



Understanding heart failure guidelines

Diagnosis

What is this guide, and who is it for?

The Heart Failure Policy Network has developed this guide as a lay summary of key principles in the European Society of Cardiology (ESC) guidelines, United Kingdom National Institute for Health and Care Excellence (NICE) guidelines and position statements by the Heart Failure Association of the ESC. The guide seeks to raise awareness of key elements of best practice in the care and management of heart failure (HF). It will be of interest to non-specialist audiences such as people with HF, patient advocates, non-cardiology healthcare professionals, clinical advocates of best practice and health system reform, organisational leaders, and political or public officials.

Guidelines are documents with suggestions or recommendations for care that derive from scientific evidence to aid patients and healthcare professionals in their decision-making – they are not prescriptive documents. Care must be tailored to each person's needs through careful collaboration between the person with HF, their family/carers and the HF care team.

This document neither replicates nor supersedes established clinical guidelines for the purpose of formal professional training or accreditation, patient therapeutic education or clinical decision-making. Clinicians, patients and service managers should consult European and national guidance as appropriate.



Diagnosis

A timely and appropriate diagnosis is important to help minimise the impact of heart failure (HF) on people living with the condition, their families/carers and society in general.¹ Symptoms of HF are varied and early access to treatment can improve quality of life.

HF is a common and complex clinical syndrome that occurs when the heart becomes too weak or stiff to pump enough blood to meet the body's needs.² There are two common classifications of HF based on the heart's left ventricular ejection fraction, which is the proportion of blood in the heart that is pumped to the rest of the body with each heartbeat.

In HF with reduced ejection fraction (HFrEF), the heart is unable to contract effectively and less than 40% of the blood in the heart is pumped to the rest of the body.^{2,3}

In HF with preserved ejection fraction (HFpEF), the heart contracts effectively but holds a small volume of blood – so even if all the blood in the heart is sent to the rest of the body, it is not enough to meet the body's needs.² People with HFpEF are typically older and present with more symptoms.





Heart failure facts

The timely and appropriate diagnosis of HF helps people achieve the best possible outcomes through early access to effective treatment.^{1,2}

How is HF diagnosed?

HF symptoms can appear suddenly and rapidly (acute HF) or last for long periods of time (chronic HF).² Multiple tests are used to establish a definitive HF diagnosis, including:

- clinical history
- physical examination
- blood tests to assess natriuretic peptides (NPs, hormones produced by the heart)
- chest X-ray
- electrocardiogram (ECG, a test that checks the heart's rhythm and electrical activity)
- echocardiogram (echo, a scan that provides a detailed overview of the heart).^{2,4}

HF diagnosis is a team effort. People with HF typically present with symptoms in primary care or emergency rooms, and healthcare professionals working in these settings should collaborate with specialists, such as cardiologists and HF nurses, to ensure prompt initiation of care.^{1,5}

What do the guidelines say?

HF guidelines outline the recommended diagnostic pathway for HF, including typical signs/symptoms and essential tests to make a definitive diagnosis.^{2,5}

Recognising HF symptoms



Heart failure facts

HF symptoms are often dismissed as signs of ageing and other health conditions, hindering timely diagnosis of HF and delaying access to treatment.^{6,7}

HF symptoms are similar to symptoms of other health conditions. They may include breathlessness, fluid retention (which may present as rapid weight gain or swelling, especially in the lower limbs and abdomen), extreme fatigue, reduced exercise capacity and, in severe cases, fluid in the lungs (pulmonary oedema).² Symptoms may vary based on a person's age and weight.

Best practice from key European guidelines

When a person presents with HF symptoms or signs, it is important to conduct a full clinical history and physical exam to diagnose or rule out HF.² For example, history of a recent heart attack (the abrupt stop of blood flow to the heart) increases the likelihood that symptoms are the result of HF.

Obesity, old age and chronic lung disease can make the interpretation of signs and symptoms more difficult – healthcare professionals should not dismiss the possibility that HF may be the underlying cause.²





Essential tests to diagnose HF



Heart failure facts

Specialist-led diagnosis using an echocardiogram is the gold standard for HF diagnosis.²

When diagnosing HF, it is important to rule out alternative explanations for symptoms, such as respiratory failure, lung infection and kidney failure (acute or chronic).² Essential diagnostic tests for HF include an ECG, a blood test for NPs and an echo.

ECGs and NP testing are essential in ruling out HF, but these tests are not precise enough to make a definitive diagnosis.^{2,3} For example, NP levels in the blood are affected by age, certain medicines, obesity, kidney failure and atrial fibrillation (a quivering or irregular heartbeat). This is why it is crucial to conduct additional tests.

HF can be diagnosed in non-acute care settings, such as outpatient clinics, and in acute care settings, such as emergency rooms.² The diagnostic pathway is slightly different depending on the care setting at which the person presents; in acute care settings, clinical investigations and symptom treatment should be started immediately and concomitantly, while in non-acute settings this process will take longer.^{2,5}

Best practice from key European guidelines

Non-acute care settings

ECG and NP testing are essential to establish the likelihood of HF before proceeding with an echo.² People with very high NP levels should have an echo within two weeks.³ The echo is important to examine the heart's ability to pump blood around the body and the structure of the heart, including the volume of the chambers (the 'rooms' in the heart), ventricular systolic/diastolic function, wall thickness, valve function and pulmonary hypertension.²

Other useful imaging tests besides ECG and echo include cardiac resonance imaging (CRI, also referred to as magnetic resonance imaging or MRI) and computed tomography (CT, CAT or cardiac CT).² Additional information collected in blood and exercise tests can be used to characterise a person's HF and tailor treatment accordingly.

Acute care settings

In acute care settings, it is important to conduct a chest X-ray in addition to the ECG and NP test to establish whether HF is the underlying cause of acute symptoms.^{2,5} Chest X-rays are particularly useful in acute care settings because they can identify typical signs of HF, including pulmonary oedema (build-up of fluid in the lungs) and cardiomegaly (enlargement of the heart).² Additional blood tests – such as those to assess liver, kidney and thyroid function – can help identify other causes of symptoms.

People with no previous history of HF or with unknown cardiac function should have an echo within 48 hours of admission.² Those showing signs of life-threatening cardiac issues should have an echo immediately.



References

1. The Heart Failure Policy Network. 2018. *The handbook of multidisciplinary and integrated heart failure care*. London: The Heart Failure Policy Network
2. Ponikowski P, Voors AA, Anker SD, *et al.* 2016. 2016 ESC guidelines for the diagnosis and treatment of acute and chronic heart failure. *Eur J Heart Fail* 18(8): 891-975
3. National Institute for Health and Care Excellence. 2018. *Chronic heart failure in adults: diagnosis and management*. London: NICE
4. Mueller C, Christ M, Cowie M, *et al.* 2017. European Society of Cardiology-Acute Cardiovascular Care Association position paper on acute heart failure: a call for interdisciplinary care. *Eur Heart J Acute Cardiovasc Care* 6(1): 81-86
5. Mebazaa A, Yilmaz MB, Levy P, *et al.* 2015. Recommendations on pre-hospital & early hospital management of acute heart failure: a consensus paper from the Heart Failure Association of the European Society of Cardiology, the European Society of Emergency Medicine and the Society of Academic Emergency Medicine. *Eur J Heart Fail* 17(6): 544-58
6. Taylor CJ, Hobbs FDR, Marshall T, *et al.* 2017. From breathless to failure: symptom onset and diagnostic meaning in patients with heart failure—a qualitative study. *BMJ Open* 7(3): e013648
7. van Riet EES, Hoes AW, Limburg A, *et al.* 2014. Prevalence of unrecognized heart failure in older persons with shortness of breath on exertion. *Eur J Heart Fail* 16(7): 772-77



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About the Heart Failure Policy Network

The Heart Failure Policy Network is an independent, multidisciplinary group of healthcare professionals, patient advocacy groups, policymakers and other stakeholders from across Europe whose goal is to raise awareness of the unmet needs surrounding heart failure and its care. All Network content is non-promotional and non-commercial. The Secretariat is provided by The Health Policy Partnership Ltd, an independent health policy consultancy based in London.

