**Beta-blockers: take the next step for heart failure**

Heart failure is a common reason for attendance at general practitioner clinics. It affects 4% of Australians (aged 45 years or more) with the prevalence increasing from about 1% at age 50 to 59 years, to over 50% above age 84. Heart failure is likely to be prevalent amongst veterans of whom 82% are over 65 years of age.

The management of patients with heart failure is increasing in the primary care setting, and the emphasis of new national programs on early recognition of signs and diagnosis of heart failure suggest that this trend will continue.

The focus of this second module of the Veterans’ MATES program is on recent evidence for the role of beta-blockers in managing heart failure. This module will address how to initiate and monitor beta-blockers, particularly in the primary care setting, as well as concerns about adverse effects, contraindications and co-morbidities.

**Key Points**

- Beta-blockers are recommended therapy for all patients with systolic heart failure, unless not tolerated or contraindicated.
- Even patients with mild symptoms, who appear clinically stable on an ACE inhibitor and a loop diuretic, with or without digoxin, should benefit from the addition of a beta-blocker.
- Long-term use improves left ventricular function, reduces disease progression, and reduces risk of death and hospitalisation.
- Regular follow-up is important for all patients on beta blockers.
- Slowly withdraw beta blockers, should it become necessary, and monitor closely.
- Good communication between healthcare professionals and patients and carers is essential for the best management of heart failure.

**Evidence for beta-blockers in heart failure**

Patients who have mild symptoms or who appear clinically stable may not seem to require additional treatment. These patients are however at high risk for morbidity and mortality and are likely to deteriorate during the ensuing 12 months even if treated with loop diuretics and ACE inhibitors with or without digoxin. Therefore, even if they do not benefit symptomatically because they have little disability, patients with mild symptoms should receive treatment with a beta-blocker to reduce the risk from disease progression, future clinical deterioration and sudden death.

Gradual up-titration of beta-blockers improves left ventricular function and reduces risk of death and hospitalisation for patients with all grades of systolic heart failure. These benefits are in addition to those achieved with ACE inhibitors.

To obtain these additional benefits it is recommended that you take the next step in managing your veteran’s heart failure by considering the careful addition of a beta-blocker after achieving the highest tolerated dose of an ACE inhibitor.
Who will benefit from beta-blockers?

Beta-blockers are recommended therapy, unless not tolerated or contraindicated, for all patients with systolic heart failure in addition to appropriate doses of ACE inhibitors and loop diuretics (commonly used for heart failure of moderate severity).

The benefits of beta-blockers in heart failure are also seen in patients with co-existent diabetes mellitus. Close monitoring of blood glucose levels is essential.

Beta-blockers are also recommended for patients with symptoms of advanced heart failure.

Beta-blockers should not be initiated during a phase of acute heart failure but only after the patient’s condition has stabilised.

Patients who are already taking a beta-blocker for a concomitant condition such as angina or hypertension may be changed to one approved for the treatment of heart failure, or the beta-blocker already prescribed may be continued.

For patients who have previously tried a beta-blocker for another condition, and discontinued it because of minor adverse effects, consider re-starting beta-blocker therapy with an agent approved for heart failure unless contraindicated.

Initiating beta-blockers

Start low and go slow:

- Commence with the low dose specified in Table 1.
- Increase the dose gradually to the highest tolerated dose (target doses and dose titration intervals schedules appear in Table 1).

The schedules outline minimum recommended titration intervals. The rate of dosage increase may need to be slower in the veteran population.

Monitoring and review

- Monitor heart rate, blood pressure and clinical signs and symptoms of heart failure on a weekly basis during dose titration.
- Advise your patients to weigh themselves daily, preferably each morning before dressing. Changes of >1.5kg in 24 hours may indicate problems.

Table 1: Dosage recommendations of beta-blockers approved to treat heart failure in Australia

Listed on the PBS/RPBS as an Authority required. Moderate to severe heart failure in patients stabilised on conventional therapy which must include an ACE inhibitor if tolerated.

<table>
<thead>
<tr>
<th>Beta Blocker</th>
<th>Starting Dose</th>
<th>Up-Titration</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisoprolol (Bicor®)</td>
<td>1.25 mg once daily for one week;</td>
<td>Increase dose if tolerated: 2.5 mg once daily for one week, then 3.75 mg once daily for one week, then 5 mg once daily for four weeks, then 7.5 mg once daily for four weeks</td>
<td>10 mg once daily</td>
</tr>
<tr>
<td>Carvedilol (Dilatrend®, Kredex®)</td>
<td>3.125 mg twice daily for two weeks</td>
<td>Increase dose if tolerated: at intervals of at least two weeks to 6.25 mg twice daily, then 12.5 mg twice daily</td>
<td>25 mg twice daily (in patients &lt;85 kg with mild to moderate heart failure and in all patients with severe heart failure) or 50 mg twice daily (in patients &gt;85 kg)</td>
</tr>
<tr>
<td>Metoprolol succinate controlled-release (Toprol-XL®)</td>
<td>23.75 mg* once daily for two weeks</td>
<td>Increase dose if tolerated: at intervals of at least two weeks to 47.5 mg daily, then 95 mg daily</td>
<td>190 mg daily.</td>
</tr>
</tbody>
</table>

* If NYHA Class III-IV – initiate at half a 23.75 mg tablet once daily for one week then a full 23.75 mg tablet once daily for the second week

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a. Refer to page 3 Pre-existing conditions where specialist management may be indicated.
b. Information on appropriate doses of ACE inhibitors is available in Therapeutic Guidelines, Cardiovascular or the Australian Medicines Handbook.
c. Adapted from NPS NEWS 36 with permission.
Managing adverse effects

Adverse effects are often transient and interventions may only need to be temporary.

**Low BP**

If asymptomatic hypotension is present, usually no change in therapy is required. If hypotension causes dizziness, light headedness or confusion, consider the effects of drugs that may lower blood pressure e.g. diltiazem, prazosin, tricyclic antidepressants. Diuretic dose may require adjustment.

**Heart Rate <50 beats/minute**

If the heart rate is <50 bpm an ECG should be performed even if the patient is asymptomatic. The dose of beta-blocker should be reduced if there is symptomatic bradycardia. Review the need to continue treatment with other drugs that may slow heart rate e.g. verapamil, diltiazem, digoxin and amiodarone. If unsure, consult a specialist.

**Increased fluid retention**

Increase the dose of loop diuretic, monitoring carefully for volume depletion and electrolyte disturbances. If the response is unsatisfactory, consider reducing the dose of beta-blocker. Review the need to continue treatment with drugs that may exacerbate fluid retention e.g. non-steroidal anti-inflammatory drugs (NSAIDs).

Severe fatigue

Exclude conditions such as anaemia, depression or hypothyroidism. If persistent consider reducing the dose of beta-blocker.

**Bronchospasm**

Consider effects of beta-blockade upon respiratory function for patients with reversible airways disease. Monitor for deterioration and counsel patients to report increasing breathlessness and wheeze.

**Beta-blockers should not be stopped abruptly unless absolutely necessary; ideally seek specialist advice before discontinuation.**

For a more complete list of adverse effects refer to the Australian Medicines Handbook.

Pre-existing conditions where specialist management may be indicated

- Uncontrolled heart failure, valvular heart disease particularly aortic stenosis/ incompetence and mitral regurgitation.
- Severe heart failure requiring hospitalisation and/or intravenous diuretics
- Reversible airways disease, asthma
- Bradycardia i.e. <50 bpm
- Symptomatic hypotension
- Second or third degree heart block (unless managed with a pace maker)

Severe ischaemic heart disease may require other specialist intervention.

### Medications for heart failure - summary

A summary of the drugs used in heart failure and their effects on mortality, hospitalisation and symptom improvement is presented in Table 2.

Table 2: Therapeutic outcomes of drugs used in heart failure

<table>
<thead>
<tr>
<th>Therapeutic Goal</th>
<th>ACE Inhibitor (ACE-I)</th>
<th>Diuretic</th>
<th>Beta-blocker</th>
<th>Spironolactone*</th>
<th>Angiotensin II Receptor Blocker (ARB) instead of ACE-I **</th>
<th>ACE Inhibitor and ARB</th>
<th>Digoxin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality reduction</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Reduced hospitalisation</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Symptom improvement</td>
<td>+</td>
<td>+</td>
<td>*/-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

*Effect only seen in severe heart failure. **Use only if ACE-I absolutely contraindicated.

d. Adapted, with permission, from Table 2. Effect of medications on therapeutic goals with heart failure. Shakib S. Problems of polypharmacy. Australian Family Physician. 2002;31(2):125-27.
What to tell my veteran patient about beta-blockers

Beta-blockers delay worsening heart failure and increase survival with long-term use\textsuperscript{6,12}.

There may be a temporary worsening of symptoms (20-30\% of cases) during initiation of therapy or increase in dose. \textit{Even if symptoms do not improve, continue treatment to improve prognosis}\textsuperscript{6}.

Report increased tiredness, breathlessness or wheezing, swollen feet or ankles, difficulty with exercise or a swollen abdomen to your doctor\textsuperscript{2}. These may be managed by adjusting other medication.

If you feel dizzy at any time or feel that you may fall over, contact your doctor as soon as possible.

Do not stop beta-blocker therapy without advice from your doctor as this may result in worsening of your heart failure.

Weigh yourself daily and consult your doctor if there is a weight gain of $>1.5$kg in a 24 hour period\textsuperscript{2}.

For other recently published Australian therapeutic information on heart failure please refer to the NPS (National Prescribing Service) website at www.nps.org.au or visit http://heartfoundation.org.au/for-professionals/clinical-information.


References