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Frailty in Heart Failure: A Coalesce of International Guidelines

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Abstract

An ever-growing elderly population is likely accompanied by increased rates of preeminent comorbidities - particularly cardiovascular disease which seems to be taking precedence over all other age-associated, end-organ disorders. Heart failure (HF) is a leading cause of morbidity and mortality. It has become a public health problem for global citizens, caregivers as well as economies that must bear its financial burden. The repercussions of HF, however, are not solely attributed to a dysfunctional bodily system, but also to a decline in physiologic reserve that denotes frailty. Although physicians may recognize a frail picture from a clinical standpoint, frailty regrettably remains equivocal. We have yet to formulate a universally agreed-upon definition, meaning that the most appropriate frailty screening and assessment tools cannot be designated. Nevertheless, the present review aims to summarize the latest international guidelines on HF management while encouraging liberal use of frailty measures for the purpose of risk stratification, signifying prognosis and potentially influencing the management of HF altogether.

Keywords: Cardiovascular disease; Elderly; Frailty; Guidelines; Heart failure

Abbreviations: ACC: American College of Cardiology; AGS: American Geriatrics Society; AHA: American Heart Association; BGS: British Geriatrics Society; BJC: British Journal of Cardiology; CCS: Canadian Cardiovascular Society; CFS: Clinical Frailty Scale; CGA: Comprehensive Geriatric Assessment; CGS: Canadian Geriatrics Society; CJC: Canadian Journal of Cardiology; ECR: European Cardiology Review; EHJ: European Heart Journal; ESC: European Society of Cardiology; HF: Heart failure; HFA: Heart Failure Association; HFpEF: Heart failure with preserved ejection fraction; HFrEF: Heart failure with reduced ejection fraction; LVEF: Left ventricular ejection fraction; MPI: Multidimensional Prognostic Index; NYHA: New York Heart Association; RAAS: Renin-angiotensin-aldosterone system

Introduction

Heart failure (HF) is a clinical syndrome that manifests when the heart is unable to efficiently perform its physiological function-pumping sufficient amount of blood to meet the metabolic demands of the human body and simultaneously accommodating systemic venous return [1]. In the realm of cardiology practice, HF has perpetually proven to be a leading cause of morbidity and mortality. It has been described as a "global pandemic" affecting an estimated 26 million people worldwide [2]. In the United States, this "common condition" affects approximately 5.7 million people, with an average incidence of 670,000 new cases per year. Equally alarming is the incremental expansion of HF cases in high-density nations, including "China, India, Southeast Asia, the Middle East and Latin America" [3].

HF is notoriously associated with high hospital readmission rates at a cost that ranges $10-38 billion US dollars annually [1]. A model created by the American Heart Association (AHA) estimates that by the year of 2030, the costs of caring for these patients is anticipated to reach $53 billion [4]. A study published in the British Journal of Cardiology (BJC) unearths HF accounting for 2% of the total NHS expenditure [5]. These figures exemplify the magnitude to which HF relentlessly impacts quality of life, necessitating repeated acute treatments that surpass mere modification of a wide array of medications.

The etiology of such dysfunction encompasses cardiac-related causes and underlying non-cardiac disease. Prompt identification of the instigator and focused management on correcting the body's adaptive response that brings about myocardial injury will help prevent further deterioration. A meticulous scrutiny of virtually accessible literature reaffirms that ischemic heart disease is a widely recognized cause of HF in the developed world. In the developing world, a preponderance of myocardial insults are secondary to "uncontrolled hypertension, valvular pathology, and congenital heart disease". Diabetes, cardiomyopathies and cardiotoxic drugs are additional risk factors that, in their chronic form, impact pathophysiologic progression of HF and pave a path towards decompensation which eventually demands therapeutic intervention [1].

The mean age range whereby patients with a primary diagnosis of HF are admitted is reportedly 70-75 years. This is deemed plausible in light of the aforementioned comorbidities that provoke steadfast, late-onset HF [2]. Additionally, because this age group conforms to a rapidly expanding elderly population, the incidence and prevalence of HF risk factors are likely to surge along with geriatric syndromes that compromise patients' overall wellbeing.

A systematic review and meta-analysis on the 'Impact of Frailty…in Chronic Heart Failure' published by the AHA concluded that coinciding presence of frailty and HF increased risk of hospitalization and death by approximately 1.5-fold [6]. Frailty is thus an independent vehicle for all-cause morbidity and mortality among all age groups of a heterogenous population, but it confers an undeniable profound

prognostic significance especially in elderly HF patients, as reinforced by the American Geriatrics Society (AGS) [7]. The current review investigates the indispensable role of frailty in terms of prognostication and management of HF with reference to prototypical international guidelines.

Pathophysiology

The cardiac dysfunction observed in HF can be categorized into systolic and diastolic HF. Systolic HF is referred to as HF with reduced ejection fraction (HFrEF) whereby depressed myocardial contractility results in inadequate left ventricular ejection fraction (LVEF) that is ≤ 40% [8]. In contrast, diastolic HF, or HF with preserved ejection fraction (HFpEF), is a consequence of reduced ventricular relaxation and insufficient filling [8]. Irrespective of classification, both types of HF yield a manifold of detrimental aftereffects that construct a clinically frail HF patient and prompt repeated hospital visits.

In order to maintain adequate function, the failing heart must resort to several compensatory mechanisms that involve increasing ventricular wall thickness via ventricular remodeling, as well as augmenting mean arterial pressure through the "activation of neurohormonal systems" [1]. While the heart surreptitiously attempts to increase cardiac output, these mechanisms are merely beneficial in the early course of restitution.

A failing heart produces pulmonary congestion as blood deviates from its habitual laminar flow. Consequently, dyspnea becomes the most commonly reported complaint [2]. Jugulovenous distention, ascites and peripheral edema arise from impaired venous return and are characteristically identified, too. In sum, HF creates a vicious cycle that, in the long run, only worsens HF and exacerbates patients' symptoms.

The New York Heart Association (NYHA) is routinely employed to evaluate the patient's stage of HF, and thereby understanding the extent of their limitations [9]. Their symptoms estimate the magnitude of pathological aberration that ultimately hinders daily activities. Literature fortifies the NYHA classes being a valid measure of functional status, but not functional capacity or functional performance, both of which fall under the umbrella of geriatric syndromes, namely frailty.

The authors strive to highlight the interrelation between frailty and HF that largely stems from a collapsing pump. Other proposals have been put forward to showcase the means by which frailty produces HF, instead. The AGS explains that frailty is intrinsically a physical syndrome. HF, on the other hand, is a multisystemic expression of cardiovascular affliction. When skeletal muscle - a type of striated muscle - becomes susceptible to fatigue as in frailty, much of the human body's total mass becomes vulnerable. The heart, too, is a striated muscle, and imposing chronic strain will drive poor outcomes that are prominent in elderly HF patients [7]. This consolidates the bidirectional relationship between frailty and HF as shown in Figure 1.

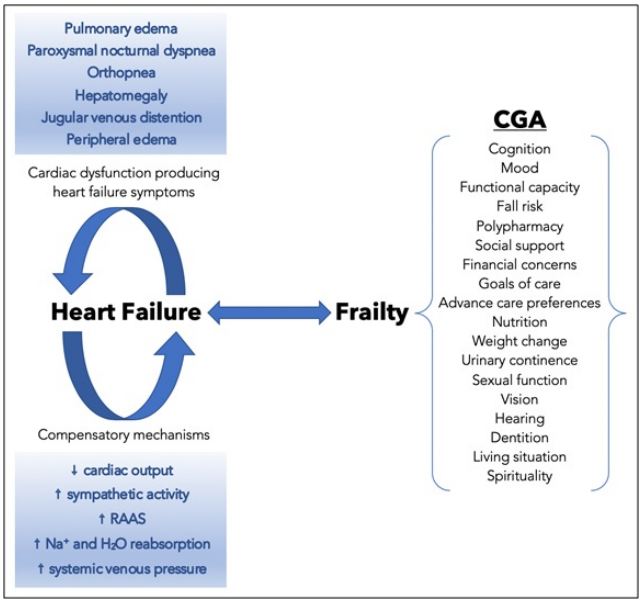

Figure 1: Illustrating the bidirectional relationship of HF and elements of frailty as listed by the CGA; CGA: Comprehensive Geriatric Assessment; RAAS: renin-angiotensin-aldosterone system.

Amalgamating Biologically Correlated Diseases

A multitude of definitions pertinent to frailty have emerged, yet an undisputable one has yet to be attained. Here, Fried's description of frailty is adopted: "a biologic syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems, and causing vulnerability to adverse outcomes" [10]. Frailty and HF share common manifestations, such as impaired cardiorespiratory function, diminished strength and endurance. The biological overlap has led us to ponder upon the configuration of these age-related phenomena and whether this uncertainty substantially contributes towards the ambiguity of frailty. Their relationship is demonstrated in the following statistical assembly:

- The 'Canadian Cardiovascular Society (CCS) Guidelines for the Management of Heart Failure' divulges that frailty affects up to 50% of older patients with HF [11].
- 'Recommendations of the Geriatric Cardiology Section of the Spanish Society of Cardiology' unveils the prevalence of frailty ranging from 4% to 14% in non-institutionalized persons older than 65 years in several European countries [12]. The prevalence in Spain is found to reach 21% [12].
- Similarly, a study from the BJC reveals that 27% of HF patients are at risk of frailty-associated harm and a longer length of hospital stay for patients that averages 3.5 days [5].
- The European Society of Cardiology (ESC) and Heart Failure Association (HFA) of the ESC impart updated guidelines concerning the 'diagnosis and treatment of acute and chronic heart failure' [13]. The article conveys that frailty is present in >70% of patients >80 years of age with HF [13].

- A Chinese-based systematic review and meta-analysis on the 'Prognostic Value of Frailty for Older Patients with Heart Failure' discloses the prevalence of frailty ranging from 25.4% to 76% [14].

Fried's definition of frailty embodies 14% of the elderly population [14]. In contrast, the studies enumerated above consistently corroborate the premise of frailty being more prevalent among HF patients. Frailty seen "as high as 50% in patients with cardiovascular disease" and an unfaltering 50% 5-year mortality rate insinuate that enhancing functional performance is not exclusively dependent on rectifying cardiac injury [1,4].

So far, a thorough understanding of the compensatory mechanisms that supersede HF has guided and influenced management strategies. Although poorly delineated, there is minimal regard for a coexisting diagnosis of frailty that has repeatedly proven to worsen outcomes. Care strategies for an elderly HF population have evolved with little thought for those seemingly subjective complaints - and so HF becomes one of the most clinically challenging chronic diseases to treat. This appeals for considerable collaboration between geriatricians that meticulously attend to elderly care, and cardiologists that attempt to help patients recuperate from cardiovascular disease.

The Comprehensive Geriatric Assessment (CGA) is a gold standard for multidisciplinary and systematic approach of patients that are liable to frailty. It evaluates the core components of frailty that include, but are not limited to, functional capacity, fall risk, cognition, mood, polypharmacy, social support, financial concerns, goals of care and advance care preferences [15]. When there is sufficient neglect of the aforementioned variables that comprise frailty, treatment plans put forth to tackle HF are inefficacious and fuel the cost of caring for patients. Because the interest of ensuring multifaceted care lies primarily under the jurisdiction of geriatricians, many recognize these syndromes and continue to seek overshadowed vulnerabilities that characterize frailty, too. In doing so, an all-inclusive definition of frailty can be established, and this entity of geriatric practice would be more readily incorporated into other specialties with an emphasis on cardiovascular care.

Recommendations for Management

Table 1 abridges the recommendations for management of HF patients that clinically qualify as frail. International guidelines exhibit paramount overlap, and these commonalities are condensed below:

- Frailty is an independent prognostic marker among all patients.
- Frailty has become fallaciously synonymous with aging.
- Frailty is not necessarily identified in those with severe comorbid diseases, such as advanced HF.
- Frailty may be reversible and should be a mandatory component of the evaluation process.
- A holistic approach to caring for HF patients helps cover the foundations of frailty. This may entail referral to a geriatric specialist or requesting a social worker to communicate with the family.
- Certain prerequisites must be met before validating a frailty assessment tool, including practicality and a user-friendly interface.
- Frail patients require careful monitoring and follow-up.
- Physicians should be more cautious when prescribing and administering medications to HF patients to avoid deleterious polypharmacy.
- Elderly HF patients may benefit from or even prefer palliative care that stresses on symptomatic treatment and improving quality of life rather than increasing chances of survival.

Guideline	Recommendations for HF management with respect to frailty
1. ACC guidelines, 2016 [16].	"A determination of frailty as an independent marker of outcomes should … be considered as part of the evaluation process of patients for advanced HF therapies." "In a generally older population, treatment plans "may prioritize symptom management, functional status, and quality of life over survival." "An interdisciplinary care team approach targeting the multidimensional aspects of health may ultimately improve health-related quality of life and overall well-being in this complex patient population."
CJC: 2017 Comprehensive Update of the CCS Guidelines for the Management of Heart Failure [11]; CGS, 2016 [17].	"There is currently no agreement on a single standard frailty measure. Instruments that address key underlying factors related to frailty might be more clinically useful than performance measures [11]." "Depression in older patients with HF should be suspected when chronic physical complaints persist despite optimal HF therapy [11]." "Measuring orthostatic vital signs might identify individuals at risk of falls [11]." "Manage fall risk related to orthostatic hypotension: Minimize use of diuretics and other vasodilators by optimizing first-line HF therapy; Consider a medication review with a pharmacist; Promote physical activity, which might reduce the risk of orthostatic hypotension [11]." "Screening, prevention, and management of delirium is a standard of care for all acutely ill older patients, including those with HF [11]." "Cognitive impairment, even when mild, might interfere with HF self-care [11]." "Patients older than the age of 65 years with HF should be screened for cognitive impairment [11]." "If cognitive impairment is identified, a capable substitute decision-maker should be designated [11]." "HF therapies in frail or older patients should be similar to those in younger patients [11]."

	"In frail older patients, HF medications may be introduced at lower doses and titrated more slowly [11]." " Clinicians should be alert for drug-drug, drug-disease interactions, and therapeutic competition, in cases when the care of one comorbidity is exacerbated by the care of another [11]." For patients prescribed many medications or those with cognitive impairment, consider adherence aids, such as "blister packs," to reduce medication errors [11]." In the older population with HF, more emphasis needs to be given to non-CV prognostic factors, such as cognitive impairment, dementia, frailty, functional state, psychosocial factors (including depression) and polypharmacy [17]." "A palliative care approach is appropriate for some HF patients and is particularly relevant to those who are elderly with advanced disease [17]." "The older patient with known or suspected HF should be assessed for [17]." Optimal care of comorbid conditions that may affect HF treatment, adherence to therapy, follow-up or prognosis (level I, class C) In hospitalized elderly HF patients, delirium should be considered when clinically appropriate (level I, class C) Elderly HF patients who are frail and have a high comorbid disease burden should be followed up in a disease management setting (level I, class A) The primary care physician or provider should be involved in the disease management plan of frail elderly HF patients (level I, class C) Psychosocial issues (e.g., depression, fear, isolation, home supports and need for respite care) should be re-evaluated routinely (level I, grade C) Caregivers of patients with advanced HF should be evaluated for coping and degree of caregiver burden (level I, grade C)"
3. Spanish Journal of Cardiology: Recommendations of the Geriatric Cardiology Section of the Spanish Society of Cardiology for the Assessment of Frailty in Elderly Patients With Heart Disease, 2019 [12].	"Frailty in patients with no severe disability can potentially be prevented or even reversed to some degree through the control of specific diseases, a medication review, specific nutritional interventions, or personalized exercise programs … The absence of severe disability does not contraindicate intervention." "Diagnostic and therapeutic decision making should involve specialists from multiple disciplines and take account of patient values and preferences. The detection of frailty always identifies a patient who will require close monitoring and early intervention in modifiable characteristics in order to improve outcomes." "The Fried criteria provide the best measure of frailty defined as a pre-disability risk state, and it is thus appropriate to use this scale once the acute symptoms have stabilized and it is safe for the patient to carry out the physical performance tasks, either in the final days of hospitalization or after discharge." "For HF patients with moderate or severe dependency, it may be appropriate to use more general scales, such as the CFS, or indices based on a CGA, such as the MPI."
4. The BJC, 2019 [5]; BGS, 2014 [18].	"There have been numerous tools developed to identify frailty, often these tools are complex and not suitable for identifying patients at the time of admission to hospital, requiring a CGA to validate them [5]." "The BGS believes that it is highly likely that CGA in any setting will be an effective intervention for an older person identified as having frailty. In the community there may need to be local flexibility in terms of what constitutes an interdisciplinary team and how the medical input is provided [18]." "The BGS developed the Frailsafe checklist, to identify patients at risk of frailty-associated harm … any person scoring positive on any of these indicators then triggered completion of the full checklist [5]."
5. EHJ: 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure [13].	• The management of older adults with HF "includes the monitoring of frailty over time" and "taking into account its reversible causes to prevent increasing frailty." • "Monitor frailty and seek and address reversible causes (cardiovascular and non-cardiovascular) of deterioration in frailty score." • "Medication review: optimize doses of HF medication slowly and with frequent monitoring of clinical status. Reduce polypharmacy; number, doses and complexity of regime. Consider stopping medication without an immediate effect on symptom relief or quality of life (such as statin). Review the timing and dose of diuretic therapy to reduce risk of incontinence."

	• "Consider need to refer to specialist care of the elderly team and to general practitioner and social worker; etc. for follow-up and support for the patient and his/her family."
ACC: American College of Cardiology; BGS: British Geriatrics Society; BJC: British Journal of Cardiology; CCS: Canadian Cardiovascular Society; CFS: Clinical Frailty Scale; CGA: Comprehensive Geriatric Assessment; CGS: Canadian Geriatrics Society; CJC: Canadian Journal of Cardiology; EHJ: European Heart Journal; ESC: European Society of Cardiology; HF: Heart Failure; MPI: Multidimensional Prognostic Index.	

Table 1: Latest international guidelines for the management of frailty in HF patients.

Discussion

Frailty is frequently underrecognized owing to the lack an assimilated definition. As a result, caregivers struggle to measure frailty and the implications of this are perilous. It is imperative that the domains of frailty, and other impediments to achieving a satisfactory quality of life, be distinguished. In doing so, frailty may be redefined for the sake of standardization.

Furthermore, frailty is presumed to be uniquely found in an elderly or geriatric population. The CCS reiterates that there is an increased likelihood of frailty with elderly individuals, but it can "occur in persons who are relatively young chronologically" [11]. Lupon et al. stated that "almost one third of the younger patient population evaluated fulfilled the criteria for frailty". The reverberations of this novel concept will pioneer diagnostic criteria of frailty in every age group, with or without comorbid disease. It implies that every patient is liable to frailty and that its prevalence might actually be greater than expected. A study published in the International Journal of Cardiology advocates "broadening the view of frailty beyond a strictly geriatric syndrome in HF" [19].

We also suspect a meaningful divide in the measurement of frailty with regards to sex. Perhaps the operationalization of an approved assessment tool will permit future investigations to implement different cut-off values for males and females when diagnosing frailty. Likewise, the presentation of frailty may be magnified in the subset of patients with comorbid disease. Not nearly enough research has been conducted in patients with concurring illnesses, like HF, and, as such, the definition and evaluation of frailty are lacking here as well. A distinction between primary diagnosis of frailty and frailty with HF should create entirely new cut-off values for the same assessment tool. The first set of values would be utilized in an outpatient department, and the latter in a reconstructed, succinct version of the assessment tool that allows for an expedited provisional diagnosis of frailty in HF, for example, and that would be useful in an inpatient or emergency setting for more critical patients.

'The Asia-Pacific Clinical Practice Guidelines for the Management of Frailty' focuses on providing recommendations for the management of frailty without a concomitant illness [20]. Interestingly, their 'strong recommendations' remain highly applicable to the subset of frail patients with HF. The Asia-Pacific Guidelines propose using a "validated measurement tool to identify frailty" and addressing polypharmacy by "reducing or deprescribing any inappropriate/superfluous medications" [20]. Both recommendations are supported by the international guidelines that have been detailed in the previous section. We conclude that, to all intents and purposes, the fundamental basis of frailty is comparable on a global scale. Yet, there are numerous limitations to its applicability that warrant methodical dissection of the topic at hand.

Considering that frailty is not a function of age or HF status - when is it an appropriate time for screening? An article from the European Cardiology Review (ECR) clarifies that the "correct timing for the diagnosis of frailty in HF is yet to be established. First and foremost, we propose rigorous exploration of the ramifications evoked by frailty on comorbidity, and vice versa. If a bidirectional relationship truly exists, then a compromise between the mean age onset of disease and pre-frail status would be best to determine recommended time for inquiry about elements of frailty. Correcting the predisposing factors for cardiovascular disease halts the progression towards HF. Frailty, like HF, is a time-dependent decline across multiple organ systems. Screening at the time of or prior to initiation of pre-frailty is a form of primary and secondary prevention.

Unfortunately, the detection of a pre-frail status is dependent on choosing the correct frailty measurement tool. Prefrailty is a "window of opportunity for workup and intervention before development of systemic decompensation" [6]. This period of heightened vulnerability has been precluded in comparison studies owing to its deficiency in definition and inconsistent measurement in assessment tools.

The CGA has always been the reference point for geriatricians with respect to investigating for frailty. However, even the most useful measuring techniques will harbor certain limitations that must be fairly considered. In the case of the CGA, it is extensive, laborious, and needs specialized personnel for completion. The Geriatric Cardiology Section of the Spanish Society of Cardiology confirms the shortcomings of CGA in an acute setting [12]. Thus, a major challenge lies in "the harmonization of a wide range of frailty scales" [6].

Ideally, a selected tool possesses an ergonomic framework that embraces every variable of the CGA and seeks to diagnose prefrailty and frailty alike. The tool should be feasible, not labor intensive, and retains the ability to easily integrate into a multitude of subspecialties even without having prior experience in geriatric practice. The argument surrounding deficiencies of the CGA may be counteracted with an overall uninformed medical community that, as such, lacks the expertise required to adeptly adopt CGA for the purpose of distinguishing frail patients.

Another systematic review pinpoints the seven frailty-measuring instruments that have been used in in HF research so far: CGA, Frailty Phenotype, Deficit Accumulation Index, Tilburg Frailty Indicator, Frailty Staging System, Clinical Frailty Scale and the Survey of Health, Ageing and Retirement in Europe Frailty Index. None has been validated for use in HF, making the task of allocating an authentic assessment tool an international priority.

Chong and colleagues found that several assessment instruments "did not significantly differ in their ability to diagnose frailty". Since knowing the collected data is not all-together redundant, we encourage unreserved use of the available frailty assessment tools. The results may, to a certain extent, justify complete geriatric assessment even in a

non-geriatric population. This would be enough to dissuade masked progression of prefrailty or frailty that complicates the management of HF otherwise.

'Frailsafe' is an exemplary collaborative effort that demonstrates the sequence to diagnosing prefrailty or frailty syndrome in older persons admitted with decompensated HF [5]. The screening tool designed to prognosticate long-term conditions was piloted across 12 hospitals in the United Kingdom. Referrals were made at the disposal of patients qualifying as prefrail. The trial enabled "superior care planning" in hopes of reducing "inappropriate emergency admissions" among HF patients [5]. A proactive strategy that corresponds to such methodical execution will serve as a paradigmatic shift in the management of frailty in HF patients. 'Frailsafe' emphasizes the importance of separating prefrailty and frailty screening and assessment tools and recommends geriatric referral at the time of diagnosis.

Henceforth, research should focus on the pillars of frailty that are sought after during screening, who should undergo the screening process, and whether a prefrailty screening tool can be administered by any professional in the healthcare sector. A heterogeneity of HF symptomatology, adjustments to care plans, and initiatives to follow frail HF patients from presentation to post-discharge period seem to be eluded in most studies. This solicits zealous exploratory work.

Conclusion

Frailty, like HF, incapacitates multiple organ systems, and the escalating rates for hospital readmission and mortality parallel. The most effective mean for facilitating our understanding of frailty in HF is by pooling literature, recapitulating guidelines and locating the knowledge gaps. The review centralizes evidence of amendments that are made to management of frail HF patients for the sake of unification and, hopefully, subsequent standardization.

Above all, a quintessential definition that groups the criteria for frailty is still missing. Caregivers are typically accustomed to making subjective diagnoses that do not reliably foresee patients that fall in the 'gray area'. A wide spectrum makes the identification of frailty in younger patients especially tricky. This provides further incentive to demarcating prefrailty and frailty in different age groups, with new cut-off values.

There will certainly remain a degree of ambiguity in coming to terms with a definitive discernment of what clinicians deem frail. International guidelines embolden caregivers of every specialty to employ any frailty measuring instrument. This would allow for a diagnosis that is still more substantial than having omit frailty from HF management entirely. The authors recommend that a blueprint is actively pursued for frailty screening, identification, evaluation and timely intervention - after all, these constitute the cornerstone of geriatric medicine and quality care. Comorbid diseases, notably HF, demand for consensus from the scientific community to predict and prevent adverse clinical outcomes.

If suspicion of frailty arises, or the result of a preliminary screening tool is positive, or time constraints do not allow for thorough use of CGA, physicians are also always encouraged to consult the geriatric team or provide a referral, irrespective of patient's age, to help rule out frailty conclusively. The CGA will ensure delivery of patient-centered care, as opposed to HF or disease-specific treatment. Stratification of HF patients in this manner will help guide decisions related to cardiac transplant candidacy, cardiac rehabilitation and palliative care. Ultimately, a multidisciplinary team can better manage the geriatric syndromes which greatly impact HF prognosis.

The guidelines are in accordance with routine follow up and counselling for HF patients, too. Cardiologists and geriatricians tackle likelihood of incidental exacerbations of HF by addressing frailty risk factors along the way. Integrating the heart of geriatric practice into HF algorithms may refine our understanding of this disease and allow for more efficient use of healthcare resources. Patient education and purposeful formulation of an individualized management plan should be of the highest priority. The ACC and CCS accentuate shifting goals of care for advanced HF, frailty or both.

References

1. Kemp CD, Conte JV (2012) The pathophysiology of heart failure. Cardiovas Pathol 21: 365-371.
2. Ambrosy AP, Fonarow GC, Butler J, Chioncel O, Greene SJ, et al. (2014) The global health and economic burden of hospitalizations for heart failure: lessons learned from hospitalized heart failure registries. J Am Coll Cardiol 63: 1123-1133.
3. Fung E, Hui E, Yang X, Lui LT, Cheng KF, et al. (2018). Heart failure and frailty in the community-living elderly population: what the UFO study will tell us. Frontiers in physiology 9: 347.
4. Jermyn R, Patel S (2014) The biologic syndrome of frailty in heart failure. Clin Med Insights: Cardiol 8 : CMC-S15720.
5. Beezer J, Omoloso T, O'Neil H (2019) Use of Frailsafe criteria to determine frailty syndrome in older persons admitted with decompensated HF. Br J Cardiol.
6. Yang X, Lupon J, Vidan MT, Ferguson C, Gastelurrutia P, et al. (2018) Impact of Frailty on Mortality and Hospitalization in Chronic Heart Failure: A Systematic Review and Meta-Analysis. J Am Heart Assoc 7: e008251.
7. Kitzman D (2017) Biological Correlates of Frailty in Older Heart Failure Patients. North Carolina, American Geriatrics Society.
8. Ellahham S (2018) Sacubitril/Valsartan in Management of Heart Failure: A Review of Safety, Efficacy and Cost-Effectiveness. Cardiovasc Pharmacol 7: 250.
9. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, et al. (2001) Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 56: M146-M157.
10. Ezekowitz JA, O'Meara E, McDonald MA, Abrams H, Chan M, et al. (2017) Comprehensive update of the Canadian Cardiovascular Society guidelines for the management of heart failure. Can J Cardiol 33: 1342-1433.
11. Díez-Villanueva P, Arizá-Solé A, Vidán MT, Bonanad C, Formiga F, et al. (2019) Recommendations of the geriatric cardiology section of the Spanish Society of Cardiology for the assessment of frailty in elderly patients with heart disease. Revista Española de Cardiología 72: 63-71.
12. Ponikowski P, Voors AA, Anker SD, Bueno H, Cleland JG, et al. (2016) ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC). Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. Eur J Heart Fail 18: 891-975.
13. Wang X, Zhou C, Li Y, Li H, Cao Q, et al. (2018) Prognostic value of frailty for older patients with heart failure: A systematic review and meta-analysis of prospective studies. Bio Med Res Int 2018: 9.
14. Hassan M, Ibrahim H, Ellahham S (2019) Frailty in Myocardial Infarction Patients: A Paradigm Shift.
15. Goldwater D, Altman N (2016) Frailty and Heart Failure-American College of Cardiology. Am Coll Cardiol.
16. Azad N, Srivaratharajah K, Khoury L (2016) An Approach to Management of Advanced Heart Failure in the Older Person. J Geriatr Cardiol 113: 329-337.

17. Turner G (2014) Managing frailty. British Geriatrics Society.
18. Denfeld QE, Winters-Stone K, Mudd JO, Gelow JM, Kurdi S, et al. (2017) The prevalence of frailty in heart failure: A systematic review and meta-analysis. Int J Cardiol 236: 283-289.
19. Dent E, Lien C, Lim WS, Wong WC, Wong CH, et al. (2017) The Asia-Pacific clinical practice guidelines for the management of frailty. J Am Med Dir Assoc 18: 564-575.
20. Vitale C (2018) Frailty in Heart Failure: Implications for Management. Card Fail Rev 4: 104-106.