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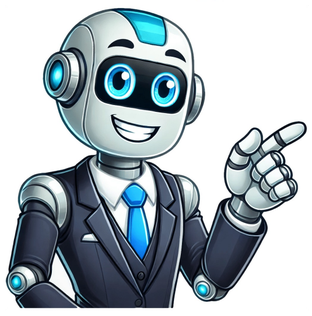

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Create Free Account or 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Heidenreich PA, Bozkurt B, Aguilar D, Allen LA, Byun JJ, Colvin MM, Deswal A, Drazner MH, Dunlay SM, Evers LR, Fang JC, Fedson SE, Fonarow GC, Hayek SS, Hernandez AF, Khazanie P, Kittleson MM, Lee CS, Link MS, Milano CA, Nnacheta LC, Sandhu AT, Stevenson LW, Vardeny O, Vest AR, Yancy CW; ACC/AHA Joint Committee Members. Heidenreich PA, et al. Circulation. 2022 May 3;145(18):e895-e1032. doi: 10.1161/CIR.0000000000001063. Epub 2022 Apr 1. Circulation. 2022. PMID: 35363499 Review. publish date: Apr 01, 2022 Go to JACC article Download PDF As a library, NLM provides access to scientific literature. Inclusion in an NLM database does not imply endorsement of, or agreement with, the contents by NLM or the National Institutes of Health. Learn more: PMC Disclaimer | PMC Copyright Notice . 2023 Aug 31;12(4):571–588. doi: 10.1007/s40119-023-00328-3 The guidelines released by the American College of Cardiology/American Heart Association/Heart Failure Society of America (ACC/AHA/HFSA) in 2022 and those released in 2021 by the European Society of Cardiology (ESC) play a crucial role in offering evidence-based recommendations for the diagnosis and management of heart failure (HF). This comprehensive review aims to provide an overview of these guidelines, incorporating insights from relevant clinical trials. While there is considerable alignment between the two sets of guidelines, certain notable differences arise due to variations in publication timelines, which we will outline. By presenting this summary, our objective is to empower clinicians to make informed decisions regarding HF management in their own practice, and facilitate the development of more harmonized guidelines in the future. Keywords: Heart failure, Heart failure with preserved ejection fraction, Heart failure with reduced ejection fraction, Guideline directed medical therapy, Clinical trials The key changes in the 2022 American College of Cardiology (ACC)/American Heart Association (AHA)/Heart Failure Society of America (HFSA) heart failure (HF) guidelines include updated staging of HF, and recommendations on treatments such as sodium glucose cotransporter-2 inhibitor (SGLT2i), mineralocorticoid receptor antagonists (MRA), and angiotensin receptor-neprilysin inhibitors (ARNIs), especially in HF with mildly reduced ejection fraction (HFmrEF) and HF with preserved ejection fraction (HFpEF). There are minimal differences between the 2022 ACC/AHA/HFSA HF guideline and the 2021 European Society of Cardiology (ESC) HF guideline, although the key differences in staging and medication recommendation come from the time difference of publication. Guidelines for the diagnosis and management of heart failure (HF) were jointly published by the American College of Cardiology (ACC), the American Heart Association (AHA), and the Heart Failure Society of America (HFSA) in 2022 [1]. These replaced the 2013 American College of Cardiology Foundation (ACCF)/AHA guidelines [2] and its subsequent 2017 update [3]. The key changes in the new guidelines that are outlined in the “top 10 take-home messages” include an updated staging of HF, and recommendations on treatments such as sodium glucose cotransporter-2 inhibitors (SGLT2i), mineralocorticoid receptor antagonists (MRA), and angiotensin receptor-neprilysin inhibitors (ARNIs), especially in HF with mildly reduced ejection fraction (HFmrEF) and HF with preserved ejection fraction (HFpEF) [1]. The following review will outline these changes, as well as highlight key differences between the ACC/AHA/HFSA 2022 guidelines and the 2021 European Society of Cardiology (ESC) HF guideline [4]. This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors. The ACC/AHA/AFSA and ESC have similar recommendations for the diagnosis of HF (see Table 1 for comparison). Both ACC/AHA/AFSA and ESC guidelines highlight the importance of history and examination in the diagnosis of HF and its etiology, as well as in the setting of decompensation to identify a cause of clinical deterioration [1, 4]. All patients with a new diagnosis of HF should have a three-generation pedigree analysis to assess family history of cardiomyopathy. The ACC/AHA/HFSA guidelines highlight the findings from the PARADIGM-HF trial showing changes in markers of clinical congestion are associated with quality of life and prognostic information independent of natriuretic peptides or the Meta-Analysis Global Group in Chronic Heart Failure (MAGGIC) risk score [5]. Summary of recommendation class for investigations of HF Recommendation ACC/AHA/HFSA ESC Initial investigations For patients who are diagnosed with HF, laboratory evaluation should include full blood count, urinalysis, serum electrolytes, blood urea nitrogen, serum creatinine, glucose and HbA1c, lipid profile, liver function tests, iron studies, and thyroid-stimulating hormone to optimize management 1 1 For all patients with HF, a 12-lead ECG should be performed 1 1 BNP or NT-proBNP Patients presenting with dyspnea 1 In patients with chronic HF for risk stratification 1 1 In patients hospitalized with HF to establish prognosis 1 In patients at risk of developing HF, BNP can be used as a screening tool followed by team-based care to prevent development of LV dysfunction or new-onset HF 2a A pre-discharge BNP can be useful to inform the trajectory of the patient and establish a postdiagnosis prognosis 2a Genetic testing In first-degree relatives of selected patients with genetic or inherited cardiomyopathies for early detection and prompt management 1 In patients with nonischemic cardiomyopathy 2a Chest X-ray Suspected or new-onset HF, or those presenting with acute decompensated HF 1 1 TTE During initial evaluation of suspected or newly diagnosed HF 1 1 In patients with HF who have significant clinical change, or who have received GDMT and are being considered for invasive procedures or device therapy 1 If TTE is inadequate, alternative imaging (e.g., CMR, cardiac CT, radionucleotide imaging) is recommended for the assessment of LVEF 1 1 CMR In patients with HF or cardiomyopathy, CMR can be useful for diagnosis and management 2a For the characterization of myocardial tissue in suspected infiltrative disease, Fabry disease, inflammatory disease, LV non-compaction, amyloid, sarcoidosis, iron overload 1 Cardiopulmonary exercise testing In selected ambulatory patients to determine appropriateness of advanced treatments (e.g., LV assist device, heart transplant) 1 1 In ambulatory patients to assess functional capacity 2a In ambulatory patients to assess cause of dyspnea 2a 2a Invasive evaluation Endomyocardial biopsy may be useful when specific diagnosis is suspected that would influence therapy 2a 2a Right heart catheterization in selected patients with HF with persistent or worsening symptoms, signs, diagnostic parameters, and in whom hemodynamics are uncertain 2a Right heart catheterization in patients with severe HF being evaluated for heart transplant or mechanical circulatory support 1 Other imaging In patients with HF, an evaluation for possible ischemic heart disease can be useful to identify the cause and guide management 2a In patients with HF and CAD who are candidates for coronary revascularization, non-invasive stress imaging may be considered for detection of myocardial ischemia to help guide coronary revascularization 2b 2b No imaging In patients with HF in the absence of: (1) clinical status change, (2) treatment interventions that might have a significant effect on cardiac function, or (3) candidacy for invasive procedures or device therapy, routine repeat assessment of LV function is not indicated 3 In addition to history and examination, both guidelines concur on the need for several investigations, including: Electrocardiogram (ECG) Blood tests: Natriuretic peptides, serum urea and electrolytes, creatinine, full blood count, lipid profile, iron studies, liver and thyroid function tests are recommended to differentiate HF from other conditions, provide prognostic information, and guide potential therapy. Transthoracic echocardiography (TTE): This aids in determining the left ventricular ejection fraction (LVEF) and identifying the underlying etiology of HF. Chest X-ray: This provides supportive evidence of HF and aids in ruling out alternative causes of breathlessness. Cardiac magnetic resonance (CMR) imaging is recommended by both guidelines in the assessment of myocardial structure and function in patients where TTE image quality is inadequate. The ESC guidelines recommend CMR for characterization of myocardial tissue in suspected infiltrative disease, Fabry disease, inflammatory disease (e.g., myocarditis), left ventricular (LV) non-compaction, amyloid, sarcoidosis, and haemochromatosis (class of recommendation [CoR]: 1) [4]. The ACC/AHA/HFSA guidelines find that CMR is reasonable in patients with non-ischemic cardiomyopathy if the diagnosis is uncertain based on the recent OUTSMART-HF trial, although with a lower strength of recommendation than the ESC guidelines (CoR: 2a) [6]. ESC recommends that CMR may be useful for assessment of myocardial ischemia in patients with dilated cardiomyopathy who would be suitable for coronary revascularization (CoR: 2b). In comparison, the ACC/AHA/HFSA guidelines recommend the same may be reasonable (CoR:2b). The ESC and ACC/AHA/HFSA guidelines both suggest non-invasive stress imaging (such as CMR, stress echocardiography, single-photon emission computed tomography [SPECT]) to assess inducible ischemia and viability for patients with coronary artery disease (CAD) who are suitable for coronary revascularization. For patients with a low to intermediate pre-test probability of CAD or those with inconclusive non-invasive stress tests, computed tomography coronary angiography (CTCA) may be considered to rule out a diagnosis of CAD. Invasive coronary angiography is recommended for patients with persistent angina despite pharmacological therapy and those with an intermediate to high pre-test probability of CAD and heart failure with reduced ejection fraction (HFrEF) who are deemed suitable for coronary revascularization. Both sets of guidelines align on the recommendation that endomyocardial biopsy should only be performed when a specific diagnosis is sought, and when that diagnosis would significantly impact management, particularly in cases of rapidly progressive HF or worsening ventricular function despite treatment. This approach ensures that the risks of the procedure are justified by the potential impact on guiding the appropriate management decisions. The 2022 ACC/AHA/HFSA guidelines defined for the first time the “Stages of Heart Failure” based on the Universal Definition of HF [7] (see Table 2). The Universal Definition of HF was developed in 2020 by a writing committee which comprised of members of the HFSA, the Heart Failure Association of the European Society of Cardiology (HFA/ESC), and the Japanese Heart Failure Society (JHFS), and released in 2021, following the release of the 2021 ESC guidelines. Four stages of HF (A, B, C, and D) were defined, with stages A and B occurring in asymptomatic individuals. Stage A is defined as patients at risk of HF without suggestive symptoms or signs, and without structural or functional heart disease or abnormal biomarkers such as natriuretic peptides. This includes patients with hypertension, cardiovascular (CV) disease, obesity, exposure to cardiotoxic agents, genetic variant cardiomyopathy, or family history of cardiomyopathy. The goal of treatment for these patients is to modify risk factors to prevent progression of heart disease. Stage B, pre-HF, is defined as patients who have never had symptoms or signs of HF but do have evidence of one or more of the following: structural heart disease; increased left atrial (LA) or LV filling pressures; increased natriuretic peptide levels or persistently elevated troponin levels. Patients with pre-HF are managed by treating risk factors and structural heart disease to prevent development of symptomatic HF. Stage C, symptomatic HF, and stage D, advanced HF, are treated based on their classification of HF by LVEF with the aim of reducing symptoms, morbidity, and mortality. Stage Definition A Patients at risk for HF but without current or previous symptoms/signs of HF and without structural/functional heart disease or abnormal biomarkers. This includes patients with hypertension, cardiovascular disease, diabetes, obesity, exposure to cardiotoxic agents, genetic variant cardiomyopathy, or a family history of cardiomyopathy B Patients without current signs or previous symptoms/signs of HF but evidence of one of the following: Structural heart disease Evidence of increased filling pressures Risk factors and Increased natriuretic peptide levels or Persistently elevated cardiac troponin C Patients with current or previous symptoms/signs of HF D Marked HF symptoms that interfere with daily life and with recurrent hospitalizations despite attempts to optimize GDMT ESC and ACC/AHA/HFSA guidelines use the same classification of HF by LVEF as shown in Table 3, however the ACC/AHA/HFSA guideline introduces a newly defined condition, HF with improved ejection fraction (HFimpEF). HFimpEF is defined as HF with previous LVEF 40%. It was previously known as HF with preserved ejection fraction-improved. HFimpEF is more appropriate terminology, since improvement does not necessarily represent normalization of LV function or resolution of the cardiomyopathic process and highlights the importance of continuing treatment as per HFrEF recommendations to prevent deterioration in symptomatic status or LVEF [8]. Classification of HF by LVEF Type of HF according to LVEF ACC/AHA/HFSA 2022 criteria ESC 2021 criteria HFrEF LVEF ≤ 40% LVEF ≤ 40% HFimpEF Previous LVEF ≤ 40% and a follow-up LVEF > 40% N/A HFmrEF LVEF 41–49% Evidence of spontaneous or provokable increased LV filling pressures (e.g., elevated natriuretic peptide, noninvasive and invasive hemodynamic measurement) LVEF ≥ 50% Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides The diagnosis of HFpEF is often challenging, requiring evidence of spontaneous or provokable increased LA or LV filling pressures as evidenced by elevated levels of natriuretic peptides (brain natriuretic peptide [BNP] or N-terminal-Pro-BNP [NT-Pro-BNP]), or a combination of echocardiographic parameters such as an elevation in the ratio of mitral inflow velocity to mitral annular excursion (E/e′ ≥ 15), or a reduction in the latter, as well as increased LA volume or pulmonary hypertension. The H2FPEF score [9], described in the ACC/AHA/HFSA guideline, and HFA-PEFF score [10], described in the ESC guideline, have been proposed to aid diagnosis, although the ESC suggests a simplified diagnostic approach that is yet to be critically assessed or compared to the score-based algorithms [4]. The ACC/AHA/HFSA guidelines provide detailed recommendations on management for patients at risk for HF (stage A). While not strictly categorized as a stage of HF, the ESC guidelines do also provide a guide to prevention of HF for those with risk factors. Patients at risk of HF (presence of hypertension, diabetes, or vascular disease) should have a screening BNP with intervention if levels are > 50 pg/ml, as it was found to reduce the composite endpoint of asymptomatic LV dysfunction in the STOP-HF trial [11]. Non-pharmacological strategies have been associated with a lower lifetime risk of developing HF. The guidelines suggest regular physical activity of at least 30 min of walking 5 days/week, or 2.5 h/week of moderate intensity exercise in addition to 75 min of vigorous activity per week [12]. Diets such as the Mediterranean, whole grain, plant-based diet, and the DASH (Dietary Approaches to Stop Hypertension) diet [12], as well as diets low in salt (