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# ACC/AHA guidelines: A-, B-, C-, and D-based approach to chronic heart failure therapy

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## KEYWORDS

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This article summarizes the rationale for and major clinical points of the recently updated ACC/AHA guidelines for management of chronic heart failure in the adult.

The last 10–15 years have been a period of tremendous advances in many fields of clinical medicine and have seen the publication of large numbers of randomized clinical trials which have validated the efficacy of clinical strategies and medications to modify the clinical course of a number of diseases. The sheer volume of such data and its complexity have led to clinical under-utilization of many therapies which have been shown to be effective, and this under-utilization has, in turn, led to a drive to create and periodically update guidelines which collate and codify the evidence base that exists for therapy or diagnosis of a given disease in order to promote the implementation of the evidence-based modalities.

The clinical entity heart failure (HF) is a major and growing public health problem in developed countries and is the only cardiovascular diagnosis (at least in the USA) which is rising rather than falling in prevalence. In the USA, HF is the most common Medicare diagnosis-related group (i.e. hospital discharge diagnosis) and more Medicare dollars are spent for the diagnosis and treatment of HF than for any other diagnosis.<sup>1</sup> It is primarily a condition of the elderly, and the relentless 'aging of the population' can be expected to lead to a similarly relentless increase in its prevalence over time. Because of this clinical importance, as well as the large base of evidence accruing relevant to its therapy, HF was one of the first cardiovascular disorders to have sets of guidelines created to address its evaluation and therapy. In the USA, the American College of Cardiology and American Heart Association (ACC/AHA) first

published such guidelines in 1995. Interestingly, this document focused in good part on the therapy of acute HF, an entity for which there was no (and still is not) substantive evidence base to guide therapy. In the year 2001, these guidelines were updated and essentially rewritten by the ACC/AHA,<sup>2</sup> and in the same year, the European Society of Cardiology (ESC) published its own guidelines.<sup>3</sup> Both of these two later documents focused on the evaluation and therapy of chronic, rather than acute, HF. Both the ACC/AHA and the ESC have published further updates of guidelines for HF in 2005.

One new proposal forwarded in the 2001 update published by ACC/AHA was the idea of subdividing clinical HF into four 'stages.' The proposed stages are as follows:

- Stage A. Patients at high risk for developing clinical HF (i.e. those with hypertension, diabetes, dyslipidaemia, and so on), but without detectable structural heart disease.
- Stage B. Patients with detectable structural heart disease (i.e. LVH, LV dysfunction), but no clinical signs or symptoms of HF.
- Stage C. Patients with current or past clinical HF.
- Stage D. Patients with end-stage refractory HF, who are candidates for extraordinary forms of therapy or for compassionate end-of-life care.

The first two of these stages are clearly not truly HF and could probably be best termed 'pre-HF.' The proposal for these stages is meant to emphasize the preventability of HF in the modern world, and the associated recommendations simply codify the well-validated measures which can treat the various risk factors for HF before it develops and prevent, or at least delay, its occurrence.

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The concept is 'borrowed' from the field of oncology, which has for many years identified populations at high risk for a given malignancy and recommended proven strategies for prevention and early detection. The proposed stages are in no way meant to replace the standard NYHA functional status classification,<sup>4</sup> but complement it nicely by emphasizing the progressive nature of HF. In the NYHA classification, patients may shift from one class to another over relatively short periods of time, e.g. a patient will be admitted to hospital because he has deteriorated to FC IV and will be discharged a week later FC II after appropriate therapy. The stages, on the contrary, progress in one direction only, with very rare exceptions.

Most contemporary guidelines now include concise lists of recommendations and, importantly, these recommendations are 'graded' or coded according to the perceived level of usefulness/efficacy of the measure and (2) the strength or type of evidence supporting the measure.

The classification codifies recommendations as follows.

- Level I: If the intervention is considered to be useful and effective.
- Level IIa: If the weight of evidence/opinion is in favour of usefulness/efficacy.
- Level IIb: If usefulness/efficacy is less well established by evidence/opinion.
- Level III: If intervention is not useful/effective and may be harmful.

The level of evidence for recommendations is classified as follows.

- Level A. If data are derived from multiple randomized clinical trials or meta-analyses.
- Level B. If data are derived from a single randomized trial or non-randomized studies.
- Level C. If recommendation is based on consensus opinion of experts, case studies, or standard-of-care.

### Therapy for stage A

It includes patients with hypertension, known atherosclerotic disease, diabetes, obesity, metabolic syndrome, or those using cardiotoxins or with a family history of cardiomyopathy. Recommended therapy for patients at high risk for HF, but without detectable structural heart disease, includes the full array of measures which have either been well shown or are well-agreed upon to be effective in preventing HF.

These include the treatment of hypertension, encouraging smoking cessation, treating lipid disorders, treating diabetes, encouraging regular exercise, discouraging alcohol intake and illicit drug use, and controlling the metabolic syndrome.

### Therapy for stage B

It includes patients with previous myocardial infarction, LV remodelling including LVH and decreased EF, and asymptomatic valvular disease. All measures under stage A are appropriate in most patients. In addition, there is clear evidence that therapy with ACE-inhibitors

can prevent HF in this population<sup>4,5</sup> and strong consensus (although not evidence) that beta-blocking drugs are also efficacious.

### Therapy for stage C

The first line of approach for patients with symptomatic HF should be to consider whether any current therapies or behaviours can be withdrawn or modified to benefit the situation. The availability of non-steroidal anti-inflammatory agents over-the-counter and their propensity to exacerbate HF makes them an especially important class of drugs to screen for and withdraw. Likewise, most calcium channel blockers (except amlodipine and felodipine) and most anti-arrhythmic drugs (except amiodarone) are contraindicated. Limiting salt intake in the diet is a major behavioural modification that should underlie pharmacological therapy. The mainstays of active pharmacological therapy for all patients with current or past symptoms of HF remain three: diuretics for patients with volume overload; ACE-inhibitors; beta adrenergic blocking agents (beta-blockers).

Evidence documenting the efficacy of the last two include some of the largest clinical trials in the field and have been consistently positive in their results. They should be used in all patients unless there are unequivocal contraindications. It is strongly recommended that the particular drugs shown to be effective in the clinical trials be used and their doses targeted to those used and shown to be effective in those trials.

Drugs or devices to be considered in selected patients include aldosterone antagonists, angiotensin II receptor blockers, fixed dose hydralazine/nitrate combinations, digitalis, implantable cardioverter defibrillators, and cardiac resynchronization therapy.

Discussion of the rationale for selecting the patients and expected benefits of the use of these drugs and devices is well outlined in the 2005 Guideline document.<sup>6</sup>

### Therapy for stage D

The vast majority of patients who develop refractory end-stage HF are elderly with many comorbidities and are candidates for compassionate end-of-life care. Other patients may be candidates for more advanced or extraordinary therapy, including surgical approaches such as cardiac transplantation, surgical ventricular restoration, high-risk mitral valve surgery or revascularization, or permanent or 'destination' mechanical circulatory support.

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