



**National Institute for
Health and Clinical Excellence**

Quick reference guide

Issue date: August 2010

Chronic heart failure

Management of chronic heart failure in adults
in primary and secondary care

This updates and replaces NICE clinical guideline 5



Introduction

Heart failure is a complex syndrome of symptoms and signs. Untreated it has a poor prognosis, but this can be improved considerably with early and optimal treatment. The most common causes of heart failure in the UK are coronary artery disease and hypertension; many patients have had a myocardial infarction in the past. Patients with heart failure are almost equally divided into those with left ventricular systolic dysfunction and those with preserved ejection fraction. Although the general approach to care is the same whether systolic function is reduced or not, most of the current evidence on drug treatment is for heart failure due to left ventricular systolic dysfunction.

About this booklet

This is a quick reference guide that summarises the recommendations NICE has made to the NHS in 'Chronic heart failure: management of chronic heart failure in adults in primary and secondary care' (NICE clinical guideline 108).

This guidance updates and replaces NICE clinical guideline 5 (published July 2003). New and updated recommendations are included on diagnosis, pharmacological treatment, monitoring and rehabilitation.

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NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

Patient-centred care

Treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care. Follow advice on seeking consent from the Department of Health or Welsh Assembly Government if needed. If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Key to terms

Specialist

Throughout this guideline, the term 'specialist' denotes a physician with subspecialty interest in heart failure (often a consultant cardiologist) who leads a specialist multidisciplinary heart failure team of professionals with appropriate competencies from primary and secondary care. The team will involve, where necessary, other services (such as rehabilitation, tertiary care and palliative care) in the care of individual patients.

Unless otherwise specified, within this guideline specialist assessment or management refers to assessment or management by this specialist multidisciplinary heart failure team. The team will decide who is the most appropriate team member to address a particular clinical problem.

Key priorities for implementation

Recommendations that have been identified as priorities for implementation are marked with **KPI**.

Referral and approach to care

Multidisciplinary approach to care

- Ensure an integrated approach to care delivered by a multidisciplinary team.

Specialist advice

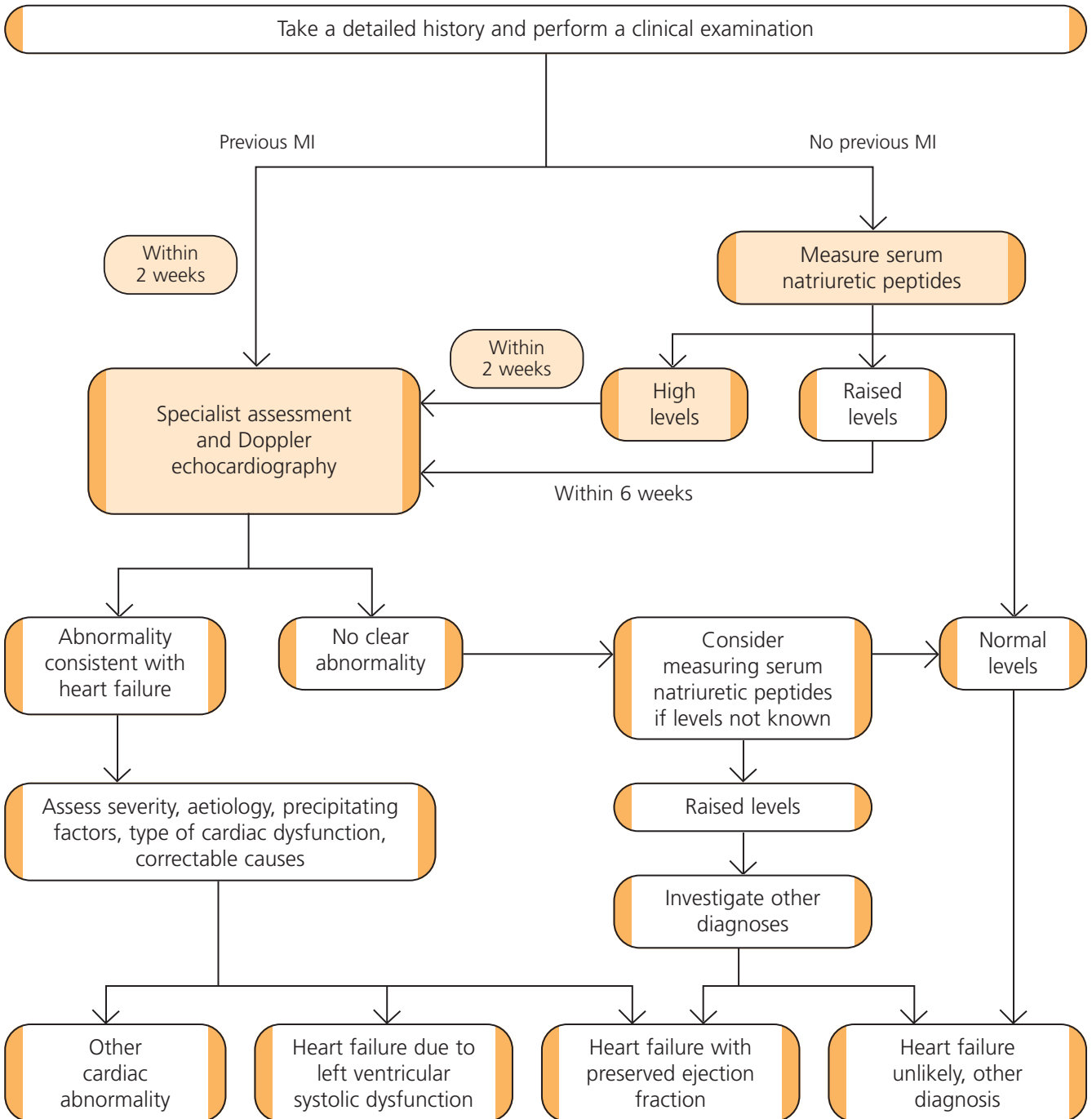
- Refer patients to the specialist multidisciplinary heart failure team in the following situations.
 - Initial diagnosis of heart failure.
 - Management of severe heart failure (NYHA¹ class IV), heart failure that does not respond to treatment, heart failure due to valve disease, or heart failure that can no longer be managed at home.
 - Advice and care of women who are planning a pregnancy or are pregnant. Care of pregnant women should be shared between the cardiologist and obstetrician.

Patients with previous MI

- Refer patients with suspected heart failure and previous myocardial infarction (MI) urgently, to have transthoracic Doppler 2D echocardiography and specialist assessment within 2 weeks. **KPI**

¹ The New York Heart Association classification of heart failure.

Diagnosing heart failure



Serum natriuretic peptides
 High levels – BNP > 400 pg/ml (116 pmol/litre) or NTproBNP > 2000 pg/ml (236 pmol/litre)
 Raised levels – BNP 100–400 pg/ml (29–116 pmol/litre) or NTproBNP 400–2000 pg/ml (47–236 pmol/litre)
 Normal levels – BNP < 100 pg/ml (29 pmol/litre) or NTproBNP < 400 pg/ml (47 pmol/litre)

Echocardiography

- Perform transthoracic Doppler 2D echocardiography to exclude important valve disease, assess systolic (and diastolic) function of the (left) ventricle, and detect intracardiac shunts.
- Ensure that:
 - echocardiography is performed on high-resolution equipment by experienced trained operators
 - demand does not compromise quality
 - those reporting echocardiography are experienced in doing so.
- When a poor image is produced by transthoracic Doppler 2D echocardiography, consider other imaging methods, such as radionuclide angiography, cardiac magnetic resonance imaging or transoesophageal Doppler 2D echocardiography.

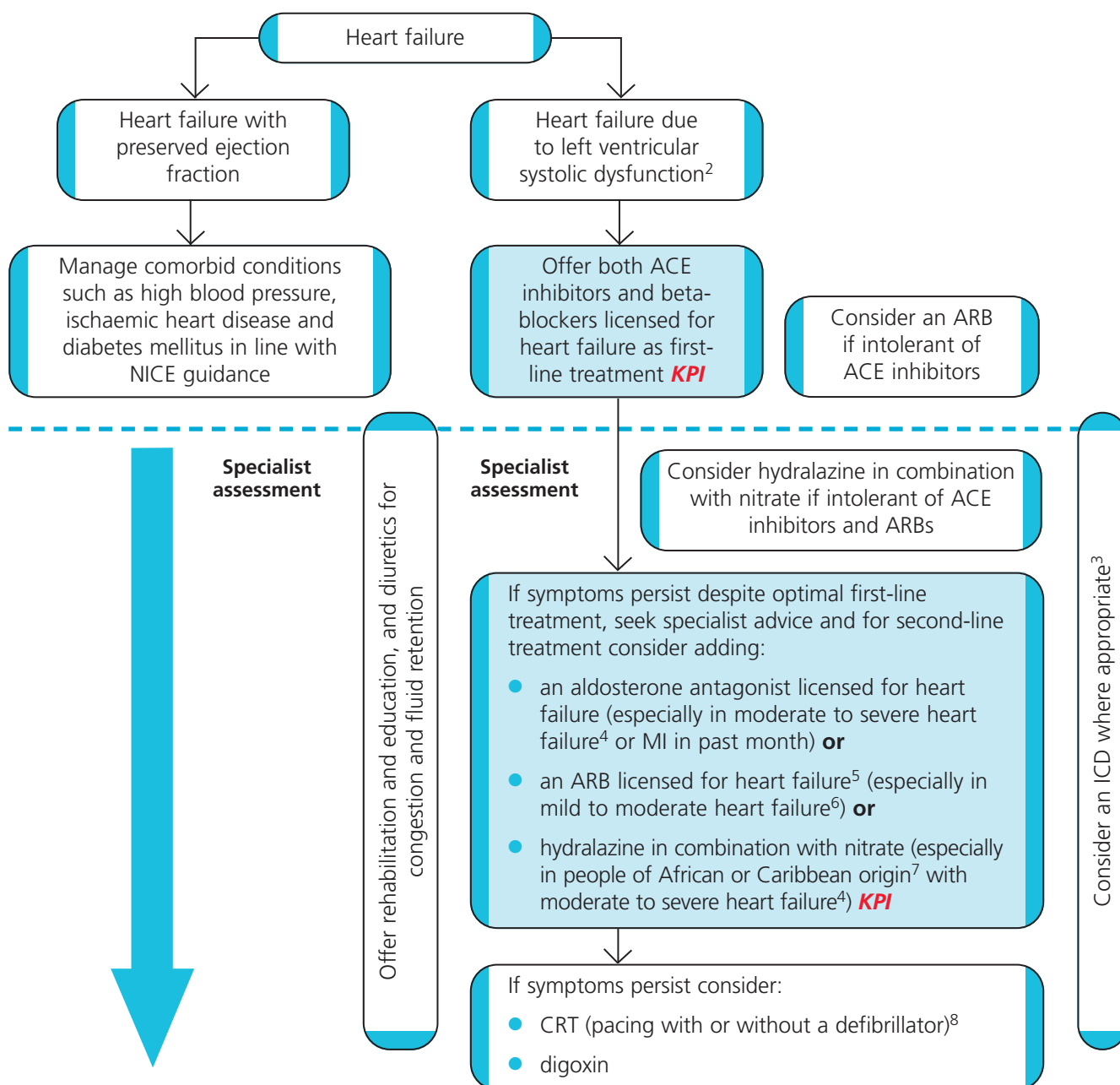
Serum natriuretic peptides

- Measure serum natriuretic peptides (B-type natriuretic peptide [BNP] or N-terminal pro-B-type natriuretic peptide [NTproBNP]) in patients with suspected heart failure without previous MI. **KPI**
- Because very high levels of serum natriuretic peptides carry a poor prognosis, refer patients with suspected heart failure and a BNP level above 400 pg/ml (116 pmol/litre) or an NTproBNP level above 2000 pg/ml (236 pmol/litre) urgently, to have transthoracic Doppler 2D echocardiography and specialist assessment within 2 weeks. **KPI**
- Be aware that:
 - very high levels carry a poor prognosis
 - BNP < 100 pg/ml (29 pmol/litre) or NTproBNP < 400 pg/ml (47 pmol/litre) in an untreated patient make heart failure unlikely
 - the level does not differentiate between heart failure due to left ventricular systolic dysfunction and heart failure with preserved ejection fraction
 - obesity, diuretics, ACE inhibitors, beta-blockers, ARBs and aldosterone antagonists can reduce levels
 - high levels can have causes other than heart failure (left ventricular hypertrophy, ischaemia, tachycardia, right ventricular overload, hypoxaemia [including pulmonary embolism], GFR < 60 ml/minute, sepsis, COPD, diabetes, age > 70 and liver cirrhosis).

Tests for evaluating possible aggravating factors and alternative diagnoses

- Perform an ECG.
- Consider chest X-ray, blood tests (electrolytes, urea and creatinine, eGFR [estimated glomerular filtration rate], thyroid function tests, liver function tests, fasting lipids, fasting glucose, full blood count), urinalysis and peak flow or spirometry.

Treating heart failure



² For more information on drug treatment see appendix D of the NICE guideline and 'Chronic kidney disease' (NICE clinical guideline 73).

³ Consider an ICD in line with 'Implantable cardiovascular defibrillators for arrhythmias' (NICE technology appraisal guidance 95).

⁴ NYHA class III–IV.

⁵ Not all ARBs are licensed for use in heart failure in combination with ACE inhibitors.

⁶ NYHA class II–III.

⁷ This does not include mixed race. For more information see the full guideline at www.nice.org.uk/guidance/CG108

⁸ Consider CRT in line with 'Cardiac resynchronisation therapy for the treatment of heart failure' (NICE technology appraisal guidance 120).

Drug treatment for heart failure due to left ventricular systolic dysfunction

ACE inhibitors (first-line treatment with beta-blockers)

- Optimise dose by starting low and titrating upwards at short intervals (for example, every 2 weeks).
- Measure serum urea, creatinine, electrolytes and eGFR at initiation and after each dose increment⁹.

Beta-blockers (first-line treatment with ACE inhibitors)

- Offer beta-blockers licensed for heart failure to all patients with heart failure due to left ventricular systolic dysfunction, including:
 - older adults **and**
 - patients with:
 - ◆ peripheral vascular disease
 - ◆ interstitial pulmonary disease
 - ◆ erectile dysfunction
 - ◆ chronic obstructive pulmonary disease (COPD) without reversibility. **KPI**
 - ◆ diabetes mellitus
- Introduce in a 'start low, go slow' manner and assess heart rate, blood pressure and clinical status after each titration.
- Switch stable patients who are already taking a beta-blocker for a comorbidity to a beta-blocker licensed for heart failure.

Aldosterone antagonists licensed for heart failure (option for second-line treatment)

- Seek specialist advice and consider as an option for second-line treatment, especially in moderate to severe heart failure (NYHA class III–IV) or MI in past month.
- Monitor potassium and creatinine levels and eGFR. Seek specialist advice if hyperkalaemia develops or renal function deteriorates¹⁰.

ARBs (angiotensin II receptor antagonists) licensed for heart failure (alternative first-line treatment or option for second-line treatment)

- Consider as an alternative to an ACE inhibitor for patients who have intolerable side effects with ACE inhibitors.
- Seek specialist advice and consider as an option for second-line treatment, especially in mild to moderate heart failure (NYHA class II–III).
- Monitor serum urea, electrolytes, creatinine and eGFR for signs of renal impairment and hyperkalaemia⁹.

Hydralazine in combination with nitrate (alternative first-line treatment or option for second-line treatment)

- Seek specialist advice and consider for patients who are intolerant of ACE inhibitors and ARBs.
- Seek specialist advice and consider as an option for second-line treatment, especially in people of African or Caribbean origin¹¹ with moderate to severe heart failure (NYHA class III–IV).

⁹ For more information see appendix D of the NICE guideline and 'Chronic kidney disease' (NICE clinical guideline 73).

¹⁰ For more information see appendix D of the NICE guideline.

¹¹ This does not include mixed race. For more information see the full guideline at www.nice.org.uk/guidance/CG108

Drug treatment for all types of heart failure

Drug	Advice
Diuretics	Titrate up and down as needed Offer a low to medium dose of loop diuretics to patients with heart failure with preserved ejection fraction
Calcium channel blockers	Consider amlodipine for comorbid hypertension and/or angina but avoid verapamil, diltiazem and short-acting dihydropyridine agents
Amiodarone	Consult a specialist before offering amiodarone. Review need regularly and carry out a routine 6-monthly clinical review, including liver and thyroid function tests and a review of side effects
Anticoagulants¹²	Consider for patients in sinus rhythm with a history of thromboembolism, left ventricular aneurysm or intracardiac thrombus
Aspirin	Offer 75–150 mg once daily to patients with atherosclerotic arterial disease (including coronary heart disease)
Inotropic agents	Only consider intravenous inotropic agents (such as dobutamine, milrinone or enoximone) for the short-term treatment of acute decompensation after specialist advice
ACE inhibitors	Do not initiate in patients with suspected valve disease until the valve disease has been assessed by a specialist

General

- Older patients may have lower drug tolerance and need more frequent monitoring for side effects.
- Discuss contraception and pregnancy with women of childbearing age and consider the potential teratogenic effects of drugs.
- Otherwise the principles of pharmacological management should be the same irrespective of age, gender, or place of care.

Medicines adherence

- Keep dosing regimens as simple as possible and ensure that patients and carers are kept fully informed.

¹² See also 'Atrial fibrillation' (NICE clinical guideline 36) for recommendations on the use of anticoagulants in patients with atrial fibrillation.

Invasive procedures

- Do not routinely consider coronary revascularisation in patients with heart failure due to left ventricular systolic dysfunction unless they have refractory angina.
- Consider specialist referral for transplantation in patients with severe refractory symptoms or refractory cardiogenic shock.
- For guidance on cardiac resynchronisation therapy (CRT), refer to 'Cardiac resynchronisation therapy for the treatment of heart failure' (NICE technology appraisal guidance 120). See www.nice.org.uk/guidance/TA120 for an update on the review status of this appraisal.
- For guidance on implantable cardioverter defibrillators (ICDs), refer to 'Implantable cardioverter defibrillators for arrhythmias' (NICE technology appraisal guidance 95). See www.nice.org.uk/guidance/TA95 for an update on the review status of this appraisal.

Lifestyle advice for patients with heart failure

Advice	
Exercise	See 'Rehabilitation'
Smoking	Strongly advise patients not to smoke Consider referral to smoking cessation services
Alcohol	Advise patients with alcohol-related heart failure to abstain Discuss consumption with other patients and tailor advice to clinical circumstances
Sexual activity	Be prepared to broach sensitive issues such as sexual activity
Vaccination	Offer: <ul style="list-style-type: none"> • an annual vaccination against influenza • a one-off vaccination against pneumococcal disease
Air travel	Consider clinical circumstances when advising about air travel
Driving regulations	Check the latest Driver and Vehicle Licensing Agency guidelines for drivers of large goods and passenger carrying vehicles (see www.dft.gov.uk/dvla for regular updates)

Monitoring

Clinical review

- Monitor all patients. Include:
 - clinical assessment of functional capacity, fluid status, cardiac rhythm (minimum of examining the pulse), cognitive status and nutritional status
 - a review of drug treatment, including need for changes and possible side effects
 - a minimum of serum urea, electrolytes, creatinine and eGFR¹³. **KPI**
- Monitor at short intervals (days to 2 weeks) if the clinical condition or drug treatment has changed. Otherwise monitor at least 6-monthly.
- Offer patients information and support if they wish to be involved in monitoring their condition. Ensure they know what to do if their condition deteriorates.

When a patient is admitted to hospital because of heart failure, seek advice on their management plan from a specialist in heart failure. **KPI**

Serum digoxin

- Do not monitor routinely but consider a measurement within 8–12 hours of the last dose if toxicity or non-adherence is suspected.
- Interpret in the clinical context because toxicity can occur in the 'therapeutic range'.

Serum natriuretic peptides

- Consider specialist monitoring in some patients (for example, those in whom up-titration is problematic or those admitted to hospital).

¹³ This is a minimum. Patients with comorbidities or co-prescribed medications will require further monitoring. Monitoring serum potassium is particularly important if a patient is taking digoxin or an aldosterone antagonist.

Rehabilitation

Offer a supervised group exercise-based rehabilitation programme designed for patients with heart failure.

- Ensure the patient is stable and does not have a condition (such as uncontrolled ventricular response to atrial fibrillation, or uncontrolled hypertension) or device (for example, a high-energy pacing device set to be activated at rates achieved during exercise) that would preclude the programme.
- Include a psychological and educational component in the programme.
- The programme may be incorporated within an existing cardiac rehabilitation programme. **KPI**

Discharge planning and long-term care

Discharge planning

- Discharge patients from hospital only when their condition is stable and their management plan optimised. When considering the timing of discharge take account of:
 - patient and carer wishes
 - level of care and support available in the community. *KPI*
- Ensure that:
 - the primary care team, patient and carers are aware of the management plan
 - the patient and their carers are given clear instructions about how they can get advice, particularly in the high-risk period immediately after discharge
 - management plans are discussed with non-NHS agencies involved in patient care and the educational needs of any non-NHS agency carers are considered.

Prognosis

- Discuss prognosis with patients and carers in a sensitive, open and honest manner.

Anxiety and depression

- Consider a diagnosis of depression in patients with heart failure.
- Reassess psychological status once heart failure has stabilised.
- Carefully consider the risks and benefits of drug treatment for depression.
- Consider treatment in line with 'Depression' (NICE clinical guideline 90) and 'Depression in adults with a chronic physical health problem' (NICE clinical guideline 91).
- Ask about any self-medication for depression, including herbal products such as St John's wort.

End of life

- Ensure that patients and carers have the opportunity at all stages of care to discuss issues of sudden death and living with uncertainty.
- Identify and manage palliative care needs as soon as possible.
- Ensure patients and carers have access to healthcare professionals within the heart failure team who have skills in palliative care.

Further information

Ordering information

You can download the following documents from www.nice.org.uk/guidance/CG108

- The NICE guideline – all the recommendations.
- A quick reference guide (this document) – a summary of the recommendations for healthcare professionals.
- ‘Understanding NICE guidance’ – a summary for patients and carers.
- The full guidelines – all the recommendations, details of how they were developed, and reviews of the evidence they were based on.

For printed copies of the quick reference guide or ‘Understanding NICE guidance’, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk and quote:

- N2268 (quick reference guide)
- N2269 (‘Understanding NICE guidance’).

Implementation tools

NICE has developed tools to help organisations implement this guidance (see www.nice.org.uk/guidance/CG108).

Related NICE guidance

For information about NICE guidance that has been issued or is in development, see www.nice.org.uk

Updating the guideline

This guideline will be updated as needed, and information about the progress of any update will be available at www.nice.org.uk/guidance/CG108

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