NICE National Institute for Health and Care Excellence

NICE guideline

Chronic heart failure in adults: diagnosis and management

NICE guideline
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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guideline replaces CG108.

This guideline is the basis of QS167, QS9 and QS181.

Overview

This guideline covers diagnosing and managing chronic heart failure in people aged 18 and over. It aims to improve diagnosis and treatment to increase the length and quality of life for people with heart failure.

NICE has also produced a guideline on acute heart failure.

Who is it for?

- Healthcare professionals
- People with heart failure and their families and carers

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

Healthcare professionals should follow our general guidelines for people delivering care:

- patient experience in adult NHS services
- shared decision making
- medicines adherence
- medicines optimisation
- multimorbidity

1.1 Team working in the management of heart failure

1.1.1 The specialist heart failure multidisciplinary team (MDT) should work in collaboration with the primary care team, and should include a:

- lead physician with subspecialty training in heart failure (usually a consultant cardiologist) who is responsible for making the clinical diagnosis
- specialist heart failure nurse
- healthcare professional with expertise in specialist prescribing for heart failure, for example, a specialist heart failure pharmacist. **[2018 amended 2025]**

1.1.2 The specialist heart failure MDT should:

- diagnose heart failure
- give information to people with newly diagnosed heart failure (see the section on giving information to people with heart failure)
- manage newly diagnosed, recently decompensated or advanced heart failure (New York Heart Association class III to IV)
- optimise treatment
- start new medicines that need specialist supervision
- continue to manage heart failure after an interventional procedure such as implantation of a cardioverter defibrillator or cardiac resynchronisation device
- manage heart failure that is not responding to treatment. **[2018]**

1.1.3 The specialist heart failure MDT should directly involve, or refer people to, other services, including rehabilitation, services for older people and palliative care services, as needed. **[2018]**

1.1.4 The primary care team should carry out the following, at all times, for people with heart failure, including during periods when the person is also receiving specialist heart failure care from the MDT:

- ensure effective communication links between different care settings and clinical services involved in the person's care
- lead a full review of the person's heart failure care, which may form part of a long-term conditions review
- recall the person at least every 6 months and update the clinical record
- ensure that changes to the clinical record are understood and agreed by the person with heart failure and shared with the specialist heart failure MDT
- arrange access to specialist heart failure services if needed. **[2018]**

Care after an acute event

For recommendations on the diagnosis and management of acute heart failure, see NICE's guideline on acute heart failure.

1.1.5 Discharge people with heart failure from hospital when their clinical condition is stable, and a management plan is in place. Take into account the wishes of the person and their family or carers, and the level of care and support that can be provided in the community. **[2003]**

1.1.6 The primary care team should take over routine management of heart failure as soon as it has been stabilised and its management optimised. **[2018]**

Writing a care plan

1.1.7 The specialist heart failure MDT should write a summary for each person with heart failure that includes:

- diagnosis and aetiology
- medicines prescribed, monitoring of medicines, when medicines should be reviewed and any support the person needs to take the medicines
- functional abilities and any social care needs
- social circumstances, including carers' needs. **[2018]**

1.1.8 Use the summary as the basis of the person's care plan, which should include:

- plans for managing the person's heart failure, including follow-up care, rehabilitation and access to social care
- symptoms to look out for in case of deterioration
- a process for any subsequent access to the specialist heart failure MDT if needed
- contact details for

  - a named healthcare coordinator (usually a specialist heart failure nurse)
  - alternative local heart failure specialist care providers, for urgent care or review.
- additional sources of information for people with heart failure. **[2018]**

1.1.9 Give a copy of the care plan to the person with heart failure, their family or carers if appropriate, and all health and social care professionals involved in their care. **[2018]**

1.2 Diagnosing heart failure

Symptoms, signs and investigations

1.2.1 Take a history and perform a clinical examination and tests to confirm the presence of heart failure. **[2010]**

1.2.2 Measure N-terminal pro-B-type natriuretic peptide (NT-proBNP) in people with suspected heart failure. **[2018]**

1.2.3 Because very high levels of NT-proBNP carry a poor prognosis, refer people with suspected heart failure and an NT-proBNP level more than 2,000 nanogram per litre (236 picomole per litre) urgently, to have specialist assessment and transthoracic echocardiography within 2 weeks. **[2018]**

1.2.4 Refer people with suspected heart failure and an NT-proBNP level between 400 and 2,000 nanogram per litre (47 to 236 pmol per litre) to have specialist assessment and transthoracic echocardiography within 6 weeks. **[2018]**

1.2.5 Be aware that:

- an NT-proBNP level of less than 400 nanogram per litre (47 pmol per litre) in an untreated person makes a diagnosis of heart failure less likely
- the level of serum natriuretic peptide does not differentiate between heart

failure with preserved, mildly reduced and reduced ejection fraction. **[2018, amended 2025]**

1.2.6 Review alternative causes for symptoms of heart failure in people with NT-proBNP levels of less than 400 nanogram per litre. If there is still concern that the symptoms might be related to heart failure, discuss with a physician with subspeciality training in heart failure. **[2018]**

1.2.7 Be aware that:

- obesity, African or African–Caribbean ethnic background, or treatment with the following can reduce levels of serum natriuretic peptides:
  - a diuretic
  - an angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor-neprilysin inhibitor (ARNI) or angiotensin II receptor blocker (ARB)
  - a beta-blocker
  - a mineralocorticoid receptor antagonist (MRA)
- high levels of serum natriuretic peptides can have causes other than heart failure (for example, pulmonary, renal, liver and systemic pathologies, sepsis, chronic obstructive pulmonary disease, diabetes, or cirrhosis of the liver). **[2010, amended 2025]**

1.2.8 Perform transthoracic echocardiography to exclude important valve disease, assess the systolic (and diastolic) function of the left ventricle and detect intracardiac shunts. See the section on referral for echocardiography and specialist assessment in NICE's guideline on heart valve disease. **[2003, amended 2018]**

1.2.9 Use high-resolution equipment operated by someone trained to the relevant professional standards to perform transthoracic echocardiography. Do not allow the need and demand for these investigations to compromise quality. **[2003, amended 2018]**

1.2.10 Ensure that those reporting echocardiography are experienced in doing so. **[2003]**

1.2.11 Think about alternative methods of imaging the heart (for example, radionuclide angiography [multigated acquisition scanning], cardiac MRI or transoesophageal echocardiography) if a poor image is produced by transthoracic echocardiography. **[2003, amended 2018]**

1.2.12 Perform an ECG and consider the following tests to evaluate possible aggravating factors or alternative diagnoses:

- chest X-ray
- blood tests:
  - renal function profile
  - thyroid function profile
  - liver function profile
  - lipid profile
  - glycosylated haemoglobin (HbA_{1c})
  - full blood count
- urinalysis
- peak flow or spirometry. **[2010, amended 2018]**

1.2.13 Try to exclude other disorders that may present in a similar manner. **[2003]**

1.2.14 When a diagnosis of heart failure has been made, assess severity, aetiology, precipitating factors, type of cardiac dysfunction and correctable causes. **[2010]**

Heart failure caused by valve disease

1.2.15 Refer people with heart failure caused by valve disease for specialist assessment

and advice regarding follow-up. See the section on referral for echocardiography and specialist assessment in NICE's guideline on heart valve disease. **[2003]**

Reviewing existing diagnoses

1.2.16 Review the basis for a historical diagnosis of heart failure and manage care in accordance with this guideline only if the diagnosis is confirmed with cardiac imaging. **[2003]**

1.2.17 If heart failure is still suspected, but an underlying cardiac abnormality has not been identified, then refer to the specialist heart failure team. **[2003]**

1.3 Giving information to people with heart failure

1.3.1 Discuss the person's prognosis in a sensitive, open and honest manner. Be frank about the uncertainty in predicting the course of their heart failure. Revisit this discussion as the person's condition evolves. **[2018]**

First consultations for people with newly diagnosed heart failure

1.3.2 The specialist heart failure multidisciplinary team (MDT) should offer people with newly diagnosed heart failure an extended first consultation, followed by a second consultation to take place within 2 weeks if possible. At each consultation:

- discuss the person's diagnosis and prognosis
- explain heart failure terminology
- discuss treatments
- discuss the risk of sudden death, including any misconceptions about that risk
- encourage the person and their family or carers to ask any questions they

have. **[2018]**

1.4 Treating people with newly diagnosed and pre-existing heart failure with reduced ejection fraction

See recommendations 1.7.1 and 1.7.2 for guidance on how to introduce the medicines listed in recommendations 1.4.1, 1.4.3 and 1.4.4. See also the section on other treatments and advice for all types of heart failure.

Treatment combinations

1.4.1 Offer an angiotensin-converting enzyme (ACE) inhibitor, a beta-blocker, a mineralocorticoid receptor antagonist (MRA) and a sodium-glucose cotransporter-2 (SGLT2) inhibitor to people with heart failure with reduced ejection fraction. **[2025]**

1.4.2 For people on the maximum tolerated dose of each of the 4 medicines who continue to have symptoms of heart failure, consider switching the ACE inhibitor to an angiotensin receptor-neprilysin inhibitor (ARNI). **[2025]**

Alternative treatment combinations if certain medicines are not tolerated

1.4.3 For people with heart failure with reduced ejection fraction who have symptoms of intolerance to ACE inhibitors (other than angioedema), offer an ARNI, beta-blocker, MRA and SGLT2 inhibitor. **[2025]**

1.4.4 For people with angioedema after taking an ACE inhibitor, or who have symptoms of intolerance to ARNIs:

- offer a beta-blocker, MRA and SGLT2 inhibitor **and**
- consider an ARB. **[2025]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on treatment combinations for heart failure with reduced ejection fraction.

Full details of the evidence and the committee's discussion are in evidence review A: medicines for heart failure with reduced ejection fraction.

Intravenous iron therapy

1.4.5 In people with heart failure with reduced ejection fraction, assess iron status and check for anaemia with all of the following blood tests:

- transferrin saturation (TSAT)
- serum ferritin
- haemoglobin. **[2025]**

1.4.6 Consider iron sucrose, ferric carboxymaltose or ferric derisomaltose for people with heart failure with reduced ejection fraction and haemoglobin of less than 150 g per litre if they have iron deficiency defined as:

- TSAT of less than 20% or
- serum ferritin of less than 100 nanogram per ml. **[2025]**

1.4.7 If iron deficiency anaemia is identified, do not assume that it is related to the person's heart failure and think about investigating for alternative causes. **[2025]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on IV iron therapy for heart failure with reduced ejection fraction.

Full details of the evidence and the committee's discussion are in evidence review C: IV iron therapy for heart failure.

Specialist treatment

Ivabradine

1.4.8 Ivabradine is recommended as an option in NICE technology appraisal guidance for treating heart failure with reduced ejection fraction. For full details, see the guidance on ivabradine (TA267, 2012).

Hydralazine in combination with nitrate

1.4.9 If ACE inhibitors, ARNIs and ARBs are not tolerated, seek specialist advice and consider hydralazine in combination with nitrate. **[2010, amended 2025]**

1.4.10 Seek specialist advice about whether to offer hydralazine in combination with nitrate (especially if the person is of African or Caribbean ethnicity and has moderate to severe heart failure [New York Heart Association class III/IV] with reduced ejection fraction). **[2010]**

Digoxin

For recommendations on digoxin for people with atrial fibrillation, see the section on rate and rhythm control in NICE's guideline on atrial fibrillation.

1.4.11 Offer digoxin to people with worsening or severe heart failure with reduced ejection fraction despite optimised treatment combinations as detailed in recommendations 1.4.1 to 1.4.4. Seek specialist advice before starting treatment. **[2010, amended 2025]**

Calcium-channel blockers

1.4.12 Avoid verapamil, diltiazem and short-acting dihydropyridine agents in people with heart failure with reduced ejection fraction. **[2003, amended 2018]**

1.5 Treating people with newly diagnosed and pre-existing heart failure with mildly reduced or preserved ejection fraction

Mildly reduced ejection fraction

See recommendations 1.7.1 and 1.7.2 for guidance on how to introduce the medicines listed in recommendations 1.5.1 to 1.5.3. See also the section on other treatments and advice for all types of heart failure.

1.5.1 Consider an angiotensin-converting enzyme (ACE) inhibitor, a beta-blocker, a mineralocorticoid receptor antagonist (MRA) and a sodium-glucose cotransporter-2 (SGLT2) inhibitor for treating heart failure with mildly reduced ejection fraction. See also recommendation 1.5.3. **[2025]**

1.5.2 For people who have symptoms of intolerance to ACE inhibitors, consider an angiotensin-receptor blocker (ARB), a beta-blocker, an MRA and an SGLT2 inhibitor. See also recommendation 1.5.3 **[2025]**

1.5.3 For SGLT2 inhibitors recommended as options in NICE technology appraisal guidance for treating heart failure with mildly reduced ejection fraction, see the guidance on:

- empagliflozin (TA929, 2023)
- dapagliflozin (TA902, 2023).

For a short explanation of why the committee made the 2025 recommendations and how they might affect practice, see the rationale and impact section on treatment combinations for heart failure with mildly reduced ejection fraction.

Full details of the evidence and the committee's discussion are in evidence review B: medicines for heart failure with mildly reduced ejection fraction.

Preserved ejection fraction

See recommendations 1.7.1 and 1.7.2 for guidance on how to introduce the medicines listed in recommendations 1.5.4 and 1.5.5. See also the section on other treatments and advice for all types of heart failure.

1.5.4 Consider an MRA and an sodium-glucose cotransporter-2 (SGLT2) inhibitor for treating heart failure with preserved ejection fraction. See also recommendation 1.5.5. **[2025]**

1.5.5 For SGLT2 inhibitors recommended as options in NICE technology appraisal guidance for treating heart failure with preserved ejection fraction, see the guidance on:

- empagliflozin (TA929, 2023)
- dapagliflozin (TA902, 2023).

For a short explanation of why the committee made the 2025 recommendation and how it might affect practice, see the rationale and impact section on treatment combinations for heart failure with preserved ejection fraction.

Full details of the evidence and the committee's discussion are in evidence review D: MRA for heart failure with preserved ejection fraction.

1.6 Treating heart failure in people with chronic kidney disease

1.6.1 If the person's eGFR is 45 ml per minute per 1.73 m^2 or less, consider lower starting doses and smaller dose increments for the medicine combinations covered by recommendations 1.4.1, 1.4.3, 1.4.4, and 1.5.1 to 1.5.5. **[2018, amended 2025]**

1.6.2 If the person's eGFR is less than 30 ml per minute per 1.73 m^2, the specialist heart failure multidisciplinary team (MDT) should consider liaising with a renal physician. **[2018, amended 2025]**

1.7 Starting and monitoring medication use

Tailoring treatment

1.7.1 Use the person's medical history and findings from their clinical assessment, their frailty status, prognosis and preferences when deciding:

- which specific medicines and medicine combinations to use (see recommendations 1.4.1, 1.4.3, 1.4.4 and 1.5.1 to 1.5.5)
- the order and timing for introducing each medicine
- the initial dose of each medicine and any subsequent dose increments
- when and how to optimise the dose of each medicine.

See also NICE's guideline on shared decision making. **[2025]**

1.7.2 Primary care prescribers should consider seeking advice from a heart failure specialist before starting someone on an angiotensin receptor-neprilysin inhibitor (ARNI). **[2025]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on starting and monitoring medicine use.

Full details of the evidence and the committee's discussion are in evidence review A: medicines for heart failure with reduced ejection fraction.

ACE inhibitors, ARNIs, ARBs and MRAs

1.7.3 Before prescribing an angiotensin-converting enzyme (ACE) inhibitor, angiotensin receptor-neprilysin inhibitor (ARNI), angiotensin II receptor blocker (ARB) or mineralocorticoid receptor antagonist (MRA), measure the person's renal function and electrolyte levels. **[2025]**

1.7.4 If the person is taking an ACE inhibitor, ARNI, ARB or MRA, measure their renal function and electrolyte levels:

- 1 to 2 weeks after starting treatment
- 1 to 2 weeks after each dose increment
- every 3 to 6 months once the maximum tolerated dose has been established
- any time renal function may be compromised. **[2025]**

1.7.5 If the person's serum creatinine level increases by more than 50% or their potassium concentration increases to more than 5.5 mmol per litre, follow local guidelines. **[2025]**

1.7.6 For potassium binders recommended as options in NICE technology appraisal guidance for treating hyperkalaemia, see the guidance on:

- patiromer (TA623, 2020)
- sodium zirconium cyclosilicate (TA599, 2022).

1.7.7 Measure the person's blood pressure, or ask the person to measure their own blood pressure, before and after each dose increment. **[2025]**

1.7.8 For people with symptoms of postural hypotension, measure blood pressure according to recommendation 1.1.5 in NICE's guideline on hypertension in adults. **[2025]**

For a short explanation of why the committee made the 2025 recommendations and how they might affect practice, see the rationale and impact section on starting and monitoring medicine use.

Full details of the evidence and the committee's discussion are in the evidence reviews A: medicines for heart failure with reduced ejection fraction, B: medicines for heart failure with mildly reduced ejection fraction and D: MRA for heart failure with preserved ejection fraction.

Beta-blockers

1.7.9 Do not withhold treatment with a beta-blocker solely because of age or the presence of peripheral vascular disease, erectile dysfunction, diabetes, interstitial pulmonary disease or chronic obstructive pulmonary disease. **[2010]**

1.7.10 Assess for heart rhythm, heart rate and conduction abnormalities using a 12-lead ECG before deciding whether to prescribe a beta-blocker. **[2025]**

1.7.11 Do not offer a beta-blocker to people with second-degree or third-degree heart block who do not have a pacemaker or to people with bradycardia (that is, a heart rate of less than 50 beats per minute). **[2025]**

1.7.12 Assess heart rate and clinical status after each dose increment. **[2010]**

1.7.13 For people with symptoms and bradycardia, consider repeating a 12-lead ECG after each dose increment. **[2025]**

For a short explanation of why the committee made the 2025 recommendations and how they might affect practice, see the rationale and impact section on starting and monitoring medicine use.

Full details of the evidence and the committee's discussion are in evidence review A: medicines for heart failure with reduced ejection fraction.

Digoxin

1.7.14 Do not routinely monitor serum digoxin concentrations. Be aware that a digoxin concentration measured within 8 to 12 hours of the last dose may be useful to confirm a clinical impression of toxicity or non-adherence. **[2003]**

1.7.15 Interpret the serum digoxin concentration in the clinical context as toxicity may occur even when the concentration is within the therapeutic range. **[2003]**

1.8 Clinical review

1.8.1 Monitor all people with heart failure. Provide:

- a clinical assessment of functional capacity, fluid status, cardiac rhythm (minimum of examining the pulse), cognitive status and nutritional status
- a review of medication, including need for changes and possible side effects
- an assessment of renal function
- iron status and haemoglobin measurement.

Note: This is a minimum. Provide further monitoring for people with comorbidities or co-prescribed medications. **[2010, amended 2025]**

1.8.2 Provide more detailed monitoring if the person has significant comorbidity or if their condition has deteriorated since the previous review. **[2003]**

1.8.3 Determine the frequency of monitoring based on the person's clinical status and the stability of their condition. If the person's clinical condition or medication has changed, use a short timeframe for monitoring (days to every 2 weeks). For stable people with proven heart failure, monitor at least every 6 months. **[2003]**

1.8.4 For people with heart failure who want to be involved in monitoring their condition, provide sufficient education and support from their healthcare professional to enable this to happen, with clear guidance on what to do in the event of deterioration. **[2003]**

People under 75 with normal renal function

1.8.5 For people aged under 75 in specialist care settings with heart failure with reduced ejection fraction and an estimated glomerular filtration rate (eGFR) more than 60 ml per minute per 1.73 m^2, consider measuring N-terminal pro-B-type natriuretic peptide as part of optimising treatment. **[2018]**

1.9 Other treatments and advice for all types of heart failure

Diuretics

1.9.1 Use diuretics for the relief of congestive symptoms and fluid retention in people with heart failure and titrate (up and down) according to need using the lowest dose required. **[2003]**

Amiodarone

1.9.2 Make the decision to prescribe amiodarone in consultation with a specialist. **[2003]**

1.9.3 Review the need to continue the amiodarone prescription at the 6-monthly clinical review. **[2003, amended 2018]**

1.9.4 Offer people taking amiodarone liver and thyroid function tests, and a review of side effects, as part of their routine 6-monthly clinical review. **[2003, amended 2018]**

Anticoagulants

1.9.5 For people with heart failure and atrial fibrillation, follow the recommendations on anticoagulation in the section on stroke prevention in NICE's guideline on atrial fibrillation. Be aware of the effects of impaired renal and liver function on anticoagulant therapies. **[2018]**

1.9.6 In people with heart failure in sinus rhythm, consider anticoagulation for those with a history of thromboembolism, left ventricular aneurysm or intracardiac thrombus. **[2003]**

Vaccinations

1.9.7 Offer people with heart failure an annual vaccination against influenza. **[2003]**

1.9.8 Offer people with heart failure vaccination against pneumococcal disease (only required once). **[2003]**

Contraception and pregnancy

1.9.9 For women, trans men and non-binary people of childbearing potential with heart failure, discuss contraception and pregnancy. If pregnancy is being contemplated or occurs, seek specialist advice. Subsequently, share specialist care between the cardiologist and obstetrician. **[2003]**

Depression

See NICE's guideline on depression in adults with a chronic physical health problem.

Salt and fluid restriction

1.9.10 Do not routinely advise people with heart failure to restrict their sodium or fluid consumption. Ask about salt and fluid consumption and, if needed, advise as follows:

- restricting fluids for people with dilutional hyponatraemia
- reducing intake for people with high levels of salt or fluid consumption.

Continue to review the need to restrict salt or fluid. **[2018]**

1.9.11 Advise people with heart failure to avoid salt substitutes that contain potassium. **[2018]**

Smoking and alcohol

See NICE's guidance on smoking and tobacco and alcohol.

Air travel

1.9.12 Advise that air travel will be possible for most people with heart failure, depending on their clinical condition at the time of travel. **[2003]**

Driving

1.9.13 Ensure physicians are up to date with the latest Driver and Vehicle Licensing Agency (DVLA) guidelines. Check the DVLA website for regular updates. **[2003]**

1.10 Interventional procedures

Coronary revascularisation

1.10.1 Do not routinely offer coronary revascularisation to people with heart failure with reduced ejection fraction and coronary artery disease. **[2018]**

Cardiac transplantation

1.10.2 Consider specialist referral for transplantation for people with severe refractory symptoms or refractory cardiogenic shock. **[2003]**

Implantable cardioverter defibrillators and cardiac resynchronisation therapy

1.10.3 Implantable cardioverter defibrillators and cardiac resynchronisation therapy are recommended as options in NICE technology appraisal guidance for treating

heart failure with reduced ejection fraction. For full details, see the guidance on implantable cardioverter defibrillators and cardiac resynchronisation therapy (TA314, 2014).

1.10.4 When discussing implantation of a cardioverter defibrillator:

- explain the risks, benefits and consequences of cardioverter defibrillator implantation, following the principles on shared decision making in NICE's guideline on shared decision making
- ensure the person knows that the defibrillator function can be deactivated without affecting any cardiac resynchronisation or pacing, and reactivated later
- explain the circumstances in which deactivation might be offered
- discuss and dispel common misconceptions about the function of the device and the consequences of deactivation
- provide the person and, if they wish, their family or carers, with written information covering the information discussed. **[2018]**

1.10.5 Review the benefits and potential harms of a cardioverter defibrillator remaining active in a person with heart failure:

- at each 6-monthly review of their heart failure care
- whenever their care goals change
- as part of advance care planning if it is thought they are nearing the end of life. **[2018]**

1.11 Cardiac rehabilitation

1.11.1 Offer people with heart failure a personalised, exercise-based cardiac rehabilitation programme. The programme:

- should be preceded by an assessment to ensure that it is suitable for the person

- should be provided in a format and setting (at home, in the community or in the hospital) that is easily accessible for the person
- should include a psychological and educational component
- may be incorporated within an existing cardiac rehabilitation programme
- should be accompanied by information about support available from healthcare professionals when the person is doing the programme. **[2018, amended 2025]**

1.12 Palliative care

1.12.1 Do not offer long-term home oxygen therapy for advanced heart failure. Be aware that long-term home oxygen therapy may be offered for comorbidities, such as for some people with chronic obstructive pulmonary disease (see the section on oxygen in NICE's guideline on chronic obstructive pulmonary disease in over 16s). **[2018]**

1.12.2 Do not use prognostic risk tools to determine whether to refer a person with heart failure to palliative care services. **[2018]**

1.12.3 If the symptoms of a person with heart failure are worsening despite optimal specialist treatment, discuss their palliative care needs with the specialist heart failure multidisciplinary team (MDT) and think about a needs assessment for palliative care. **[2018]**

1.12.4 Offer people with heart failure and their families or carers access to professionals with palliative care skills within the heart failure team. **[2003]**

1.12.5 If it is thought that a person may be entering the last 2 to 3 days of life, follow NICE's guideline on care of dying adults in the last days of life. **[2018]**

Terms used in this guideline

Note: Heart failure is, by definition, symptomatic.

Heart failure with preserved ejection fraction

Heart failure with left ventricular ejection fraction of 50% or more, plus a structural issue in the heart including 2 or more of the following:

- left atrial volume greater than 34 ml per m^2 in sinus rhythm, or greater than 40 ml per m^2 in atrial fibrillation
- ratio between early mitral inflow velocity and mitral annular early diastolic velocity (E:e' ratio) greater than 11
- left ventricular hypertrophy, that is, wall thickness greater than 12 mm
- pulmonary arterial pressure greater than 35 mmHg.

Heart failure with mildly reduced ejection fraction

Heart failure with left ventricular ejection fraction between 41% and 49%.

Heart failure with reduced ejection fraction

Heart failure with left ventricular ejection fraction of 40% or less.

Mineralocorticoid receptor antagonist

A medicine that antagonises the action of aldosterone at mineralocorticoid receptors.

Recommendations for research

The guideline committee has made the following recommendations for research.

Key recommendations for research

1 Intravenous iron therapy in adults with iron deficiency and heart failure with mildly reduced or preserved ejection fraction

What is the clinical and cost effectiveness of intravenous iron supplementation in adults with iron deficiency and heart failure with mildly reduced or preserved ejection fraction?

For a short explanation of why the committee made this recommendation for research, see the rationale section on intravenous iron therapy for heart failure with reduced ejection fraction.

Full details of the evidence and the committee's discussion are in evidence review C: IV iron therapy for heart failure.

2 Diuretic therapy for managing fluid overload in people with advanced heart failure in the community

In people with advanced heart failure and significant peripheral fluid overload, what is the clinical and cost effectiveness of oral, subcutaneous and intravenous diuretic therapy in the community?

3 Cardiac MRI versus other imaging techniques for diagnosing heart failure

What is the optimal imaging technique for the diagnosis of heart failure?

4 The impact of advanced kidney disease on the natriuretic

peptide threshold for diagnosing heart failure

What are the optimal NT-proBNP thresholds for diagnosing heart failure in people with stage IIIb, IV or V chronic kidney disease?

5 Risk tools for predicting non-sudden death in heart failure

What is the most accurate prognostic risk tool in predicting 1-year mortality from heart failure at specific clinically relevant thresholds (for example, sensitivity, specificity, negative predictive value and positive predictive value at a threshold of 50% risk of mortality at 1 year)?

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Treatment combinations for heart failure with reduced ejection fraction

Recommendations 1.4.1 to 1.4.4

Why the committee made the recommendations

Evidence showed adding a sodium-glucose cotransporter-2 (SGLT2) inhibitor to existing treatment with an angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (ARB), beta-blocker and mineralocorticoid receptor antagonist (MRA) reduced mortality and hospitalisation for heart failure without important increases in adverse events. The committee agreed that treatment combinations for people with heart failure with reduced ejection fraction should now include an SGLT2 inhibitor.

Similar benefits were seen when adding an MRA to existing treatment with an ACE inhibitor or ARB and beta-blocker although there was an increased risk of hyperkalaemia. The committee agreed an MRA should remain part of the treatment combination for people with heart failure with reduced ejection fraction.

Economic modelling based on the clinical trials and real-world data suggested that early use of an MRA and SGLT2 inhibitor in combination with ACE inhibitor and beta-blocker would be cost-effective. For this reason and because the correct sequencing of medicines will vary from 1 person to another, the committee agreed to move away from a set of recommendations that include a sequence for introducing each medicine and instead listed treatment combinations for different scenarios.

Evidence comparing treatment with an ACE inhibitor, beta-blocker and MRA against treatment with an angiotensin receptor-neprilysin inhibitor (ARNI), beta-blocker and MRA showed reduced all-cause and cardiovascular mortality for the group of people taking the treatment combination with an ARNI. More falls were seen in those taking an ARNI, while

hyperkalaemia was more common among those taking an ACE inhibitor. The committee agreed that an ARNI can replace an ACE inhibitor in people who remain symptomatic when receiving the combination of ACE inhibitor, beta-blocker, MRA and SGLT2 inhibitor. However, where this combination is providing symptomatic improvement, switching to an ARNI is not advised because it is not as cost effective as an ACE inhibitor. The committee was aware that there should be a period of at least 36 hours between taking the last dose of an ACE inhibitor and the first dose of an ARNI.

Economic modelling showed that ARNIs were cost effective compared to ARBs. The committee agreed that an ARNI should be offered instead of an ACE inhibitor to people who have symptoms of intolerance to ACE inhibitors (other than angioedema). The previous first choice in this situation was an ARB. The committee agreed that an ARB can still be used for people with angioedema after taking an ACE inhibitor, or who have symptoms of intolerance to ARNIs.

How the recommendations might affect practice

Growing numbers of people with heart failure with reduced ejection fraction are being prescribed an SGLT2 inhibitor or ARNI and these recommendations are likely to accelerate this trend. There is likely to be a reduction in hospitalisation for heart failure as a result of this change in prescribing.

Return to recommendations

Intravenous iron therapy for heart failure with reduced ejection fraction

Recommendations 1.4.5 to 1.4.7

Why the committee made the recommendations

Evidence showed intravenous (IV) iron (iron sucrose, ferric carboxymaltose or ferric derisomaltose) improved exercise tolerance and quality of life in the first year for people with heart failure with reduced ejection fraction and iron deficiency. Some trials also showed reduced hospitalisation for heart failure. One study showed a significant risk of hypophosphatemia with ferric carboxymaltose. As hypophosphatemia can be monitored and treated, the committee agreed that the risk of this did not outweigh the expected

benefits of IV iron.

There was evidence that IV iron therapy is cost-effective in people with heart failure with reduced ejection fraction and iron deficiency and so the committee focused on this population. They agreed to define iron deficiency according to the definition used in the trials.

To support the recommendation on when to consider IV iron, the committee made a recommendation to assess iron status with blood tests for transferrin saturation (TSAT) and serum ferritin, as well as measuring haemoglobin to check for anaemia.

The committee highlighted the importance of considering alternative causes of iron deficiency anaemia when it is identified, but also the need to get the correct balance against over-investigating.

As only 1 small trial was available for the mildly reduced or preserved ejection fraction population, the committee made a recommendation for research on use of IV iron therapy in adults with iron deficiency and heart failure with mildly reduced or preserved ejection fraction.

How the recommendations might affect practice

The use of IV iron therapy to treat iron deficiency in people with heart failure with reduced ejection fraction is quite common. In some places this might be a change in practice. With increased use of IV iron therapy there could be a reduction in hospitalisation.

Return to recommendations

Treatment combinations for heart failure with mildly reduced ejection fraction

Recommendations 1.5.1 and 1.5.2

Why the committee made the recommendations

Evidence suggested each of the following medicines reduce hospitalisation for heart failure, and possibly mortality, in people with heart failure with mildly reduced ejection

fraction: angiotensin-converting enzyme (ACE) inhibitor, angiotensin II receptor blocker (ARB), beta-blocker and mineralocorticoid receptor antagonist (MRA). In practice, an ACE inhibitor and ARB would not be prescribed together because of the lack of additional benefit and risk of adverse events. There was no cost-effectiveness evidence for these medicines, but all are relatively cheap in their generic form.

Evidence comparing use of an angiotensin receptor-neprilysin inhibitor (ARNI) with use of an ARB for treating heart failure with mildly reduced ejection fraction showed no difference in mortality rates. Economic evidence also showed that ARNIs were not cost effective for this population group and so were not recommended.

The committee did not review the evidence for sodium-glucose cotransporter-2 (SGLT2) inhibitors because the NICE technology appraisals 929 and 902 already recommend them as treatment options for people with heart failure with mildly reduced ejection fraction. The committee therefore agreed they should be considered alongside the other medicines.

How the recommendations might affect practice

Although this is a new recommendation for NICE, most people in this population will already be receiving a combination of these medicines, if not contraindicated and depending on comorbidities. Where there is an impact, it will include extra staff time for consultations to establish the correct combination and dose of each of medicine. However, there should be a reduction in hospitalisation for heart failure.

Return to the recommendations

Treatment combinations for heart failure with preserved ejection fraction

Recommendation 1.5.4

Why the committee made the recommendation

Evidence showed treatment with a mineralocorticoid receptor antagonist (MRA) reduced hospitalisation for heart failure and may also improve all-cause and cardiovascular mortality in people with heart failure with preserved ejection fraction. However, there was

an increased risk of hyperkalaemia. Although this requires careful monitoring and management the committee agreed this should not prevent them from recommending MRAs for this population group.

The committee did not review the evidence for sodium-glucose cotransporter-2 (SGLT2) inhibitors because the NICE technology appraisals 929 and 902 already recommend them as treatment options for people with heart failure with preserved ejection fraction. The committee therefore agreed they should be considered alongside MRAs.

How the recommendation might affect practice

This is a significant change in practice. The impact will include staff time for consultation to establish the correct dose of MRA and treatment of hyperkalaemia. However, there is likely to be a reduction in hospitalisation for heart failure.

Return to recommendation

Starting and monitoring medicine use

Recommendations 1.7.1 and 1.7.2, recommendations 1.7.3 to 1.7.5 and 1.7.7 and 1.7.8 and recommendations 1.7.10, 1.7.11 and 1.7.13

Why the committee made the recommendations

The order in which the medicines should be prescribed should be based on the presenting symptoms, comorbidities and past medical history and the preferences of the person, for example, expected side effects.

It is not necessary to optimise the dose of a medicine before introducing another. How quickly to introduce the medicines depends on a number of factors including symptoms, frailty, blood pressure and renal function.

Based on their experience and expertise, the committee agreed that angiotensin receptor-neprilysin inhibitors (ARNIs) could be prescribed by primary care prescribers without the advice of a heart failure specialist. However, in some circumstances, advice from a heart specialist might be needed and so should be considered.

Evidence showed that angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor-neprilysin inhibitors (ARNIs), angiotensin II receptor blockers (ARBs) and mineralocorticoid receptor antagonists (MRAs) can affect renal function and electrolyte levels. However, these risks can be managed by measuring a person's electrolyte levels and renal function at baseline and at regular intervals or after increasing their dose. Local guidelines should be followed rather than automatically discontinuing a medicine if there is a rise in serum creatinine of more than 50% or potassium concentrations increase to more than 5.5 mmol per litre.

The importance of measuring blood pressure after each dose increment was also stressed by the committee as postural hypotension is a common cause of hospital admission in older people.

Beta-blockers can affect heart rate and rhythm. The committee agreed, based on their expertise and experience, that a 12-lead ECG should be undertaken in everyone before prescribing them a beta-blocker.

The committee supported the current clinical practice of not offering a beta-blocker if a person has second- or third-degree heart block or bradycardia, that is a heart rate of less than 50 beats per minute. They discussed using beta-blockers in symptomatic people with bradycardia, and agreed that repeating a 12-lead ECG after each dose increment was a reasonable safety measure to ensure early detection of any new arrhythmias or conduction abnormalities that could indicate intolerance to the increased dose.

How the recommendation might affect practice

The recommendations reflect current practice but might increase prescribing of ARNIs by dropping the requirement that these medicines should be initiated by a heart failure specialist.

Return to recommendations 1.7.1 and 1.7.2

Return to recommendations 1.7.3 to 1.7.5 and 1.7.7 and 1.7.8

Return to recommendations 1.7.10, 1.7.11 and 1.7.13

Context

Key facts and figures

Heart failure is a complex clinical syndrome of symptoms and signs caused by impaired heart function. When this affects mainly the left ventricle, it can be due to either weakness of contraction or impaired relaxation of the left ventricle. Other problems affecting the right ventricle, the heart valves, the pulmonary circulation or the pericardium can lead to the development of heart failure.

Almost 1 million people in the UK are currently diagnosed with heart failure, with 200,000 new cases each year. Both the incidence and prevalence of heart failure increase steeply with age. The average age at diagnosis is 76 years. Increases in life expectancy, including for people with ischaemic heart disease and hypertension, has increased the incidence of heart failure. The increased prevalence of obesity is another contributor to the rising incidence and prevalence of heart failure.

Current practice

NICE's 2018 guideline on chronic heart failure concentrated on the weak left ventricular contraction phenotype of heart failure, otherwise called heart failure with reduced ejection fraction, as it was then the only phenotype of chronic heart failure where we had evidence-based treatments. The treatment algorithm then was based on stepwise introduction of medicines aiming to provide people with at least angiotensin-converting enzyme (ACE) inhibitors, beta-blockers and, if remaining symptomatic, mineralocorticoid receptor antagonists (MRAs). Those who continued to be symptomatic would be considered by the specialist heart failure multidisciplinary team for 1 or more of 4 further medicines.

Since 2018, we have seen new developments in the treatment of not only heart failure with reduced ejection fraction, but also new evidence emerged for the treatment of the people with heart failure due to stiff ventricle, called heart failure with preserved ejection fraction; in addition to some evidence for treating those with heart failure with mildly reduced ejection fraction.

In people with heart failure with reduced ejection fraction there will be a need to change the ethos of stepwise introduction of medicines and allow early initiation of multiple medicines before optimising the doses of each. The reason for the different approach being the evidence for impact on people's symptoms and prognosis at an early stage of introduction of each medicine class, and the tendency of all classes of medicine to lower blood pressure which, when exaggerated by optimising the dose of some of the medicines, can render the person unable to receive further treatment with other medicines.

Finding more information and committee details

To find out what NICE has said on related topics, including guidance in development, see the NICE topic page on cardiovascular conditions.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews and full guideline. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

September 2025: We have reviewed the evidence on treating and monitoring heart failure with reduced ejection fraction, mildly reduced ejection fraction and preserved ejection fraction. Recommendations are marked **[2025]** if the evidence has been reviewed.

September 2018: This guideline updates and replaces NICE guideline CG108 (published August 2010). NICE guideline CG108 updated and replaced NICE guideline CG5 (published July 2003).

Minor changes since publication

December 2025: We amended the rationale for recommendation 1.7.2 to clarify our advice on the prescribing of angiotensin receptor-neprilysin inhibitors (ARNIs) by primary care prescribers.

October 2025: We amended the rationale for recommendation 1.7.10 to clarify that an ECG should be carried out before prescribing a beta-blocker.

November 2021: We added links to NICE's guideline on heart valve disease.

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