



PRACTICE

GUIDELINES

Chronic heart failure in adults: summary of updated NICE guidance

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What you need to know

- Refer people with suspected heart failure and N-terminal pro B-type natriuretic peptide (NT-proBNP) greater than 400 ng/L for specialist assessment and transthoracic echocardiography within 6 weeks.
- Offer angiotensin converting enzyme (ACE) inhibitors and beta blockers as first line treatment for heart failure with reduced ejection fraction, and add mineralocorticoid receptor antagonist (MRA) if symptoms continue.
- Offer exercise based cardiac rehabilitation therapy to people with stable heart failure in a format and setting that is easily accessible.
- Provide management in primary care once the person's condition is stable, with advice from specialist heart failure teams (MDTs).
- People with heart failure do not routinely need to restrict their sodium or fluid consumption.

What's new in this guidance

- Clearer advice on managing the care of people with heart failure, including a greater emphasis on multidisciplinary working, shared decision making, care planning, lifestyle advice and interventions, co-morbidities, and end-of-life care.
- N-terminal pro-B-type natriuretic peptide (NT-proBNP) specified as the biomarker to be used in the diagnosis (and, if relevant, the monitoring) of people with heart failure.
- Mineralocorticoid receptor antagonist (MRA) to be offered (in addition to an ACE inhibitor (or angiotensin receptor blocker, ARB) and beta blocker) in people with heart failure with reduced ejection fraction who remain symptomatic.

The prevalence of heart failure is increasing because of an ageing population and improved survival of chronic diseases that contribute to heart failure. Heart failure includes reduced ejection fraction (<40%) and preserved ejection fraction (>50%) disease. The National Institute for Health and Care Excellence (NICE) guideline on chronic heart failure was last updated in 2010. Since then, further evidence on novel and existing therapies, for example mineralocorticoid receptor antagonists (MRAs), has emerged. New research has also been published

on diagnosing heart failure and approaches to heart failure care, including monitoring, rehabilitation, and the composition of the multidisciplinary team.

This article summarises the latest update of the NICE guideline on chronic heart failure in adults.¹ It includes the recommendations from this updated guideline considered to be most relevant to primary care clinicians covering the diagnosis and management of chronic heart failure in adults.

Recommendations

NICE recommendations are based on systematic reviews of best available evidence and explicit consideration of cost effectiveness. When minimal evidence is available, recommendations are based on the guideline committee's experience and opinion of what constitutes good practice. Evidence levels for the recommendations are given in italics in square brackets.

Diagnosing heart failure

Figure 1 details a pathway for investigating and diagnosing heart failure.

- Measure N-terminal pro-B-type natriuretic peptide (NT-proBNP) in people with suspected heart failure:
 - NT-proBNP >2000 ng/L (236 pmol/L): refer urgently, to have specialist assessment and transthoracic echocardiography within two weeks.
 - NT-proBNP 400–2000 ng/L (47 to 236 pmol/L): refer to have specialist assessment and transthoracic echocardiography within six weeks.

[Based on very low to high quality evidence from diagnostic accuracy studies, original economic modelling, and experience and opinion of the GC]

For further information on natriuretic peptides, see [box 1](#).

Box 1: Natriuretic peptides

Be aware that

- Obesity, African or African-Caribbean family origin, or treatment with diuretics, ACE inhibitors, beta blockers, angiotensin II receptor blockers (ARBs), or MRAs can reduce levels of serum natriuretic peptides
- High levels of serum natriuretic peptides can have causes other than heart failure (for example, age over 70, left ventricular hypertrophy, ischaemia, tachycardia, right ventricular overload, hypoxaemia (including pulmonary embolism), renal dysfunction (estimated glomerular filtration rate (eGFR) less than 60 ml/min/1.73 m²), sepsis, chronic obstructive pulmonary disease, diabetes, or cirrhosis of the liver).

- Perform an electrocardiogram in all people with suspected heart failure and consider a chest radiograph, blood tests and urinalysis, and peak flow or spirometry as part of the diagnostic investigation, as necessary.
- Offer people newly diagnosed with heart failure an extended first consultation with the specialist heart failure MDT, followed by a second meeting within two weeks if possible.

[Based on low to high quality evidence from qualitative studies and the experience and opinion of the GC]

For a summary of what to discuss during these consultations, see [box 2](#).

Box 2: Giving information to people with heart failure

At first consultations:

- Discuss the person's diagnosis and prognosis
- Explain heart failure terminology
- Discuss treatments
- Address 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.
- 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.
- Provide information whenever needed throughout the person's care.
- Consider training in advanced communication skills for all healthcare professionals working with people who have heart failure.

(New recommendations 2018) *[Based on low to high quality evidence from qualitative studies and the experience and opinion of the GC]*

Follow NICE guidance on patient experience.²

Managing heart failure**Multidisciplinary approach**

Heart failure is a complex condition. The committee sought to establish the key competencies for the MDT, and to clarify the roles of primary and secondary care.

- The core specialist heart failure 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
 - A specialist heart failure nurse
 - A healthcare professional with expertise in specialist prescribing for heart failure.
- The specialist heart failure MDT should directly involve, or refer people to, other services including rehabilitation, services for older people, and palliative care, as needed.

- The primary care team should take over routine management of heart failure as soon as the person is stable and management has been optimised.

[Based on very low to high quality evidence from randomised trials and the experience and opinion of the GC]

For a summary of the roles of the MDT and the primary care team see [box 3](#).

Box 3: Roles of the MDT and primary care**MDT**

- Diagnose heart failure
- Give information to those with newly diagnosed heart failure
- Optimise treatment (including titration and blood test monitoring)
- Start new specialist therapies
- Manage new, recently decompensated, or advanced heart failure (NYHA III-IV)
- Continue to manage heart failure after interventional procedures, eg, cardioverter defibrillator or cardiac resynchronisation device
- Manage heart failure that is not responding to treatment.

Primary care

- Ensure effective communication 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 review of their conditions
- Recall the person at least every six months and update their medical record
- Ensure that changes to the medical 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.

The MDT and primary care need to liaise closely about drug titration and monitoring of people with heart failure.

(New recommendations 2018) *[Based on low to high quality evidence from qualitative studies and the experience and opinion of the GC]*

What to include in a care plan

Heart failure is a chronic progressive condition. People with heart failure can be admitted or referred to secondary care to address deterioration and are then referred back to primary care once they are stable. They often have other co-morbidities that may be relevant to management of their heart failure, for example chronic kidney disease and chronic obstructive pulmonary disease. Managing the associated information has become a complex process with roles and responsibilities sometimes unclear. The committee wished to review the evidence to define key information requirements, and to improve the processes involved in transfers of care and liaison between primary and secondary care.

- The specialist heart failure MDT should write a summary for each person with heart failure.
- The summary should form the basis of a care plan for each person.
- Give a copy of the care plan to the person with heart failure, their family or carer if appropriate, and all health and social care professionals involved in their care.

[Based on very low to moderate quality evidence from qualitative studies and the experience and opinion of the GC]

For a summary of what to include in the summary and care plan see [box 4](#). Complete the care plan when a person is first diagnosed with heart failure (initiated by the lead clinician) and

update as necessary; for example, as a result of request by patient or general practitioner.

Box 4: Information to include in summary and care plan (new recommendations 2018)

Summary—a brief summary of key clinical problems for the electronic medical records

- 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.

Care plan—a multidisciplinary document, shared with the patient, that includes clinical and social factors affecting their health

- 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 co-ordinator (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, such as the British Society for Heart Failure, British Heart Foundation, and Pumping Marvellous.

Pharmacological management

The treatment of heart failure symptoms often involves the use of loop diuretics (eg, furosemide), and long term treatment for prognostic benefit is based on using agents affecting the renin-angiotensin-aldosterone and other neurohormonal systems (fig 2). The committee considered the latest evidence on MRAs, particularly adding an MRA to existing first line treatment in people with heart failure. Spironolactone and eplerenone are licensed MRAs for use in heart failure.

- Offer MRA, in addition to ACE inhibitor (or ARB) and β -blocker, to people who have heart failure with reduced ejection fraction if they continue to have symptoms of heart failure.
- *[Based on very low to moderate quality evidence from randomised trials]*

The committee did not make any recommendation on the use of MRAs in heart failure with preserved ejection fraction because of substantial current uncertainty in the evidence base for this indication.

See box 5 for further recommendations on lifestyle advice and interventions.

Box 5: Lifestyle advice and interventions

Salt and fluid restriction

- Do not routinely advise people with heart failure to restrict their sodium or fluid consumption. Ask about salt and fluid intake and, if needed, advise as follows:
 - People with dilutional hyponatremia should restrict fluid intake
 - People who consume high levels of salt and/or fluid should reduce their intake.

Continue to review the need to restrict salt or fluid.

- Advise people with heart failure to avoid salt substitutes that contain potassium (eg, LoSalt or Nu-Salt)

(New recommendation 2018) [Based on very low to low quality evidence from randomised controlled trials and the experience and opinion of the GC]

Cardiac rehabilitation

Rehabilitation programmes need to be structured, with clear objectives and a monitoring component.

- Offer people with heart failure a personalised, exercise based cardiac rehabilitation programme, unless their condition is unstable. 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.

(Updated recommendation 2018) [Based on very low to moderate quality evidence from randomised trials and the experience and opinion of the GC]

How to monitor heart failure

All people with heart failure require clinical review and monitoring (box 6). More detailed monitoring will be needed if the person has substantial co-morbidity or if their condition has deteriorated. The frequency of monitoring depends on the clinical status. The monitoring interval should be short (days to two weeks) if the clinical condition or medication has changed, and at least six monthly for people with stable heart failure. Provide people who wish to be involved in monitoring their heart failure with sufficient education and support to do this, with clear guidance on what to do in the event of deterioration.

Box 6: Clinical monitoring of heart failure

- Clinical assessment of
 - Functional capacity
 - Fluid status
 - Cardiac rhythm (minimum of examining the pulse)
 - Cognitive status and nutritional status.

[Based on the experience and opinion of the GC]

- Medication review including need for changes and possible side effects.

[Based on the experience and opinion of the GC]

- Consideration of NT-proBNP measurement as part of a treatment optimisation protocol—only in a specialist care setting for people aged under 75 who have heart failure with reduced ejection fraction and an eGFR above 60 ml/min/1.73m².

[Based on very low to moderate quality evidence from randomised trials and the experience and opinion of the GC]

When commencing ACE inhibitors, angiotensin-II blockers, and MRAs:

- Start therapy at a low dose and titrate upwards at short intervals (for example, every two weeks) until the target or maximum tolerated dose is reached.

- Measure serum sodium and potassium, and assess renal function, before starting treatment and one to two weeks after, and following each dose increment.
- Measure blood pressure before and after each dose increment. Follow the recommendations on measuring blood pressure, including measurement in people with symptoms of postural hypotension, in the NICE guideline on hypertension in adults.³

[Based on the experience and opinion of the GC]

Patients with chronic kidney disease

- For people who have heart failure with reduced ejection fraction and chronic kidney disease with an eGFR of 30 ml/min/1.73m² or above:
 - Offer the same treatment outlined for those with heart failure with reduced ejection fraction
 - If eGFR is 45 ml/min/1.73m² or below, consider lower doses and/or slower titration of dose of ACE inhibitors or ARBs, MRAs, and digoxin.
- If eGFR is below 30 ml/min/1.73m², the specialist heart failure MDT should consider liaising with a renal physician.
- Monitor closely the response to titration of medicines, taking into account the increased risk of hyperkalaemia.

[Based on very low to low quality evidence from randomised trials and the experience and opinion of the GC]

Palliative care for advanced heart failure

Heart failure is a chronic progressive disease with an eventual requirement for palliative care. The disease trajectory for people with heart failure is difficult to predict, with periods of stability punctuated by episodes of acute deterioration within a gradual overall decline. This creates anxiety for both patients and clinicians and may prevent optimal advance care planning. Consequently, there has been increasing interest in prognostic tools to try and identify people who are entering the last year of life. Despite some prediction tools being widely available there is uncertainty about their utility in practice.

- Do not use prognostic risk tools to determine whether to refer a person with heart failure to palliative care services.

[Based on very low to high quality evidence from prognostic studies and the experience and opinion of the GC]

- 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 and consider a needs assessment for palliative care.

[Based on the experience and opinion of the GC]

Breathlessness is a common symptom in advanced heart failure, even with optimal pharmacological and non-pharmacological treatments and the absence of clinical pulmonary oedema. As long term home oxygen therapy is sometimes used in these circumstances, the committee considered it important to assess its effectiveness in improving breathlessness and patient quality of life.

- Do not offer long term home oxygen therapy for advanced heart failure. Be aware that long term home oxygen therapy may be offered for co-morbidities such as chronic obstructive pulmonary disease and hypoxia. See NICE

guidance on chronic obstructive pulmonary disease in over 16s (CG101).⁴

[Based on very low quality evidence from a randomised trial and the experience and opinion of the GC]

Implementation

The recommendations in this guideline build on those previously published. The extension of first line therapies to include MRAs will require additional monitoring of patients. This will mean establishing processes to create, update, and share care summaries and plans for each person with heart failure between primary care and MDT. Measures are needed to enable patients with heart failure to access rehabilitation services. This could be within services that already exist for other cardiac conditions.

Future research

There was sufficient, reasonable quality evidence to make recommendations for most of the proposed questions in this guideline update. However, there were several areas where there was not sufficient current evidence to make recommendations.

Despite the frequency of diuretic use in community settings, no evidence was identified comparing the efficacy of intravenous compared with oral diuretics in advanced heart failure. Similarly, no evidence was identified for the clinical and cost effectiveness of utilising cardiac magnetic resonance imaging, and therefore further research is required on these topics.

The committee considered the evidence on β blockers in people with heart failure and atrial fibrillation was highly uncertain. They considered that this was likely to be due to the fact that the analysis was a retrospective sub-group analysis, and therefore the committee concluded that a prospective randomised controlled trial was required.

The committee also considered that there was not currently sufficient evidence to recommend intravenous iron supplementation. However, the committee was aware of multiple ongoing randomised controlled trials that could help inform this in the future. The committee was also unable to make a recommendation regarding the use of MRAs in heart failure with preserved ejection fraction, and this is another area where research is ongoing.

Furthermore, the committee considered the evidence on several prognostic risk tools that may have utility in identifying people with a high risk of death in the short term, but agreed that the evidence was currently insufficient to support their use, and further research and analysis was required.

In other areas, such as the threshold for NT-proBNP warranting referral for specialist assessment and echocardiography for suspected heart failure, there was acceptance that the biomarker was a useful tool, and agreement on the need for a threshold for referral, but acknowledgment that the ideal threshold was still uncertain based on current evidence, particularly in sub-populations such as patients with atrial fibrillation or chronic kidney disease stage 3-5, where the applicability of current general thresholds has not been validated. Thus, in this area recommendations were made while acknowledging the need for continued research.

In line with the above, the committee posed the following research questions:

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

- What is the optimal threshold for NT-proBNP for the diagnosis of heart failure
 - in people with suspected heart failure: 400 ng/L or 125 ng/L
 - in people with suspected heart failure and atrial fibrillation
 - in people with suspected heart failure and chronic kidney disease stage 3-5?
- What are the effects of β blockers in patients with heart failure with reduced ejection fraction and atrial fibrillation?
- What is the effectiveness of oral, subcutaneous, and intravenous diuretic therapy in people with advanced heart failure and substantial peripheral fluid overload in the community?
- What is the most accurate prognostic risk tool in predicting 1 year mortality from heart failure at specific clinically relevant thresholds (eg, a threshold of 50% risk at 1 year)?

Guidelines into practice

- How do you use NT-proBNP currently in suspected heart failure? Does this guideline offer you ways to adapt your practice?
- How do primary and secondary care services share the work of supporting people with heart failure currently? Do the recommendations in this guideline offer you ideas on how to modify your working, or local pathways?
- What treatments and advice do you typically offer to patients with heart failure? Does this guideline suggest different management strategies? How might these work in your setting?
- Can patients with heart failure access cardiac rehabilitation (either at home, in the community, or in the hospital) in your local area?

Further information on the guidance

This guidance was developed by the National Guideline Centre in accordance with NICE guideline development methods (www.nice.org.uk/media/default/about/what-we-do/our-programmes/developing-nice-guidelines-the-manual.pdf).

The Guideline Committee (GC) established by the National Guideline Centre comprised three consultant cardiologists, a consultant geriatrician and general physician, a specialist heart failure nurse, a consultant pharmacist cardiologist, two general practitioners, and two lay members. The GC also co-opted a consultant nephrologist, a consultant interventional cardiologist, a senior clinical researcher in cardiac rehabilitation, a professor in health services research for cardiac rehabilitation, a clinical specialist physiotherapist in cardiology, and a palliative care physician.

Review questions were developed based on key clinical areas of the scope. Systematic literature searches, critical appraisals, evidence reviews, and evaluations of cost effectiveness, where appropriate, were completed for all questions except for stopping or reducing smoking, where other guidance was cross-referred to.

Quality ratings of the evidence were based on GRADE methodology (www.gradeworkinggroup.org/), or an adapted GRADE methodology for qualitative and diagnostic reviews. These relate to the quality of the available evidence for assessed outcomes or themes rather than the quality of the study.

The scope and the draft of the guideline went through a rigorous reviewing process, in which stakeholder organisations were invited to comment; the GC took all comments into consideration when producing the final version of the guideline.

A formal review of the need to update a guideline is usually undertaken by NICE after its publication. NICE will conduct a review to determine whether the evidence base has progressed substantially to alter the guideline recommendations and warrants an update.

Different versions of this guideline have been produced: a full version, a short version and an online pathway. These are available from the NICE website: <https://www.nice.org.uk/guidance/ng106>

How patients were involved in the creation of this article

Committee members involved in this guideline included people with heart failure who contributed to the formulation of the recommendations summarised here.

The members of the guideline committee were Anthony Wierzbicki (Chair), Rajai Ahmad (from January 2017), Abdallah Al-Mohammad, Martin Cowie (resigned December 2016), Suzanna Hardman, Nick Hartshorne-Evans, Rani Khatib, Richard Mindham, Jim Moore, Rebekah Schiff, Sue Simpson, Clare J Taylor.

Contributorship and guarantor: All authors contributed to the initial draft of this article, helped revise the manuscript, approved the final draft for publication, and agree to be accountable for all aspects of the article.

The views expressed in this article are those of the authors and not necessarily those of NICE

Funding: The National Guideline Centre was commissioned and funded by the National Institute for Health and Care Excellence to develop this guideline and write this *BMJ* summary.

Competing interests We declare the following interests based on NICE's policy on conflicts of interests (available at <https://www.nice.org.uk/Media/Default/About/Who-we-are/Policies-and-procedures/declaring-and-managing-interests-board-and-employees.pdf>): JR, and EC have no relevant interests to declare. ASW provides a full statement in the NICE guideline: <https://www.nice.org.uk/guidance/ng106/evidence/appendices-as-pdf-6538850030>

- 1 National Institute for Health and Care Excellence. Chronic heart failure in adults: diagnosis and management (NICE guideline NG106) 2018. <https://www.nice.org.uk/guidance/ng106>
- 2 National Institute for Health and Care Excellence. Patient experience in adult NHS services: improving the experience of care for people using adult NHS services. Clinical Guideline (CG 138). 2012. <https://www.nice.org.uk/guidance/cg138>
- 3 National Institute for Health and Care Excellence. Hypertension in adults: diagnosis and management (clinical guideline CG127). 2016. www.nice.org.uk/guidance/cg127.
- 4 National Institute for Health and Care Excellence. Chronic obstructive pulmonary disease in over 16s: diagnosis and management (clinical guideline CG101). 2010. www.nice.org.uk/guidance/Cg101.

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Figures

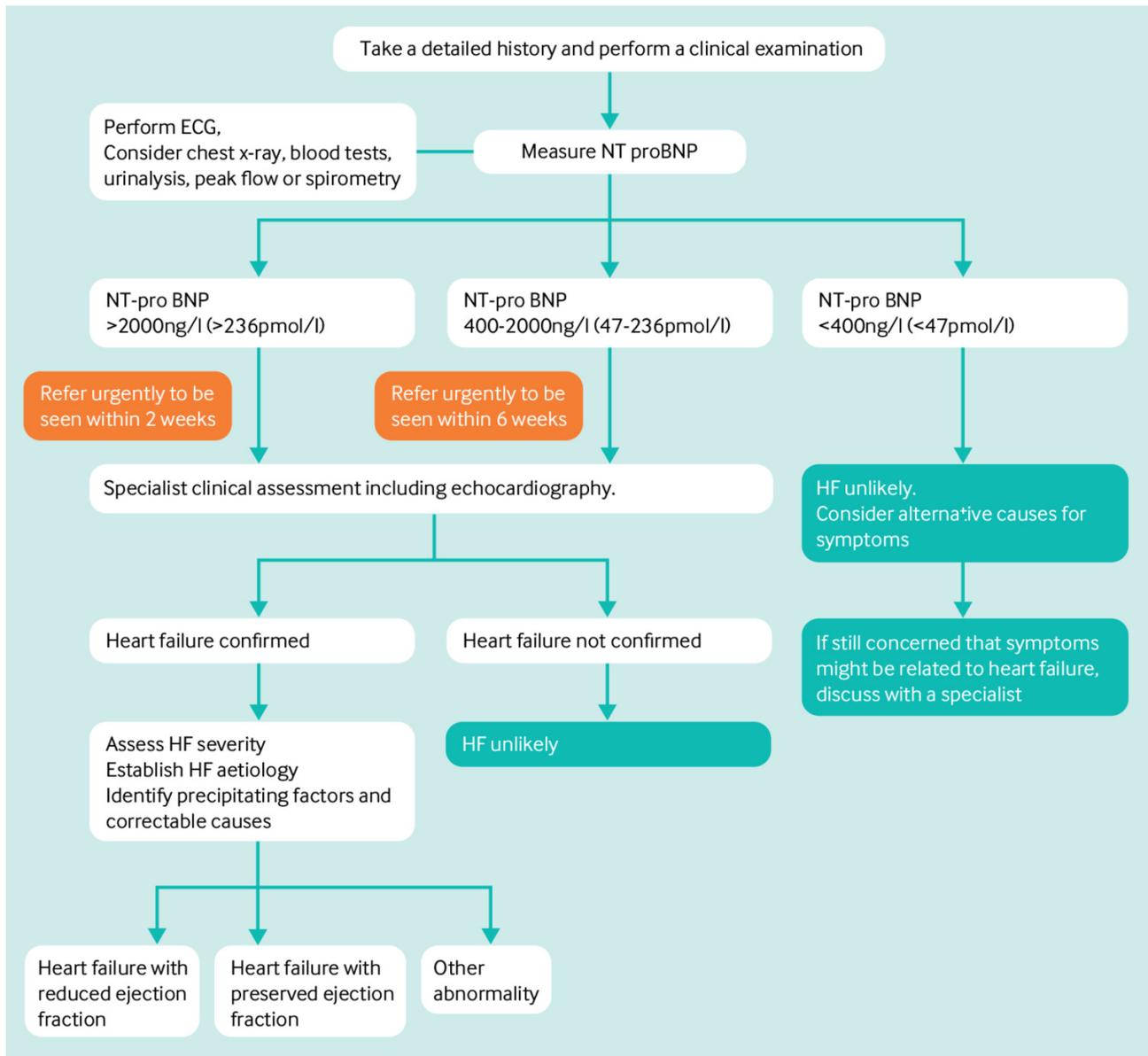


Fig 1 Suggested approach for diagnosing heart failure

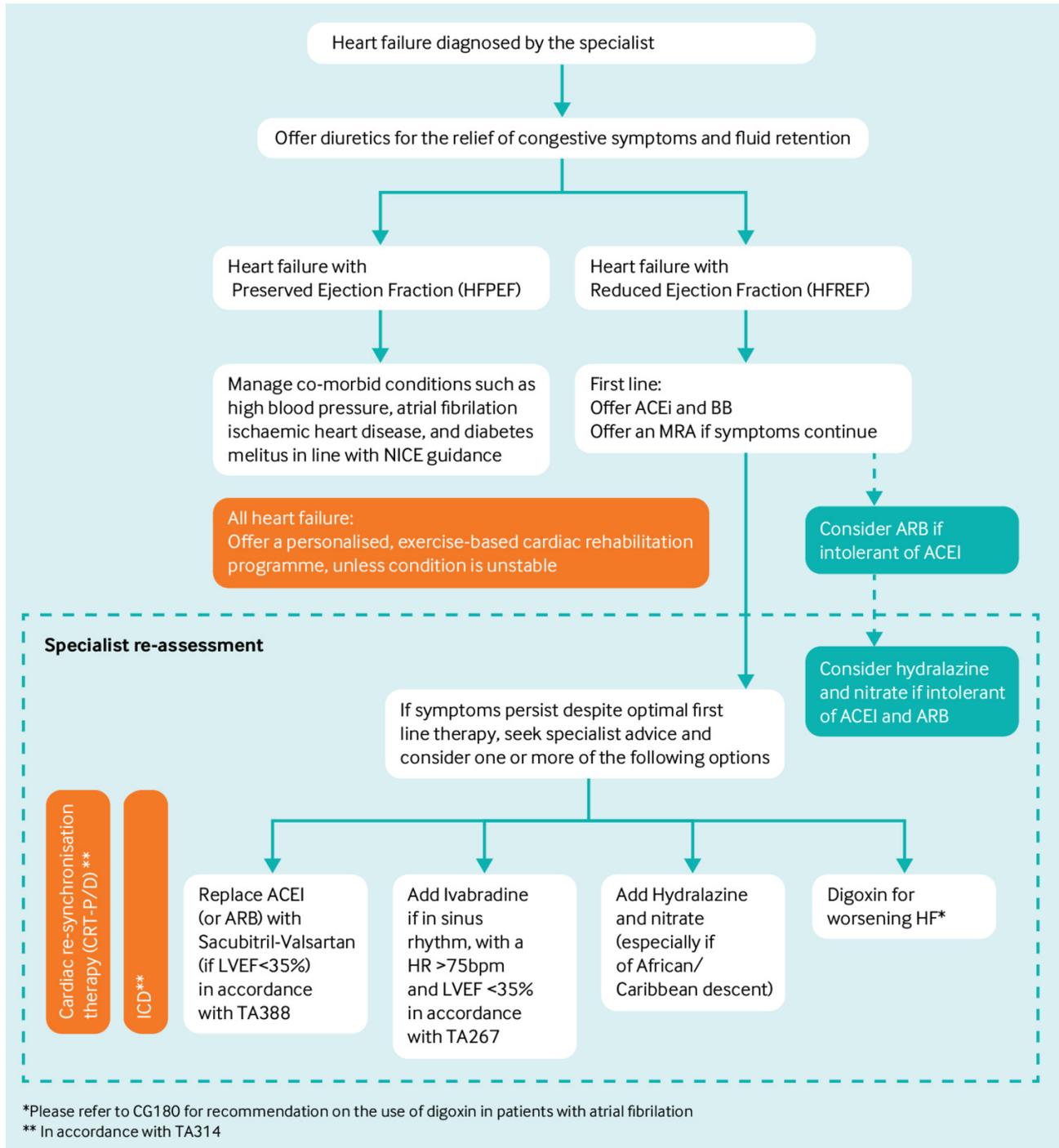


Fig 2 Suggested approach for managing heart failure