Chronic heart failure: management of chronic heart failure in adults in primary and secondary care

NICE guideline

Draft for second consultation, April 2003

If you wish to comment on the recommendations, please make your comments on the full version of the draft guideline.
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Heart failure

Heart failure is a complex syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the heart to function as a pump to support a physiological circulation. The syndrome of heart failure is characterised by symptoms such as breathlessness and fatigue, and signs such as fluid retention.

This guideline offers best practice advice on the care of adult patients (aged 18 years or older) who have symptoms or a diagnosis of chronic heart failure. It aims to define the most effective combination of symptoms, signs and investigations required to establish a diagnosis of heart failure, and those which will influence therapy or provide important prognostic information. It also gives guidance on the treatment, monitoring and support of patients with heart failure.

The following guidance is evidence based. The grading scheme used for the recommendations (A, B, C, Good Practice Point [GPP]) is described on page 4; a summary of the evidence on which the guidance is based is provided in the full guideline (see Section 5).
Grading scheme used in this guideline

<table>
<thead>
<tr>
<th>Level</th>
<th>Type of evidence</th>
<th>Typical grading of recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ia</strong></td>
<td>Evidence obtained from systematic review of meta-analysis of randomised controlled trials</td>
<td><strong>A</strong> At least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (evidence levels Ia and Ib)</td>
</tr>
<tr>
<td><strong>Ib</strong></td>
<td>Evidence obtained from at least one randomised controlled trial</td>
<td><strong>B</strong> Well-conducted clinical studies but no randomised clinical trials on the topic of recommendation (evidence levels IIa, IIb, III)</td>
</tr>
<tr>
<td><strong>IIa</strong></td>
<td>Evidence obtained from at least one well-designed controlled study without randomisation</td>
<td><strong>C</strong> Expert committee reports or opinions and/or clinical experience of respected authorities. This grading indicates that directly applicable clinical studies or good quality are absent (evidence level IV)</td>
</tr>
<tr>
<td><strong>IIb</strong></td>
<td>Evidence obtained from at least one other type of well-designed quasi-experimental study</td>
<td><strong>GPP</strong> Recommended good practice based on the clinical experience of the Guideline Development Group</td>
</tr>
<tr>
<td><strong>III</strong></td>
<td>Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies</td>
<td><strong>DS</strong> Diagnostic studies</td>
</tr>
<tr>
<td><strong>IV</strong></td>
<td>Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities</td>
<td><strong>GPP</strong> Recommended good practice based on the clinical experience of the Guideline Development Group</td>
</tr>
</tbody>
</table>
1 Guidance

1.1 Diagnosing heart failure

The full evaluation of heart failure is more than stating whether the syndrome is present or not; it requires consideration of the underlying abnormality of the heart, the severity of the syndrome (usually classified using the New York Heart Association [NYHA] system shown in Table 1), the aetiology, precipitating and exacerbating factors, identification of concomitant disease relevant to the management, and an estimation of prognosis. It is important to exclude other conditions that may masquerade as heart failure (see Table 2).

The recommendations for diagnosing heart failure are summarised in an algorithm on page 6. For more detail please see the full guideline (see Section 5).

Table 1 New York Heart Association classification of heart failure symptoms

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>No limitations. Ordinary physical activity does not cause fatigue, dyspnoea or palpitation (Asymptomatic left ventricular dysfunction is included in this category.)</td>
</tr>
<tr>
<td>Class II</td>
<td>Slight limitation of physical activity. Such patients are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnoea or angina pectoris (symptomatically 'mild' heart failure).</td>
</tr>
<tr>
<td>Class III</td>
<td>Marked limitation of physical activity. Although patients are comfortable at rest, less than ordinary physical activity will lead to symptoms (symptomatically 'moderate' heart failure).</td>
</tr>
<tr>
<td>Class IV</td>
<td>Inability to carry on any physical activity without discomfort. Symptoms of cardiac failure are present even at rest. With any physical activity increased discomfort is experienced (symptomatically 'severe' heart failure).</td>
</tr>
</tbody>
</table>
Algorithm summarising recommendations for the diagnosis of heart failure

[To appear opposite Section 1.1 in typeset version]

**Suspected heart failure**
because of history, symptoms, and signs

Seek to exclude heart failure through:
- 12-lead ECG
- and/or natriuretic peptides (BNP or NTproBNP) – where available

Both normal –
heart failure unlikely
consider alternative diagnosis

Other recommended tests:
(mostly to exclude other conditions)
- Chest x-ray
- Blood tests: U&Es, creatinine, FBC, TFTs, LFTs, glucose, and lipids
- Urinalysis, peak flow or spirometry.

One or more abnormal

Imaging by echocardiography*

No abnormality detected
Heart failure unlikely, but if diagnostic doubt persists consider diastolic dysfunction and consider referral for specialist assessment

Abnormal
Assess heart failure severity, aetiology, precipitating and exacerbating factors and type of cardiac dysfunction
Correctable causes must be identified
Consider referral

* Alternative methods of imaging the heart should be considered when a poor image is produced by transthoracic Doppler and 2D-echocardiography – alternatives include transoesophageal echocardiography, radionuclide imaging or cardiac magnetic resonance imaging.

**Key:**
- BNP: B-type natriuretic peptide
- ECG: Electrocardiogram
- FBC: Full blood count
- LFTs: Liver function tests
- NTproBNP: N-terminal pro-B-type natriuretic peptide
- TFTs: Thyroid function tests
- U&Es: Urea and electrolytes
Table 2 Conditions presenting with similar symptoms

<table>
<thead>
<tr>
<th>Other conditions that may present with similar symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Obesity</td>
</tr>
<tr>
<td>• Chest disease – including lung, diaphragm or chest wall</td>
</tr>
<tr>
<td>• Venous insufficiency in lower limbs</td>
</tr>
<tr>
<td>• Drug-induced ankle swelling (e.g. dihydropyridine calcium channel blockers)</td>
</tr>
<tr>
<td>• Drug-induced fluid retention (e.g. NSAIDs)</td>
</tr>
<tr>
<td>• Hypoalbuminaemia</td>
</tr>
<tr>
<td>• Intrinsic renal or hepatic disease</td>
</tr>
<tr>
<td>• Pulmonary embolic disease</td>
</tr>
<tr>
<td>• Depression and/or anxiety disorders</td>
</tr>
<tr>
<td>• Severe anaemia or thyroid disease</td>
</tr>
<tr>
<td>• Bilateral renal artery stenosis</td>
</tr>
</tbody>
</table>

1.1.1 Cardiac assessment

1.1.1.1 Take a careful and detailed history, and perform a clinical examination. These should be combined with tests to confirm the presence of heart failure and make a complete diagnosis. [GPP]

1.1.1.2 Healthcare professionals should seek to exclude a diagnosis of heart failure through the following investigations:

• 12-lead ECG
• and/or natriuretic peptides (BNP or NTproBNP) – where available.

If one or both are abnormal, a diagnosis of heart failure cannot be excluded and transthoracic echocardiography should be performed because it consolidates the diagnosis and provides information on the underlying functional abnormality of the heart. [B]

1.1.1.3 Efforts should be made to exclude other disorders that may present in a similar manner. [GPP]
1.1.1.4 To evaluate possible aggravating factors and/or alternative diagnoses the following tests are recommended.

- Chest X-ray
- Blood tests:
  - biochemical profile including electrolytes, urea and creatinine
  - full blood count
  - thyroid function tests
  - liver function tests
  - fasting lipids
  - fasting glucose
- Urinalysis
- Peak flow or spirometry [GPP]

1.1.1.5 Doppler 2D echocardiographic examination should be performed to exclude important valve disease, assess the systolic (and diastolic) function of the (left) ventricle, and detect intracardiac shunts. [GPP]

1.1.1.6 Doppler 2D echocardiographic studies should only be performed on high-resolution equipment, by experienced operators trained to the relevant professional standards. Need and demand for these studies should not compromise quality. [GPP]

1.1.1.7 The reporting of echocardiography should be by those experienced in doing so. [GPP]

1.1.1.8 Alternative methods of imaging the heart should be considered when a poor image is produced by echocardiography. Such methods may include radionuclide angiography or cardiac magnetic resonance imaging. [B]
1.1.2 Diastolic heart failure

1.1.2.1 Where the diagnosis is unclear, or if a diagnosis of diastolic heart failure is being considered, the patient should be referred for more specialist assessment. [GPP]

1.1.3 Review of existing diagnoses

1.1.3.1 The basis for historical diagnoses of heart failure should be reviewed, and only patients whose diagnosis is confirmed should be managed in accordance with this guideline. [GPP]

1.1.3.2 If the diagnosis of heart failure is still suspected, but confirmation of the underlying cardiac abnormality has not occurred, then the patient should have appropriate further investigation. [GPP]

1.2 Treating heart failure

Treatments are available that can improve the life expectancy and quality of life of a person with heart failure. Treatment recommendations are given below, and include aspects of lifestyle, pharmacological therapy, and invasive procedures. It is also helpful to consider the process-oriented aims of heart failure treatment, such as keeping patients fully informed about their condition and the treatment options, and this is reflected in the recommendations.

For further detail please see the full guideline.

1.2.1 Lifestyle

Exercise training and rehabilitation

1.2.1.1 Patients with heart failure should be encouraged to adopt regular aerobic and/or resistive exercise. This may be more effective when part of an exercise programme or a programme of rehabilitation. [B]
Smoking

1.2.1.2 Total abstinence from smoking should be recommended. Referral to smoking cessation services should be considered. [GPP]

Alcohol

1.2.1.3 Patients with alcohol-related heart failure should abstain from drinking alcohol. [GPP]

1.2.1.4 Healthcare professionals should discuss alcohol consumption with the patient and tailor their advice appropriately to the clinical circumstances. [GPP]

Sexual activity

1.2.1.5 Healthcare professionals should be prepared to broach sensitive issues with patients, such as sexual activity, as these are unlikely to be raised by the patient. [GPP]

Vaccination

1.2.1.6 Patients with heart failure should be offered an annual vaccination against influenza. [GPP]

1.2.1.7 Patients with heart failure should be offered vaccination against pneumococcal disease (only required once). [GPP]

Air travel

1.2.1.8 Air travel will be possible for the majority of patients with heart failure, depending on their clinical condition at the time of travel. [GPP]

Driving regulations

1.2.1.9 Heavy Goods Vehicle and Public Service Vehicle licence: physicians should be up to date with the latest Driver and Vehicle
1.2.2 Pharmacological therapy

Drug therapy is required for the vast majority of patients with heart failure. It is the responsibility of the individual prescriber to check the dosage of medication. This document should be read as a guide to treatment rather than being considered a protocol that must be followed prescriptively in all patients. Treatment should be tailored to the individual patient, with referral for more specialist advice being considered where appropriate.

Recommendations on specific drugs

Recommendations for pharmacological therapy are summarised in the algorithm on page 13.

Diuretics

1.2.2.1 Diuretics (see Table 3) should be routinely used for the relief of congestive symptoms and fluid retention in patients with heart failure, and titrated (up and down) according to need following the initiation of subsequent heart failure therapies. [C]
Table 3 Diuretics (oral): dosages and side effects

<table>
<thead>
<tr>
<th>Drug</th>
<th>Initial dose (mg)</th>
<th>Maximum recommended daily dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loop diuretics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bumetanide</td>
<td>0.5–1.0</td>
<td>5–10</td>
</tr>
<tr>
<td>Furosemide</td>
<td>20–40</td>
<td>250–500</td>
</tr>
<tr>
<td>Torasemide</td>
<td>5–10</td>
<td>100–200</td>
</tr>
<tr>
<td><strong>Thiazides</strong>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bendrofluazide</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Indapamide</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Metolazone</td>
<td>2.5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Potassium-sparing diuretics</strong></td>
<td>+ACEI –ACEI +ACEI –ACEI</td>
<td></td>
</tr>
<tr>
<td>Amiloride</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>Triamterene</td>
<td>25</td>
<td>50</td>
</tr>
</tbody>
</table>

ACEI, angiotensin converting enzyme inhibitor

*May be effective when added to loop diuretics when fluid retention is resistant, but can promote dramatic diuresis and disturbance in fluid balance and electrolytes. Patients must be closely monitored and specialist advice is required.
**Algorithm for the pharmacological treatment of symptomatic heart failure due to left ventricular systolic dysfunction**

[To appear opposite the relevant text (Section 1.2.2) in typeset version]

Patients with symptomatic heart failure due to left ventricular systolic dysfunction should be treated with the following drugs (if tolerated and not contraindicated) and in the sequence indicated. The reader must refer to the text of the guideline for more detailed discussion and explanation.

**Please note:**
- Diuretic is first-line therapy when a patient presents with acute pulmonary oedema
- Please refer to Tables 3–7 for starting doses of drugs
- The arrow on the left-hand margin indicates the increasing likelihood of the need for specialist input.

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**Add diuretic**
Diuretic therapy is likely to be required to control congestive symptoms and fluid retention

**Add ACE inhibitor and titrate upwards**

**Add beta-blocker and titrate upwards**

**Add spironolactone**
If patient remains moderately to severely symptomatic despite optimal drug therapy listed above

Seek specialist advice for further options
Angiotensin converting enzyme (ACE) inhibitors

1.2.2.2 All patients with heart failure due to left ventricular systolic dysfunction should be considered for treatment with an ACE inhibitor (see Table 4). [A]

1.2.2.3 ACE inhibitor therapy should be instituted in patients with heart failure due to left ventricular systolic dysfunction before beta-blockade is introduced. [A]

1.2.2.4 ACE inhibitor therapy should be initiated at the appropriate dose (see Table 4), and titrated upwards at short intervals (for example, every 2 weeks) until the optimal tolerated or target dose is achieved. [A]

1.2.2.5 Blood biochemistry (urea, creatinine and electrolytes) should be measured after initiation and at each dose increment. [GPP]

Table 4 Practical recommendations on the use of ACE inhibitors

<table>
<thead>
<tr>
<th>Licensed ACEI</th>
<th>Starting dose (mg)</th>
<th>Target dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captopril</td>
<td>6.25 three times daily</td>
<td>50–100 three times daily</td>
</tr>
<tr>
<td>Cilazapril*</td>
<td>0.5 once daily</td>
<td>1–2.5 once daily</td>
</tr>
<tr>
<td>Enalapril</td>
<td>2.5 twice daily</td>
<td>10–20 twice daily</td>
</tr>
<tr>
<td>Fosinopril*</td>
<td>10 once daily</td>
<td>40 once daily</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>2.5–5.0 once daily</td>
<td>30–35 once daily</td>
</tr>
<tr>
<td>Perindopril*</td>
<td>2.0 once daily</td>
<td>4 once daily</td>
</tr>
<tr>
<td>Quinapril*</td>
<td>2.5–5.0 once daily</td>
<td>10–20 once daily</td>
</tr>
<tr>
<td>Ramipril</td>
<td>2.5 once daily</td>
<td>5 twice daily or 10 once daily</td>
</tr>
</tbody>
</table>

*Target dose based on manufacturer’s recommendation rather than large outcome study

Continued
How to use?
- Start with a low dose (see above)
- Double dose at not less than 2 weekly intervals
- Aim for target dose (see above) or, failing that, the highest tolerated dose
- Remember some ACE inhibitor is better than no ACE inhibitor
- Monitor blood chemistry urea, creatinine, K⁺ and blood pressure
- When to stop up-titration / down-titration; see PROBLEM SOLVING

Advice to patient?
- Explain expected benefits
- Treatment is given to improve symptoms, to prevent worsening of heart failure and to increase survival
- Symptoms improve within a few weeks to a few months
- Advise patients to report principal adverse effects i.e. dizziness/symptomatic hypotension, cough

Problem solving
- Asymptomatic low blood pressure does not usually require any change in therapy

Symptomatic hypotension
- If dizziness, light-headedness and/or confusion and a low blood pressure reconsider need for nitrates, calcium channel blockers* and other vasodilators
- If no signs/symptoms of congestion consider reducing diuretic dose
- If these measures do not solve problem seek specialist advice

*Calcium channel blockers should be discontinued unless absolutely essential e.g. for angina or hypertension.

Cough
- Cough is common in patients with chronic heart failure, many of whom have smoking-related lung disease
- Cough is also a symptom of pulmonary oedema which should be excluded when a new or worsening cough develops
- ACE inhibitor induced cough rarely requires treatment discontinuation
- When a very troublesome cough does develop one stopping the patient sleeping and can be proven to be due to ACE inhibition (i.e. recurs after ACE inhibition withdrawal and rechallenge) substitution of an angiotensin II receptor antagonist can be considered

Worsening renal function
- Some rise in urea, creatinine and K⁺ is to be expected after initiation of an ACE inhibitor; if the increase is small and asymptomatic no action is necessary
- An increase in creatinine of up to 50% above baseline, or to 250 µmol/litre, which ever is the smaller, is acceptable
- An increase in K⁺ to ≤ 6.0 mmol/litre is acceptable
- If urea, creatinine or K⁺ do rise excessively consider stopping concomitant nephrotoxic drugs (e.g. NSAIDs), non-essential vasodilators (e.g. calcium antagonists, nitrates), K⁺ supplements / retaining agents (triamterene, amiloride) and, if no signs of congestion, reducing the dose of diuretic

Continued
• If greater rises in creatinine or K⁺ than those outlined above persist despite adjustment of concomitant medications the dose of the ACE inhibitor should be halved and blood chemistry rechecked, if there is still an unsatisfactory response specialist advice should be sought
• If K⁺ rises to > 6.0 mmol/litre or creatinine increases by >100% or to above 350 µmol/litre the dose of ACE inhibitor should be stopped and specialist advice sought
• Blood chemistry should be monitored serially until K⁺ and creatinine have plateued

Note: it is very rarely necessary to stop an ACE inhibitor and clinical deterioration is likely if treatment is withdrawn; ideally, specialist advice should be sought before treatment discontinuation


**Beta-blockers**

1.2.2.6 Beta-blockers licensed for use in heart failure should be initiated in patients with heart failure due to left ventricular systolic dysfunction after diuretic and ACE inhibitor therapy (regardless of whether or not symptoms persist). [A]

1.2.2.7 Beta-blockade therapy for heart failure should be introduced in a ‘start low, go slow’ manner, with assessment of heart rate, blood pressure, and clinical status after each titration. [C]

1.2.2.8 Patients who develop heart failure due to left ventricular systolic dysfunction and who are already on treatment with a beta-blocker for a concomitant condition (for example, angina, hypertension) should continue with a beta-blocker – either their current beta-blocker or an alternative licensed for heart failure treatment. [GPP]
Table 5: Practical recommendations on the use of beta-blockers

<table>
<thead>
<tr>
<th>Which beta-blocker and what dose?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Only two beta-blockers are licensed for the treatment of heart failure in the UK.</td>
<td></td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>Starting dose (mg)</td>
</tr>
<tr>
<td>1.25 once daily</td>
<td>10 once daily</td>
</tr>
<tr>
<td>Carvedilol</td>
<td>3.125 twice daily</td>
</tr>
</tbody>
</table>

How to use?
- Start with a low dose (see above)
- Double dose at not less than 2 weekly intervals
- Aim for target dose (see above) or, failing that, the highest tolerated dose
- Remember some beta-blocker is better than no beta-blocker
- Monitor heart rate, blood pressure, clinical status (symptoms, signs, especially signs of congestion, body weight)
- Check blood chemistry 1-2 weeks after initiation and 1-2 weeks after final dose titration
- When to down-titrate/stop up-titration, see PROBLEM SOLVING

Advice to patient?
- Explain expected benefits
- Emphasise that treatment given as much to prevent worsening of heart failure as to improve symptoms, beta-blockers also increase survival
- If symptomatic improvement occurs, this may develop slowly 3-6 months or longer
- Temporary symptomatic deterioration may occur (estimated 20-30% of cases) during initiation / up-titration phase
- Advise patient to report deterioration (see PROBLEM SOLVING) and that deterioration (tiredness, fatigue, breathlessness) can usually be easily managed by adjustment of other medication; patients should be advised not to stop beta-blocker therapy without consulting their physician
- Patients should be encouraged to weigh themselves daily (after waking, before dressing, after voiding, before eating) and to increase their diuretic dose should their weight increase, persistently (>2 days), by >1.5-2.0 kg

Problem solving
Worsening symptoms/signs (e.g. increasing dyspnoea, fatigue, oedema, weight gain)
- If increasing congestion double dose of diuretic and/or halve dose of beta-blocker (if increasing diuretic does not work)
- If marked fatigue (and/or bradycardia, see below) halve dose of beta-blocker (rarely necessary)
- Review patient in 1–2 weeks; if not improved seek specialist advice
- If serious deterioration halve dose of beta-blocker or stop this treatment (rarely necessary); seek specialist advice

Continued
Low heart rate

- If <50 beats/min and worsening symptoms – halve dose beta-blocker or, if severe deterioration, stop beta-blocker (rarely necessary)
- Review need for other heart rate slowing drugs (e.g. digoxin, amiodarone, diltiazem)
- Arrange ECG to exclude heart block
- Seek specialist advice

Asymptomatic low blood pressure

- Does not usually require any change in therapy

Symptomatic hypotension

- If dizziness, light-headedness and/or confusion and a low blood pressure reconsider need for nitrates, calcium channel blockers and other vasodilators
- If no signs/symptoms of congestion consider reducing diuretic dose
- If these measures do not solve problem seek specialist advice

Note: beta-blockers should not be stopped suddenly unless absolutely necessary (there is a risk of a ‘rebound’ increase in myocardial ischaemia/infarction and arrhythmias); ideally specialist advice should be sought before treatment discontinuation


Aldosterone antagonists

1.2.2.9 Patients with heart failure due to left ventricular systolic dysfunction who remain moderately to severely symptomatic despite optimal therapy (as outlined in the algorithm) should be prescribed spironolactone at a dose of 12.5 to 50 mg once per day – specialist advice should be sought. [A]

1.2.2.10 Patients with heart failure taking spironolactone should have blood potassium and creatinine levels monitored for signs of hyperkalaemia and/or deteriorating renal function.* If hyperkalaemia is a problem then the dose of spironolactone should be halved and biochemistry rechecked. [GPP]

*See Section 1.3, page 28 for further details
## Table 6: Practical recommendations for the use of spironolactone

<table>
<thead>
<tr>
<th>Starting dose (mg)</th>
<th>Target dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 once daily or on alternate days</td>
<td>25-50 once daily</td>
</tr>
</tbody>
</table>

### Which dose of spironolactone?

### How to use?
- **Start at 25 mg once daily**
- **Check blood chemistry at 1, 4, 8 and 12 weeks; 6, 9 and 12 months, 6 monthly thereafter**
- **If K⁺ rises to between 5.5 and 6.0 mmol/litre or creatinine rises to 220 µmol/litre reduce dose to 25 mg on alternate days and monitor blood chemistry closely**
- **If K⁺ rises to >6.0 mmol/litre or creatinine to >350 µmol/litre stop spironolactone and seek specialist advice**

### Advice to patient?
- **Explain expected benefits**
- **Treatment is given to improve symptoms, prevent worsening of heart failure and to increase survival**
- **Symptom improvement occurs within a few weeks to a few months of starting treatment**
- **Avoid NSAIDs not prescribed by a physician (self-purchased ‘over the counter’ treatment e.g. ibuprofen)**
- **Temporarily stop spironolactone if diarrhoea and/or vomiting and contact physician**

### Problem solving

**Worsening renal function/hyperkalaemia:**
- **See HOW TO USE? section**
- **Major concern is hyperkalaemia (>6.0 mmol/litre though this was uncommon in the RALES clinical trial; a high normal potassium may be desirable in patients with heart failure, particularly if taking digoxin)**
- **It is important to avoid other K⁺ retaining drugs – for example, K⁺ sparing diuretics and nephrotoxic agents (e.g. NSAIDs)**
- **Some ‘low salt’ substitutes have a high K⁺ content**
- **Male patients may develop breast discomfort and/or gynaecomastia**

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Digoxin

1.2.2.11 Digoxin is recommended for:

- worsening or severe heart failure due to left ventricular systolic dysfunction despite ACE inhibitor, beta-blocker and diuretic therapy [A]
- patients with atrial fibrillation and any degree of heart failure. [C]

Angiotensin II receptor antagonists

1.2.2.12 Although evidence is still emerging, an angiotensin II receptor antagonist may be considered as a replacement for treatment with an ACE inhibitor if the patient is intolerant of such therapy (for example, because of cough). [A]

1.2.2.13 The triple combination of ACE inhibitor, beta-blocker and angiotensin II receptor antagonist should be avoided, pending the results of further trials. [GPP]

Table 7 Currently available angiotensin II receptor antagonists

<table>
<thead>
<tr>
<th>Drug</th>
<th>Daily dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Candesartan</td>
<td>4–16</td>
</tr>
<tr>
<td>*Eprosartan</td>
<td>400–800</td>
</tr>
<tr>
<td>*Irbesartan</td>
<td>150–300</td>
</tr>
<tr>
<td>*Losartan</td>
<td>50–100</td>
</tr>
<tr>
<td>*Telmisartan</td>
<td>40–80</td>
</tr>
<tr>
<td>*Valsartan</td>
<td>80–320</td>
</tr>
</tbody>
</table>

*None of these drugs is currently licensed for the treatment of heart failure in the UK

Amiodarone

1.2.2.14 The decision to prescribe amiodarone should be made in consultation with a specialist. [GPP]
1.2.2.15 The need to continue the prescription should be reviewed regularly. [GPP]

1.2.2.16 Patients taking amiodarone require routine 6-monthly clinical review, commonly including liver and thyroid function tests, and including a review of side effects. [GPP]

Anticoagulants

1.2.2.17 Anticoagulation is indicated for patients with the combination of heart failure and atrial fibrillation (see also page 25). [A]

1.2.2.18 In patients with heart failure in sinus rhythm, anticoagulation should be considered for those with a history of thromboembolism, left ventricular aneurysm, or intracardiac thrombus. [GPP]

Aspirin

1.2.2.19 Aspirin (75–150 mg once daily) should be prescribed for patients with the combination of heart failure and atherosclerotic arterial disease (including coronary heart disease). [B]

Statins (hydroxymethylglutaryl-coenzyme A reductase inhibitors)

1.2.2.20 Patients with the combination of heart failure and known atherosclerotic vascular disease should receive statins only in accordance with current indications. Specific trials in this area are ongoing. [GPP]

Isosorbide/hydralazine combination (specialist initiation only)

1.2.2.21 An isosorbide/hydralazine combination may be used in patients with heart failure who are intolerant of ACE inhibitors or angiotensin II receptor antagonists. [A]

Inotropic agents (specialist use only)

1.2.2.22 Intravenous inotropic agents (such as dobutamine, milrinone or enoximone) should only be considered for the short-term treatment
of acute decompensation of chronic heart failure. This will require specialist advice. [A]

Calcium channel blockers

1.2.2.23 Amlodipine may be used for the treatment of co-morbid hypertension and/or angina in patients with heart failure, but verapamil, diltiazem or short-acting dihydropyridine agents should be avoided. [A]

Major co-morbidities that impact on the pharmacological management of heart failure

The presence of certain co-morbidities may affect the drugs that can be used for the treatment of heart failure, or increase the likelihood of side effects. The major co-morbidities that impact on the management of heart failure are summarised in Table 8.
**Table 8 Major co-morbidities that impact on the management of heart failure**

<table>
<thead>
<tr>
<th>Co-morbidity</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD/asthma/reversible airways disease</td>
<td>Beta-blockers are contraindicated in patients with <strong>reversible</strong> airways disease. The presence of reversible airways disease should be objectively verified.</td>
</tr>
<tr>
<td>Renal dysfunction (e.g. serum creatinine &gt;250 µmol/litre)</td>
<td>ACE inhibitors and angiotensin-II receptor antagonists may be contraindicated. Patient requires specialist assessment</td>
</tr>
<tr>
<td>Anaemia</td>
<td>Anaemia is common in patients with moderate to severe heart failure and where due to the heart failure (and not other causes) treatment with erythropoietin and iron therapy may improve symptoms and reduce the risk of hospitalisation for worsening heart failure. The results of several large RCTs addressing this issue are awaited.</td>
</tr>
<tr>
<td>Thyroid disease</td>
<td>Severe thyroid dysfunction may cause or precipitate heart failure. Amiodarone is contraindicated in such cases.</td>
</tr>
<tr>
<td>Peripheral vascular disease</td>
<td>Not an absolute contraindication to beta-blocker therapy. High index of suspicion for renal artery stenosis required.</td>
</tr>
<tr>
<td>Urinary frequency</td>
<td>Requires appropriate specialist referral. Alpha-blockers may cause hypotension or fluid retention, but are not absolutely contraindicated in patients with heart failure. Diuretics likely to be less well tolerated.</td>
</tr>
<tr>
<td>Gout</td>
<td>Avoid non-steroidal anti-inflammatory drugs. Gout can be exacerbated by diuretics and may have an atypical presentation in patients with heart failure. Colchicine may be useful.</td>
</tr>
</tbody>
</table>


Side effects of drugs commonly used in the treatment of heart failure

All drugs have side effects. The major complications of drugs commonly used for the treatment of heart failure are listed in Table 9.

Table 9 Major complications of drug therapy in chronic heart failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diuretics</td>
<td><strong>Common</strong>: postural hypotension, gout, urinary urgency</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: electrolyte imbalance (hypokalaemia, hypomagnesia, hyponatraemia), arrhythmia</td>
</tr>
<tr>
<td>ACE inhibitors</td>
<td><strong>Common</strong>: cough, hypotension including postural</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: worsening renal function, renal infarction in renal artery stenosis</td>
</tr>
<tr>
<td>Beta-blockers</td>
<td><strong>Common</strong>: tiredness, bradycardia, coldness</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: asthmatic attack, exacerbation of heart failure, heart block</td>
</tr>
<tr>
<td>Spironolactone</td>
<td><strong>Common</strong>: gynaecomastia; tiredness; rashes</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: hyperkalaemia; hyponatraemia</td>
</tr>
<tr>
<td>Digoxin</td>
<td><strong>Common</strong>: nausea</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: life threatening arrhythmias</td>
</tr>
<tr>
<td>Angiotensin II receptor</td>
<td><strong>Common</strong>: hypotension including postural</td>
</tr>
<tr>
<td>antagonists</td>
<td><strong>Serious</strong>: worsening renal function, renal infarction in renal artery stenosis</td>
</tr>
<tr>
<td>Amiodarone</td>
<td><strong>Common</strong>: photosensitivity, nausea, thyroid dysfunction, sleep disturbance</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: thyrotoxic storm: pro-arrhythmia, pulmonary/hepatic fibrosis</td>
</tr>
<tr>
<td>Inotropes</td>
<td><strong>Common</strong>: nausea, palpitation</td>
</tr>
<tr>
<td></td>
<td><strong>Serious</strong>: arrhythmia, cardiotoxicity</td>
</tr>
</tbody>
</table>

Improving adherence with pharmacological therapy

1.2.2.24 Dosing regimens should be kept as simple as possible, and the healthcare professional should ensure that the patient and carer are fully informed about their medication. [A]
Recommendations for treatment of heart failure not due to left ventricular systolic dysfunction

Valve disease

1.2.2.25 Patients with heart failure due to valve disease should be referred for specialist assessment and advice regarding follow-up. [C]

1.2.2.26 ACE inhibitor therapy should not be initiated in a patient with a clinical suspicion of haemodynamically significant valve disease, until the valve disease has been assessed by a specialist. [C]

Diastolic dysfunction

1.2.2.27 The diagnosis and treatment of diastolic dysfunction should be made by a specialist, and other conditions that present in a similar way may need to be considered. Patients in whom this diagnosis has been made may usually be treated with low to medium dose of loop diuretics (for example, <80 mg furosemide per day). Patients who do not respond to this treatment will require specialist advice. [GPP]

Other causes

The management of other causes of heart failure requires specialist input. This would include congenital heart disease, cardiomyopathies, and specific heart muscle disease such as amyloid.

Recommendations for atrial fibrillation

1.2.2.28 For patients with heart failure and atrial fibrillation, specialist advice should be sought as to whether the aim is improvement of heart rate control or cardioversion (return to sinus rhythm). [C]

1.2.2.29 Anticoagulation is indicated for patients with heart failure and atrial fibrillation (see also anticoagulation section, page 21). [A]
Recommendations for different subgroups of patients with heart failure

**Age**

1.2.2.30 The management of heart failure should be determined by clinical criteria, irrespective of the age of the patient. [A]

1.2.2.31 Tolerance of drugs may be lower and side effects require closer and more frequent monitoring in older patients. [GPP]

**Gender**

1.2.2.32 The principles of pharmacological management of heart failure should be the same for men and women. [GPP]

1.2.2.33 The potential teratogenic effects of drugs should be considered. [GPP]

**Pregnancy**

1.2.2.34 In women of reproductive age who have heart failure, contraception and pregnancy should be discussed. If pregnancy is being considered or occurs, specialist advice should be sought. Subsequently, specialist care should be shared between the cardiologist and obstetrician. [GPP]

**Ethnicity**

1.2.2.35 The principles of pharmacological management should be the same for all patients with heart failure, regardless of ethnicity. [GPP]

1.2.3 Invasive procedures

Although drug therapy is the mainstay of treatment of heart failure, some patients will also benefit from diagnostic or interventional invasive procedures. These procedures are normally organised by a specialist. Several randomised controlled trials are currently examining the benefit of such procedures, and the evidence base is likely to change substantially in the next 5–10 years. This
guideline can only give general advice, and specialist advice is strongly recommended where such procedures might be considered.

The Guideline Development Group considered evidence for oxygen therapy and continuous positive airway pressure, but were unable to draw any specific recommendations because of the small evidence base.

**Coronary revascularisation**

1.2.3.1 Coronary revascularisation should not be **routinely** considered in patients with heart failure due to systolic left ventricular impairment, unless they have refractory angina. [GPP]

**Cardiac transplantation**

1.2.3.2 Specialist referral for transplantation should be considered in patients with severe refractory symptoms or refractory cardiogenic shock. [C]

**Cardiac resynchronisation therapy**

1.2.3.3 Resynchronisation therapy should be considered in selected patients with left ventricular systolic dysfunction (LVEF ≤ 35%), drug refractory symptoms, and a QRS duration >120 ms. The result of ongoing trials will help guide appropriate patient selection. [B]

**Implantable cardioverter-defibrillators (ICDs)**

1.2.3.4 Recommendation from *NICE Technology Appraisal Guidance No. 11*, Guidance on the use of implantable cardioverter defibrillators for arrhythmias (see Section 6). [NICE]

The use of implantable cardioverter defibrillators (ICDs) should be routinely considered for patients in the following categories:

1. Secondary prevention, that is for patients who present, in the absence of a treatable cause, with:
• cardiac arrest due to either ventricular tachycardia (VT) or ventricular fibrillation (VF)
• spontaneous sustained VT causing syncope or significant haemodynamic compromise
• sustained VT without syncope/cardiac arrest, and who have an associated reduction in ejection fraction (less than 35%) but are no worse than class 3 of the New York Heart Association functional classification of heart failure.

2. A familial cardiac condition with a high risk of sudden death, including long QT syndrome, hypertrophic cardiomyopathy, Brugada syndrome, arrhythmogenic right ventricular dysplasia and following repair of Tetralogy of Fallot.

1.3 Monitoring

The clinical condition of a person with heart failure may fluctuate and repeated admission to hospital is common, particularly for patients with more severe heart failure. Monitoring of clinical status is necessary and will involve healthcare professionals in both primary and secondary care. Patients and their carers are playing an increasing role in monitoring, but this requires appropriate education and support.

1.3.1 Clinical review

1.3.1.1 All patients with chronic heart failure require monitoring. This monitoring should include (see Table 10): [GPP]
• a clinical assessment of functional capacity, fluid status, cardiac rhythm (minimum of examining the pulse), cognitive and nutritional status
• a review of medication, including need for changes and possible side-effects
• serum urea, electrolytes and creatinine *.

*This is a minimum. Patients with co-morbidities or co-prescribed medications will require further monitoring. Monitoring serum potassium is particularly important if a patient is taking digoxin.
1.3.1.2 More detailed monitoring will be required if the patient has significant co-morbidity or has deteriorated since the previous review. [GPP]

1.3.1.3 The frequency of monitoring should depend on the clinical status and stability of the patient. The monitoring interval should be short (days to 2 weeks) if the clinical condition or medication has changed, but is required at least 6 monthly for stable patients with proven heart failure. [GPP]

1.3.1.4 Patients who wish to be involved in monitoring of their condition should be provided with sufficient education and support from their healthcare professional to do this, with clear guidelines as to what to do in the event of deterioration. [GPP]

1.3.2 Therapeutic drug monitoring of serum digoxin concentrations

1.3.2.1 Routine monitoring of serum digoxin concentrations is not recommended. A digoxin concentration measured within 8–12 hours of the last dose may be useful to confirm a clinical impression of toxicity or non-compliance. [GPP]

1.3.2.2 The serum digoxin concentration should be interpreted in the clinical context as toxicity may occur even when the concentration is within the ‘therapeutic range’. [GPP]
Table 10 Assessments to be made at clinical review

| Assessment of functional capacity | Chiefly from history, but more objectively by use of NYHA Class, specific quality-of-life questionnaires, 6 minute walk test, or maximal exercise test. NB Not all of these tests are likely to be necessary, or appropriate, at each assessment. |
| Assessment of fluid status | Chiefly by physical examination – changes in body weight, extent of jugular venous distension, lung crackles and hepatomegaly, extent of peripheral oedema, and lying and standing blood pressure (postural drop in blood pressure may indicate hypovolaemia) |
| Assessment of cardiac rhythm | Chiefly by clinical examination, but may require 12-lead electrocardiogram (ECG) or 24 hour electrocardiographic monitoring (‘Holter’) if suspicion of arrhythmia |
| Laboratory assessment | Checking of serum biochemistry (urea, electrolytes, creatinine) is essential, but other tests (such as thyroid function, haematology, liver function, level of anticoagulation) may also be required depending on the medication prescribed and co-morbidity |

1.4 Referral and approach to care

The management of heart failure is likely to be shared between healthcare professionals in both primary and secondary care. Patients and their carers are increasingly involved in management decisions. Work with patient focus groups suggests that the major failings of management relate to poor communication between healthcare professionals, and between patients and the professionals caring for them.

1.4.1 Referral for more specialist advice

1.4.1.1 Patients with heart failure require specialist advice in the following situations. [GPP]

- Heart failure due to valve disease, diastolic dysfunction or any other cause except left ventricular systolic dysfunction
- One or more of the co-morbidities outlined in Table 8 (page 23)
• Angina, atrial fibrillation or other symptomatic arrhythmia
• Women who are planning a pregnancy or who are pregnant.

1.4.1.2 The following situations also require referral. [GPP]
• Severe heart failure.
• Heart failure that does not respond to treatment as discussed in this guideline and outlined in the algorithm.
• Heart failure that can no longer be managed effectively in the home setting.

1.4.2 Discharge planning
1.4.2.1 Patients with heart failure should generally be discharged from hospital only when their clinical condition is stable and the management plan is optimised. Timing of discharge should take into account patient and carer wishes, and the level of care and support that can be provided in the community. [GPP]

1.4.2.2 The primary care team, patient and carer must be aware of the management plan. [GPP]

1.4.2.3 Clear instructions should be given as to how the patient/carer can access advice particularly in the high-risk period immediately following discharge. [GPP]

1.4.3 Multidisciplinary team approach to heart failure management
1.4.3.1 Heart failure care should be delivered by a multidisciplinary team with an integrated approach across the healthcare community. [A]

1.4.4 Non-NHS agencies
1.4.4.1 Standard One of The Older People NSF states:
Social care services will not use age in their eligibility criteria or policies to restrict access to available services. This applies to patients with heart failure. (See www.doh.gov.uk/nsf/olderpeople.htm) [GPP]
1.4.4.2 Management plans for patients with heart failure should be discussed with non-NHS agencies where they are involved in or responsible for the care of a person with heart failure. [GPP]

1.4.4.3 The principles of pharmacological management for patients cared for in non-NHS institutions should be similar to that of any other patient with heart failure. [GPP]

1.4.4.4 The education needs of non-NHS agency carers should be considered. [GPP]

1.5 **Supporting the patient and their carer**

Understanding the information needs of patients and carers is vital. Key issues identified by patient focus groups include the importance of honesty and accurate information, and the potential value of support groups. The recommendations below are based on earlier consensus guidelines produced by a Royal College of Physicians working party.

1.5.1 **Communication**

1.5.1.1 Good communication between healthcare professionals and patients and carers is essential for the best management of heart failure. [GPP]

1.5.1.2 Guidelines for good communication. [C]

- Listen to patients and respect their views and beliefs.
- Give patients the information they ask for or need about their condition, its treatment and prognosis, in a way they can understand including information about any serious side effects of drugs to be prescribed.
- Provide the most important information first.
- Explain how each item will affect patients personally.
- Present information in separate categories.
- Make advice specific, detailed and concrete.
• Use words the patients will understand; confirm understanding by questions; define unfamiliar words; write down key words; draw diagrams and keep a copy in the medical notes.
• Repeat the information using the same words each time.
• Prepare material, written or taped, to back up handwritten notes.
• Share information with patients' partners, close relatives or carers if they ask you to do so. When patients cannot indicate their consent for such sharing of information, it is advisable to share the information that those close to the patient need or want to know, except where you have reason to believe that the patient would object if able to do so.

1.5.1.3 The content, style and timing of information provision should be tailored to the needs of the individual patient. [C]

1.5.1.4 Healthcare professionals should assess cognitive ability when sharing information. [GPP]

1.5.1.5 Carers and relatives of patients who are cognitively impaired should be made aware of treatment regimens for the patients they care for and be encouraged to identify any need for clinical support. [GPP]

1.5.1.6 Management of heart failure should be seen as a shared responsibility between patient and healthcare professional. [GPP]

1.5.1.7 Unless specifically excluded by the patient, carers and relatives should be involved in the management of the patient, particularly where the patient cannot look after him or herself. [GPP]

1.5.2 Prognosis

1.5.2.1 Prognosis should be discussed with patients and carers in a sensitive, open and honest manner. [GPP]
1.5.3 Support groups

1.5.3.1 Healthcare professionals should be aware of local cardiac support networks and provide this information to patients and carers. [GPP]

1.6 Anxiety and depression

Depression tends to be more common in patients with heart failure than in the general population. Drug therapy with antidepressants may lead to complications such as fluid retention, hypotension and arrhythmias.

1.6.1.1 The diagnosis of depression should be considered in all patients with heart failure. [C]

1.6.1.2 Where depression is likely to have been precipitated by heart failure symptoms then reassessment of psychological status should be undertaken once the physical condition has stabilised following treatment for heart failure. If the symptoms have improved no further specific treatment for depression is required. [C]

1.6.1.3 Where it is apparent that depression is co-existing with heart failure, then the patient should be treated for depression following the NICE guideline (Depression: the management of depression in primary and secondary care), scheduled for publication in January 2004. [C]

1.6.1.4 For patients with heart failure, the potential risks and benefits of drug therapies for depression should be considered carefully. [GPP]

1.6.1.5 Patients with heart failure should consult with a healthcare professional before using over-the-counter therapies for depression such as St John’s Wort (Hypericum perforatum). Healthcare professionals should be aware of the potential interaction with prescribed medication, and always ask about self-medication, including the use of herbal products. [GPP]
1.7 **End of life issues**

There is substantial evidence for considerable unmet palliative needs of patients with heart failure and their informal carers. The main areas of need include symptom control, psychological and social support, planning for the future, and end of life care.

1.7.1.1 Issues of sudden death and living with uncertainty are pertinent to all patients with heart failure. The opportunity to discuss these issues should be available at all stages of care. [GPP]

1.7.1.2 The palliative needs of patients and carers should be identified, assessed and managed at the earliest opportunity. [GPP]

1.7.1.3 Patients with heart failure and their carers should have access to professionals with palliative care skills within the heart failure team. [GPP]

1.8 **Prevention**

The prevention of cardiac damage leading to heart failure lies outside the scope of this guideline. Many potential causes of cardiac damage can be prevented or treated, and the extent of any damage reduced. Aspects of lifestyle such as diet, smoking, alcohol consumption, and exercise, affect cardiac risk. Accurate identification and appropriate treatment of hypertension, hyperlipidaemia, and diabetes will reduce the risk of cardiac (and vascular) damage.

1.8.1.1 To help prevent heart failure, healthcare professionals should encourage and support people to make healthy lifestyle choices such as not smoking, exercising regularly, avoiding excessive alcohol intake and controlling their weight. [GPP]

1.8.1.2 Patients with hypertension, hyperlipidaemia, diabetes, and coronary artery disease (including acute myocardial infarction) should be treated according to current guidelines. [GPP]
1.8.1.3 Patients with heart valve disease should be assessed by a specialist. [GPP]

2 Notes on the scope of the guidance

All NICE guidelines are developed in accordance with a scope document that defines what the guideline will and will not cover. The scope of this guideline was established at the start of the development of this guideline, following a period of consultation; it is available from:

www.nice.org.uk/article.asp?a=15233

The guideline covers the care provided by primary and secondary healthcare professionals who have direct contact with, and make decisions concerning, the care of patients with heart failure. It also addresses issues concerning the interface between primary and secondary care, including in what circumstances patients should be referred to or admitted to secondary care.

The guideline addresses all the key areas of managing chronic heart failure, including diagnosis, pharmacological and non-pharmacological treatments, and the management of depression and anxiety.

This guideline does not include specific reference to ‘acute’ heart failure, but does include comment on exacerbation of the syndrome and the causes and treatment of this, recognising that chronic heart failure often has an undulating course. It does not address the screening or diagnosis of people who are asymptomatic, the management of patients with right heart failure as a consequence of respiratory disease, or post-transplant care. In addition, the guideline does not cover the organisational aspects of heart failure management. It does not therefore address models of care, the roles or composition of primary or secondary healthcare teams and competencies, skill mix or training requirements.

This guideline was developed for the NHS, and although it comments on the interface with other sectors, it does not consider them in detail.
3 Implementation in the NHS

3.1 In general

Local health communities should review their existing service provision for the management of heart failure against this guideline. The review should consider the resources required to implement fully the recommendations set out in Section 1 of this guideline, the people and processes involved, and the timeline over which full implementation is envisaged. Clearly, it is in the interests of people with heart failure, their carers and healthcare professionals that the implementation timeline, as determined by each local health community, is as rapid as possible.

This guideline is not a detailed procedural protocol. Relevant local clinical guidelines and protocols should be reviewed in the light of this guidance and revised accordingly.

3.2 Audit

Suggested audit criteria are listed in Appendix D.
4 Research recommendations

Table 11 Areas for further research

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<tr>
<td>1.2.1 Treating heart failure – Lifestyle</td>
<td>9</td>
<td>The optimum lifestyle advice on diet and nutrition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The benefits of interventions aimed at improving diet and nutrition</td>
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<td>26</td>
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<tr>
<td>1.2 Treating heart failure – oxygen therapy</td>
<td>Full</td>
<td>The benefits of domiciliary oxygen for patients with heart failure</td>
</tr>
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<td></td>
<td>guideline page 65</td>
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<td>The treatment of mental health problems arising co-morbidly with chronic heart failure.</td>
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<td>1.7 End of life</td>
<td>35</td>
<td>The optimum method of meeting the palliative care needs of patients with heart failure.</td>
</tr>
</tbody>
</table>
General

The psychological effects of treatment on patients with heart failure (including interventions such as implantable defibrillators)

5 Full guideline

The National Institute for Clinical Excellence commissioned the development of this guidance from the National Collaborating Centre for Chronic Conditions. The Centre established a Guideline Development Group (see Appendix B), which reviewed the evidence and developed the recommendations. The full guideline, *Chronic heart failure: management of adults with chronic heart failure in primary and secondary care*, is published by the National Collaborating Centre for Chronic Conditions; it is available on its website (TBA), the NICE website (www.nice.org.uk) and on the website of the National Electronic Library for Health (www.nelh.nhs.uk). [Note: these details will apply to the full guideline at publication.]

The members of the Guideline Development Group are listed in Appendix B. Information about the Institute’s Guideline’s Advisory Committee is given in Appendix C.

The booklet *The Guideline Development Process – Information for the Public and the NHS* has more information about the Institute’s guideline development process. It is available from the Institute’s website and copies can also be ordered by telephoning 0870 1555 455 (quote reference N0038).

6 Related NICE guidance

7 Review date

The process of reviewing the evidence is expected to begin 4 years after the date of commissioning of this guideline (December 2005). Reviewing may begin earlier than 4 years if significant evidence that affects the guideline recommendations is identified sooner. The updated guideline will be available within 2 years of the start of the review process.
Appendix A: The Guideline Development Group

Guideline Development Group

Steven Barnes  Systematic reviewer, NCC-CC
Martin Cowie  Professor of Cardiology, Clinical advisor, NCC-CC
Jonathan Mant  Senior Lecturer in Public Health, GDG lead, NCC-CC
Jennifer Roberts  Health economist, NCC-CC
Hasina Shaikh  Information scientist, NCC-CC
Sarah Williams  Project manager, NCC-CC
Audrey Alimo  British Association for Nursing Cardiac Care
Graham Archard  Royal College of General Practitioners
Stephanie Cruickshank  Cardiomyopathy Association
Perry Elliott  British Cardiac Society
Rose Anne Kenny  British Geriatrics Society
Derrick Masters  British Heart Foundation
Mojgan Sani  Royal Pharmaceutical Society
Lip Bun Tan  British Cardiac Society
Anne Taylor  Chartered Society of Physiotherapy

Consensus reference group (CRG)

To support the development of this guideline, a Consensus Reference Group (CRG) was formed. The CRG met early in the development process to ensure that the aims and the clinical questions addressed by the guideline were appropriate. The CRG met again at the end of the process to review the recommendations drafted by the Guideline Development Group. The group used formal consensus techniques in their consideration of clinically important areas where there was insufficient evidence or disagreement over the interpretation of the evidence.
John Camm  
CRG Chair, NCC-CC

John Cleland  
Royal College of Physicians

Michael Gammage  
British Cardiac Society

Louise Gibbs*  
Association for Palliative Medicine

Richard Hobbs  
British Cardiac Society

Lee Hooper  
British Dietetic Association

Malcolm Metcalfe  
British Cardiac Society

Chris Monaco  
Society for Cardiological Science and Technology

Kevin O’Shaughnessy*  
Royal College of Physicians (clinical pharmacology)

Chakravarthi Rajkumar*  
British Geriatrics Society

Sara Richards  
Royal College of Nursing

Jonathan Richards*  
Royal College of General Practitioners

David Roberts  
British Cardiac Society

Christopher Spencer-Jones  
Faculty of Public Health Medicine

* Denotes members of the CRG who attended and contributed to one or more
GDG meetings

Please note – the British Psychological Society and the Royal College of
Psychiatrists both nominated representatives for the CRG, but both individuals
withdrew at too late a stage for replacements to be found.
## Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring its quality. The panels include experts on guideline methodology, health professionals and people with experience of the issues affecting patients and carers. The members of the Guideline Review Panel for this guideline were as follows.

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<thead>
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<th>Area of expertise/experience</th>
</tr>
</thead>
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<tr>
<td>Marcia Kelson</td>
<td>Patient and carer issues</td>
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<tr>
<td>Helena Shovelton</td>
<td>Patient and carer issues</td>
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<tr>
<td>Peter Rutherford</td>
<td>Methodology</td>
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<td>Rob Higgins</td>
<td>Clinical practice</td>
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<td>Fiona Wise</td>
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Appendix C: Information for the public

This will be inserted by NICE before printing.
### Appendix D: Technical detail on the criteria for audit

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Exception</th>
<th>Definition of terms</th>
</tr>
</thead>
</table>
| 1. ‘Disease register’  
Percentage of patients with a confirmed diagnosis of heart failure who are recorded in a practice heart failure register | | |
| 2. Readmission  
Readmission rate for heart failure at 30 days post discharge | Where a new morbid event occurs such as a cardiac event, chest infection. Unrealistic to expect an audit to be able to distinguish these from ‘preventable’ readmissions. | Readmission to hospital within 30 days of discharge with primary code for both admissions being heart failure |
| 3. Echocardiography  
Percentage of patients with a new diagnosis of heart failure (in the previous 12 months) who have had an echocardiogram | | |
| 4. Beta-blockers  
Percentage of patients with heart failure due to left ventricular systolic dysfunction who are prescribed a beta-blocker | Contraindications (see guideline text); or documented adverse events led to withdrawal of beta-blocker | |
| 5. ACE inhibitors  
Percentage of patients with left ventricular systolic dysfunction who are prescribed an ACE inhibitor (or an angiotensin II receptor antagonist if a documented adverse event led to withdrawal of ACE inhibitor) | Contraindications (see guideline text); or documented adverse events led to withdrawal of ACE inhibitor | |
| 6. Monitoring  
Percentage of patients with proven heart failure who are reviewed on a 6-monthly* basis  
* this is a minimum | | |
| 7. Care pathway  
Percentage of patients discharged from hospital with a (primary or secondary) diagnosis of heart failure for whom a management plan has been communicated to the primary | | |
<table>
<thead>
<tr>
<th>care team within 2 working days of discharge</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>8. Patient understanding</strong></td>
<td></td>
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<tr>
<td>All patients with heart failure receive a copy of the public version of the guideline</td>
<td></td>
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</tbody>
</table>