Heart Failure

Summary: Diagnosing patients with heart failure in primary care

Patient with suspected heart failure based on symptoms
(see main article for key examples)

Assess the probability of heart failure:

Patient history
- History of coronary artery disease or hypertension?
- Past diuretic use?
- Drug-induced causes?

Physical examination
- Any signs of heart failure?
- NYHA functional class?

Consider ECG
- Any abnormality?

Significant or distressing symptoms? → **Hospital admission**

All normal? → **Heart failure unlikely**
Consider other diagnoses

Any concerning but non-urgent features? → **Assess bloods including BNP test**

All normal?

BNP threshold met?*

Diagnose heart failure and initiate treatment

Refer for echocardiogram

Consider need for additional testing, e.g. chest X-ray and spirometry
- Lung disease suspected?
- Co-morbidities that may worsen heart failure?

LVEF ≤ 40% → Heart failure with **reduced** ejection fraction (HFrEF)

LVEF 41 – 49 % → Heart failure with **mildly reduced** ejection fraction (HFmrEF)

LVEF ≥ 50% and evidence of relevant structural heart disease, and/or diastolic dysfunction with a high filling pressure → Heart failure with **preserved** ejection fraction (HFpEF)

Refine treatment based on results; refer to secondary care if needed

* Detection of elevated BNP levels is sufficient to establish a working diagnosis of heart failure (see the main article for specific thresholds), however, an echocardiogram is still important for confirmation and for guiding long-term management

Common blood tests for heart failure:

- BNP/NT-proBNP
- Complete blood count
- Electrolytes and renal function
- Liver function
- HbA_{1C} and lipids as part of a CVD risk evaluation

Other blood tests as appropriate:

- Thyroid function
- CRP if infection is suspected
- Serum troponin if acute onset of symptoms or an acute coronary syndrome is possible
- Iron studies (including iron levels, ferritin, transferrin saturation)

Abbreviations: BNP = brain natriuretic peptide; CRP = C-reactive protein; CVD = cardiovascular disease; ECG = electrocardiogram; $HbA_{1c,}$ = glycated haemoglobin; LVEF = left ventricular ejection fraction; NYHA = New York Heart Association.

Managing patients with heart failure in primary care

Guideline-directed medical therapy (GDMT)

Also called the "four pillars" of heart failure treatment – denoted in green boxes

Establish patients on all four medicines as early as possible

ARNI (or ACE inhibitor/ARB†)	**Beta blocker** (once euvolemic)	**MRA****	**SGLT-2 inhibitor** (all patients unless contraindicated)

Promptly titrate to maximally tolerated or target dose **(see: Page 3)**

- Ideally achieve optimised GDMT within three months of initiation
- Initially favour up-titrating the beta blocker unless congested or heart rate < 50 bpm

Continue at specified dose

N.B. See main article for discussion around the practicalities of implementing GDMT in New Zealand primary care.

Consider need for secondary care referral to guide further medicine optimisation or use of advanced procedures, e.g. in patients with a high symptom burden despite optimised GDMT

Provide assertive loop diuretic* treatment if fluid overload/congestion is present

- Taper/stop the diuretic once patient is euvolemic
- Avoid continuous long-term use

Consider additional treatments depending on co-morbidities. For example:

Medicine	Condition
Digoxin	Atrial fibrillation
Anticoagulants	
Intravenous iron	Anaemia and iron deficiency

Non-pharmacological support:

- Daily exercise, as appropriate if tolerated
- Reduce sodium intake (ideally < 3 g daily; no more than 5 g daily)
- Weight loss
- Adequate fluid intake (1.5 – 2 L daily)
- Reduce alcohol/smoking cessation, if relevant
- Influenza/pneumococcal/COVID-19 vaccination

* Usually furosemide. Consider use of a thiazide diuretic if loop diuretic is contraindicated or not tolerated.

† If unable to tolerate an ARNI or patient not eligible for funded access (and cannot afford to self-fund treatment)

** Also known as aldosterone antagonist. Examples include spironolactone and eplerenone.

Recommendations for medicine use in patients with HFrEF or an undifferentiated clinical diagnosis of heart failure

	Usual starting dose*	Target dose	Up-titration strategy	Initiate only if	Monitoring
ACE inhibitor			**Conventional approach:** Gradual increases to maintenance dose; in general, doubling dose no sooner than every two to four weeks **Assertive approach:** Guidelines now indicate that up-titration every one to two weeks is reasonable, but rapid titration should only occur with close supervision Some treatment protocols recommend switching to ARNI after achieving mid-range ACE inhibitor or ARB dose (see below)	▪ Systolic blood pressure is ≥ 100 mmHg ▪ Serum potassium is < 5.5 mmol/L; significant caution is still required between 5.0 – 5.5 mmol/L ▪ Creatinine is < 250 micromol/L or eGFR is ≥ 30 mL/min/1.73 m^2 (seek cardiology advice if not) ▪ In general, discontinue potassium supplements and potassium-sparing diuretics before introducing an ACE inhibitor ▪ ACE inhibitor contraindicated in patients with history of idiopathic or hereditary angioedema	▪ Check serum potassium and creatinine† one week after first dose ▪ Check blood pressure, serum potassium and creatinine prior to each dose increase; delay dose increase or seek cardiologist advice if systolic blood pressure is < 95 mmHg, serum potassium is > 5.5 mmol/L or creatinine is > 25% above baseline ▪ Regular physical examination: weight, pulse, jugular venous pressure, chest auscultation ▪ Once stable dosing is achieved, continue long-term and monitor every three months (or more frequently if required depending on the patient)
Enalapril	2.5 mg, once or twice daily	10 – 20 mg, twice daily (higher doses indicated in some patients, e.g. those with hypertension). Once stabilised, total daily dose can be given once daily, if tolerated.			
Quinapril	2.5 – 5 mg, twice daily	20 – 40 mg, daily, in 1 – 2 divided doses (higher doses indicated in some patients, e.g. those with hypertension)			
Lisinopril	2.5 mg, once daily	20 – 40 mg, once daily			
Perindopril	2 mg, once daily	4 mg, once daily			
Ramipril**	1.25 mg, once daily	10 mg daily, preferably taken in two divided doses			
ARB					
Candesartan	4 mg, once daily	32 mg, once daily			
Losartan	12.5 mg, once daily	150 mg, once daily			
ARNI‡					
Sacubitril/ valsartan	▪ 49 mg/51 mg, twice daily, for most patients ▪ 24 mg/26 mg, twice daily, may be suitable for higher risk patients (see main text)	97 mg/103 mg, twice daily	Increase dose every two weeks	▪ As for ACE inhibitor/ ARB (above) ▪ Patient has stopped taking an ACE inhibitor/ARB ▪ It has been at least 36 hours since last ACE inhibitor dose or at least 24 hours since last ARB dose	
Beta blocker					
Carvedilol	3.125 mg, twice daily	25 mg, twice daily, for patients weighing < 85 kg or 50 mg, twice daily, for patients weighing ≥ 85 kg	**Conventional approach:** Gradual increases to maintenance dose; in general, doubling dose no sooner than every two to four weeks **Assertive guideline approach:** Increase dose every two weeks until maximum tolerated or target dose is reached (ensure appropriate monitoring occurs at each dose increase)	▪ Symptoms of fluid overload have resolved and there are no symptoms of worsening heart failure ▪ No symptomatic bradycardia, hypotension or second- or third-degree heart block	▪ As for ACE inhibitor/ ARB/ARNI above ▪ If the patient has first degree heart block (i.e. PR interval > 0.2 seconds), an ECG is recommended before each dose increase. If an ECG is not available, seek cardiology advice.
Bisoprolol	1.25 mg, once daily	10 mg, once daily			
Metoprolol succinate (modified-release)	23.75 mg, once daily	190 mg, once daily			

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Table Cont.

	Usual starting dose*	Target dose	Up-titration strategy	Initiate only if	Monitoring
MRAs					
Spironolactone **Eplerenone‡**	25 mg, once daily	50 mg, once daily	▪ Increase dose after two weeks	▪ eGFR is > 30 mL/min/1.73 m^2 ▪ Serum potassium is < 5.0 mmol/L	▪ Check creatinine and electrolytes regularly, i.e. at one week, one month and then at least six monthly
SGLT-2 inhibitor‡					
Empagliflozin	10 mg, once daily		Not applicable; continue treatment at 10 mg, once daily	▪ eGFR is > 20 mL/min/1.73 m^2 ▪ Patient does not have type 1 diabetes (due to risk of diabetic ketoacidosis)	▪ Assess renal function before initiation of concomitant medicines that may reduce renal function, then at least annually thereafter ▪ Warn patients about increased risk of Fournier's gangrene (rare). Recommend patients self-check their genitals and surrounding skin regularly for changes in integrity, inflammation or signs of infection. Consider temporarily stopping treatment in patients with active genital or urinary tract infections until resolved.

* For more specific dosing information refer to the NZ Formulary (NZF) at **nzf.org.nz**. In some cases, cardiologists may recommend slightly different dosing regimens, or general practitioners may decide on a different regimen depending on patient-specific factors.

† An increase in serum creatinine of up to 30% above baseline is acceptable following initiation assuming it does not exceed 250 micromol/L; subsequent up-titrations should only occur if the creatinine increase is ≤ 25% above baseline (otherwise seek cardiologist advice)

** Ramipril doses listed are for patients with heart failure without previous myocardial infarction (unapproved indication). Dosing recommendations differ for patients with heart failure post-myocardial infarction (approved indication), however, treatment will likely be initiated and supervised in hospital – refer to the NZF at **nzf.org.nz/nzf_1286** for further information.

‡ Special Authority approval required for funded access

It is strongly recommended to review the original resources at your convenience for full details of recommendations and evidence and to ensure you are viewing the latest version. See full articles here: bpac.org.nz/2025/heart-failure.aspx

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