Highlights of the 2016 European Society of Cardiology Guidelines on Heart Failure

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Abstract

The European Society of Cardiology guidelines for the diagnosis and treatment of heart failure (HF) was updated in 2016. In this article, highlights of the updates made based on new findings and practical recommendations are presented. The 2016 guidelines include definitions and criteria for diagnosing the different types of HF. In addition, a newly developed algorithm is proposed for treating particularly symptomatic HF with reduced ejection fraction, including the use of the angiotensin-converting enzyme inhibitors, beta-blockers, mineralocorticoid receptor antagonists and the angiotensin receptor neprilysin inhibitor sacubitril/valsartan. Further evidence is required for some aspects of the diagnosis and treatment of HF, but these guidelines will prove useful for decision making in this setting.

Keywords

heart failure, angiotensin receptor neprilysin inhibitor, angiotensin-converting enzyme inhibitors, cardiac resynchronisation therapy

Disclosure: None

Received: 15 May 2017 **Accepted:** 23 June 2017 **Citation:** *European Cardiology Review* 2017;**12**(2):76–7. DOI: 10.15420/ecr.2017:5:2

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The long-awaited 2016 European Society of Cardiology (ESC) guidelines for heart failure (HF)¹ provide the large amount of novel research in HF since the previous guidelines published in 2012.² Here, highlights of the 2016 guidelines are presented.

Definition of Heart Failure

The main terminology used to describe HF is historically based on measurement of the left ventricular ejection fraction (LVEF). HF affects a wide range of patients, from those with normal LVEF (typically considered as ≥ 50 %; HF with preserved EF [HFpEF]) to those with reduced LVEF (typically considered as < 40 %; HF with reduced EF [HFrEF]). Patients with an LVEF in the range of 40–49 % represent a 'grey area', which is now defined as HF with mid-range EF (HFmrEF). The criteria for diagnosing the three types of HF are summarised in Table 3.1 in the ESC guidelines.¹ It is remarkable that the new classification includes natriuretic peptides as key factors for the definition of HFmrEF and HFpEF.

Treatment of Heart Failure

A newly proposed algorithm to aid in decision making for the treatment of HF is summarised in Figure 7.1 in the ESC guidelines.¹ The algorithm covers the use of pills and devices, with colour-coded differentiation between classes of recommendation (class I = green, class IIa = orange). Two major treatments for HF included in the algorithm are the angiotensin receptor neprilysin inhibitor (ARNI) sacubitril/valsartan and ivabradine.

Angiotensin-converting enzyme inhibitors (ACEIs) and beta-blockers are first-line treatments, followed by mineralocorticoid receptor antagonists (MRAs). These three therapies have received class Ia recommendations. After this first-line treatment, there are three further options for the clinician to consider if patients remain symptomatic (New York Heart Association [NYHA] functional class II or above and LVEF ≤ 35 %).

Treatment with Angiotensin Receptor Neprilysin Inhibitor

If the patient is unable to tolerate ACEIs and/or angiotensin receptor blockers (ARBs), consider switching to ARNI (recommendation class Ib). In a large, prospective randomised clinical trial, sacubitril/valsartan was proven to be superior to conventional ACE inhibition (enalapril) in reducing cardiovascular deaths and HF readmissions.¹ The Prospective Comparison of ARNI with ACEI to determine Impact on Global Mortality and Morbidity in Heart Failure (PARADIGM-HF) trial was the largest (N=8442) and most geographically diverse HF trial performed to date. The trial was terminated early due to overwhelming reductions in death from cardiovascular causes and the primary endpoint (cardiovascular death or first hospitalisation for worsening HF) in the group receiving sacubitril/valsartan. After a mean treatment duration of 27 months, treatment with sacubitril/valsartan was associated with significant reductions in the primary endpoint in the sacubitril/valsartan group compared with the enalapril group (21.8 versus 26.5 %, respectively; hazard ratio [HR] 0.80; $P < 0.001$). All-cause mortality rates were significantly reduced (17.0 versus 19.8 %; HR 0.84; $P < 0.001$) and the average reduction in the Kansas City Cardiomyopathy Questionnaire (KCCQ) clinical score reflects significantly fewer symptoms or physical limitations secondary to HF in the sacubitril/valsartan group. There was no difference in the incidence of new-onset AF or worsened renal function between treatment groups.³

Treatment with Ivabradine

If the patient is in sinus rhythm, and it already receives optimally tolerated beta-blockers, the clinician should consider introducing ivabradine (class IIa recommendation). Ivabradine slows the heart rate through inhibition of the If channel in the sinus node and, therefore, should only be used for patients in sinus rhythm. Ivabradine reduced the combined endpoint of mortality or hospitalisation for HF in patients with symptomatic HFrEF or LVEF ≤ 35 %, in sinus rhythm and with a heart

rate ≥ 70 bpm who had been hospitalised for HF within the previous 12 months, receiving treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose), an ACEI (or ARB) and an MRA.⁴

Cardiac Resynchronisation Therapy

Recommendations for the use of cardiac resynchronisation therapy (CRT) are largely based on QRS duration:

- Not recommended (class III, level of evidence A) in patients with a QRS duration < 130 ms
- Indicated for patients with complete left bundle branch block and a QRS duration ≥ 130 ms, specifically:
 - Class I, level of evidence A recommendation for those with QRS > 150 ms
 - Class I, level of evidence B recommendation for those with QRS 130–149 ms
- Recommended (class IIa, level of evidence B) for patients with AF and NYHA III–IV HFrEF, despite optimal medical treatment, and a QRS duration of > 130 ms, but only if it can achieve close to 100 % biventricular capture

Furthermore, in patients requiring a pacemaker as a result of having heart block, implantation of a CRT device is also recommended (class I, level of evidence A). In particular, implantable cardioverter-defibrillators (ICDs) are indicated under the following circumstances:

- Primary prevention in patients with HF and reduced systolic function (LVEF < 35 %) despite optimal medical treatment (class I recommendation)
 - Level of evidence A in patients with ischaemic cardiomyopathy
 - Level of evidence B in patients with non-ischaemic dilated cardiomyopathy
- Secondary prevention in patients with < 1 year estimated survival (class I, level of evidence A recommendation)

At the time when these guidelines were published, findings from the DANISH study⁵ had not yet been reported; it is likely that ICD recommendation for non-ischemic cardiomyopathy will be lowered in future guideline updates.

Acute Heart Failure

The 2012 guidelines characterised acute HF based on the presence or absence of signs or symptoms of congestion (fluid status: 'wet' versus 'dry') and peripheral hypoperfusion (degree of hypoperfusion: 'cold' versus 'warm').² Combination of these characterisations results in four clinical profiles: wet–cold, wet–warm, dry–cold and dry–warm. Determination of a patient's clinical profile enables identification of a suitable drug therapy to initiate. The current guidelines recommend that after the initial evaluations and the patient is stabilised, clinicians should seek to identify potential causative or precipitating factors of the decompensation, keeping in mind the CHAMP (acute Coronary syndrome, Hypertension emergency, Arrhythmia, acute Mechanical cause, and Pulmonary embolism) rule.

Further recommendations for acute HF include the following:

- In patients with normal oxygen levels avoid oxygen supplementation (class I, level of evidence C recommendation)
- In patients with pulmonary oedema and chronic obstructive pulmonary disease avoid arterial blood gas testing (class IIa, level of evidence B recommendation).
- In patients with respiratory failure, consider early noninvasive ventilation (class IIa, level of evidence B recommendation)
 - In patients with persistent respiratory failure, intubation is recommended (class I, level of evidence C)
- Systematic use of morphine or opioids is not recommended; however, they should be considered for patients with acute dyspnoea (class IIb, level of evidence B)

For other acute HF drug therapies, the guidelines recommend that identification and prioritisation should be based on the patient's initial clinical–hemodynamic profile.

Multidisciplinary Team Care

Continuity of care is considered to be the key factor in ensuring that HF management programmes are suitably effective. The current guidelines outline the distinct roles for professionals involved in HF management that will enable them to empower patients to acquire the necessary skills for self-management. The benefit of correct discharge planning (i.e. incorporation of early post-discharge follow-up significantly reducing readmission rates) is also highlighted.

Palliative and End-of-life Care

The guidelines include a checklist for physicians relating to palliative care of patients with HF. This list covers often overlooked aspects of such care and includes medication, and anticipated desires and emotional support for patients and their carers. However, evidence is scarce, thus development of definite recommendations for palliative care of patients with HF is not currently possible.

Although palliative therapies, such as intermittent inotropic infusion and peritoneal dialysis, can improve the quality of life of patients in this setting, these are not addressed in the guidelines.

Comorbidities

The current guidelines include increased details pertaining to comorbidities compared with previous guidelines. Notably, in symptomatic patients with HFrEF and absolute or functional iron deficiency, intravenous ferric carboxymaltose is indicated (class IIa, level of evidence A recommendation) to improve symptoms, exercise capacity and quality of life.

Conclusion

The 2016 ESC guidelines for HF were updated with new findings and detailed practical recommendations (most based on a high level [A/B] of evidence). Although gaps in the evidence for some aspects of HF diagnosis and treatment remain, these guidelines will prove immensely useful for decision making in the management and treatment of patients with HF. ■

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