

Heart failure medication titration problem solving guidelines

NSAIDs or COX-2 inhibitors are contraindicated in patients with heart failure.

Avoid negatively inotropic calcium-channel blockers (verapamil, diltiazem) in systolic heart failure.

Hypotension

- **Asymptomatic hypotension** does not usually require any change in therapy (systolic BP 90–100 mmHg).
- **Symptomatic hypotension** (dizziness, lightheadedness and/or confusion):
 - i. Stop or reduce calcium-channel blockers and/or other vasodilators unless essential e.g. for angina.
 - ii. Consider reducing diuretic dose if there are no signs or symptoms of congestion.
 - iii. Temporarily reduce ACE inhibitor or beta-blocker dose if above measures do not work.
- **Severe symptomatic hypotension** or shock requires immediate referral to an emergency department. Review patient as clinically appropriate (daily to weekly review) and seek specialist advice if the above measures do not work.

ACE inhibitors in heart failure

- **Angioedema**, although rare, can occur at any time when using ACE inhibitors. Stop ACE inhibitor immediately and seek specialist advice. Trial of an Angiotensin II antagonist should only occur on specialist advice due to possible cross-sensitivity.
- **Cough** is common in patients with heart failure. Pulmonary oedema should be excluded as a cause if cough is new or worsening. If the patient develops a drug cough, that is likely to be caused by the ACE inhibitor, it is not always necessary to discontinue the drug. If the cough is troublesome and/or interferes with sleep, consider substituting ACE inhibitor with an angiotensin II receptor antagonist.

Worsening renal function

- ACE inhibitors are generally well tolerated even in patients with significant renal impairment (creatinine greater than 200 micromol/L or eGFR less than 30mL/min). These patients are more vulnerable to acute renal failure following a destabilising event such as a dehydrating illness (sepsis, diarrhoea/vomiting), dehydration from over-diuresis or addition of nephrotoxic medications. NB. Advise patients experiencing such an event to seek urgent medical attention and to stop the ACE inhibitor until they are clinically reviewed and blood chemistry is checked.
- Some rise in urea, creatinine and potassium is expected after commencing an ACE inhibitor due to a decrease

in eGFR. Blood chemistry must be checked several days after initiation of therapy and monitored closely thereafter to ensure kidney function is not worsening. No action is necessary if the change is small and patient is asymptomatic.

- An eGFR decrease of up to 30% is acceptable provided it stabilises within 2 weeks, however, repeat electrolytes, creatinine and urea within 48 hours if required.
- If the eGFR declines further than 30%, the patient should be reviewed urgently for clinical assessment of volume status and review of nephrotoxic medications. Seek specialist advice regarding the safety of continuing therapy.
- Careful potassium monitoring is required:
 - i. If potassium rises greater than 5.0–5.5 mmol/L, review and reduce potassium supplements or potassium retaining agents (eg. amiloride, spironolactone, eplerenone).
 - ii. If potassium rises greater than 5.6–5.9 mmol/L, cease all potassium supplements / retaining agents.
 - iii. If potassium rises greater than 6 mmol/L, seek immediate specialist advice.

MRA in heart failure (Spironolactone/ Eplerenone)

- Stop the therapy if serum potassium is greater than 5.5 mmol/L or serum creatinine greater than 220 micromol/L.
- Urgently check electrolytes (especially potassium) creatinine and urea if patient is dehydrated or septic.

Beta-blockers in heart failure

Worsening symptoms / signs

- Worsening Congestion: increase the diuretic dose and if this does not work halve the dose of beta-blocker and liaise with the heart failure service.
- Marked fatigue and/or bradycardia (see below) halve dose of beta-blocker (rarely necessary).
- Bradycardia (less than 50 beats/min): review the need for other drugs that slow heart rate (e.g. digoxin, amiodarone) in consultation with specialist; and arrange ECG to exclude heart block.
- If symptoms are worsening, review the patient as clinically appropriate (daily to weekly review); seek specialist advice if symptoms do not improve; and, if there is severe deterioration, stop beta-blocker and refer patient to an emergency department immediately.