Heart Failure (Cardiac Failure)

Disclaimer

See also:
- Dyspnoea
- Advanced or End-stage Heart Failure
- Managing Exacerbations of Heart Failure

COVID-19 note

Medication

Patients should continue to take ACE inhibitors and angiotensin-II receptor antagonists as part of optimal management of heart failure during the COVID-19 pandemic. For more details, see Medicines and COVID-19.

Last updated: 10 September 2020

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Red Flags

- Ongoing chest pain
- Acute pulmonary oedema
- Oxygen saturation < 94% (in the absence of any other reasons)
- Haemodynamic instability
- Syncope or pre-syncope
- Recent myocardial infarction (within 2 weeks)
- Pregnant or post-partum woman

Background – About Heart Failure (HF)

Heart failure (HF) is a complex clinical syndrome that is secondary to an abnormality of cardiac structure or function that impairs the ability of the heart to fill with blood at normal pressure or eject blood sufficient to fulfil the needs of the metabolising organs.

The average annual mortality is 10%, and for patients with severe heart failure, annual mortality is 30 to 50%.

There are 2 main types, which differ in aetiology, approach to management, and use of medications:

Heart failure with reduced left ventricular ejection fraction (HFrEF):
- Symptoms and/or signs of heart failure and left ventricular ejection fraction (LVEF) < 50%
- Refers to a weakened ability of the heart to contract in systole
- Most common cause coronary heart disease

Heart failure with preserved left ventricular ejection fraction (HFpEF):
- Symptoms and/or signs of heart failure and left ventricular ejection fraction (LVEF) > 50% and objective evidence of:
  - Relevant structural heart disease (LV hypertrophy, left atrial enlargement) and/or
  - Diastolic dysfunction, with high filling pressure demonstrated by any of the following:
    - Invasive means (cardiac catheterisation)
    - Echocardiography
    - Biomarker (elevated B-type natriuretic peptide (BNP) or pro natriuretic b-type natriuretic peptide (NT-proBNP)
    - Exercise (invasive or echocardiography)
  - Ischaemia, hypertrophy and age-related fibrosis (including diabetes) may all act to impair diastolic filling of the heart.

Careful general practice management, education, and support can help improve quality of life, compliance, and prognosis, while reducing hospitalisations.

Models of care that optimise medication titration (e.g., nurse-led titration), decreases hospital admission and improves survival.
Identify heart failure
Heart failure is described as either:
- Heart failure with reduced ejection fraction (HF-REF), usually < 50%, or
- Heart failure with preserved ejection fraction (HF-PEF), usually ≥ 50%.
An echocardiogram is essential to determine the type of heart failure as it is not possible to differentiate clinically between HFrEF and HFpEF.

1. Assess for symptoms and signs of heart failure. The **New York Heart Association (NYHA) Functional Classification** is used to grade severity and help predict survival and guide management.

<table>
<thead>
<tr>
<th>Class</th>
<th>Patient Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnoea (shortness of breath).</td>
</tr>
<tr>
<td>II</td>
<td>Slight limitation of physical activity. Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnoea (shortness of breath).</td>
</tr>
<tr>
<td>III</td>
<td>Marked limitation of physical activity. Comfortable at rest. Less than ordinary activity causes fatigue, palpitation, or dyspnoea.</td>
</tr>
<tr>
<td>IV</td>
<td>Unable to carry on any physical activity without discomfort. Symptoms of heart failure at rest. If any physical activity is undertaken, discomfort increases.</td>
</tr>
</tbody>
</table>

See Heart Foundation – [Classes of Heart Failure](#)

**Symptoms**
- More typical symptoms:
  - Dyspnoea (usually with exertion)
  - Orthopnoea
  - Paroxysmal nocturnal dyspnoea
  - Fatigue
- Less typical symptoms:
  - Nocturnal cough
  - Wheeze
  - Abdominal bloating
  - Anorexia
  - Confusion (elderly)
  - Depression
  - Palpitations
  - Dizziness
  - Syncope
  - Bendopnoea
  - Abdominal pain (ascites or hepatic engorgement)
  - Chest pain or tightness
  - Peripheral oedema
  - Weight gain
  - Poor peripheral perfusion
**Signs**

- **More specific signs:**
  - Raised jugular venous pressure (JVP) often develops before any other sign
  - Hepatoujugal reflux
  - Third heart sound (S3, gallop rhythm)
  - Laterally displaced apex beat

- **Less specific signs:**
  - Weight gain (> 2 kg/week)
  - Weight loss (in advanced heart failure)
  - Peripheral oedema (ankle, sacrum, scrotal)
  - Respiratory:
    - Tachypnoea or reduced pulse oximetry, especially after minor exertion
    - Pulmonary crackles (basal inspiratory crepitations)
    - Pleural effusions
  - Cardiac murmur
  - Tachycardia
  - Cheyne-Stokes respiration
  - Ascites and hepatomegaly
  - Oliguria

Suspect peripheral or central hypoperfusion if:

- **Peripheral** – cold extremities or diaphoresis.
- **Central** – heart rate (HR) ≥ 120 and systolic blood pressure (BP) ≤ 90.

2. Consider **risk factors for heart failure**

- Aged > 65 years (HF is more common as people age)
- Diabetes
- Hypertension
- Dyslipidaemia
- Ischaemic heart disease
- Other cardiac conditions:
  - Coronary artery disease (CAD)
  - Valvular disease
  - Atrial fibrillation
  - Persistent arrhythmias
  - Pericardial effusion
- Family history of HF or CAD
- Chronic lung diseases - chronic obstructive pulmonary disease (COPD)
- Previous pulmonary embolism
- Sleep apnoea
- Childhood cancer survivor
- Haemochromatosis
- Hyperthyroidism
- Obesity
- Aboriginal and Torres Strait Islander, and some other ethnicities including South East Asian, Pacific Islander, Hispanic, Equatorial African
- Lifestyle:
  - Smoking
  - Excess alcohol
  - Recreational drug use, especially amphetamines and cocaine
3. Determine **cause** and **reversible or exacerbating factors** as these will significantly influence management.

**Causes to consider**

It is very important to determine the cause of HF, as this will significantly influence management.

Causes are abnormal myocardium, abnormal loading, or abnormal rhythm:

- Coronary artery disease (CAD)
- Hypertension
- Valvular disease, especially mitral and aortic incompetence
- Tachyarrhythmia or bradyarrhythmia
- Cardiomyopathies:
  - Inheritable cardiomyopathy e.g., hypertrophic (HOCM), idiopathic dilated, arrhythmogenic
  - Inflammatory – associated with viral infections (e.g., Coxsackie B)
  - HIV-related
  - Drug induced – chemotherapy and HIV
  - Toxins – alcohol, cocaine, mercury, cobalt, arsenic
  - Metabolic cause – thyroid, parathyroid, diabetes, Addison’s, nutritional deficiency
  - Infiltrative cause – sarcoidosis, amyloidosis, haemochromatosis, Löffler’s eosinophilia, connective tissue disease

**Reversible or exacerbating factors for established HF**

- Poor treatment adherence
- Excessive fluid, salt, or alcohol intake
- Infection
- Thyroid dysfunction – hyperthyroidism, hypothyroidism
- Anaemia
- Iron deficiency (without anaemia). Consider if ferritin < 100 or transferrin saturation < 30% and ferritin < 250
- Arrhythmias e.g., atrial fibrillation (AF) or heart block
- Alcohol
- Medications:
  - Non-steroidal anti-inflammatory drugs (NSAIDs)
  - Prednisolone (long-term)
  - Cyclosporine
  - Clozapine
  - Thiazolidinediones (TZDs or glitazones for type 2 diabetes)

4. Arrange **investigations**.

- **Echocardiography** is recommended in all patients with elevated BNP, clinical suspicion of or newly diagnosed HF.
  - Echocardiography is the single most useful diagnostic test in evaluating HF by measuring the ejection fraction.
  - Assesses cardiac structure and function:
    - Ventricular size, volume, and wall thickness
    - Ventricular systolic and diastolic function
    - Valvular structure and function
  - If echocardiogram is normal, stress testing may be indicated to exclude ischaemia.
  - If an echocardiogram cannot be arranged in a timely fashion, measurement of BNP improves diagnostic accuracy.
• Other investigations
Consider arranging other tests as clinically indicated to evaluate possible causes of CHF and other causes of symptoms:
  o Bloods and urinalysis – FBE, iron studies, urea, creatinine, electrolytes, LFTs, albumin, TFTs, lipid profile, fasting cholesterol, blood sugar level (BSL).
  o B-type natriuretic peptide or N terminal pro-brain natriuretic peptide level (NT proBNP) only if the diagnosis is uncertain.
    ▪ B-type natriuretic peptide (BNP) testing is not routinely done and is not funded by Medicare in general practice.
    ▪ If an echocardiogram cannot be arranged in a timely fashion, measurement of BNP is recommended when the diagnosis is uncertain. Some specialists use serial BNP measurements instead of single tests to adjust therapy for heart failure in difficult cases.
    ▪ BNP and N-terminal pro B-type natriuretic peptide (NT-proBNP) have different normal ranges but provide similar information.

N terminal pro-brain natriuretic peptide level (NT proBNP)
NT-proBNP levels are not affected by medications such as Entresto. This is only of importance when seeing a patient with known heart failure who has increasing shortness of breath or is unwell and unsure if the cause of symptoms is an exacerbation of congestive cardiac failure or not.

<table>
<thead>
<tr>
<th>BNP Results</th>
</tr>
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<tbody>
<tr>
<td><strong>Indications</strong></td>
</tr>
<tr>
<td>&lt; 100 ng/L</td>
</tr>
<tr>
<td>100 to 500 ng/L</td>
</tr>
<tr>
<td>&gt; 500 ng/L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NT-proBNP results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indications</strong></td>
</tr>
<tr>
<td>&lt; 50 years</td>
</tr>
<tr>
<td>50 to 75 years</td>
</tr>
<tr>
<td>&gt; 75 years</td>
</tr>
<tr>
<td>Any age</td>
</tr>
</tbody>
</table>

• BNP/NT-proBNP are most useful as a “rule-out test” to eliminate heart failure as a cause of the symptoms. Heart failure is ruled out with a BNP result of < 100 ng/L or NT-proBNP < 300 ng/L
• Elevations in BNP have several cardiac causes and non-cardiac causes associated with high cardiac output.
  Cardiac causes:
    o After myocardial infarction in the elderly
    o Atrial fibrillation
    o Left ventricular hypertrophy
    o Valvular heart disease – aortic stenosis, mitral valve regurgitation
  Non-cardiac causes:
    o Acute pulmonary embolism
    o Pulmonary hypertension – primary or secondary
    o Sepsis – possibly due to tissue hypoxia or secondary myocardial depression
    o Chronic obstructive pulmonary disease with cor pulmonale or respiratory failure
South Eastern Melbourne PHN Heart Failure (Cardiac Failure) pathway

- **Cirrhosis**
- **Hyperthyroidism**
- **Severe renal impairment – acute or chronic kidney injury**

- BNP may be decreased by hypothyroidism, treatment with diuretics, vasodilators, ACE inhibitors, and in obese patients.
- Serial measurements to adjust therapy for heart failure rather than single tests for diagnosis may be helpful in difficult cases. A dramatic reduction of BNP following treatment of heart failure is a favourable sign.
- Very high levels of BNP carry a poor prognosis.

- **12-lead ECG**
  
  To assess cardiac rhythm, QRS duration, and the presence of underlying conditions, arrange [12-lead ECG](#).
  
  Look for:
  - arrhythmias, atrial fibrillation (AF)
  - left ventricular hypertrophy (LVH)
  - ischaemia
  - previous myocardial infarction (MI)
  - left bundle branch block (LBBB).
  
  Only about 10% of patients with HF will have a normal ECG.

- **Chest X-ray**
  - A normal result does not exclude HF.
  - May detect signs of pulmonary congestion (cardiomegaly, pulmonary venous changes, and interstitial oedema) that support the diagnosis of HF.
  - Main use is to identify alternative cardiac and non-cardiac causes for the patient’s symptoms

- To exclude lung pathology as a cause of dyspnoea, consider:
  - CT chest if suspected malignancy and interstitial lung disease.
  - spirometry if suspected COPD or asthma.
  - Sleep studies.

- To exclude other cardiac causes of dyspnoea, consider:
  - if acute onset, consider whether [myocardial infarction](#) is the possible cause – stress testing, angiography may be indicated.
  - pacemaker or ICD check if relevant.

5. Determine the **type of heart failure**, as this will influence management.

- **Heart failure with reduced ejection fraction (HFrEF)** – systolic heart failure:
  - Heart failure with reduced (< 50%) left ventricular ejection fraction (HFrEF)
  - Treatment can improve function, survival, and symptoms.
  - Common causes include:
    - Acute myocardial infarction or ischaemia
    - Alcohol and substance abuse
    - Atrial fibrillation with poor rate control
    - Thyroid dysfunction – hyperthyroidism, hypothyroidism
    - Inherited
    - Postpartum
    - Idiopathic
- Frequent ventricular ectopic activity (> 25% on Holter monitor)

- **Heart failure with preserved ejection fraction (HFrEF)** – diastolic heart failure:
  - Heart failure with preserved (> 50%) left ventricular ejection fraction (HFrEF)
  - Treatment does not improve function or survival but can relieve symptoms.
  - Common causes include:
    - Hypertension
    - Diabetes
    - Age
    - Coronary artery disease must be excluded
    - Aortic stenosis
    - Hypertrophic cardiomyopathy – most cases hereditary
    - Restrictive cardiomyopathy
    - Idiopathic
    - Secondary to infiltrative disease
    - Amyloidosis (rare)

6. See Heart Foundation:
   - Heart Foundation – [Diagnostic Work-up of a Patient with Suspected Heart Failure](#)
   - NICE – [Chronic Heart Failure: Diagnosis](#)

### Management

Manage according to heart failure stage and type. Consider **Nurse-led self-management support:**

**Nurse-led self-management support**

*Daily weighs are critical for monitoring patients and for self-management and are the key to early intervention.*

*Evidence shows patients participation in multidisciplinary interventions (exercise, self-management, and dietetics) and nurse-led clinics improve outcomes.*

*Consider training Practice Nurse to support good management.*

### Prevention of heart failure

Key evidence-based recommendations to decrease the risk of developing HF:

- **Smoking cessation**
- Avoid excessive alcohol
- Weight reduction if overweight or obese
- Regular physical activity
- Blood pressure and lipid lowering according to published guidelines is recommended, to decrease the risk of cardiovascular events.
- Sodium-glucose cotransporter 2 (SGLT2) inhibitors decrease the risk of HF hospitalisation in patients with type 2 diabetes and cardiovascular disease.
- Angiotensin-converting enzyme (ACE) inhibitors:
  - consider in patients with cardiovascular disease
  - recommended in patients with left ventricular systolic dysfunction.
- Consider beta-blockers in patients with LV systolic dysfunction.
Initial heart failure management

1. If red flags in a patient with suspected heart failure, or new heart failure that has not responded to initial and escalated treatment with diuretic therapy, arrange immediate cardiology referral or admission for management.

   **Red flags**
   - Ongoing chest pain
   - Acute pulmonary oedema
   - Oxygen saturation < 94% (in the absence of any other reasons)
   - Haemodynamic instability
   - Syncope or pre-syncope
   - Recent myocardial infarction (within 2 weeks)
   - Pregnant or post-partum woman

2. Refer for [urgent or routine cardiology assessment](#) if:
   - known heart failure with symptoms unresponsive to medical management e.g., symptoms at rest, or on minimal exertion.
   - new onset heart failure with reduced ejection fraction < 50% (HF-rEF) and structural or valvular heart disease.
   - new onset heart failure with preserved ejection fraction (HF-pEF) that has failed maximum tolerated diuretic treatment.

3. Consider a [cardiology assessment](#) for all patients newly diagnosed with heart failure. These patients may be suitable for advanced treatments, unless they have multiple co-morbidities. The specialist will also manage any heart failure with co-existent or causative valvular disease.

4. If possible, withdraw any *medications* which may be contributing to the heart failure.

   **Medications to avoid**
   - Conventional and COX-2 selective NSAIDs
   - Thiazolidinediones e.g., rosiglitazone or pioglitazone
   - Corticosteroids e.g., hydrocortisone, prednisone, fluticasone
   - Anti-arrhythmic medicines – except for heart failure specific beta-blockers and amiodarone
   - Non-dihydropyridine calcium channel blockers e.g., verapamil or diltiazem
   - Tricyclic antidepressants
   - Urinary alkalinisers – high sodium content
   - Moxonidine and clozapine are also contraindicated
   - Tumour necrosis factor antagonist biologics
   - Tyrosine kinase inhibitors

   *If chemotherapeutic agent is the cause of heart failure, refer for oncology assessment.*

See National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand – *Guidelines for the Prevention, Detection, and Management of Heart Failure in Australia 2018 (Section 4: Prevention of Heart Failure)*
5. In the majority of patients with symptomatic heart failure, start a **diuretic** to reduce fluid overload and review regularly. Aim to establish a goal (dry) weight.

**Diuretics** relieve symptoms but do not affect mortality.
- Use minimum dose to control fluid overload by aiming for the target weight.
- Start with **frusemide** 20 to 40 mg daily.
- If severe peripheral oedema present, refer to Emergency Department for intravenous (IV) frusemide, as significant oedema reduces the bioavailability of oral frusemide.
- Aim is to see an improvement in symptoms and a weight loss of about 1 kg/day with a return to target weight.
- Monitor potassium and creatinine weekly during titration, then 3 monthly.
- Potassium supplementation is usually required except with concomitant ACE inhibitor or **spironolactone**.

6. Start all patients on an **ACE inhibitor (ACEI)**. ACE inhibitors improve prognosis in all grades of heart failure.

**ACE inhibitors**
- Helps with LV re-modelling.
- Improves morbidity and mortality.
- Start at low dose. Refer to table.
- It is important to titrate to highest tolerated dose over 2 to 3 weeks

<table>
<thead>
<tr>
<th>Medication</th>
<th>Starting dose</th>
<th>Target maintenance dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captopril</td>
<td>6.25 mg three times daily</td>
<td>25 mg three times daily</td>
</tr>
<tr>
<td>Enalapril</td>
<td>2.5 mg daily</td>
<td>20 mg twice daily</td>
</tr>
<tr>
<td>Fosinopril</td>
<td>5 to 10 mg daily</td>
<td>20 mg daily*</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>2.5 mg daily</td>
<td>30 mg daily</td>
</tr>
<tr>
<td>Perindopril arginine</td>
<td>2.5 mg daily</td>
<td>10 mg daily*</td>
</tr>
<tr>
<td>Quinapril</td>
<td>5 mg daily</td>
<td>20 to 40 mg daily</td>
</tr>
<tr>
<td>Ramipril</td>
<td>2.5 mg daily</td>
<td>10 mg daily</td>
</tr>
<tr>
<td>Trandolapril</td>
<td>1 mg daily</td>
<td>4 mg daily</td>
</tr>
</tbody>
</table>

* No evidence but class effect

- See weekly while titrating and monitor blood pressure, potassium, and creatinine. 25 to 30% rise in creatinine is acceptable.
- If estimated glomerular filtration rate (eGFR) drop is > 30%, consider renal artery stenosis.
- Be cautious if eGFR is < 30.
- Night-time dosing reduces daytime hypotension.
- Risk of first dose hypotension is increased if systolic blood pressure < 90 mmHg.
- **Adjust dose for renal impairment** and in the elderly.
- Contraindications:
  - Potassium > 5.5 mmol/L
  - Creatinine > 250 micromoles/L
  - Symptomatic hypotension
  - Systolic blood pressure < 80 mm Hg
  - Angioedema
  - Pregnancy
7. If unable to tolerate an ACE inhibitor (ACEI’s), consider starting an **Angiotensin 2 Receptor antagonists** (A2RAs/ARBs). A2RAs/ARB’s improve survival in heart failure with reduced ejection fraction.

**Angiotensin 2 receptor antagonists (A2RAs/ARBs)**
- Consider only in patients intolerant of ACE inhibitors as they have not been shown to have any superiority over ACE inhibitors in the treatment of heart failure.
- Angiotensin 2 receptor antagonists (A2RAs) in combination with ACE inhibitors is discouraged.
- Monitor for hypotension, hyperkalaemia, and changes in renal function.
- 25 to 30% increase in creatinine is acceptable. Consider renal artery stenosis if greater.
- Start at low dose and titrate to the highest tolerated dose over 2 to 3 weeks.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Starting dose</th>
<th>Target maintenance dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candesartan</td>
<td>4 mg daily</td>
<td>32 mg daily</td>
</tr>
<tr>
<td>Eprosartan</td>
<td>600 mg daily</td>
<td>800 mg daily</td>
</tr>
<tr>
<td>Irbesartan</td>
<td>75 mg daily</td>
<td>75 to 300 mg daily</td>
</tr>
<tr>
<td>Losartan</td>
<td>25 mg daily</td>
<td>25 to 100 mg daily</td>
</tr>
<tr>
<td>Olmesartan</td>
<td>20 mg daily</td>
<td>20 to 40 mg daily</td>
</tr>
<tr>
<td>Telmisartan</td>
<td>40 mg daily</td>
<td>80 mg daily</td>
</tr>
<tr>
<td>Valsartan</td>
<td>20 to 40 mg twice daily</td>
<td>160 mg twice daily</td>
</tr>
</tbody>
</table>

8. Then manage according to heart failure type:

**Heart failure with reduced ejection fraction (HFrEF) EF < 50% (systolic heart failure)**

Treatment can **improve symptoms**, function, and **reduce mortality**. It is preferable to use lower doses of combined agents rather than a higher dose of a single agent.

**Improve symptoms**
- Loop diuretics
- Digoxin
- Nitrates
- Ivabradine (ejection fraction ≤ 35%, in sinus rhythm > 77 beats per minute)
- Iron infusions if ferritin < 100 even if other FBE parameters are normal.

**Reduce mortality**
- ACE inhibitors/A2RA
- Beta-blockers
- Spironolactone
- ARNI
- Invabradine
- Implantable defibrillators (ejection fraction ≤ 35%)
- Cardiac resynchronisation (ejection fraction ≤ 35% + left bundle branch block)

1. Add in a **beta-blocker** in impaired systolic function when patient no longer has fluid overload or pulmonary congestion. All beta-blockers reduce mortality by 34% in heart failure with reduced ejection fraction.

**Beta-blockers**
- Beta-blockers improve survival, reduce hospitalisations, and improve left ventricular function. These benefits are in addition to the benefits gained with ACE inhibitors.
- May not be tolerated until fluid is reduced and symptoms are stabilised.
- Start at a low dose and titrate up.

### Titrate dosing unless limited by hypotension or bradycardia

<table>
<thead>
<tr>
<th>Week</th>
<th>Bisoprolol</th>
<th>Carvedilol</th>
<th>Nebivolol</th>
<th>Metoprolol XR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2</td>
<td>1.25 mg/day</td>
<td>3.125 mg twice a day</td>
<td>1.25 mg/day</td>
<td>23.75 mg/day</td>
</tr>
<tr>
<td>2 to 4</td>
<td>2.5 mg/day</td>
<td>6.25 mg twice a day</td>
<td>2.5 mg/day</td>
<td>47.5 mg/day</td>
</tr>
<tr>
<td>4 to 6</td>
<td>5 mg/day</td>
<td>12.5 mg twice a day</td>
<td>5 mg/day</td>
<td>95 mg/day</td>
</tr>
<tr>
<td>6 onward</td>
<td>10 mg/day</td>
<td>25 mg twice a day</td>
<td>10 mg/day</td>
<td>190 mg/day</td>
</tr>
</tbody>
</table>

- See patient fortnightly to slowly titrate the dose to avoid side-effects. Slower up-titration may improve both the tolerability and the maximal achievable dose.
- If worsening heart failure on beta-blockers:
  - increase diuretics first.
  - unless the increased beta-blocker precipitated the worsening heart failure, then halve the dose of the beta-blocker.
- Titrate to the maximum dose unless limited by hypotension or bradycardia (resting heart rate < 60 bpm).
- Never stop a beta-blocker suddenly, as there is a risk of rebound hypertension and arrhythmias. Gradual dose reduction over 1 to 2 weeks is recommended.
- Contraindications:
  - Poorly controlled asthma
  - Pulmonary congestion
  - 2nd or 3rd degree heart block
  - Symptomatic hypotension
  - Systolic blood pressure < 90 mmHg
  - Heart rate < 50 beats per minute
  - Late pregnancy

2. Consider starting an aldosterone antagonist, such as **spironolactone**, which improves mortality and symptoms of heart failure.

**Spironolactone**

- Add after an ACE inhibitor and B blocker have been started if glomerular filtration rate (GFR) > 30, creatinine < 150 μmol/L, and systolic blood pressure > 90.
- Recommended dose is 25 mg daily – start at 12.5 mg and up-titrator.
- Monitor renal function and potassium at 1, 4, 8, and 12 weeks, and then every 3 months or when there is an intercurrent illness. Do not use if creatinine is > 200 μmol/L. Indefinitely. Also monitor if there is an intercurrent illness.
- Serious hyperkalaemia can arise with a combination of spironolactone and ACE inhibitors.
- Increased risk of hypotension and subsequent falls.
- Eplerenone is an alternative and used at the initial dose of 25 mg once daily and up-titrated to 50 mg once daily.

3. If patient remains symptomatic with ejection fraction < 40% despite maximal tolerated standard therapy, consider changing ACE inhibitor (or A2RA) therapy to **angiotensin receptor/neprilysin inhibitor (ARNI)**.

**Angiotensin receptor/neprilysin inhibitor (ARNI)**
Valsartan/sacubitril (Entresto) is an angiotensin II receptor neprilysin inhibitor (ARNI) combination. Neprilysin inhibitors prevent the degradation of natriuretic peptides and other vasoactive peptides in patients with heart failure with reduced ejection fraction (HFrEF). They are proven to reduce mortality and hospitalisation.

**PBS authority indications**

Symptomatic patients with HFrEF:
- with reduced ejection fraction (< 40%).
- with New York Heart Association (NYHA) grade II, III, or IV.
- who are not responding to maximum tolerated optimal standard therapy:
  - Angiotensin converting enzyme inhibitor (ACE inhibitor) or angiotensin 2 receptor antagonist (A2RA) unless contraindicated
  - Mandatory beta-blocker with or without mineralocorticoid receptor antagonist (MRA).

**Contraindications, cautions, and adverse effects**

- Contraindicated with ACE inhibitors or within 36 hours of ACE inhibitor, or with A2RA therapy.
- Contraindicated if pregnant or past history of angioedema.
- Do not initiate if systolic BP < 100 mmHg or potassium > 5.4 mmol/L.
- Increased risk of hypotension, renal insufficiency and angioedema. Also cough, hyperkalaemia.
- Be aware of multiple drug interactions.

**Dosage**

- It is essential to stop an angiotensin-converting enzyme inhibitor (ACEI) for a 36-hour washout before initiating an ARNI, to minimise the risk of angiodema. Can be used after angiotensin-II receptor blocker (A2RA/ARB) with no washout period.
- If on a full dose of ACEI/ARB, cease ACEI or A2RA/ARB and start initial Entresto dose of 49/51 mg twice a day and increase dose after 2 to 4 weeks to target dose of 97/103 mg twice a day if tolerated.
- If on low dose ACEI/ARB, initiate with 24/26 mg twice a day and double dose every 4 weeks to target dose of 97/103 mg as tolerated.
- Use lower doses in severe renal impairment or in patients naïve to, or using low doses of ACE or A2RA medication prior to initiation on ARNI.

**Monitoring**

Watch for hypotension, deterioration in renal function and hyperkalaemia, especially during the run-in period.

See also:
- Australian Government – Department of Health – Entresto
- TGA – Entresto Product Information
- TGA – Entresto Patient Information

4. Consider digoxin for patients in:

- atrial fibrillation (AF).
- sinus rhythm if heart failure is severe and not controlled with ACE inhibitor, diuretic, and beta-blocker.
  - **Digoxin** improves symptoms but not mortality in heart failure with reduced ejection fraction.
  - No patient requires more than 0.125 mg of digoxin daily in treating heart failure.
  - At this dosage, therapeutic levels do not need to be routinely checked and doses do not need to be raised to lift levels into the therapeutic range.
Consider monitoring in elderly patients with low body mass index (BMI) and impaired renal function.

If elderly or renal impairment, start at 0.125 mg or 0.0625 mg daily – check levels in 4 to 5 days.

Digoxin is contraindicated in patients with a heart rate ≤ 60.

Toxicity: confusion, anorexia, nausea, visual disturbance, arrhythmias.

Drugs which may increase digoxin levels include amiodarone, diltiazem, verapamil, and quinidine.

Changes in frusemide dose can affect potassium balance, and hypokalaemia predisposes to digoxin toxicity.

5. Other therapies may be appropriate and are mostly managed by a specialist:

**Ivabradine** *(PBS authority is restrictive)*
- Patients qualify if in sinus rhythm > 77 beats per minute and with reduced ejection fraction classes II and III with left ventricular ejection fraction (LVEF) ≤ 35%.
- This drug’s only action is to slow heart rate, which then improves stroke volume by up to 15%.
- Drug acts on the sino-atrial (SA) node, so the patient must be in sinus rhythm.
- Patient must already be on optimal heart failure management, including a beta-blocker at maximal dose, unless contraindicated.

**Advanced treatments**
Additional treatment options in selected patients with persistent HF associated with reduced left ventricular ejection fraction (HFrEF) include:
- Rate and rhythm control of AF by cardioversion. The specialist may also consider pulmonary vein isolation/ablation if appropriate.
- Catheter ablation for atrial fibrillation.
- Coronary revascularisation, if ischaemia present.
- Implantable cardioverter defibrillators

See National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand – *Guidelines for the Prevention, Detection, and Management of Heart Failure in Australia 2018: HFrEF Management Algorithm*

**Heart failure with preserved ejection fraction (HFrEF) EF > 50% (diastolic heart failure)**

There is limited clinical evidence to guide the management of heart failure with preserved ejection fraction (HFrEF). Treatment does not improve function or survival in patients with HFrEF but can relieve symptoms.

Consider medications:
1. **Diuretics** – if evidence of fluid overload.

2. **ACE inhibitor** or angiotensin 2 receptor antagonist (A2RA) – only if hypertensive.

**ACE inhibitors (ACEI)**
- Helps with LV re-modelling.
- Improves morbidity and mortality.
- Start at low dose. Refer to table.
- It is important to titrate to highest tolerated dose over 2 to 3 weeks.
### Target doses of ACE inhibitors in heart failure

<table>
<thead>
<tr>
<th>Medication</th>
<th>Starting dose</th>
<th>Target maintenance dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captopril</td>
<td>6.25 mg three times daily</td>
<td>25 mg three times daily</td>
</tr>
<tr>
<td>Enalapril</td>
<td>2.5 mg daily</td>
<td>20 mg twice daily</td>
</tr>
<tr>
<td>Fosinopril</td>
<td>5 to 10 mg daily</td>
<td>20 mg daily*</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>2.5 mg daily</td>
<td>30 mg daily</td>
</tr>
<tr>
<td>Perindopril arginine</td>
<td>2.5 mg daily</td>
<td>10 mg daily*</td>
</tr>
<tr>
<td>Quinapril</td>
<td>5 mg daily</td>
<td>20 to 40 mg daily</td>
</tr>
<tr>
<td>Ramipril</td>
<td>2.5 mg daily</td>
<td>10 mg daily</td>
</tr>
<tr>
<td>Trandolapril</td>
<td>1 mg daily</td>
<td>4 mg daily</td>
</tr>
</tbody>
</table>

* No evidence but class effect

- See weekly while titrating and monitor blood pressure, potassium, and creatinine. 25 to 30% rise in creatinine is acceptable.
- If estimated glomerular filtration rate (eGFR) drop is > 30%, consider renal artery stenosis.
- Be cautious if eGFR is < 30.
- Night time dosing reduces daytime hypotension.
- Adjust dose for renal impairment and in the elderly.
- Contraindications:
  - Potassium > 5.5 mmol/L
  - Creatinine > 250 micromol/L
  - Symptomatic hypotension
  - Systolic blood pressure < 80 mm Hg
  - Angioedema

Pregnancy

### Angiotensin 2 receptor antagonists

- These should only be considered in patients intolerant of ACE inhibitors as they have not been shown to have any superiority over ACE inhibitors in the treatment of heart failure.
- Angiotensin 2 receptor antagonists (A2RAs/ARBs) in combination with ACE inhibitors is discouraged.
- Caution is required if eGFR is < 30.
- Monitor for hypotension, hyperkalaemia, and changes in renal function.
- 25 to 30% increase in creatinine is acceptable. Consider renal artery stenosis if greater.
- Start at low dose and titrate if required, over 2 to 3 weeks.

### Target doses for A2RAs in heart failure

<table>
<thead>
<tr>
<th>Medication</th>
<th>Starting dose</th>
<th>Target maintenance dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candesartan</td>
<td>4 mg daily</td>
<td>32 mg daily</td>
</tr>
<tr>
<td>Eprosartan</td>
<td>600 mg daily</td>
<td>800 mg daily</td>
</tr>
<tr>
<td>Irbesartan</td>
<td>75 mg daily</td>
<td>75 to 300 mg daily</td>
</tr>
<tr>
<td>Losartan</td>
<td>25 mg daily</td>
<td>25 to 100 mg daily</td>
</tr>
<tr>
<td>Olmesartan</td>
<td>20 mg daily</td>
<td>20 to 40 mg daily</td>
</tr>
<tr>
<td>Telmisartan</td>
<td>40 mg daily</td>
<td>80 mg daily</td>
</tr>
<tr>
<td>Valsartan</td>
<td>20 to 40 mg twice daily</td>
<td>160 mg twice daily</td>
</tr>
</tbody>
</table>
3. **Spironolactone.**
   - Add after an ACE inhibitor and B blocker have been started if glomerular filtration rate (GFR) > 30, creatinine < 150 μmol/L, and systolic blood pressure > 90.
   - Recommended dose is 25 mg daily – start at 12.5 mg and up-titrated.
   - Monitor renal function and potassium at 1, 4, 8, and 12 weeks, and then every 3 months or when there is an intercurrent illness. Do not use if creatinine is > 200 μmol/L. indefinitely. Also monitor if there is an intercurrent illness.
   - Serious hyperkalaemia can arise with a combination of spironolactone and ACE inhibitors.
   - Increased risk of hypotension and subsequent falls.
   - Eplerenone is an alternative and used at the initial dose of 25 mg once daily and up-titrated to 50 mg once daily.

4. Beta-blockers can be used in heart failure with preserved ejection fraction in patients who are:
   - symptomatic
   - not rate controlled
   - have atrial fibrillation and a heart rate of ≥ 80.
   Consider referral to a [cardiologist](#) for initiation.

5. Treat the underlying cause:
   - Ischaemia – consider coronary revascularisation.
   - Hypertension – aggressive blood pressure management to prevent left ventricular hypertrophy (LVH).
   - Diabetes – strict glycaemic and low blood pressure (BP) targets.

6. Monitor:
   - By clinical symptoms – weight, blood pressure, heart rate, creatinine, electrolytes.
   - By patient – ask patient to record weight, swelling, and breathing changes in a daily checks record sheet.

See NICE – [Chronic Heart Failure: Management](#).

### Ongoing management

1. Maintain the patient on the minimum dose of diuretic required, cease frusemide altogether if possible.

2. Monitor
   - by clinical symptoms, weight, blood pressure, heart rate (target is 55 to 60 bpm), and renal function.
   - By patient – ask patient to record weight, swelling, and breathing changes in a daily checks record sheet.

3. Screen for and manage **coexisting conditions and exacerbating factors**
   - **Atrial fibrillation (AF)** – use digoxin to control the ventricular rate of AF, and beta-blockers if heart failure is stabilised. Consider anticoagulation if ejection fraction (EF) < 45%. All cardiomyopathies with atrial fibrillation need anticoagulation. Cardiologist may consider cardioversion and/or pulmonary vein isolation procedure/ablation if appropriate.
   - **Valvular heart disease**
   - **Hypertension**
   - **Coronary heart disease**
• Anaemia – in particular, look for and treat iron deficiency) in congestive heart failure to improve symptoms, exercise tolerance, and quality of life. Iron infusions improve symptoms if ferritin < 100, even if other FBE parameters are normal.

Iron deficiency is common and associated with a worse prognosis. Intravenous iron replacement improves symptoms. Do not treat with oral iron.
  o Screen every 6 to 12 months, or every 3 months if required iron replacement previously.
  o Consider intravenous ferric carboxymaltose replacement if HFrEF and symptomatic, plus:
    ▪ ferritin < 100 micrograms/L, or
    ▪ ferritin 100 to 299 micrograms/L with transferrin < 20%.
  o See Iron Deficiency Anaemia

• Obstructive sleep apnoea
• Thyroid disease
• Obesity

4. **Monitor** heart failure treatment response with echocardiograms.
   • If there is a significant change in the severity of symptoms, re-assessment of systolic, diastolic, or valvular function is appropriate.
   • Moderate and severe lesions may require more frequent evaluation.
   • Routine assessment can be useful to measure the effect of changes in therapy on cardiac structure and function.

5. Consider referral for **allied health services**.
   • Cardiac and heart failure rehabilitation
   • Exercise physiology – exercise improves outcomes in heart failure. Patients require permission from their cardiologist to enrol in an exercise program.
   • Complex Care Program (formerly HARP) services – for patients with clinical deterioration and multiple hospital admissions, or for consideration of a diuretic titration management plan.

6. Provide patient advice. Educate the patient and provide information about:
   • the nature of the disease, drug regimens, prognosis, and impact on life
     Direct patients and their carers to the Heart Foundation Australia or Heart Failure Matters website for information and resources in multiple languages.
     Heart Foundation:
       o Living Well with Chronic Heart Failure Summary
       o Living Every Day with my Heart Failure

   • self-management and medication monitoring. Non-compliance is a major cause of morbidity and avoidable hospital admission.

   **Self-management and medication monitoring**
   • A self-management diary can assist with:
     o monitoring symptoms.
     o response to medication.
     o patient managed flexible diuretic regimen.
   • My Heart Failure Action Plan
   • Ensure up-titration to maximum tolerated doses is achieved. See Queensland Government – Heart Failure Medication Titration Plan.
• Consider referral to heart failure rehabilitation for education, support, help with self-management, and medication adjustment.

Non-compliance
Consider:
  o cost of general practice visits, side effects of medications, and complexity of treatment regimens.
  o referral for a Home Medicines Review (MBS Item 900).
  o offering patients a medicine chart to help them manage their drug regimen.
  o recommending pharmacy packing of medications e.g., Webster pack and combination drugs to aid compliance.

• reduction of other risk factors – atrial fibrillation, lipids, diabetes, smoking, alcohol excess.

Alcohol excess
Restrict alcohol to no more than one standard drink per day or, if alcohol-related cardiomyopathy, advise abstinence.

• Dietary advice - importance of following fluid and salt restriction.
  o Avoid excessive fluid intake e.g., 1.5 L/day. If severe heart failure, 1 L/day. See Queensland Health – Controlling Fluid Intake in Heart Failure: Hints for Fluid Control.
  o Reduce sodium intake to < 2 g per day. Advise patients to avoid adding salt to cooking, not to add extra salt at the table, and to avoid foods which are very high in salt. 2 grams of salt is equal to approximately half a teaspoon. See Healthdirect – Salt: The Facts (patient information).
  o Restrict alcohol to no more than one standard drink per day, or if alcohol related cardiomyopathy, advise abstinence.

• exercise and heart failure rehabilitation

Heart failure rehabilitation
  o Fatigue and low activity tolerance can be significant issues, but a rehabilitative exercise plan improves functional capacity and symptoms.
  o Exercise-based rehabilitation significantly reduces hospitalisations from heart failure, improves quality of life, and does not increase mortality in people with stable systolic heart failure.
  o Consider cardiac and heart failure rehabilitation.
  o Encourage patients with New York Heart Association (NYHA) class I or II symptoms to walk for at least 10 to 30 minutes on most days. Other low to moderate intensity exercises include cycling on a stationary bicycle, light weights, and stretching.
  o Advise patients to exercise to a level that allows them to carry on a normal conversation.

• Managing exacerbations
  o Daily weights, check for swelling, and watch for increasing dyspnoea.
  o Write an exacerbation action plan for the patient. Consider using the Heart Foundation’s My Heart Failure Action Plan. Teach the patient to recognise signs of exacerbation and how to act on this by attending for treatment and by increasing their diuretics, if appropriate.
  o Rest during exacerbations.
  o See Heart Foundation – Living Well with Chronic Heart Failure.
7. Monitor:
   • for anxiety and **depression** which are common in heart failure. Treat depression with **medications** that are less likely to contribute to heart failure.

**Depression**

*The National Heart Foundation (NHF) recommends that a simple tool, such as the Patient Health Questionnaire 2 (PHQ-2) or the short-form CDS, is incorporated into routine screening of patients with coronary heart disease (CHD). Patients diagnosed with depression will require more regular reviews.*

**Screen for depression using the Patient Health Questionnaire 2 (PHQ-2):**
   - During the past month, have you been bothered by feeling down, depressed, or hopeless?
     - Not at all: 0
     - Several days: 1
     - More than 7 days: 2
     - Nearly every day: 3
   - During the past month, have you often been bothered by little interest or pleasure in doing things?
     - Not at all: 0
     - Several days: 1
     - More than 7 days: 2
     - Nearly every day: 3

Scores of ≥ 3 indicate that depression is likely. If the PHQ-2 is positive then use the **PHQ-9 assessment tool.**

Consider **psychologist** referral for patients with depression.

**Antidepressant medications**

Antidepressants to use preferentially in heart failure:
   - Sertraline
   - Mirtazapine
   - Other selective serotonin reuptake inhibitors (SSRIs). Monitor sodium levels when initiating SSRIs.

Antidepressants to avoid in heart failure:
   - Tricyclic antidepressants
   - Venlafaxine
   - Reboxetine
   - Other serotonin and norepinephrine reuptake inhibitors (SNRIs)

- cardiovascular risk factors - atrial fibrillation, lipids, diabetes, smoking.
- symptom control, medications, and compliance.

**Non-compliance** is a major cause of morbidity and avoidable hospital admissions.

Consider:
   - cost of general practice visits, side-effects of medications, and complexity of treatment regimens.
   - referral for a **Home Medicines Review (MBS Item 900).**
   - offering patients a **medicine chart** to help them manage their drug regimen.

- renal function and electrolytes when changing medication, following hospitalisation, or every 3 to 6 months if stable.
8. Consider **additional issues in heart failure management.**
   - Offer all patients with heart failure a General Practice Management Plan and Team Care Arrangement to help them access allied health services.
   - Palliative care discussion and advance care planning as part of the GPMP and TCA is ideal, as 50% of patients die within 3 years after an acute admission to hospital with heart failure.
   - Immunisation – Pneumovax and annual influenza vaccination.
   - **Fitness to drive** – cardiovascular conditions and **driving regulations.**
     - A patient with shortness of breath on moderate exertion may not hold an unconditional licence for private use.
     - If a general practitioner provides evidence of satisfactory response to treatment and minimal symptoms relevant to driving, a conditional licence for private use can be issued.
     - A patient with heart failure cannot hold an unconditional licence for commercial use. A conditional licence requires an annual review and report issued by the treating specialist.
   - **Benefits** – disability allowance or carer may be eligible for carer allowance via Centrelink.
   - Home help, community nursing, family and carer support.
   - **Home Medicines Review** (DMMR) (MBS item 900) for consultation with pharmacist for Webster pack to improve compliance.
   - **Complex Care Program (formerly HARP)** referral if a patient with heart failure continues to clinically deteriorate despite active management. The Complex Care Program team will assist the patient and family in determining if, and when, palliative care services are needed.
   - **Deactivation of defibrillators.**

### Exacerbation management

See also [Managing Exacerbations of Heart Failure.](#)

1. **If a patient with heart failure presents with an exacerbation with red flags,** arrange **immediate cardiology referral or admission.**

2. **Assess the patient's fluid and cardiovascular status.**
   - Weight, including any recent change
   - Respiratory rate
   - Blood pressure
   - Heart rate and rhythm (regular or irregular)
   - Walking distance, including any recent change
   - Fluid status:
     - Chest auscultation
     - Dyspnoea
     - Orthopnoea or pillows required to sleep
     - JVP
     - Ascites
     - Ankle oedema
     - Appetite
     - bloating
     - Fatigue
     - Urine output
3. Determine the **most likely cause of the exacerbation** and correct this. Some deteriorations in heart failure patients may be due to acute dehydration, not fluid overload. If dehydrated, decrease dose of diuretic back to minimal dose required to achieve baseline weight until response achieved.

**Most likely causes of exacerbation**
- Myocardial ischaemia
- Medications e.g., **poor adherence**, alterations to medications
  - Poor adherence is a major cause of morbidity and avoidable hospital admissions.
  - Consider the cost of general practice visits, side-effects of medications, and complexity of treatment regimens.
  - Consider Medication Management Service (MMS) – consultation with pharmacist to help with adherence.
- Infection
- Uncontrolled hypertension
- Cardiac arrhythmia
- Poor adherence to salt and fluid restrictions
- Valvular dysfunction
- Anaemia
- Renal failure leading to fluid overload
- Pulmonary embolus
- Thyroid dysfunction

4. **Increase diuretics** to get back to target weight. Consider use of a heart failure diary to monitor and self-manage medications.
   - Frusemide – double the dose. Once > 120 mg is needed, add a lunch time dose as this improves response, for example if 160 mg needed, use 120 mg in the morning and 40 mg at lunchtime. To increase further, change to 120 mg in the morning and 80 mg at lunchtime.
   - If not responding, consider a short course of intravenous (IV) frusemide at half the oral dose.

5. If not responding, seek **cardiology advice** as a short course of intravenous (IV) frusemide may be indicated.

**Cardiology advice**
- If changes in the diuretic dose do not stabilise the patient’s symptoms and weight within 2 days, seek advice from a **heart failure service**.

**Heart failure services**

<table>
<thead>
<tr>
<th>The Alfred Heart Centre</th>
<th>Patient known to The Alfred Heart Centre phone the Heart Centre on (03) 9076 3263 OR (03) 9076 6525.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monash Heart Monash Health</td>
<td>Patient known to Monash Heart Monash Health call 1300 MHEART (1300 643 278).</td>
</tr>
<tr>
<td>Peninsula Health</td>
<td>Patient known to Peninsula Health call 03 9784 1177.</td>
</tr>
</tbody>
</table>

See also [Urgent or Routine Cardiology Referral](#)
For more information on managing fluid overload, over-diuresis, and dehydration, see The Heart Foundation – Fluid Management Algorithm in Heart Failure.

6. Once stable:
   - look at maximising the maintenance treatment.
   - for patients whose performance status is poor or deteriorating, or who have multiple co-morbidities, consider a palliative or end-stage heart failure approach, even if the exacerbation has responded to treatment.

Management following discharge

1. Review patients immediately following discharge within a week (preferably within 2 days).

2. Follow initial management, in particular:
   - monitor closely for relapse of fluid overload immediately post-discharge and adjust diuretic dose accordingly.
   - once fluid overload controlled, ensure other heart failure medications are titrated to maximum tolerated dose. Queensland Government – Heart Failure Medication Titration Plan.

3. Then follow ongoing management, as above.

4. Palliative care discussion and advance care planning as part of the GPMP and TCA is ideal, as 50% of patients die within 3 years after an acute admission to hospital with heart failure.

Referral

- If red flags in patient with suspected heart failure, exacerbation of known heart failure or new heart failure that has not responded to initial and escalated treatment with diuretic call 000 for ambulance and arrange immediate cardiology referral or admission.
- Refer for urgent or routine cardiology assessment if:
  - known heart failure with symptoms unresponsive to medical management e.g., symptoms at rest, or on minimal exertion.
  - new onset heart failure with reduced ejection fraction < 50% (HF-rEF) and structural or valvular heart disease.
  - new onset heart failure with preserved ejection fraction (HF-pEF) that have failed maximum tolerated diuretic treatment.
- Consider a cardiology assessment for all patients newly diagnosed with heart failure for consideration of advanced treatments.
- If community diuretic plan for diuretic titration is required, contact Complex Care Program (formerly HARP).
- If chemotherapeutic agent is the cause of heart failure, refer for oncology assessment.
- In all stabilised patients, consider referral for cardiac and heart failure rehabilitation or exercise physiology.
- If a patient is depressed, consider referral to a psychologist for supportive counselling.
- If other co-morbidities, consider referral for a general medicine assessment, geriatric medicine assessment, or aged care assessment.
- In advanced or end-stage heart failure, consider palliative care services.
Information

For health professionals

Further information

- Heart Foundation:
  - Heart Failure Clinical Guidelines
  - Heart Foundation Toolkit: A Targeted Approach to Reducing Heart Failure Readmissions
  - Support and Resources for Health Professionals [guidelines, tools and patient information]
- Heart Lung and Circulation – National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Guidelines for the Prevention, Detection, and Management of Heart Failure in Australia 2018
- Improvement Foundation – qiCommunity: The New Heart Failure Guidelines, What’s Important for Primary Care [video, 30 mins]
- Medicine Today – Heart Failure Guidelines: A Concise Summary for the GP
- NICE – Chronic Heart Failure in Adults: Diagnosis and Management
- NPS MedicineWise – Chronic Heart Failure
- Queensland Government – Heart Failure Medication Titration Plan

For patients

- Better Health Channel – Congestive Heart Failure (CHF)
- Health Direct – Salt: The Facts
- Heart Failure Matters
  - Heart Foundation – Heart Failure Resources for Patients:
    - Living Well With Chronic Heart Failure
    - My Heart Failure Action Plan

References


**Disclaimer**

Last updated: September 2020