



Therapeutic brief

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Is it time to review your veterans with heart failure?

Chronic heart failure (CHF) is a common reason for general practitioner consultation and hospitalisation in those aged 70 years and over. Prevalence is 10% in those aged 65 years or older and more than 50% in those aged 85 years or older.¹ Prognosis of CHF is poor with 5-year survival rates of less than 50%² and a community cost of \$1 billion in Australia. The major preventable adverse consequence is recurrent hospital admissions.^{3,4,5} Many hospitalisations can be prevented by improved medication management.

ACE inhibitors and heart failure-specific beta blockers have been shown to improve symptoms and prolong survival in CHF. Patient education and heart failure support interventions are successful in preventing hospital readmission.^{6,7} Recent data has shown Home Medicines Reviews (HMR) to be an effective tool for delaying the need for hospitalisation.⁸

An earlier Veterans' MATES module successfully promoted the use of beta blockers in patients prescribed ACE inhibitors for CHF. This therapeutic brief asks you to consider a structured approach to the management of your patient with heart failure by using target doses of an ACE inhibitor, initiating a heart failure-specific beta blocker, reconsidering the use of medicines that may exacerbate CHF and using an interdisciplinary care approach including a HMR.

CHF is a common clinical syndrome representing the end point of a number of different cardiac diseases. Reduced cardiac output and heart failure can occur via systolic or diastolic dysfunction, or a combination of both.

In systolic heart failure the ability of the heart to contract in systole is weakened resulting in a left ventricular ejection fraction (LVEF) less than 40%. Some patients may still have heart failure when LVEF is higher (diastolic heart failure)*. Coronary heart disease and prior myocardial infarction (MI) account for 2/3 of cases.

Most evidence for treatment is based on studies of systolic heart failure. The evidence for treatment of diastolic heart failure is still emerging. However, most patients with CHF have evidence of both systolic and diastolic dysfunction at rest.⁹

*See NHF guidelines (2006)³ and European guidelines (2008).⁹

Key points

Take a structured approach to reviewing your veterans with chronic heart failure:

- Check target doses of ACE inhibitors used
- Check heart failure-specific beta blockers initiated
- Check for medicines that may exacerbate CHF
- Check if Home Medicines Review required

The benefits of all four are cumulative.



② Check: ACE inhibitor at maximally tolerated dose

ACE inhibitors have been shown to improve prognosis in all grades of systolic heart failure and should be used as initial therapy.¹⁰ They prolong survival, improve symptoms and increase ejection fraction.³ Whilst they are also beneficial in patients with mixed systolic and diastolic heart failure, their role in diastolic heart failure alone is less clear.¹¹ Asymptomatic patients with significant left ventricular dysfunction should receive an ACE inhibitor. Start low and titrate up at 1 to 2 weekly intervals towards recommended dose as tolerated (Table 1). Check electrolytes and renal function 1 to 2 weeks after commencing.¹⁰ If patient is on high dose loop diuretic e.g. frusemide, aim to reduce 24-48 hours before starting ACE inhibitor.

Start low and go slow but try to achieve target maintenance dose

NOTE: The dose of ACE inhibitor required to control symptoms alone may not be sufficient to confer survival benefits achieved by target doses outlined in Table 1.

Table 1: Dosing regimens for ACE inhibitors in heart failure¹⁰

ACEI	Starting dose	Target maintenance dose
captopril	6.25 mg twice daily	25-50 mg twice daily
enalapril	2.5 mg daily	10-20 mg twice daily
fosinopril	5 mg daily	20-40 mg daily
lisinopril	2.5 mg daily	20-40 mg daily
perindopril arginine	2.5 mg daily	5-10 mg daily
perindopril erbumine	2 mg daily	4-8 mg daily
quinapril	2.5 mg daily	20-40 mg daily
ramipril	1.25 mg daily	5-10 mg daily
trandolapril	0.5 mg daily	2-4 mg daily

Current evidence supports ACE inhibitors as the drug of choice for heart failure. Evidence for angiotensin II receptor blockers (ARBs) is less extensive. ARBs are not recommended in preference to ACE inhibitors but can be used as an alternative if a patient is unable to tolerate ACE inhibitors because of adverse effects such as cough or skin rashes.³

② Check: Beta Blocker initiated

Beta blockers have been shown to prolong survival in patients with mild to moderate CHF, reduce the risk of rehospitalisation and improve symptoms in systolic heart failure.¹² These benefits are in addition to those of ACE inhibitors. Clinical trials have shown the efficacy of bisoprolol, carvedilol and metoprolol CR in CHF. Recent DVA data suggests only 16% of veterans concurrently dispensed ACE inhibitors and frusemide are also dispensed a heart failure-specific beta blocker.¹³

Beta blockers should be initiated when the patient is stable (see practice points). Assess for contraindications to the use of beta blockers. Start at a low dose and increase at intervals of at least 2 weeks until target dose is reached or limited by symptoms (Table 2). Inform patients that an increase in symptoms may occur for 4-10 weeks before any improvement is noted.

Start low and go slow but try to achieve target maintenance dose

Table 2: Dosing regimens for beta blockers in heart failure^{2,14}

Beta blocker	Starting dose	Target maintenance dose
bisoprolol	1.25 mg daily	10 mg daily
carvedilol	3.125 mg twice daily	25mg twice daily (if greater than 85kg can go to 50mg twice daily if tolerated)
metoprolol CR	23.75 mg daily	190 mg daily

Practice points when prescribing beta blockers¹⁴

- Patient should be haemodynamically stable, systolic BP greater than 85mmHg without symptomatic postural drop in blood pressure, minimal peripheral oedema, no pulmonary crackles, before starting beta blockers.
- Reduce dose of beta blocker if heart rate less than 55/min.
- Treat transient worsening of heart failure (HF) with increased doses of diuretics; temporarily withdraw beta blocker if necessary for control of severe HF. Often can be continued for milder exacerbations.
- Treat hypotension by reducing dose of diuretics and other vasodilating drugs first; reduce dose of beta blocker if necessary.

Role of other drugs

Diuretics are used for symptom control but have not been shown to improve long term survival. The dose should be regularly assessed to avoid dehydration or fluid overload. Patients should be monitored for hypokalaemia and renal failure during treatment with a loop diuretic. There is no role for diuretics as monotherapy in CHF.

The aldosterone antagonist, spironolactone, can prolong survival in select patients with severe heart failure and can be considered for patients with systolic HF who are symptomatic despite optimal doses of an ACE inhibitor and diuretic. The risk of hyperkalaemia, especially in the

presence of an ACE inhibitor and/or renal impairment, necessitates close monitoring. Eplerenone, a 'selective' aldosterone antagonist, has been found to reduce mortality and hospitalisation in the immediate post-MI period in patients with LV systolic dysfunction and symptoms of heart failure.¹⁵

Digoxin can be used in addition if CHF is not controlled by ACE inhibitor/beta blocker/loop diuretic combination.^{3,10} It remains primarily a valuable therapy in CHF patients with concomitant atrial fibrillation.



⊗ Check: Drugs of concern to be reviewed

Heart failure patients are typically elderly and often have renal impairment making them high risk for medication-related problems. Review all medications, especially before prescribing new drugs.

Table three provides a list of medications that can cause particular problems for patient with heart failure. Appropriate alternatives may be available in some instances.

Table 3: Drugs that may exacerbate CHF ^{3,14}

Drug	Adverse effect
NSAIDs and COX-2 inhibitors (excluding low dose aspirin)	Can cause fluid retention, hyperkalaemia and renal failure especially in the presence of ACE inhibitor and diuretic. Consider alternative analgesic.
Thiazolidinediones e.g. rosiglitazone, pioglitazone	Can cause fluid retention. Consider alternative diabetes medication.
Non-dihydropyridine calcium channel blockers e.g. verapamil, diltiazem*	Can reduce contractility, heart rate and conduction further depressing cardiac function. Consider withdrawal.
Anti arrhythmic agents (apart from beta blockers and amiodarone)	Can slow cardiac conduction and cause hypotension. Some are proarrhythmic. Consider alternative anti arrhythmic agent.
Tricyclic antidepressants e.g. amitriptyline, doxepin	Can slow cardiac conduction and cause arrhythmias. Consider alternative antidepressant.
Corticosteroids e.g. hydrocortisone, prednisone	Can cause sodium and fluid retention. Closely monitor dose and duration.

*Consider starting heart failure-specific beta blocker once diltiazem or verapamil ceased.

Non Pharmacological management of CHF

Along with optimal medical management, the promotion of effective self-care and patient education are vital in improving outcomes for CHF.

Strategies include:

- Cessation of smoking
- Restriction of alcohol intake
- Salt restriction to minimise fluid accumulation (changes of greater than 2kg in 48 hours may indicate problems)
- Weight reduction in obese patients
- Influenza and pneumonia immunisation
- Encouraging physical activity
- Educating patients on symptom recognition, medication and side effects to improve compliance with treatment. Consider a dose administration aid funded by DVA.



4 Check: Home Medicines Review Required

DVA Veterans' MATES Module 1 advocated the benefits of a Home Medicines Review. Analysis of subsequent health outcome data showed that a HMR was effective in delaying time to next hospitalisation for CHF.⁸

A HMR can help to identify:

- Situations where ACE inhibitors and beta blockers may be initiated
- Opportunities for dose adjustments
- Inadvertent co-prescribing of drugs which may exacerbate CHF
- Patient factors impacting on poor compliance with medications.

Initiate a Home Medicines Review if you are concerned about:

- Patient knowledge and understanding
- Patient compliance
- Risk of adverse drug events
- High risk of hospitalisation (two or more of the following: age greater than 65 years, LVEF less than 30%, living alone, depression, lower socioeconomic status, significant renal dysfunction, frailty).³

Management of CHF can be enhanced by patient education and support interventions allowing patients to take an active role in managing their illness. In one study a 40% reduction in CHF readmission was seen when patients were educated by a cardiac nurse.¹⁶ A recent review of 12 randomised controlled trials showed pharmacist collaborative care reduced heart failure hospitalisations.¹⁷

What to discuss with your patient with CHF

- Treatment with an ACE inhibitor and a beta blocker at maximally tolerated doses is required to achieve good quality of life and increased survival in CHF.
- Beta blockers may worsen symptoms initially.
- Do not cease your heart failure medication without first discussing this with your doctor.
- Report symptoms of fatigue, lightheadedness, shortness of breath, ankle swelling or difficulty with exercise as your medications may need to be adjusted.
- Always report any other medication you are taking including over-the-counter and those from other health practitioners.
- Weigh yourself daily and consult your doctor if there is a weight gain or loss of greater than 2kg in a 48 hour period.
- Aim for a healthy lifestyle, no smoking and regular physical activity.
- A Home Medicines Review can be beneficial in the treatment of chronic heart failure.

Suggested further reading

www.heartfoundation.org.au

www.nps.org.au

For more information on HMRs

<http://www.gppaustralia.org.au/content/home-medicines-review>

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