Tackling comorbidities in your patient with heart failure

Practical management strategies for GPs

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Heart failure most commonly affects older adults with multiple comorbidities. These coexisting conditions substantially increase symptom burden, polypharmacy, hospitalisation risk and mortality, while adding significant complexity to care. As most patients with heart failure are managed in the community, GPs play a central role in early recognition, longitudinal monitoring, treatment optimisation and care co-ordination.

KEY POINTS

- Comorbidities are common in heart failure (HF) and substantially worsen symptoms, hospitalisation risk and mortality.
- Many HF therapies provide prognostic benefits across multiple comorbidities commonly managed in general practice.
- Early recognition and proactive management of comorbidities in primary care can prevent HF decompensation and hospitalisation.
- Co-ordinated shared care between GPs and specialist services is essential for managing complex HF and supporting patient transition back to the community.

Heart failure (HF) is a clinical syndrome characterised by breathlessness, fatigue, fluid retention and reduced exercise tolerance resulting from structural or functional cardiac disease, supported by elevated natriuretic peptides and objective evidence of pulmonary or systemic congestion.[1]

Over recent decades, the clinical complexity of HF has increased because of population ageing, a rising incidence of multimorbidity and improved survival with guideline-directed medical therapy (GDMT).[2] In Australia, nearly three-quarters of people living with HF are aged 65 years or older, and many have multiple chronic conditions that contribute to polypharmacy, functional decline and frequent hospitalisation.[3] Most patients with HF have regular contact with their GP; data from the Study of Heart failure in the Australian Primary carE setting (SHAPE) study indicate that patients with HF visit their GP an average of 14 times per year.[4] Consequently, GPs play a central role in early diagnosis, recognition of decompensation, treatment optimisation and care co-ordination. This article provides a practical primary care-focused framework to support GPs in identifying and managing common cardiac and noncardiac comorbidities in HF, prioritising therapies with shared prognostic benefit, recognising red flags requiring escalation and integrating shared care with specialist services to reduce preventable hospitalisation and mortality. Red flags requiring urgent same-day hospital assessment or specialist review are outlined in the Box.

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WHEN TO ESCALATE URGENTLY: RED FLAGS IN PATIENTS WITH HEART FAILURE AND COMORBIDITIES

Urgent same-day hospital assessment or specialist review should be arranged if patients with heart failure develop:

- acute pulmonary oedema or severe resting dyspnoea
- new or worsening hypotension with signs of hypoperfusion
- atrial fibrillation with rapid ventricular response or ventricular arrhythmias with haemodynamic compromise
- suspected acute coronary syndrome
- rapidly worsening renal function, severe hyperkalaemia or metabolic derangement
- recurrent syncope or unexplained collapse
- acute confusion or delirium
- marked functional decline with an inability to perform basic activities of daily living

Atrial fibrillation

Atrial fibrillation (AF) commonly coexists with HF, affecting 35 to 50% of patients.[5] AF should be suspected in patients with new palpitations, worsening breathlessness, reduced exercise tolerance or unexplained functional decline. Initial assessment should include a 12-lead ECG and blood tests to evaluate electrolytes, renal function and thyroid function.

Management should prioritise early rate control and stroke prevention. In patients with heart failure with reduced ejection fraction, cardioselective beta blockers and digoxin are preferred, whereas beta blockers, diltiazem, verapamil or digoxin may be used in patients with heart failure with preserved ejection fraction (HFpEF).[6] Anticoagulation should follow the updated CHA_2DS_2-VA score (Congestive heart failure or left ventricular dysfunction; Hypertension; Age 75 years and older; Diabetes mellitus; Stroke, transient ischaemic attack or thromboembolism history; Vascular disease history; and Age 65 to 74 years).[6] Direct oral anticoagulants are preferred over vitamin K antagonists, except in patients with mechanical heart valves, moderate-to-severe mitral stenosis (valvular AF) or severe renal impairment (creatinine clearance <15 mL/min).[5,6] Anticoagulant dose adjustments should follow established criteria.[6] A cardiology referral is appropriate for cases involving complex anticoagulation decisions, inadequate rate or rhythm control or consideration of rhythm control strategies, including catheter ablation.

Coronary artery disease

Coronary artery disease is a common contributor to HF and may present either as acute coronary syndrome complicated by HF, or as progressive ischaemic cardiomyopathy due to chronic myocardial ischaemia.[7] Initial investigations include ECG and transthoracic echocardiography to assess left ventricular function and the presence of regional wall motion abnormalities. Further assessment may involve functional exercise testing or CT coronary angiography. Persistent angina, recurrent HF decompensation and otherwise unexplained left ventricular dysfunction should prompt cardiology referral for further assessment, including the consideration of coronary angiography and revascularisation where appropriate.[7]

Lipid-lowering therapy remains an important component of care in patients with HF and concomitant atherosclerotic cardiovascular disease (ASCVD) or high cardiovascular risk. LDL-cholesterol (LDL-C) targets should be individualised according to the patient's overall cardiovascular risk. Patients with moderate chronic kidney disease (CKD; estimated glomerular filtration rate [eGFR] 30–59 mL/min/1.73 m^2) are considered high risk, with an LDL-C target of less than 1.8 mmol/L. Those with established ASCVD or type 2 diabetes with target organ damage are considered to be at very high risk, with an LDL-C target of less than 1.4 mmol/L. Patients with recurrent ASCVD events despite maximal statin-based therapy, or polyvascular arterial disease, are considered to be at extreme risk with a recommended LDL-C target of less than 1 mmol/L.[8]

Hypertension

Hypertension frequently precedes the development of HF and remains a major modifiable driver of disease progression.[9] Chronic pressure overload promotes maladaptive ventricular remodelling and neurohormonal activation.[10-12] Initial investigations and screening may be guided by recommendations outlined in the *2024 European Society of Cardiology Guidelines for the Management of Elevated Blood Pressure and Hypertension*.[13]

The guidelines recommend blood pressure (BP) targets of 120/70 to 129/79 mmHg, provided treatment is tolerated.[13] In HFpEF, sodium-glucose cotransporter-2 (SGLT-2) inhibitors reduce HF hospitalisation and should be initiated irrespective of the baseline BP.[13] Additional BP lowering may be achieved with mineralocorticoid receptor antagonists, including finerenone, which has demonstrated reductions in cardiovascular mortality and HF hospitalisation.[14] ACE inhibitors or angiotensin II receptor blockers may also be used if further BP control is required.[1,13,15]

In heart failure with reduced ejection fraction, GDMT should be prioritised. This includes ACE inhibitors, angiotensin II receptor blockers or angiotensin receptor-neprilysin inhibitors, HF-selective beta blockers (bisoprolol, metoprolol extended-release, carvedilol or nebivolol), mineralocorticoid receptor antagonists and SGLT-2 inhibitors.[13,15,16] Low BP alone should not prompt dose reduction or cessation unless accompanied by symptomatic hypotension or evidence of end-organ hypoperfusion.[17]

Type 2 diabetes

Type 2 diabetes and HF share a complex bidirectional relationship, whereby the presence of type 2 diabetes increases the risk of HF, and established HF promotes insulin resistance and worsens glycaemic control.[18-20] About 40% of patients with HF have coexisting type 2 diabetes, and the presence of type 2 diabetes is associated with worse prognosis, higher rates of

hospitalisation and increased mortality.[21,22] Conversely, patients with type 2 diabetes who develop HF experience poorer outcomes compared with those without HF.

Glycaemic targets in patients with HF should be individualised, with less stringent goals appropriate for older or frail patients. Preference should be given to glucose-lowering therapies with a proven HF benefit, particularly SGLT-2 inhibitors, which reduce HF hospitalisation and cardiovascular mortality irrespective of baseline glycaemic control.[23-34] Incretin-based therapies have also demonstrated benefit in selected populations, with recent trials showing improvements in symptoms, reductions in neurohormonal activation and fewer HF hospitalisations in patients with overweight or obesity and HFpEF.[35-37]

Obesity

Obesity increases the risk of HF both indirectly through associated conditions such as hypertension, diabetes and coronary artery disease, and directly via obesity-related cardiomyopathy.[38] In patients with established HF, obesity is associated with a greater symptom burden and reduced functional capacity.

Assessment should extend beyond the body mass index to include the waist circumference, waist-to-hip ratio or waist-to-height ratio, which better reflect an individual's cardiometabolic risk.[39] N-terminal pro B-type natriuretic peptide (NT-proBNP) concentrations may be suppressed in obesity and should be interpreted cautiously.

Sustained weight loss remains the cornerstone of management. Weight reductions greater than 10% improve functional capacity and cardiovascular outcomes, particularly in patients with HFpEF.[40-42] Glucagon-like peptide-1 receptor agonists can achieve significant weight loss and have demonstrated improvements in symptoms and reductions in HF hospitalisations, although a definitive survival benefit has yet to be established.[36,43,44]

Chronic kidney disease

CKD frequently coexists with HF and accelerates disease progression in both organs.[45] Routine monitoring of the eGFR and albuminuria is essential, as even mild abnormalities are associated with worse prognosis.[46-53]

CKD should not delay the initiation or continuation of GDMT, provided appropriate monitoring is in place. In patients with an eGFR greater than 30 mL/min/1.73 m^2, GDMT reduces mortality and HF hospitalisation and slows renal decline.[54-60] A modest early reduction in eGFR after therapy initiation is common and usually transient. A nephrology referral is appropriate for cases of advanced CKD, rapid renal decline, refractory hyperkalaemia or uncertainty regarding GDMT continuation, or consideration of renal replacement therapy.

Pulmonary disease

Chronic obstructive pulmonary disease (COPD) and sleep-disordered breathing commonly coexist with HF and contribute to dyspnoea and functional limitations. Distinguishing HF decompensation from pulmonary exacerbations is challenging, and both may coexist.

Initial investigations should include a chest x-ray and assessment of NT-proBNP levels. Low NT-proBNP levels make HF unlikely, although elevations may occur during COPD exacerbations, particularly with renal dysfunction or AF.[61,62] Management priorities include smoking cessation, optimisation of inhaler therapy and the prevention of exacerbations.[63,64] In patients requiring systemic corticosteroids, careful monitoring for fluid retention and HF deterioration is essential. Cardioselective beta blockers should not be withheld in patients with COPD, given their established prognostic benefits in HF.[65-67] Vaccination against influenza, severe acute respiratory syndrome coronavirus 2, pneumococcus, pertussis, respiratory syncytial virus and shingles is recommended. Respiratory referral should be considered for persistent or worsening dyspnoea despite optimised HF therapy, frequent exacerbations, unexplained hypoxia or recent hospitalisation.

Sleep-disordered breathing includes obstructive sleep apnoea and central sleep apnoea. The former results from upper airway collapse, whereas the latter results from delayed circulatory feedback between pulmonary capillaries and carotid chemoreceptors, leading to cyclical hyperventilation and apnoea.[68] Management of obstructive sleep apnoea includes optimisation of HF therapy, weight management and positive airway pressure therapy. Positive airway pressure is not recommended in central sleep apnoea.

Anaemia and iron deficiency

Anaemia and iron deficiency affect up to 80% of patients with HF and are associated with reduced exercise capacity, increased hospitalisation and higher mortality.[69,70] Iron deficiency frequently occurs independently of anaemia and may be overlooked without targeted testing.

Anaemia is defined by haemoglobin levels less than 130 g/L in men and less than 120 g/L in women.[71] In HF, absolute iron deficiency is defined as ferritin levels less than 100 mcg/L, and functional iron deficiency as ferritin levels of 100 to 299 mcg/L with transferrin saturation less than 20%.[16]

Iron studies should be included in routine HF blood monitoring. Early studies have demonstrated that intravenous iron therapy, including ferric carboxymaltose and ferric derisomaltose, improves symptoms, exercise capacity and quality of life, and reduces HF hospitalisations irrespective of anaemia status.[72-79] Although recent individual randomised controlled trials did not demonstrate a clear clinical benefit when considered individually, a contemporary meta-analysis suggests that intravenous iron supplementation reduces HF hospitalisations and, to a lesser extent, all-cause mortality.[80] Oral iron supplementation, blood transfusion and erythropoietin-stimulating agents are not recommended and may increase adverse events.[81-84]

TABLE. COMORBIDITIES IN HEART FAILURE: GP PRIORITIES, INVESTIGATIONS AND REFERRAL TRIGGERS

Comorbidity	GP priorities	Initial investigations	When to refer
AF	• Assess stroke risk (CHA_2DS_2-VA) and initiate anticoagulation, if indicated • Optimise rate control	• 12-lead ECG • Electrolytes • eGFR • Thyroid function	• Poor rate control despite first-line therapy • Recurrent symptomatic AF or suspected cardiomyopathy • Uncertainty regarding anticoagulation choice or dosing • Consideration of rhythm control strategies (e.g. cardioversion or catheter ablation) • Worsening HF temporally associated with AF onset
Coronary artery disease	• Investigate ischaemia, if suspected • Optimise secondary prevention	• 12-lead ECG • Lipid profile • Troponin, if acute symptoms are present	• Persistent or recurrent angina despite optimal therapy • Recurrent HF decompensation with suspected ischaemic trigger • Unexplained left ventricular dysfunction or regional wall motion abnormalities • Consideration of coronary angiography or revascularisation
Hypertension	• Achieve BP targets while preserving GDMT	• Ambulatory or home BP monitoring • 12-lead ECG	• Resistant hypertension despite trialling >3 agents • Rapidly progressive HF thought to be driven by uncontrolled BP • Inability to uptitrate HF therapies because of BP concerns
Diabetes and metabolic disease	• Consider agents with cardiovascular and HF benefits • Avoid hypoglycaemia	• HbA_{1c} level • Fasting lipids • eGFR • Electrolytes • Urine ACR	• Persistent poor glycaemic control despite therapy escalation • Progressive micro- or macrovascular complications • Recurrent HF hospitalisation or medication intolerance
Obesity	• Assess cardiometabolic risk • Identify and manage obesity-related contributors to HF • Support sustained weight loss	• BMI and waist circumference, waist-to-hip ratio or waist-to-height ratio • HbA_{1c} or fasting glucose levels • Lipid profile • Liver function tests (metabolic dysfunction-associated steatotic liver disease) • Sleep apnoea screening	• Severe obesity (BMI ≥35 kg/m^2) with HF-related symptoms or functional limitations • Suspected or confirmed OSA contributing to resistant HF or hypertension • Failure to achieve meaningful weight loss despite structured lifestyle interventions • Consideration of bariatric intervention

Abbreviations: ACR = albumin–creatinine ratio; AF = atrial fibrillation; BMI = body mass index; BP = blood pressure; CHA_2DS_2-VA = Congestive heart failure or left ventricular dysfunction; Hypertension; Age 75 years and older; Diabetes mellitus; Stroke, transient ischaemic attack or thromboembolism history; Vascular disease history; and Age 65 to 74 years; CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; GDMT = guideline-directed medical therapy; HbA_{1c} = glycated haemoglobin; HF = heart failure; NT-proBNP = N-terminal pro B-type natriuretic peptide; OSA = obstructive sleep apnoea.

Frailty, sarcopenia and falls

Frailty is highly prevalent in HF and is associated with increased hospitalisation, disability and mortality, contributing to symptom burden and medication intolerance.[85] Recognition of frailty supports individualised care planning and timely consideration of supportive or palliative approaches.

Frailty screening should be integrated into chronic disease management plans and medication reviews, using validated tools including the Fried phenotype, Rockwood Clinical Frailty Scale, Barthel Index, Edmonton Frail Scale and Heart Failure Association Frailty Score.[86-94]

Frailty alone should not result in withholding GDMT, as the prognostic benefits persist in older and frail populations.[95-99] Careful dose titration, close monitoring and referral to cardiac rehabilitation can improve functional outcomes.[85,100-102]

Depression, anxiety and cognitive impairment

Depression, anxiety and cognitive impairment are common in HF and increase with disease severity.[103] Reduced cardiac output may impair cerebral perfusion, whereas depression is independently associated with increased healthcare utilisation, HF hospitalisation and mortality.[104-108]

Persistent symptoms, difficulty with self-care or poor treatment adherence should prompt assessment using validated screening tools, including the Patient Health Questionnaire-9, Beck Depression Inventory, Cardiac Depression Scale, Geriatric Depression Scale, Mini-Mental State Exam or Montreal Cognitive Assessment.[109-113]

Referral to a psychologist, geriatrician or psychiatrist should be considered for

TABLE. COMORBIDITIES IN HEART FAILURE: GP PRIORITIES, INVESTIGATIONS AND REFERRAL TRIGGERS ***continued***

Comorbidity	GP priorities	Initial investigations	When to refer
CKD	• Monitor renal function and potassium • Adjust doses rather than cease GDMT	• eGFR • Electrolytes • Urine ACR	• Advanced CKD (eGFR <30 mL/min/1.73 m^2) with HF • Rapid or unexplained renal decline • Refractory hyperkalaemia • Uncertainty regarding the continuation of GDMT
Pulmonary disease	• Differentiate cardiac *vs* pulmonary dyspnoea • Optimise inhaler therapy and HF treatment	• Spirometry • Chest x-ray • Sleep study, if indicated • NT-proBNP, if indicated	• Frequent chronic obstructive pulmonary disease exacerbations or recent hospitalisation • Persistent or unexplained dyspnoea despite optimised HF therapy • Unexplained hypoxia or suspected interstitial lung disease
Anaemia and iron deficiency	• Screen routinely • Treat iron deficiency with intravenous ferric carboxymaltose or ferric derisomaltose	• Full blood examination • Iron studies	• Symptomatic iron deficiency requiring intravenous iron therapy • Refractory or recurrent anaemia • Diagnostic uncertainty regarding anaemia aetiology
Frailty and falls	• Screen routinely • Prioritise nutrition, exercise and falls prevention	• Functional assessment • Nutrition screening	• Recurrent falls • Progressive functional decline • Difficulty tolerating GDMT • Need for comprehensive geriatric assessment • Consideration of palliative or supportive care planning
Mood and cognitive disorders	• Screen proactively • Involve carers	• Mood questionnaires • Cognitive screening	• Persistent symptoms • Safety or adherence concerns • Suspected dementia or rapid cognitive decline

Abbreviations: ACR = albumin–creatinine ratio; AF = atrial fibrillation; BMI = body mass index; BP = blood pressure; CHA_2DS_2-VA = Congestive heart failure or left ventricular dysfunction; Hypertension; Age 75 years and older; Diabetes mellitus; Stroke, transient ischaemic attack or thromboembolism history; Vascular disease history; and Age 65 to 74 years; CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; GDMT = guideline-directed medical therapy; HbA_{1c} = glycated haemoglobin; HF = heart failure; NT-proBNP = N-terminal pro B-type natriuretic peptide; OSA = obstructive sleep apnoea.

patients with persistent symptoms, safety concerns or impaired self-management, with involvement of carers to support adherence and shared decision-making.

Conclusion

HF is a chronic multisystem condition managed predominantly in the community. Comorbidities are highly prevalent and are major determinants of symptom burden, treatment tolerance, hospitalisation and survival. Early identification and proactive management of these conditions are therefore central to improving outcomes. Common comorbidities in HF and associated GP management priorities are summarised in the Table.

GPs play a pivotal role in delivering this care. Many HF therapies provide benefit across multiple comorbidities, allowing cardiovascular, metabolic, renal and functional risk to be addressed in parallel. Co-ordinated shared care between general practice and specialist services remains essential to delivering sustainable, high-quality care for patients living with HF. MT

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A list of references is included in the online version of this article (www.medicinetoday.com.au).

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