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## 44 – Heart Failure Diagnosis and Management

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### **Background**

Heart failure (HF) is a common clinical syndrome, affecting 1% of people in developed countries, associated with significant morbidity and reduced life-expectancy for patients and high costs for healthcare systems. (1) Accurate and early diagnosis is important to guide several evidence based therapies, which can delay mortality and improve symptoms. However, early stages of HF are difficult to identify clinically since typical symptoms are common, and associated with many other disorders, and diagnosis requires access to specialist investigations. Primary care has an important role in HF diagnosis and management, yet care is often sub-standard as evidenced in this essay.

### **Defining Heart Failure**

HF is a clinical syndrome characterised by typical symptoms, possibly signs, and objective evidence of a structural or functional abnormality of the heart. The type of HF is determined by measurement of left ventricular ejection fraction (LVEF) although the exact cut-point that defines disease continues to be an area of debate. HF with reduced ejection fraction (HFrEF) is commonly defined as LVEF less than 40% and HF with preserved ejection fraction (HFpEF) as LVEF at or above 50% with evidence of diastolic dysfunction or structural cardiac changes. (2) Recently, the European Society of Cardiology added a third group, HF with midrange ejection fraction, or HFmrEF, for the grey area between HFrEF and HfpEF. (3) All three show reduced prognosis compared to 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. (4)

## ***Diagnosing Heart Failure***

In both HFrEF and HFpEF, the heart fails to pump adequately causing symptoms of fluid overload and cardiac stress, resulting in breathlessness, ankle swelling and fatigue. A history of cardiovascular disease, particularly previous myocardial infarction, makes HF more likely. Clinical signs can include basal lung crepitations and a raised jugular venous pressure. Classic features such as orthopnoea (waking gasping for breath) are more likely due to HF but only occur in severe cases and are less often seen in general practice. (2)

Patients with suspected HF should be further investigated initially with natriuretic peptide (NP) testing, especially if access to echocardiography is limited or delayed. (2) Guideline recommendations on NP thresholds vary, but the best evidence is to use an NTproBNP cut-off of 125 pg/mL, below which HF is unlikely. However, clinicians should be aware that results can be influenced by several factors, such as renal impairment may increase NP levels and diuretics or angiotensin converting enzyme inhibitors (ACE-I) can reduce them. If a patient has NP levels above the threshold, echocardiography or review by a cardiologist is required to confirm the diagnosis and establish type.

Additional blood tests should be done to rule out precipitating factors, such as thyroid disease or anaemia, to measure modifiable cardiovascular risk factors, such as cholesterol, and assess baseline liver and renal function prior to initiating treatment. Electrocardiogram (ECG) is useful to detect possible causes, and consequences, of HF, such as atrial fibrillation (AF). Chest X ray can be normal, except in the case of clear fluid overload, but may identify another cause for the breathlessness, as can lung function tests.

## ***Treating Heart Failure***

Diuretics are vital in the initial phase of treatment to reduce fluid overload and improve symptoms in patients with all types of HF. Their use though is empiric and trial evidence does not (and will not) exist. ACE-Inhibitors (ACE-I), B-blockers (BB), mineralocorticoid receptor antagonists (MRA), and Angiotensin Receptor Blockers (ARB) all significantly improve survival, quality of life and reduce hospital admissions in patients with HFrEF, with incremental benefit shown in co-administration. (5) The same benefits are not seen in trials of HFpEF patients. (4)

Ivabradine may benefit patients in sinus rhythm with a LVEF less than 35% and heart rate at or above 70 beats per minute who remain symptomatic after ACE-I, BB and MRA treatment. Device therapies such as cardiac resynchronisation therapy in patients with LVEF less than 35% and QRS duration >130ms on ECG may also improve cardiac function. A new class of drugs, angiotensin receptor neprilysin inhibitors (ARNIs) exert a dual action through inhibition of the renin angiotensin system and potentiation of protective vasoactive neuropeptides. The first ARNI (sacubitril-valsartan) significantly reduced cardiovascular mortality and hospitalisation compared to enalapril 20mg twice daily. (6)

Importantly, the trials all showed that the greatest benefits were seen in patients on maximal doses of these drugs and when used in combination. However, participants of the HF trials were

more likely to be younger, male, and with less co-morbidity than GP populations so the presence of co-morbidities, particularly chronic kidney disease, may limit optimisation of drug therapy. Furthermore, patients with HF may have several other co-morbidities often requiring multiple medications, and HF may not be their main burden.(7) A patient-centred approach, balancing symptom improvement and prognostic benefit through shared decision making, is therefore necessary.

Patients with HF and their carers should be involved in all aspects of self-care, made aware of the role of salt and the benefits of regular exercise. Patients with HF also benefit from formalised rehabilitation programmes which combine exercise with lifestyle and educational components as well as psychological support.(2-3) End of life care is also an important but challenging part of HF management.

### **Summary**

General practice plays a key role in recognising, investigating, referring and managing patients with HF. However, repeated surveys in many countries show that GPs commonly under-diagnose and under-treat heart failure, (8) mainly due to the complexities of its presentation, limited access to the necessary investigations, and difficulties in titrating evidence-based therapies.

### **Take Home Message**

- Always think about heart failure in patients over 55 presenting with unexplained breathlessness or lethargy, especially if they have a history of MI – arrange NP tests and echocardiography, or refer if tests not available. If heart failure is diagnosed, ensure that patients understand the disease and what they can do - sensible diet, low salt, more exercise, stop smoking, importance of staying on medication, self monitoring weight if symptoms worsen
- If HFrEF is present then ensure that full evidence-based treatments are started AND up-titrated slowly (especially for BB) – namely ALL of a diuretic, an ACE or ARB, and a BB – try very hard to help get patients stabilised on these therapies.
- Monitor blood electrolytes and eGFR at each titration step and then annually.
- For HFmEF patients, consider the same treatments but probably less need to up-titrate. For HFpEF, consider the same treatments but mainly aim to control blood pressure and improve healthy living.
- In severe heart failure, may need high diuretic doses and consider ARNI instead of ACE/ARB and/or add spironolactone/epleronone.

### **Original Abstract**

<http://www.woncaeurope.org/content/analysis-choice-and-dosage-drugs-treatment-chronic-heart-failure-family-medicine>

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