A RESEARCH REVIEW™
SPEAKER SERIES

Optimising management of heart failure in the community

Making Education Easy 2024

About the speakers

Suzanne Jackson

Suzanne is a Nurse Practitioner (Primary Care/ CNS Cardiorespiratory) in South Canterbury and a member of CSANZ and NPNZ.

Johanna Lim

Johanna is an ANZCAP-accredited Consultant Cardiology Pharmacist and Pharmacist Prescriber. She is also an Executive member of the CSANZ Allied Health, Scientific & Technical Council.

Mayanna Lund

Mayanna is a Cardiologist and Heart Failure Specialist at Counties Manukau. She is also the Clinical Lead of the Northern Region New Zealand Cardiac Network and the CSANZ President-Elect.

ABOUT RESEARCH REVIEW

Research Review is an independent medical publisher producing electronic publications in a wide variety of specialist areas.

Research Review Speaker Series is a summary of a speaking engagement by a medical expert. Research Review has no control over the content of these presentations, which has been developed and presented by the featured experts. Research Review is not responsible for any inaccuracies or errors of fact made by, or opinions of, the speakers.

RESEARCH REVIEW™
Making Education Easy — Since 2006

The annual GP CME South conference was held in Christchurch. In this workshop session, the speakers presented case studies as the basis for discussions on management strategies to improve outcomes for patients in the community with heart failure. This review is sponsored by an educational grant from Boehringer Ingelheim and Eli Lilly.

SUZANNE JACKSON: HEART FAILURE IN THE COMMUNITY

A first HF hospitalisation in New Zealand is associated with an all-cause mortality rate of 12% at 30 days post-admission and 30.6% and 63.3% at 1 year and 5 years respectively. HF resulted in 11,428 publicly funded discharges in 2018/19 with a mean stay of 12.9 days.[1] Māori are over four times more likely to be hospitalised due to HF and more than twice as likely to die from it as the general population.[2]

In New Zealand, HF diagnosis is generally similar to the European Society of Cardiology (ESC) guidelines (**Figure 1**).[3] HF should be suspected when patients present with fatigue, dyspnoea and decreased functional capacity. Orthopnoea is a telltale HF symptom that some patients may deny. An elevated jugular venous pressure (JVP) and displaced apex heartbeat on examination are consistent with HF. An elevated BNP supports a diagnosis of HF and can expediate an echocardiogram.

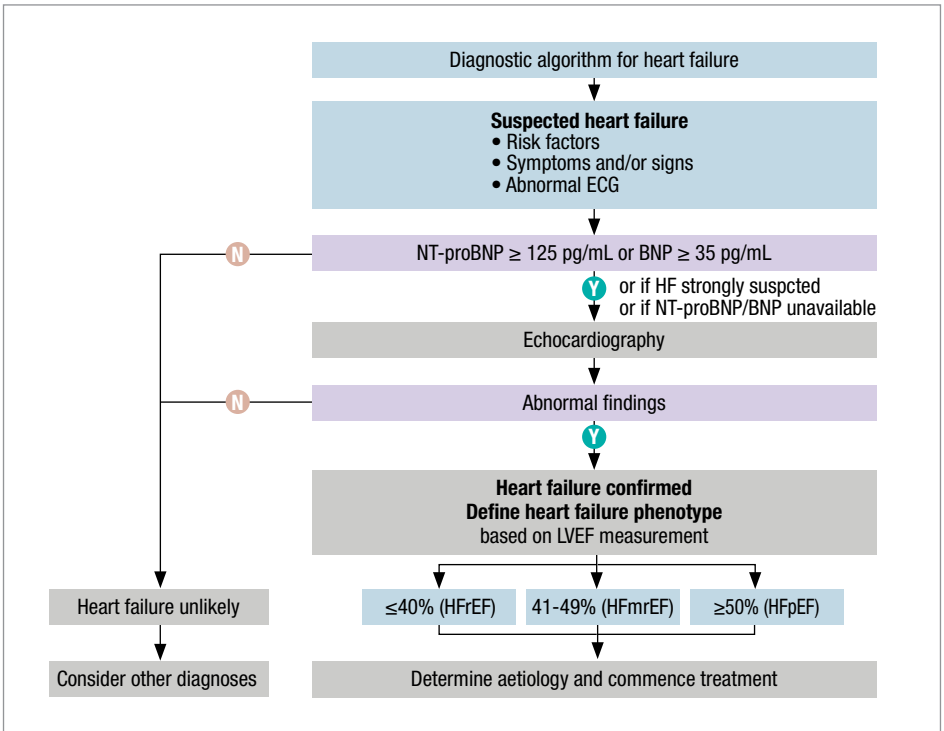


Figure 1: The ESC heart failure diagnostic algorithm. Adapted from McDonagh *et al* (2021).[3]

In patients with suspected HF, a diuretic and an ACE inhibitor should be initiated. Patients diagnosed with HFrEF should begin guideline-directed medical therapy as soon as possible (**Figure 2**), including an:

1. ACE inhibitor/ARB or ARNI.
2. Beta-blocker.
3. MRA - spironolactone or eplerenone if gynaecomastia is a concern.
4. SGLT2 inhibitor - empagliflozin, only funded for patients with diabetes.

The importance of exercise rehabilitation is often overlooked in HF management.

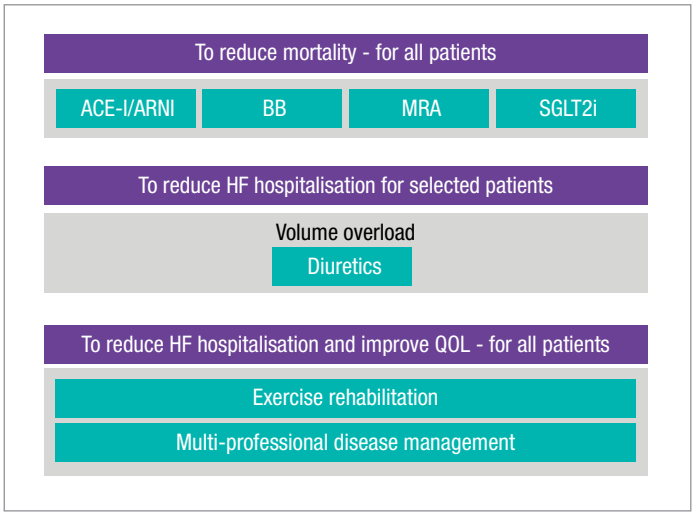


Figure 2: Management of HF with reduced ejection fraction (HFrEF) in primary care. Adapted from McDonagh et al (2021).[3]

The case of a 29-year-old male was presented with a recent inpatient stay due to shortness of breath and collapse following codeine and alcohol use (**Table 1**). Echocardiogram confirmed an LVEF of 35%. He was initiated on losartan 12.5 mg once daily; the patient self-discharged before other therapies could be initiated. He smokes 35 cigarettes and drinks 5-7 beers daily. The patient was motivated to improve their health due to the threat to his livelihood.

The Entresto® Special Authority applies if the patient has HF and an echocardiogram is not reasonably practical, and in the opinion of the treating practitioner the patient would benefit from treatment, and they are receiving concomitant optimal standard chronic HF treatments. If an echocardiogram is performed, the patient's LVEF needs to be ≤35%.

During the workshop discussion, it was strongly emphasised that the recommendation for HF therapies is now to keep up-titrating until the patient experiences adverse effects or the maximal dose is reached. Specifically regarding Entresto®, up-titration from a low dose is important. If a patient is tolerating a twice-daily ARB, this suggests that they are likely to tolerate any drop in blood pressure associated with Entresto®.

A patient-centred approach is important when making treatment decisions and deciding on doses.

Table 1: Clinical features, treatment and progress of Case Study 1.

Primary care visit	Clinical features and treatment plan
1st visit	**The patient reports** fatigue but denies dizziness, orthopnoea, paroxysmal nocturnal dyspnoea or dyspnoea. He does not want to quit smoking or drinking but will consider decreasing both. He declines a health coach and pharmacotherapy to support reduction. **Clinical signs**: BP 100/60 mmHg, HR 97 bpm regular, HS dual, SpO2 98%, chest clear, JVP not seen on sitting, weight 78 kg (stable). **Treatment plan**: Low dose bisoprolol (1.25 mg) once daily with monthly consults for up-titration (patient could not afford two-weekly consults). The patient declined input from a cardiorespiratory nurse due to perceived embarrassment from being seen during work. A "Staying well with heart failure" booklet was provided with a weight chart and action plan. The patient was asked to weigh themselves first-thing every morning. Care Plus funding was accessed as the patient had multiple comorbidities.
2nd visit	**The patient reports** some dyspnoea but denies dizziness or orthopnoea. His body weight increased by 1.5 kg and he is reminded to report an increase ≥1.5 kg. Alcohol reduced to 10 units per week and cigarettes down to 10 daily. **Clinical signs**: BP 105/60 mmHg, HR 80 bpm regular, SpO2 98%, chest clear, JVP not seen on sitting. **Treatment plan**: Low dose spironolactone 12.5 mg once daily, renal function test, complete blood count and iron study requested*. Offered smoking cessation therapy and alcohol reduction support. Declines multi condition rehabilitation or green prescription but will continue to walk his dog.
3rd visit (12 weeks - did not attend at 2 months)	**Patient reports** resolved dyspnoea and increased physical activity with daily dog walking. **Clinical signs**: BP sitting 110/70 mmHg and 120/70 standing, HR 75 bpm regular, HS dual, chest clear, JVP not seen on sitting, weight stable. Renal function test, complete blood count and iron study within normal limits. On exercise ECG, the patient ran for 12.33 minutes with HR 86% maximum of predicted and IHD was excluded. **Treatment plan**: Increase losartan to 12.5 mg twice daily. Given influenza vaccination.
4th visit	**Patient reports** no dizziness, orthopnoea or dyspnoea and daily activities and dog walking are manageable. **Clinical signs** are stable. Renal function test within normal limits. **Treatment plan**: Stop losartan and start Entresto® 24/26 mg twice daily the next day (a 36-hour washout is required if switching from an ACE inhibitor). Renal function test to be performed in 2 weeks and patient to report any adverse effects. Treatment will continue to be up-titrated: bisoprolol towards 10 mg, spironolactone towards 25 mg, Entresto® towards 97/103 mg twice daily. An SGLT2 inhibitor should be considered if the patient can self-fund. Continue to offer smoking and alcohol cessation support.

*Patients with symptomatic HF are eligible for funded ferric carboxymaltose infusion in primary care if they have been diagnosed with iron-deficiency anaemia and a serum ferritin ≤20 mcg/L.

TAKE-HOME MESSAGES

- **Consider GDMT at every visit with up-titration towards maximally tolerated doses of a beta-blocker, ACEI/ARNI, MRA and SGLT2 inhibitor.**
- **Check for iron deficient anaemia.**
- **Do not wait for an echocardiogram before initiating guideline-directed medical therapy.**
- **In frail patients, an ACE inhibitor or an ARB are appropriate instead of ARNI.**
- **Spironolactone should be used cautiously in frail patients with CKD.**
- **Clinical inertia will not improve patient outcomes – prioritise up-titration of HF therapies.**

JOHANNA LIM: OPTIMISING MANAGEMENT OF HEART FAILURE IN THE COMMUNITY

The case of Mr WK was presented, a 65-year-old retired Māori male (**Table 2**) who lives rurally with two high-school aged moko (children). He still drives, but frequently does not attend GP appointments and is difficult to engage with as he stays up late and sleeps until afternoon. Mr WK has long-term T2D and does not SMBG. He is a current smoker who has refused cessation support on multiple occasions. He was diagnosed with HF just over a year ago.

Following an MI in May 2022, his echocardiogram demonstrated an LVEF of 35% with anterior wall motion abnormalities and moderately impaired left and right ventricular function but no valvular abnormalities. Mr WK was awaiting outpatient angiogram but was lost to follow-up. He sleeps with two pillows and reports shortness of breath on exertion when digging in the garden, although he has done little exercise recently due to winter. Mr WK reports drinking 1L of fluid per day (honey/lemon drink, tea, coffee) and only eating dinner as a meal (mainly vegetables), although he eats sugary snacks in the morning.

Mr WK only takes his prescribed medicines when he is feeling "off". He regularly drinks kawakawa tea to control his blood sugar levels.

Table 2: Case Study 2 – Mr WK

Co-morbidities	Clinical signs	Medicines
• T2D • IHD – likely MI in May 2022 • HF • Current smoker • Hypertension • BMI elevated	• HbA1c 107 mmol/mol Jan (83 mmol/mol Nov 2022) • LDL 3.8 mmol/L (4.4 mmol/L) • Creatinine 102 µmol/L • eGFR 66 mL/min/1.73m^2 • Weight 113 kg (target) • Height 175 cm • BMI 37.88 kg/m^2 • BP 140/80 mmHg	• Furosemide 40 mg mane • Entresto® 49 mg/51 mg, 1 tablet BD • Metoprolol CR 23.75 mg mane • Metformin 1000 mg BD • Empagliflozin 10 mg mane • Lantus® 30 units daily • Simvastatin 40 mg nocte • Nortriptyline 25 mg nocte

Clinical pharmacist consultations

First consult: During her first HF consult, Johanna performs a KCCQ12 + MOS SAS score to assess functionality. This also provides an insight into the patient's goals and priorities. She provides some education but is mindful that patients will often only remember 3 things on average and is careful not to overload the patient. Patients are asked to bring their medicines and Johanna provides a brief explanation for each and groups them according to the condition they are treating. This helped Mr WK understand why he was prescribed so many medicines.

Mr WK was provided with a Heart Foundation Heart Failure action plan and diary and asked to record his weight every morning alongside any symptoms (breathlessness, fatigue, ankle swelling). The importance of SMBG was discussed and he was referred to cardiology for an angiogram. Mr WK was prescribed Aspirin EC 100 mg daily and switched from Simvastatin to Atorvastatin.

Second consult: It was determined that Mr WK was now adherent to treatment with all the medicines prescribed to him. Furthermore, he was weighing himself daily and monitoring himself for symptoms. Mr WK remains euvolemic. His HbA1c improved to 80 mmol/mol, although he recognises there remains room for improvement. He also received an Outpatient Clinic Appointment to see the Cardiologist.

The agreed management plan included making dietary changes, starting with cutting down on sugar. Mr WK also agreed to begin SMBG, and his technique was checked during the consultation. Mr WK will continue to have monthly follow-ups with Johanna.

Questions between Johanna and attendees stimulated sharing of thoughts and ideas to improve Mr WK's outcomes.

Are there any medicines that Mr WK is taking that could be optimised?

- To reduce the number of tablets, the combination metformin/empagliflozin (Jardiamet®) could be prescribed as this would help with diabetes, HF and prevent further CVD events. The dose of empagliflozin could be increased to improve diabetic control.
- The furosemide could be withdrawn because the patient is euvolemic and empagliflozin also has a diuretic effect.

What strategies could be used to encourage this patient to be more adherent?

- Asking about the patient's goals identifies issues that may motivate him. For example, if his symptoms worsen he may not to be able to garden, help his Iwi or be active with his moko.
- Explaining that the risk of hospitalisation or deterioration of disease is increased if he stops taking medicines.
- Asking about adverse effects as a potential reason for non-adherence. A multi-disciplinary approach is important, with all members of primary and secondary care asking about adherence and providing consistent messaging to avoid confusion.
- Using an analogy to explain concepts like HbA1c. For example, having high blood sugar levels is like parking your car in a pond – it will rust.
- Ask about family history. If others have the same condition, ask about their symptoms and use them as an example outcome that may occur with continued nonadherence. The key being to motivate the patient to take control of their own health.
- Educate the patient that medicines are good, like healthy food and exercise.
- It was noted that if Mr WK's health could be improved, he might motivate others to seek care given that he has mana in his community.

What strategies can be used to educate patients who are confused about medicines or report feeling down about needing to take them?

- Provide simple explanations and group the medicines according to the condition they are treating.
- Link taking medicines to activities that match how many times a day the medicines should be taken. For example, twice daily could be taken at breakfast and dinner, if the patient consistently eats both meals.
- If a patient is regularly taking any complimentary and alternative medicines, ask why they are adherent to these products and use this information to adjust strategies.
- Identify the most important medicines and ask the patient to be adherent to these first, before negotiating further. For Mr WK, Entresto® is important given he has high blood pressure and HF. Metoprolol is likely to provide a mortality benefit due to a recent MI. Empagliflozin provides benefit for HF and diabetes. Statins provide mortality benefits post MI.
- Use an analogy. For example, the heart is like a rubber band and if you stop taking medicines it becomes too stretched and will not be springy anymore.

TAKE-HOME MESSAGES

- **Advise patients to continue taking HF medicines as it is a long-term condition - unless there is a clear reason to stop.**
- **Dose matters**
  - **Target doses or maximumly tolerated doses improve outcomes, but this is influenced by heart rate, blood pressure, creatinine, electrolytes and interactions.**
- **A collaborative approach is required to address multiple interventions, but consistent messages are needed across primary and secondary care.**
- **Ongoing medication review and updates are important.**

MAYANNA LUND: A CARDIOLOGIST'S PERSPECTIVE

Mrs K is a 70-year-old who first presented to hospital in 2011 with a likely familial cardiomyopathy. She had a possible history of hypertension, although her systolic BP was initially low normal. She was a recent ex-smoker with an FEV_1 of 53% and an EF of 20%. With the aid of a nurse practitioner, it took 9 visits and 1 year to achieve maximally tolerated 3-drug therapy.

Patient progress

Mrs K underwent a cardiac MRI in March 2012, revealing an EF improved to 44% before she had achieved full drug titration. Evidence of an anterior infarct was discovered on this test and she underwent stenting in May 2012 for a severe left anterior descending artery lesion. Mrs K had resumed smoking and gained weight. She was provided with multidisciplinary support.

In general, Mrs K was progressing relatively well, despite a slight concern regarding postural hypotension. She had minimal cardiac symptoms and osteoarthritis in her right knee was her only complaint. An echocardiogram in May 2020 revealed mildly impaired LVEF and she was stretched to a 2-year review due to clinic resources.

The undoing

In August 2020, Mrs K underwent a knee revision where the house surgeon stopped her heart-healing medicines because "*she no longer needs this for blood pressure control*".

In June 2022, Mrs K was reviewed in cardiology with Q wave progression on ECG. Her cardiac medicines were restarted with slow titration. An echocardiogram in September 2022 revealed HF progression with a severely dilated LV with moderate to severe impairment and an apical aneurysm.

Recovered dilated cardiomyopathy

The effects of withdrawing cardiac therapies in patients who have apparently recovered from a dilated cardiomyopathy has been studied.[4] In an RCT, patients with a recovered dilated cardiomyopathy had one medicine deprescribed at a time, with careful clinical monitoring and measurement of EF at 16 weeks and 6 months. During the six months, 4 out of 10 patients had a relapse.

Heart failure trends in Aotearoa

The rates of incident HF are decreasing in older white populations, but they are increasing in younger people, particularly in Māori or Pacific peoples.[5] The inequities in HF in New Zealand are also increasing. From 2006 to 2018, the incidence of HF admissions decreased for NZ Europeans and Asian people but did not change for Māori and Pacific people (**Figure 3**).[6] Māori and Pacific people who were admitted to hospital for HF were 17 years younger, had more comorbidity, were less likely to have IHD and had higher socioeconomic deprivation.

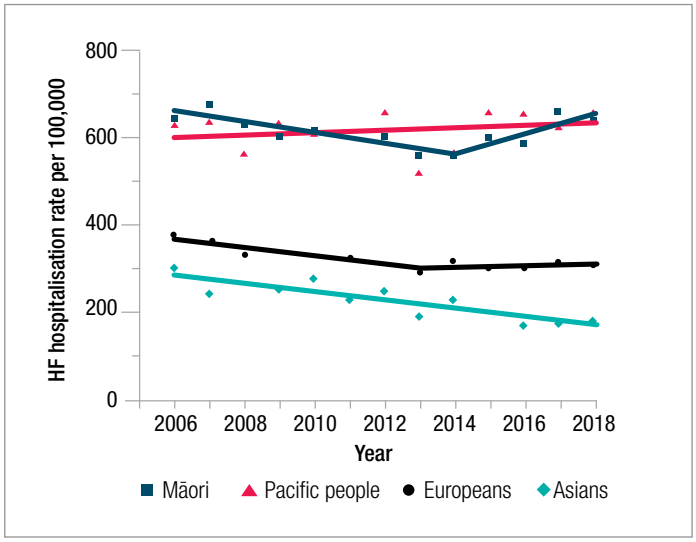
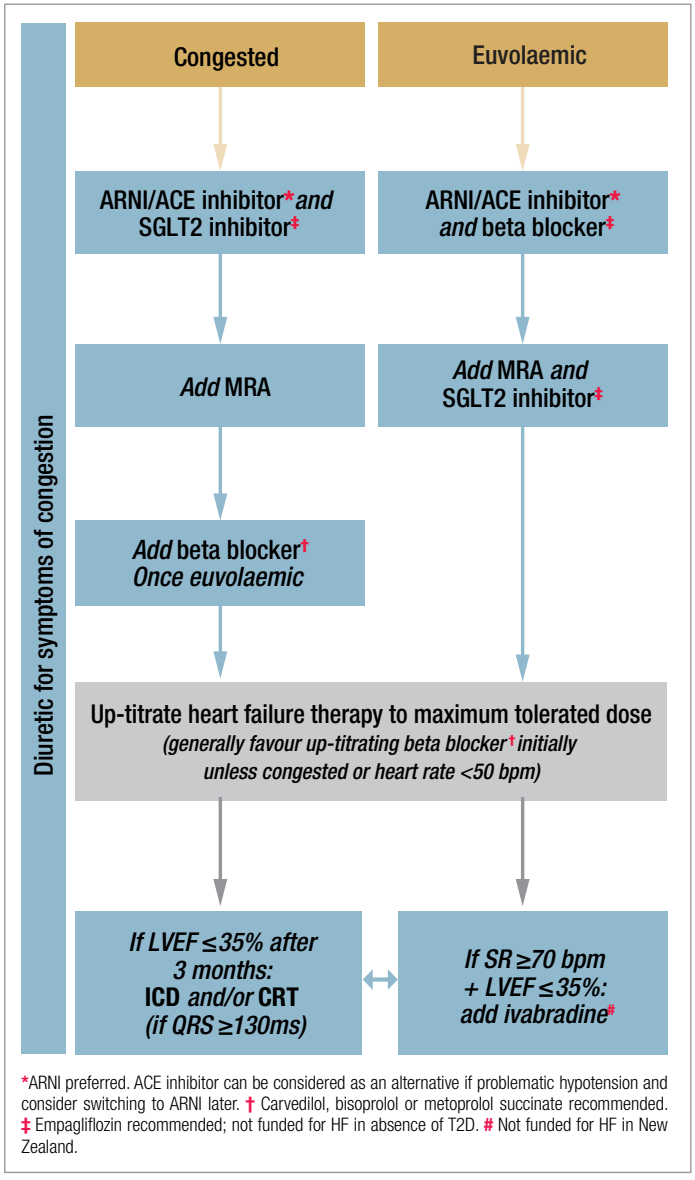


Figure 3: Age-standardised rates of heart failure hospitalisation in New Zealand (2006-2018). Adapted from Chan *et al* (2023).[6]

The fab four, all at once, all the time

The STRONG-HF trial demonstrated the importance of prompt initiation of an ARNI, MRA and a beta-blocker.[7] Patients admitted for HF were randomised to usual care or a target of maximal tolerated doses of all 3 therapies within 2 weeks of discharge. Patients were followed-up four times in 2 months. The intensive strategy was associated with reduced symptoms, improved QoL, and reduced 180-day all-cause death or HF readmission, compared to usual care. Younger patients benefited the most.[7] The rapid introduction of medicines with changing doses can be challenging for patients to follow and a highly resourced and motivated treatment team is required.

A simplified treatment algorithm is provided in **Figure 4** that divides HF patients into congested and euvolemic and provides appropriate treatment guidance.



*ARNI preferred. ACE inhibitor can be considered as an alternative if problematic hypotension and consider switching to ARNI later. † Carvedilol, bisoprolol or metoprolol succinate recommended. ‡ Empagliflozin recommended; not funded for HF in absence of T2D. # Not funded for HF in New Zealand.

Figure 4: Treatment algorithm based on the presence or absence of clinical congestion. Adapted from Sindone *et al* (2022).[8]

There is increasing recognition of the importance of treating symptomatic HFmrEF (LVEF 41-49%) as it is associated with high morbidity, even if mortality is lower than for patients with HFrEF.[9] The latest ESC guidance recommends SGLT2 inhibitors at level 1 for HFmrEF and in Dr Lund's experience, some patients with symptomatic HFmrEF do very well on SGLT2 inhibitors.[10] This is supported by evidence showing a benefit of SGLT2 inhibitors across the spectrum of EFs in patients with HF.[11] However, patients need to have diabetes to meet Special Authority criteria for funded SGLT2 inhibitor treatment.

HF classifications can change over time due to variations in LVEF.[9] When this occurs, Dr Lund recommends treating patients according to their most severe LVEF and not switching between treatment recommendations, e.g. from HFrEF to HFmrEF.

During the COVID pandemic, Dr Lund's team demonstrated that remote up-titration of HF medicines using daily weighing and automated blood pressure monitoring was highly effective in select patients with a mean age of 59 years (24% Māori, 34% Pacific).[12] Within this group, no patients had an LVEF >40% prior to titration, but well over half had an LVEF >40% following up-titration. Many of these patients only needed to attend the clinic once.

Dr Lund also emphasised the importance of not fluid restricting HF patients unless they are severely symptomatic, particularly larger patients in warmer weather.

TAKE-HOME MESSAGES

- **History, examination and ECG remain the cornerstones of HF diagnosis.**
- **Echocardiograms are essential and should be performed with high priority – if good clinical evidence of HF, although therapy can be started prior to this.**
- **Heart failure statistics for Māori in New Zealand demand a health policy response.**
- **The fab four, all at once, all the time for HFrEF – ARNI/ACEi/ARB, SGLT2 inhibitor, MRA and a beta-blocker.**

Abbreviations used in this review

ACE = angiotensin converting enzyme
ARB = angiotensin receptor blocker
ARNI = angiotensin receptor/neprilysin inhibitor
BMI = body mass index
BNP = B-type natriuretic peptide
Bpm = beats per minute
CKD = chronic kidney disease
CVD = cardiovascular disease
ECG = electrocardiogram
eGFR = estimated glomerular filtration rate
ESC = European Society of Cardiology
GDMT = guideline-directed medical therapy
GORD = gastroesophageal reflux disease
HF = heart failure
HFmrEF= heart failure with mid-range or mildly reduced ejection fraction
HFpEF = heart failure with preserved ejection fraction
HFrEF = heart failure with reduced ejection fraction
IHD = ischaemic heart disease
JVP = jugular venous pressure
KCCQ12 = Kansas City Cardiomyopathy Questionnaire
LVEF = left ventricular ejection fraction
MOS-SAS = Medical Outcomes Study Specific Adherence Scale
MI = myocardial infarction
MRA = mineralocorticoid receptor antagonist
NT-proBNP = N-terminal pro-B type natriuretic peptide
QoL = quality of life
T2D = type 2 diabetes
SBP = systolic blood pressure
SGLT2 = sodium glucose co-transporter 2
SMBG = self-monitor blood glucose
VF = ventricular fibrillation

REFERENCES

1. Ministry of Health. Publicly funded hospital discharges – 1 July 2018 to 30 June 2019. Published 2021. www.health.govt.nz/publication/publicly-funded-hospital-discharges-1-july-2018-30-june-2019
2. Ministry of Health. Cardiovascular disease. Published 2018. https://www.health.govt.nz/our-work/populations/maori-health/tatau-kahukura-maori-health-statistics/nga-mana-hauora-tutohu-health-status-indicators/cardiovascular-disease
3. McDonagh TA, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *Eur Heart J.* 2021;42(36):3599-3726.
4. Halliday BP, Wassall R, Lota AS, et al. Withdrawal of pharmacological treatment for heart failure in patients with recovered dilated cardiomyopathy (TRED-HF): an open-label, pilot, randomised trial. *Lancet.* 2019;393(10166):61-73. doi:10.1016/S0140-6736(18)32484-X
5. Chan DZL, et al. Contrasting trends in heart failure incidence in younger and older New Zealanders, 2006-2018. *Heart.* 2022;108(4):300-306. doi:10.1136/heartjnl-2021-319853
6. Chan DZ, et al. Widening ethnic inequities in heart failure incidence in New Zealand. *Heart.* Published online August 3, 2023:heartjnl-2023-322795. doi:10.1136/heartjnl-2023-322795
7. Mebazaa A, 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(10367):1938-1952.
8. Sindone AP, et al. Consensus statement on the current pharmacological prevention and management of heart failure. *Med J Aust.* 2022;217(4):212-217. doi:10.5694/mja2.51656
9. Heidenreich PA, Bozkurt B, Aguilar D, et al. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation.* 2022;145(18):e895-e1032. doi:10.1161/CIR.0000000000001063
10. McDonagh TA, et al. 2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J. 2023;44(37):3627-3639. doi:10.1093/eurheartj/ehad195
11. Jhund PS, et al. Dapagliflozin across the range of ejection fraction in patients with heart failure: a patient-level, pooled meta-analysis of DAPA-HF and DELIVER. *Nat Med.* 2022;28(9):1956-1964.
12. McLachlan A, et al. An NP-led pilot telehealth programme to facilitate guideline-directed medical therapy for heart failure with reduced ejection fraction during the COVID-19 pandemic. *N Z Med J.* 2021;134(1538):77-88.