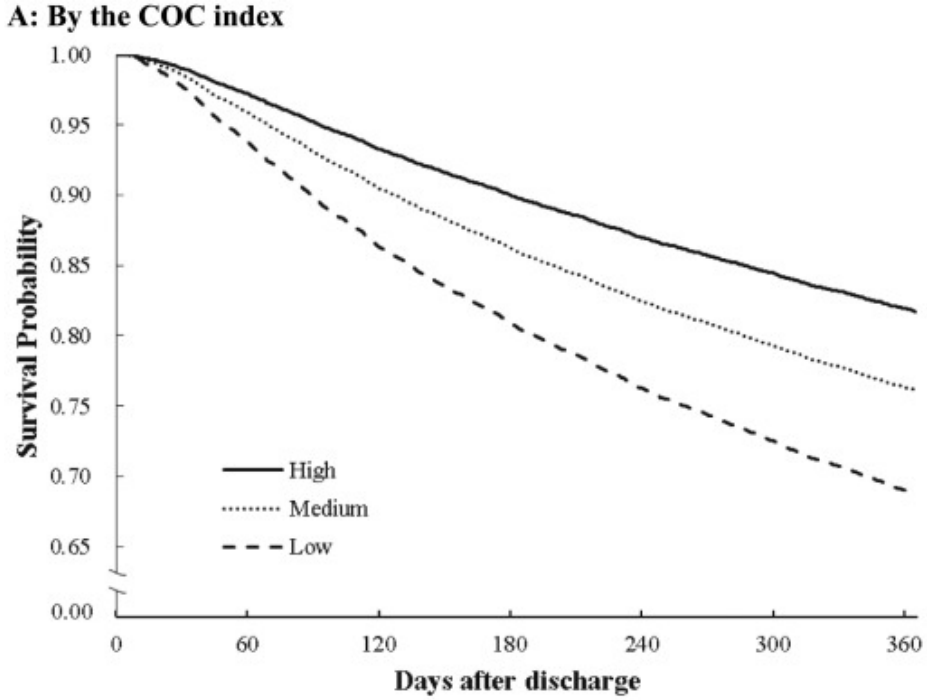
1. Driscoll A, Srivastava P, Toia D, et al. A nurse-led up-titration clinic improves chronic heart failure optimization of beta-adrenergic receptor blocking therapy—a randomized controlled trial. BMC Res Notes. 2014 Sep 23;7:668.

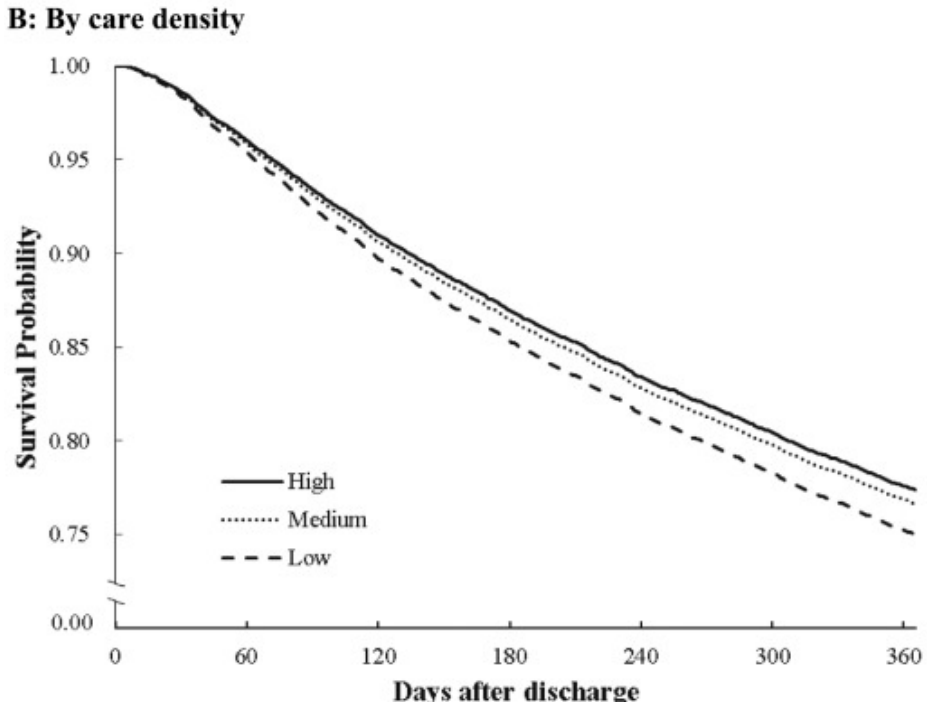
Continuity of care

Higher continuity of care is associated with lower 1-year mortality and costs for discharged patients with HF.

Low care coordination is associated with higher 1-year post-discharge mortality and costs.

Facilitating care continuity and coordination may be an important strategy for improving value-based care for HF.





Shared care

1. Ezekowitz JA, van Walraven C, McAlister FA, et al. Impact of specialist follow-up in outpatients with congestive heart failure. CMAJ. 2005 Jan 18;172(2):189-94.

Blue line – shared care (both cardiologist and GP)

Red line – GP care only

Black line – no cardiovascular claims (i.e. no doctor visits for a cardiovascular cause)

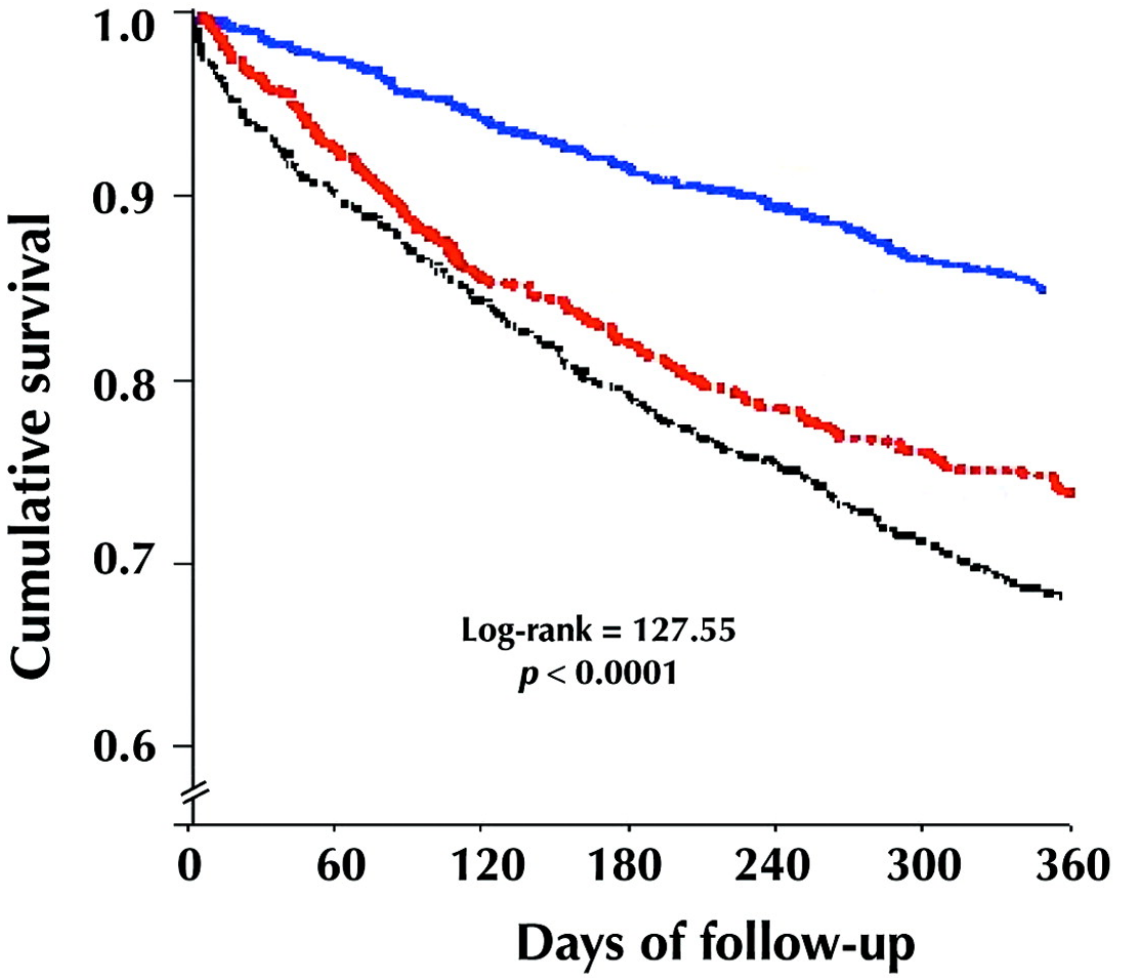
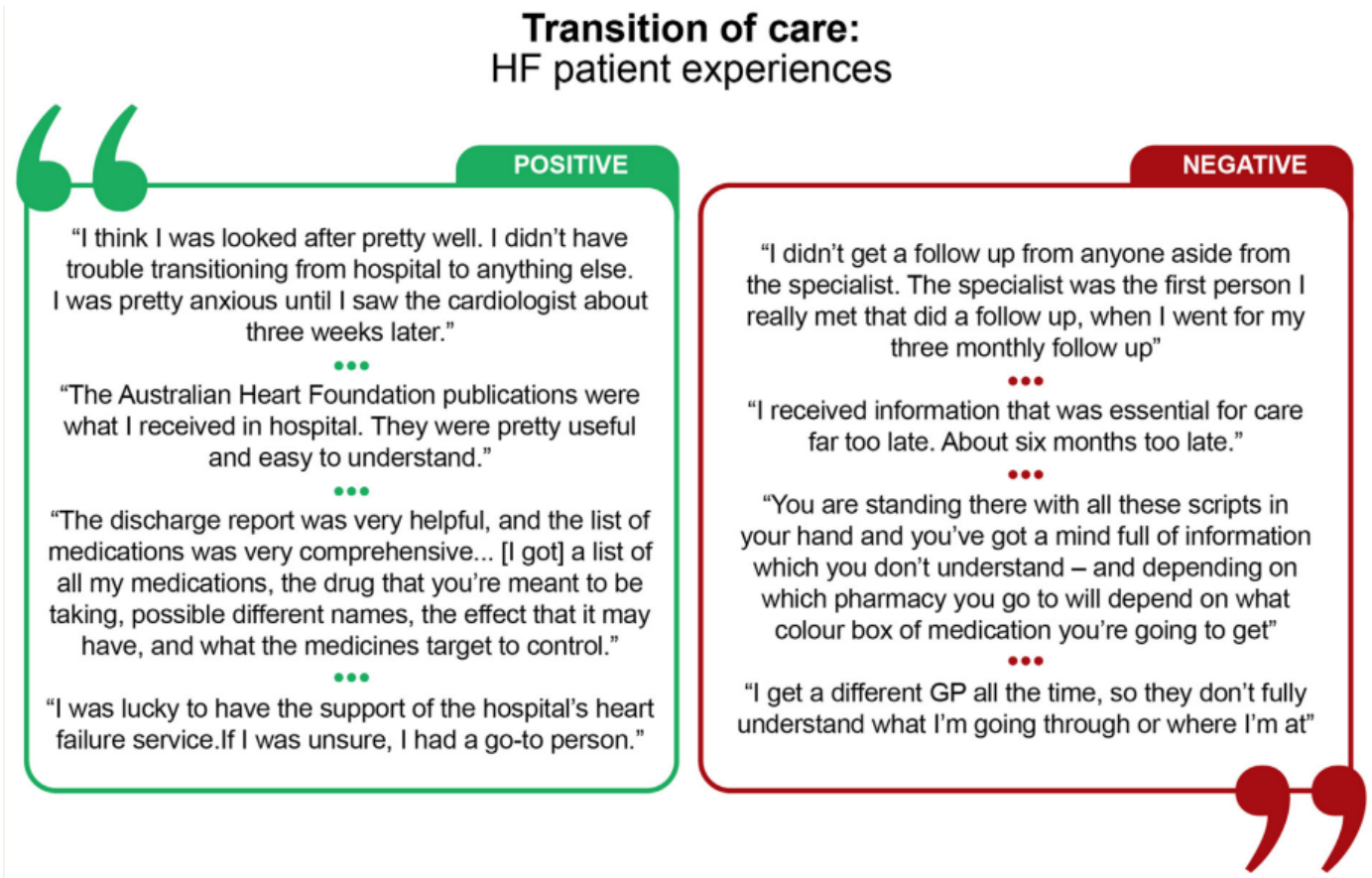


Fig. 1: Kaplan–Meier survival curves for care received, by ambulatory specialty.

Post-discharge follow-up is important



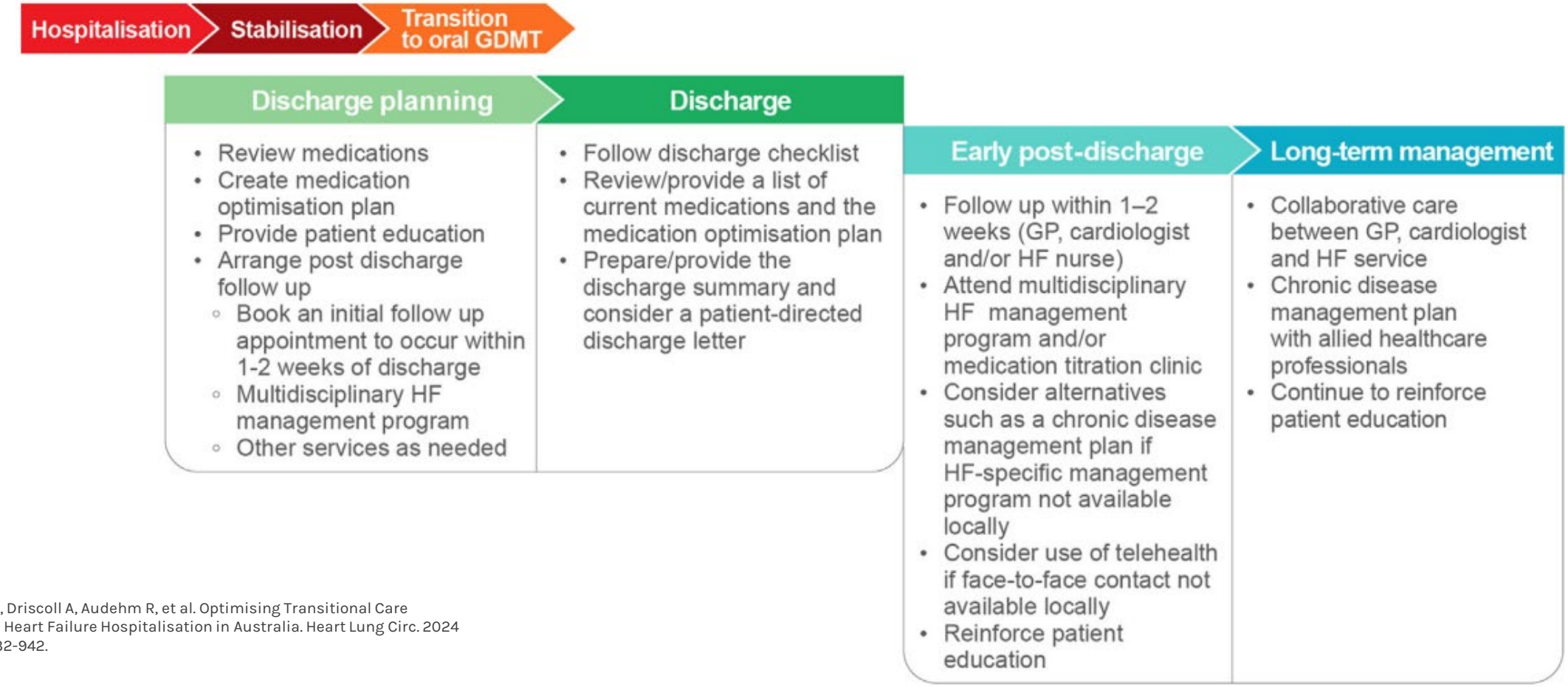
Most vulnerable period is within the first few weeks post-hospital discharge.

After one month of discharge:

- All-cause readmission: **20%**
- Mortality rates: **8%**

1. Sindone AP, Driscoll A, Audehm R, et al. Optimising Transitional Care Following a Heart Failure Hospitalisation in Australia. Heart Lung Circ. 2024 Jul;33(7):932-942.

Key steps in transitional care following HF hospitalisation in Australia



1. Sindone AP, Driscoll A, Audehm R, et al. Optimising Transitional Care Following a Heart Failure Hospitalisation in Australia. Heart Lung Circ. 2024 Jul;33(7):932-942.

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Key takeaways

What we do - matters

How we do it - matters

Great teams are a great enabler

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Brian Meier

Credentialed pharmacist

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Home medicines review (HMR)

AIM: **Identify, resolve and prevent** drug-related problems to ensure that medicine use is safe, optimal and fully understood

- Comprehensive clinical assessment
- Collaborative
- Patient living at home

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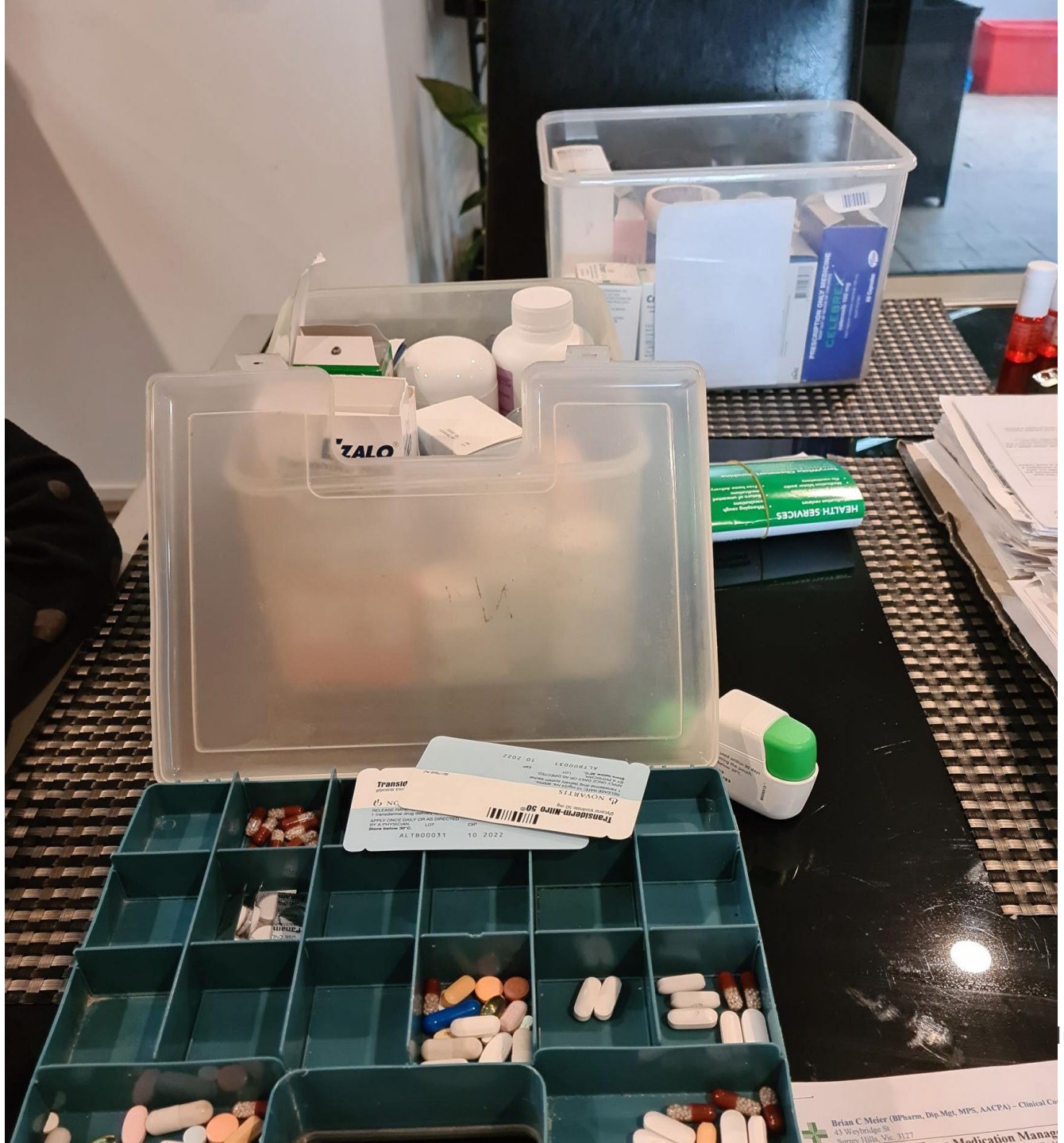
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Brian C Meier (BPharm, Dip.Mgt, MPS, AACPA) – Clinical
Medication Manag

HMRs in heart failure management

- Improve adherence and optimise therapy
- Associated with up to a **46% ↓ in HF-related hospitalisations**[1]

1. Roughead EE, Barratt JD, Ramsay E, et al. The effectiveness of collaborative medicine reviews in delaying time to next hospitalization for patients with heart failure in the practice setting: results of a cohort study. Circ Heart Fail 2009;2(5):424–428.

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High-risk transition in heart failure

Post-charge (first 1-4 weeks)

Emphasise

- Medicines reconciliation
- Dose titration
- Adverse effect surveillance
- Identify HF triggers
- Improve patient knowledge
- Ongoing deprescribing

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Medication checklist

Identify and act on HF–worsening medicines:	Medicines that may cause peripheral oedema:
• **NSAIDs** (e.g. meloxicam, ibuprofen) • **Non-dihydropyridine CCB** (e.g. verapamil, diltiazem are contraindicated unless under specialist) • **Moxonidine** • **Corticosteroids** • **Tricyclic antidepressant** (e.g. amitriptyline) • **Saxagliptin** • **Thiazolidinediones** (e.g. pioglitazone)	• **Dihydropyridine CCB** (e.g. amlodipine, lercanidipine) • **Mirtazapine** • **Gabapentinoid** (e.g. pregabalin)

Mrs HF – hidden medicines, real impact

The importance of medication reconciliation at home

Ibuprofen →

← Oxybutynin patch

Iron deficiency in heart failure

In symptomatic HFrEF despite optimal therapy, IV iron is recommended when ferritin <100 µg/L, or 100–300 µg/L with TSAT <20%

Ref: NHFA & CSANZ Heart Failure Guidelines 2018

FERRITIN
<100 µg/L
or
100–300 µg/L

TSAT
<20%

ORAL IRON	IV IRON
	
Generally ineffective	Effective and guideline recommended

TSAT = transferrin saturation

My role:

- Tolerating oral iron
- Check for drug interactions
- Check iron studies conducted
- Prompt IV iron infusion if oral iron is ineffective

HMR process (MBS item 900)

Criteria
- Patient lives at home
- Patient is at risk of medication mismanagement

Referral
- Patient is identified for HMR – suggested criteria + informed consent
- GP initiates HMR referral – sends referral to credentialed pharmacist / community pharmacy

HMR
- Credentialed pharmacist coordinates interview with patient
- Credentialed pharmacist conducts HMR in patient's home (~1 hr)

Report
- Credentialed pharmacist write report and sends to GP

Manage
- GP discusses finding of HMR with credentialed pharmacist
- GP meets with patient to arrange a medication management plan for patient

Payment – GP can claim $180.65 as of 1/4/2026; Pharmacist $222.77
Every 2 yrs unless medical needs, change of condition etc.

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Collaborative approach

Embed medicines optimisation into team-based care

Emphasise:

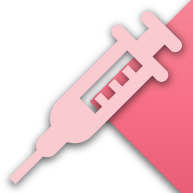
- Shared care
- Communication loops
- Documentation and follow-up plans

Pharmacist supporting system integrity

Key messages

Implement **post-discharge medication reconciliation within 7 days**

Add a **"HF-worsening medicines" check** to every review



Create a standard **iron deficiency pathway** (test → treat → follow-up)

Use HMR / practice pharmacist referral as routine, not exception

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Case study

Meet Sandra

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Sandra

64-year-old retired teacher presents following discharge from the hospital 5 days ago. She reports feeling better than in hospital, but is experiencing mild dizziness on standing.

She has a follow-up appointment with her cardiologist in the outpatient department in 8 weeks.

Discharge summary confirms heart failure (LVEF 36%).

- BP 108/74 mmHg
- HR 66 bpm, regular
- eGFR 78 mL/min/1.73m^2
- Potassium 3.8 mmol/L

Medicines prescribed on discharge:

- Bisoprolol 2.5 mg once daily
- Empagliflozin 10 mg once daily
- Ramipril 2.5 mg daily
- Spironolactone 12.5 mg once daily
- Lasix 20mg mane

Case study – reflection questions

1. How do you document Sandra's diagnosis (HFrEF) in the clinical software?
2. What would your management plan look like for Sandra in the next 4-6 weeks post discharge?
    - Would you change her medicines now and, if so, which ones?
    - Going forward, how often would you up-titrate her medications? In what order would you try and up-titrate her medications?
    - When would you want her back for review?
    - How would you assess her progress?
    - What barriers might limit dose escalation?
    - Is her blood pressure too low? Would you reduce her medication and, if so, which one?

Case study – reflection questions (cont.)

3. What additional assessments or supports would you include in Sandra's management plan?

When asked about her understanding of the admission, Sandra says she is "not entirely sure what the diagnosis was" and feels overwhelmed by the number of new medicines started in the hospital.

4. How would you explain a diagnosis of HFrEF, educate her on her medicines and support her to manage her medicines confidently?
5. What key self-management strategies and lifestyle interventions would you discuss with Sandra?

Q & A

Please raise your hand or write your questions into the chat

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Health Pathways

Search bar for quickly locating clinical pathways and conditions

Browse clinical suites via left-hand menu, organised into easy to navigate categories (e.g. **referral instructions for local health services and hospitals**)

Essential **quick-access** links for latest updates, Pathway updates, clinical resources and MBS items

Click '**Send Feedback**' to add comments and questions about this pathway.

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HealthPathways Melbourne

Search for Cardiovascular Disease (CVD) Risk Assessment Homepage

Search bar for quickly locating clinical pathways and conditions

Browse clinical suites via left-hand menu, organised into **easy to navigate** categories

Essential **quick-access** links for latest updates, Pathway updates, clinical resources and MBS items

Click '**Send Feedback**' to add comments and questions about this pathway.

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Please provide your feedback

EVALUATION - From hospital to home: coordinated heart failure care in general practice

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Thank you

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Available resources

- National Heart Foundation – for action plans, health professional information and patient information.
- Health Pathways Melbourne – clinical management and referral resource
- Managing heart failure care guide
- Medication optimisation plan
- Flexible diuretic plan
- Sick day management plan
- Living well with heart failure booklet
- Hearts4heart heart failure symptom tracker
- Action plan for reducing fluid
- Heart failure and regular activity video
- Heart Foundation walking groups

References

1. Al-Omary MS, Davies AJ, Evans T, et al. Mortality and readmission following hospitalisation for heart failure in Australia: A systematic review and meta-analysis. *Heart Lung Circ.* 2018;27:917–927.
2. Atherton JJ, Sindone A, De Pasquale CG, et al. National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Guidelines for the prevention, detection, and management of heart failure in Australia 2018. *Heart Lung Circ.* 2018;27(10):1123–1208.
3. Australian Institute of Health and Welfare. Heart, stroke and vascular disease: Australian facts. 2024. Available at: https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/hsvd-facts/contents/all-heart-stroke-and-vascular-disease/heart-failure-and-cardiomyopathy
4. Australian Institute of Health and Welfare. Disparities in potentially preventable hospitalisations across Australia, 2012–13 to 2017–18. Available at: https://www.aihw.gov.au/reports/primary-health-care/disparities-in-potentially-preventable-hospitalisa/summary
5. Bozkurt B, Savarese G, Adamsson Eryd S, et al. Mortality, outcomes, costs and use of medicines following a first heart failure hospitalisation (EVOLUTION HF). *JACC Heart Fail.* 2023;11(10):1320–1332.
6. Chen L, Booley S, Keates AK, Stewart S. Snapshot of heart failure in Australia. Mary MacKillop Institute for Health Research, Australian Catholic University; 2017. Available at: https://www.acu.edu.au/about-acu/news/2017/june/snapshot-of-heart-failure-in-Australia
7. Coons JC, Kliner J, Mathier MA, et al. Medication optimisation clinic decreases hospitalisations and mortality for patients with HFrEF. *Am Heart J Plus.* 2024;47:100470.
8. Driscoll A, Dinh D, Wong J, et al. Impact of individual patient profiles on adherence to guideline-directed medical therapy in HFrEF (VCOR-HF). *Heart Lung Circ.* 2020;29(12):1782–1789.
9. Driscoll A, Srivastava P, Toia D, et al. A nurse-led up-titration clinic improves beta-blocker optimisation in chronic heart failure: A randomised controlled trial. *BMC Res Notes.* 2014;7:668.
10. Ezekowitz JA, van Walraven C, McAlister FA, et al. Impact of specialist follow-up in outpatients with congestive heart failure. *CMAJ.* 2005;172(2):189–194.
11. Evans M, Morgan AR, Whyte MB, et al. New therapeutic horizons in chronic kidney disease: The role of SGLT2 inhibitors in clinical practice. *Drugs.* 2021;81:1243–1255.
12. Fonarow GC, Greene SJ. Rapid and intensive guideline-directed medical therapy for heart failure across the ejection fraction spectrum. *J Am Coll Cardiol.* 2023;81(22):2145–2148.
13. HealthPathways. Heart failure. 2023. Available at: https://westvicphn.com.au/health-professionals/general-practice-support/healthpathways/
14. Indraratna U, Biswas J, McVeigh A, et al. A randomised controlled trial of TeleClinical Care – a smartphone-app-based model of care for heart failure and acute coronary syndromes. *Eur Heart J.* 2021;42(Supplement 1):ehab724.3083.
15. Maddox TM, Januzzi JL, Allen LA, et al. 2021 update to the 2017 ACC expert consensus decision pathway for optimisation of heart failure treatment. *J Am Coll Cardiol.* 2021;77(6):772–810.
16. McDonagh TA, Metra M, Adamo M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J. 2021;42(36):3599–3726.

References (cont.)

17. McDonald M, Virani S, Chan M, et al. CCS/CHFS heart failure guidelines update: Defining a new pharmacologic standard of care for HFrEF. *Can J Cardiol.* 2021;37(4):531–546.
18. Mebazaa A, Davison B, Chioncel O, et al. Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure (STRONG-HF). *Lancet* 2022;400:1938–1952.
19. National Heart Foundation of Australia. Guidelines for the prevention, detection and management of heart failure in Australia 2018. ANZSCTS and Cardiac Society of Australia and New Zealand; 2018. Available at: https://www.sciencedirect.com/science/article/pii/S1443950618317773
20. NPS MedicineWise. Heart failure: Taking an active role. September 2021. Available at: https://www.nps.org.au/professionals/heart-failure-taking-an-active-role
21. Queensland Government. Heart failure medication optimisation plan. Available at: https://www.health.qld.gov.au/__data/assets/pdf_file/0018/428121/Medn_Titration.pdf
22. Roughead EE, Barratt JD, Ramsay E, et al. Effectiveness of collaborative medicine reviews in delaying time to next hospitalisation for patients with heart failure. *Circ Heart Fail.* 2009;2(5):424–428.
23. Savarese G, Lindberg F, Christodorescu RM, et al. Physician perceptions, attitudes and strategies towards implementing GDMT in HFrEF. *Eur J Heart Fail.* 2024;26(6):1408–1418.
24. Savarese G, Lund LH, Dahlström U, et al. Nurse-led heart failure clinics and outcomes. *J Am Heart Assoc.* 2019;8(10):e011737.
25. Sindone AP, De Pasquale C, Amerena J, et al. Consensus statement on the current pharmacological prevention and management of heart failure. *Med J Aust.* 2022;217(4):212–217.
26. Sindone AP, Haikerwal D, Audehm RG, et al. Clinical characteristics of people with heart failure in Australian general practice. *ESC Heart Fail.* 2021;8(6):4497–4505.
27. Stewart S, Riegel B, Boyd C, et al. ARISE-HF: A multidisciplinary framework to optimise outcomes in heart failure and multimorbidity. *Int J Cardiol.* 2016;212:1–10.
28. Straw S, McGinlay M, Witte KK. Four pillars of heart failure: Contemporary pharmacological therapy for HFrEF. *Open Heart.* 2021;8(1):e001585.
29. Tromp J, Ouwerkerk W, van Veldhuisen DJ, et al. Systematic review and network meta-analysis of pharmacological treatment of HFrEF. *JACC Heart Fail.* 2022;10(2):73–84.

Self-directed mini-audit

[Post-webinar CPD - self-directed mini-audit]

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HealthPathways : Clinical Management and Referral Resource

Localised Clinical Pathways
(Evidence-based guidance adapted for Melbourne clinicians)

Referral Information
(Clear referral instructions for local health services and hospitals)

Regular Updates
(Pathways reviewed and updated regularly by Clinical Editors)

CPD Hours
(Track and record CPD activities directly through Pathway page)

Collaborative Development
(Created by GPs, specialists, allied health and other health professionals)

Easy Access
(Web-based platform, mobile-friendly for point-of-care use)

Streamlined Workflow
(Quick navigation with Assessment, Management and Referral sections all in one place)

Free for Clinicians
(No cost access for all health professionals in North Western and Eastern Melbourne PHN catchments)

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Relevant and Related Pathways

Relevant Pathways

Cardiovascular Disease (CVD) Risk Assessment
Hypertension
Hyperlipidaemia
Monitoring of Cardiac Drugs
Acute Chest Pain
Atrial Fibrillation (AF)
Funny Turns
Oral Antiplatelet Agents
Smoking and Vaping Cessation
Weight Management in Adults with Overweight or Obesity

Referral Pathways

Acute Cardiology Referral (Same-day)
Non-acute Cardiology Referral (> 24 hours)
Cardiac and Heart Failure Rehabilitation
Lipid Disorders Specialist Referral
Exercise and Lifestyle Modification Programs
Weight Management Specialist Referral

Related Pathways

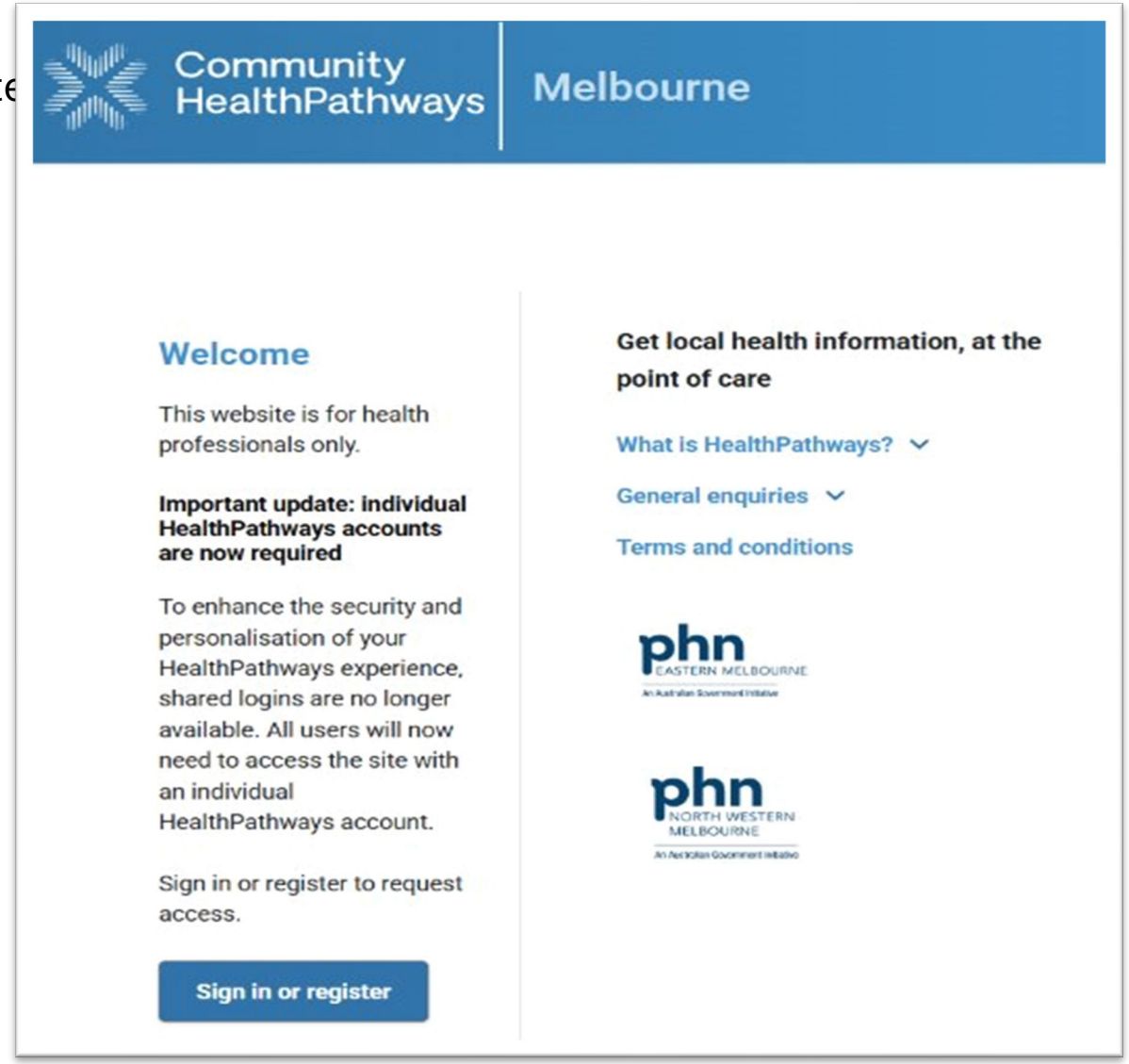
Acute Chest Pain
Family History of Sudden Cardiac or Unexpected Death
Heart Failure
Heart Murmurs in Adults
Heart Valve Disease
Infective Endocarditis Prophylaxis
Long QT Syndrome
Palpitations
Hypertension and Pre-eclampsia in Pregnancy

CPD Hours for HealthPathways Use

Access Now: Sign In or Scan to Register

Please click on the **Sign in or register** button to create your individual account or scan the QR code below.

If you have any questions, please email the team info@healthpathwaysmelbourne.org.au



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POLAR, data definitions, caveats and limitations

POLAR is a primary care data platform used by ~90% of EMPHN general practices that securely extracts and aggregates de-identified data from participating general practice clinical systems.

POLAR extracts data from structured fields (e.g. diagnoses, prescribed medications, measurements) and NOT free-text notes

Differences in how practices code diagnoses, medications etc. can affect completeness and comparability of the data.

POLAR insights are intended to provide system-level or population-level context and support reflection and quality improvement.

RACGP active patient

- Patient who has visited a specific general practice at least three times in the previous two years

Diagnosis of HF (diagnosis field)

- '*heart failure*' string
- '*cardiac failure*' string
- '*ventricular failure*' string
- '*myocardial failure*' string
- '*cardiomyopathy*' string
- '*cor pulmonale*' string
- Abbreviations (e.g. HF, CCF, CHF, HFrEF, HFmrEF, HFpEF)

Diagnosis of HF subtypes based on SNOMED terms

- HFrEF = heart failure with reduced ejection fraction
- HFmrEF = heart failure with mid range ejection fraction
- HFpEF = heart failure with normal ejection fraction

HF-specific beta blockers

- Bisoprolol
- Carvedilol
- Metoprolol succinate CR
- Nebivolol

ACE inhibitors, ARBs and ARNI (including combination products)

- Enalapril
- Lisinopril
- Perindopril arginine / perindopril erbumine
- Ramipril
- Trandolapril
- Candesartan
- Valsartan
- Sacubitril + valsartan

MRA

- Eplerenone
- Spironolactone

SGLT2 inhibitors (including combination products)

- Dapagliflozin
- Empagliflozin

GPCCMP and DMMR / RMMR

- GP management plans (229, 721, 92024, 92055)
- Team care arrangements (230, 723, 92025, 92056)
- Reviews (233, 732, 92028, 92059)
- Prepare a GPCCMP – face to face (965, 392)
- Prepare a GPCCMP – video (92029, 92060)
- Review a GPCCMP – face to face (967, 393)
- Review a GPCCMP – video (92030, 92061)
- DMMRs (245, 900); RMMRs (249, 903)

Vaccinations

- Data only captures vaccinations administered in general practices and recorded in a patient's immunisation record
- COVID-19 vaccines include the Pfizer and the Moderna vaccines (Cormirnaty® and Spikevax®)

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