

## Practical guidance on heart failure diagnosis and management in primary care:

recent EPCCS recommendations

### INTRODUCTION

Heart failure (HF) is a common and costly clinical syndrome, associated with significant morbidity and reduced life expectancy, affecting around 1–2% of adults in developed countries.<sup>1</sup> Timely diagnosis is important to optimise evidence-based treatment opportunities, which delay mortality and improve symptoms, but the early stages of HF can be difficult to identify clinically. Primary care has a vital role in providing holistic, person-centred care from first symptoms to end of life. This article summarises the key aspects of HF management for general practice including new areas of diagnostics and drug therapy.

### DEFINITION

HF is a clinical syndrome characterised by certain symptoms, and possibly signs, plus objective evidence of a structural or functional abnormality of the heart. The type of HF is determined according to left ventricular ejection fraction (LVEF), although the exact cut-point continues to be an area of debate.<sup>2</sup> HF with reduced ejection fraction (HFrEF) is commonly defined as LVEF <40%. HF with preserved ejection fraction (HFpEF) is defined as LVEF ≥50% with evidence of diastolic dysfunction or structural cardiac changes.<sup>3</sup> Recently, the European Society of Cardiology (ESC) added a third group, HF with midrange ejection fraction (HFmrEF), for the grey area between HFrEF and HFpEF.<sup>3</sup> All three show reduced prognosis compared with the non-HF population. The classification is important for management: HFrEF has a strong evidence base for pharmacological intervention whereas the same treatments have not shown benefit in HFpEF.<sup>4</sup>

### RECOGNISING HEART FAILURE

In both HFrEF and HFpEF, the heart fails to pump adequately, causing symptoms of fluid overload and cardiac stress, such as breathlessness, ankle swelling, and fatigue. These symptoms are common and can be associated with a variety of conditions, not just

HF. In addition, patients with HF often have several coexisting conditions, treated with multiple medications, which can complicate the picture further.<sup>5</sup> A background of cardiovascular disease, particularly previous myocardial infarction, makes HF more likely. On examination, signs may include crepitations at the lung bases, a raised jugular venous pressure, or a displaced apex beat. Features such as orthopnoea, waking up at night gasping for breath, or a gallop rhythm, are more strongly suggestive of HF, but only occur in severe cases and are less commonly seen in general practice.<sup>3,6</sup>

### INVESTIGATIONS

The National Institute for Health and Care Excellence (NICE) guideline for chronic HF suggests patients with suspected HF should be further investigated initially with natriuretic peptide (NP) testing, except if there is a history of myocardial infarction, where referral directly to echocardiography is advised.<sup>6</sup> NP thresholds need to be low enough to rule out HF. NICE recommends that below N-terminal pro B type NP (NT-proBNP) 400 pg/mL, and B type NP (BNP) 100 pg/mL, HF is unlikely and to consider alternative diagnoses. However, several factors need to be taken into account when interpreting results: renal impairment and atrial fibrillation (AF) can increase NP levels; and in overweight patients and users of diuretics or angiotensin-converting enzyme inhibitors (ACE-I) NP may be reduced. If a patient has NP levels above cut-off values, echocardiography and review by a cardiologist are required to confirm the diagnosis.

The NICE NP thresholds are higher than the levels suggested by the ESC HF guidelines,<sup>7</sup> which recommend further investigation at NT-proBNP above 125 pg/ml rather than 400 pg/ml. Furthermore, the recent REFER trial dataset based in UK general practice confirmed 125 pg/ml as a safer threshold because 400 pg/ml excluded 20% of people who had HF.<sup>2</sup>

Additional blood tests to rule out precipitating factors such as thyroid disease or anaemia,

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measure modifiable cardiovascular risk factors, and assess baseline liver and renal function prior to initiating treatment are also important. Electrocardiogram (ECG) is useful to detect possible causes, and consequences, of HF, such as AF. Chest X-ray can be normal, except in the case of clear fluid overload, but may identify another cause for the breathlessness. Echocardiography is used to determine the type of heart failure and other structural or functional abnormalities, such as valvular heart disease. HFrEF is, as the name suggests, characterised by a reduced ejection fraction whereas in HFpEF ejection fraction is normal but other abnormalities, such as increased left ventricular stiffness and a restrictive left ventricular filling pattern, are evident.<sup>8</sup>

## HOLISTIC MANAGEMENT

Patients with HF usually have several other comorbidities, often requiring multiple medications; HF may not be their main burden. A patient-centred approach, coordinated by a generalist, may therefore be most appropriate over the long term. But specialist expertise in HF will be required at diagnosis and at intermittent points throughout the patient's healthcare journey. Hospital and community-based HF nurses can play an important role in providing continuity.

Patients with HF should understand their condition and be actively involved in management decisions. It is also important to encourage aspects of self-care. Lifestyle interventions can improve patients' quality of life and prevent exacerbations. Patients should be made aware of the role of salt and encouraged to avoid overuse, the importance of ensuring adequate hydration and a healthy diet, and the benefits of regular exercise in increasing their functional capacity. Patients with HF also benefit from formalised rehabilitation programmes that combine exercise with lifestyle and educational components, as well as psychological support.<sup>3,6</sup> End-of-life care is also an important but challenging part of HF management. There is significant individual variation in the disease trajectory of HF and patients generally do not follow a gradual downward path. Some feel and function quite well and die suddenly, whereas others may improve after a period of poor health. In the context of multimorbidity, HF may not be the final mode of death.<sup>5</sup>

## DRUG TREATMENT — OLD AND NEW

Diuretics are vital in the initial phase of treatment to offload fluid and improve symptoms in patients with all types of HF. Their use though is empirical and trial

evidence does not (and will not) exist. ACE-I, beta-blockers (BB), and mineralocorticoid receptor antagonists (MRA) have been shown to significantly improve survival and quality of life, and to reduce hospital admissions in patients with HFrEF. The same effects were not seen in trials of HFpEF patients.<sup>4</sup>

Ivabradine may benefit patients in sinus rhythm with a LVEF <35% and heart rate at or above 70 bpm who remain symptomatic after ACE-I, BB, and MRA treatment. Device therapies, such as cardiac resynchronisation (QRS), in patients with LVEF <35% and QRS duration >130 ms on ECG might also improve cardiac function. Digoxin was one of the first drugs to be used in HF, although outcomes of trials have shown only modest benefit. Patients with HF and in sinus rhythm on digoxin had fewer hospitalisations but no overall decrease in mortality. Digoxin may be of use in patients with HF and AF to control ventricular rate.

The participants of HF trials were traditionally younger, male, and with less comorbidity than today's general practice population, so the presence of comorbidities, particularly chronic kidney disease, may limit optimisation of drug therapy. A patient-centred approach, balancing symptom improvement and prognostic benefit through shared decision making, is required to provide the most appropriate care.

A new class of drug has recently been introduced to HF management options. Angiotensin receptor neprilysin inhibitors, or ARNIs, exert a dual action through inhibition of the renin-angiotensin system and potentiation of protective vasoactive neuropeptides. The first ARNI to be licensed is sacubitril-valsartan and was evaluated in the PARADIGM-HF trial.<sup>9</sup> Symptomatic patients with LVEF <40% on optimal background HF therapy (such as diuretics, ACE-I, BB, and MRAs) were recruited and randomised to sacubitril-valsartan or enalapril 20 mg twice daily. The trial was stopped early due to significantly reduced cardiovascular mortality and hospitalisation in the ARNI group. Sacubitril-valsartan has been approved by NICE for use in the NHS but may only be initiated by specialists.

## CONCLUSION

General practice plays a key role in recognising, investigating, referring, and managing patients with HF. Generalists and specialists together should provide person-centred care that optimises both the quantity and quality of life. The European Primary Care Cardiovascular Society has produced detailed practical guidance on heart failure diagnosis and management, available at [epccs.eu](http://epccs.eu).