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REVIEW

Using the 5Ms Framework to Advance Aging-Responsive Care for Heart Failure with Reduced Ejection Fraction

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Abstract: Complexity of care is the inevitable consequence of an aging population and is particularly true in instances where patients are managing chronic conditions such as heart failure with reduced ejection fraction (HFrEF). HFrEF itself is complex, with an undulating course of illness, increased risk of sudden cardiac death, and myriad accompanying treatment considerations. Generalist management of HFrEF among older patients is further complicated by competing comorbidities, potential for financial toxicity, potential for mental health symptoms, and risk of care with does not align with goals and preferences. The 5Ms (multicomplexity, mind, mobility, medications, and matters most) is a holistic conceptualization of care that has been applied to the care of older adults, including in gastroenterology, ICU care, oncology, and dentistry. In this narrative review, we present 5Ms Model of care for older adults with HFrEF.

Keywords: older adult, cardiovascular disease, interprofessional, interdisciplinary, framework

Introduction

As the aging population grows, clinicians must attend to their evolving and complex care needs. Individualized care planning for older adults with heart failure with reduced ejection fraction (HFrEF, the most common form of heart failure among older adults) is needed due to the undulating progression of symptoms, high mortality, and the need to balance treatment burden with benefit in the context of competing morbidity.[1] Multiple comorbidities such as frailty, cognitive impairment (CI), and insufficiency in other organ systems further complicate care planning and medical management.[2]

Decision-making around cardiac resynchronization therapy, implantable cardioverter defibrillators, inotropes, and mechanical circulatory support is necessary.[3] However, the lack of older adults in clinical trials creates challenges in therapy recommendations and requires careful balance with treatment risks and benefits.[3] Yet, this process cannot take the focus off older adults' HFrEF care, or we may overlook their understanding of their illness, adjustment to emotional and physical changes, and older adults' and values.[4] Complicating setting and treatment management, older adults often have poor prognostic understanding, including misperceiving their anticipated length of survival.[5,6] Ignoring or misinterpreting symptoms and managing declining functional or cognitive status can overshadow the subtle worsening of HFrEF.[7] Alongside these complex medical concerns and treatment options, older adults may have insight into their aging process, thoughts about how old they *feel* (versus their chronological age), and a desire to age well by prioritizing meaningful engagement in life.[8]

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Optimal HFrEF management includes treatment approaches that are sensitive to older adults' needs.[9] Domains rooted in the biopsychosocial model to help clinicians address and support their needs have been established as best practices.[9] We emphasize a domain approach to geriatric HFREF management and present the 5Ms as the most appropriate tool. The 5Ms is a framework developed to address the unique needs of older adults, integrating five critical older adult-centric focus areas: Multicomplexity, Mind, Mobility, Medications, and Matters Most.[2] Sohn et al provide guidance for using this framework to evaluate older adults in clinics and inpatient units.[10] They emphasize how each of the 5Ms impacts the other, creating a holistic picture to guide diagnostic and treatment planning.[10] When older adults receive comprehensive geriatric assessments, they have improved outcomes.[2] Using the 5Ms to support clinicians in thinking through age-friendly and focused care is an approach used in other specialties, such as gastroenterology[11] and opioid use disorders.[12] This paper aims to contextualize geriatric HFrEF management within this framework (Figure 1). The goal is to instill the need for clinicians engaging in HFrEF care to adopt an integrated approach to managing care received by older adults with HFrEF.

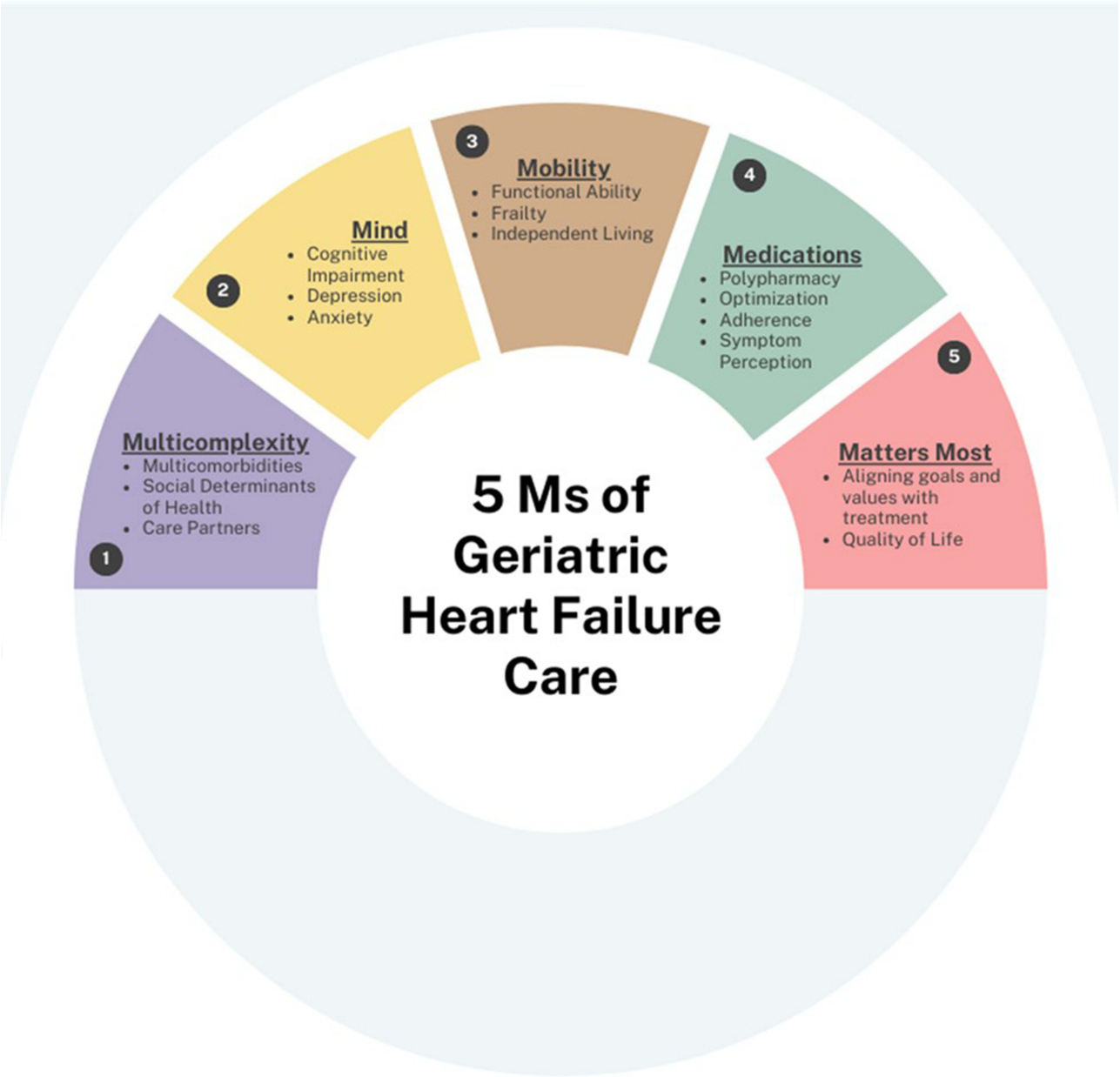

Figure 1 Applied 5Ms model to heart failure care for older adults.
Notes: Adapted with permission from Kochar B, Ufere NN, Ritchie CS, et al. The 5Ms of geriatrics in gastroenterology: the path to creating age-friendly care for older adults with inflammatory bowel diseases and cirrhosis. *Clin Transl Gastroenterol.* 2022;13(1):e00445.[11]

Multicomplexity

Multicomplexity reflects the reality that many older adults do not manage their HFrEF in isolation, with more than 85% of patients having two or more additional chronic conditions.[13,14] They are managing these other conditions, phase of life changes, and changes to functional independence. In addition to guideline-directed medical therapy (GDMT) for HFrEF, each comorbidity has its own set of treatment recommendations that require thoughtful attention.[13,14] For example, using diuretics or vasodilators for older adults with autonomic dysfunction can increase fall risk.[15] HFrEF frailty, polypharmacy, weight loss, and incontinence can worsen prognosis[14] and further complicate optimization of GDMT. This is especially true for Black older adults and those with lower socioeconomic status, who are disproportionately at risk of developing cardiovascular diseases including HFrEF.[13]

These same acknowledgements extend to considering device placement or other advanced therapies for HFrEF. Optimal treatment planning for older adults with HFrEF evaluates how much benefit may be conferred by advanced therapies in the context of competing sources of potential mortality.[16] The struggle created by balancing multiple debilitating conditions and the amount and quality of support in place (eg, social and economic) create scenarios where cardiologists must help patients consider treatment tradeoffs and the added value to preserve quality of life (QOL).[16] There are numerous demands in HFrEF, such as monitoring weight and dyspnea, adhering to sodium and fluid restrictions, and adjusting to fluctuating functional capacity. These demands, on top of other common comorbidities such as diabetes and chronic obstructive pulmonary disease, increase clinic visits and treatment options. Given that many older adults live on limited incomes, the cost of treatment may be a deciding factor. Excessive cost, or financial toxicity, of treatment can lead to patients making difficult tradeoffs,[17] but patients are open to this discussion.[18]

Care Partners

While some older adults with HFrEF die suddenly of cardiac arrhythmia, most will have progressive HFrEF, requiring significant assistance from care partners. "Care partners" is preferred terminology because it reflects the dyadic partnership between an individual with HFrEF and a supportive person who provides some level of care.[19] Caregiving for older adults with HFrEF is uniquely challenging given the prevalence of comorbidities, frequent illness transitions, and the reality that many care partners are also aging and have debilitating health.[19]

Existing interventions to reduce care partner burden or improve their mental health or QOL have mixed effectiveness, but none have shown harm.[20] Evidence suggests interventions designed to improve skills and knowledge, and offer support through nursing or coaching may be beneficial.[20] Additionally, assistance programs can improve HFrEF care partners' well-being and QOL.[20] Evaluating the needs of singular and multiple care partners over time, especially during transitions of worsening symptom progression or end of life, is a necessary aspect of both HFrEF research and clinical practice.[19,20]

Mind

The mind is the realm of depression, anxiety, and cognitive impairment (CI) and that can alter the ability of older adults with HFrEF to perceive symptoms accurately, impair functional status and prognosis, and diminish their capacity to act in their best interests.[21,22] Despite the negative impact of depression, anxiety, and CI on QOL and morbidity and mortality outcomes in patients with HFREF,[23] multimorbidities go unrecognized by clinicians 50% of the time.[21] Interrelated pathophysiologic and behavioral mechanisms link HFrEF, depression, anxiety, and CI.[24] Behavioral factors and neurohumoral and inflammatory systems that produce coagulation and vasculature abnormalities are instrumental in promoting HFrEF, and can also result in depression, anxiety, and CI[24] In turn, depression, anxiety, and CI have similar behavioral, neurohumoral, inflammatory, coagulation, and vasculature effects that can result in incident HFrEF or can exacerbate existing HFrEF. Understanding this interdependent pathophysiology is essential for appropriately and comprehensively assessing, intervening, and managing cognitive dysfunction.

Depression and Anxiety

Depression and anxiety are associated with increased hospitalizations, cardiac events, higher mortality, and poorer QOL, with prevalence ranging between 20% and 45% and 20% and 50%, respectively.[25] Moreover, older adults with social isolation, lower socioeconomic status, and maladaptive coping behaviors are also more susceptible.[22,25] While HFrEF is an independent predictor of depression for older adults,[22] there is clear evidence that depression is associated independently with incident and worsening HFrEF.[26]

Management starts with timely screening and follow-up assessment using validated instruments delivered with empathy and concern. Detection of depressive symptoms using the Patient Health Questionnaire 9 is effective at identifying those who may be at risk. The Geriatric Depression Scale was developed for older adults and appropriate for use in practice,[21,25] but omits the impact of somatic symptoms.[25] Detecting anxiety can be difficult given shared symptomatology with medical issues (including worsening HFrEF), cognitive decline/impairment, and depression[27]; however, the Geriatric Anxiety Inventory (20 items) appropriate for older adults experiencing memory loss.[27] The Geriatric Anxiety Scale (30 or 10 items) offers cognitive, somatic, and affective subscales and was developed specifically for use with older adults.[27] Disruptive symptoms should be treated to improve their QOL and reduce negative physiologic responses. Multidisciplinary teams, including psychiatrists, psychiatric nurse practitioners, pharmacists, and social workers, can aid in managing such complexities.

Treatment for depression and anxiety include pharmacologic, non-pharmacologic, and combination options. Pharmacologic management with selective serotonin reuptake inhibitors (SSRIs) or serotonin and norepinephrine reuptake inhibitors (SNRIs) is well-established.[25] Conflicting evidence regarding the safety of SSRIs and whether they are effective in moderate-to-severe depression may be reasons to avoid additional pharmacotherapy. However, concerns should be weighed against illustrated increases in survival with SSRI/beta blocker combinations and mechanistic anti-inflammatory effects of SSRIs in isolation.[22] Nonpharmacologic approaches (eg, cognitive behavioral therapy and exercise) can be effective at mitigating depression and anxiety and reducing HFREF rehospitalization and mortality.[25] Exercise is commonly recommended[25] but may be challenging for many older adults with HFrEF. More gentle forms of activity through mind–body interventions, such as yoga and Tai Chi, may improve QOL and psychological health and decrease symptoms.[28]

Cognitive Impairment (CI)

Depression and anxiety are often accompanied by cognitive impairment (CI).[21,24] Estimated prevalence of 40% to 60% of older adults with HFrEF have CI, and odds of developing dementia are 1.52-fold compared to others. Moreover, those with HFrEF over age 80 experience significantly worse cognitive decline than those without HFrEF.[24] Cognitive impairment reduces older adults' capacity to engage in self-care and decision-making, worsens depression and anxiety, functional decline, frailty, and is associated independently with increased rehospitalization and mortality.[29] Patients can often compensate for early cognitive dysfunction, which makes it difficult to detect. The Mini Mental Status Examination (MMSE) and the Montreal Cognitive Assessment (MOCA) are both widely used.[24] However, the Mini Mental Status Exam has been criticized owing to practical use concerns and lacking sensitivity to changes in cognitive functioning.[30]

Mobility

Activities of Daily Living (ADLs) and Frailty

Maintaining mobility and independence is essential for older adults' autonomy. Dyspnea, pain, edema, dizziness, and fatigue, hallmark symptoms of HFrEF, contribute to fall risk, avoidance of physical activity, and ultimately worsening capacity to engage in ADLs.[31] Impairments in ADLs not only threaten independence but also contribute to high rehospitalization rates and mortality.[32] Cardiac rehabilitation (CR) is associated with improvements in ADLs, but access and utilization depend on older adults' finances, insurance, and access to facilities and clinicians.[31] Assessment of ADLs in either inpatient or outpatient settings is a critical recommendation to mitigate negative outcomes and improve functional status.[33] Standardized screening tools such as the Katz Index, or Barthel Index are appropriate tools to assess ADLs in both the inpatient and outpatient settings.[34]

Older adults are at risk for physical frailty, amplified in the presence of comorbidities.[33,35] Frailty is a biological and clinical syndrome associated with worse clinical outcomes, including increased falls, hospitalizations, mortality, and decreased QOL.[33,35,36] Weakness and weight loss complicate treatment management and require consideration in prescribing and appointment logistics. Lack of support, low socioeconomic status, depression and anxiety, and CI all increase an older adult's vulnerability to developing frailty.[35,37]

Clinicians should consider older adults' physical, social, and mental factors when evaluating frailty using validated tools.[33,36,38] While objective measures exist, none are specifically designed for HFrEF populations.[36,38] The most utilized frailty tools are the Fried Frailty Phenotype and Barthel Index.[38] However, multidimensional frailty components may offer greater insight beyond physical capacity. While more evidence is needed, interventions that improve social support, prevent polypharmacy; include resistance and aerobic exercise; and optimize nutrition help decrease risk of adverse outcomes.[36] Physical interventions, including CR and tailored programs, have shown improvements in frailty status, QOL, and depression for older adults with HFrEF.[39]

Medications

Multidimensional understanding of the patient's stage of life, the other M's and the potential impact of patient-specific social determinants of health are critical to optimizing medication therapy. Treatment tradeoffs, deprescribing, and managing side effects may be priorities as symptoms progress and life expectancy reduces.[16] Adherence to GDMT to reduce morbidity and mortality may be best for older adults with few multimorbidities and functional capacity.[16] Regularly reviewing, reconciling, and coordinating with multidisciplinary team members will help identify gaps in care (eg, omissions, duplications, incorrect dose, drug interactions, side effects) and prioritize interventions that align with patients' values.[40]

Deprescribing

As part of the medication reconciliation process, clinicians should consider whether any medications can be deprescribed.[41] Older adults with HFrEF are likely to have polypharmacy, given their likelihood of having multiple chronic conditions. Non-GDMT polypharmacy is higher for older adults with HFrEF, which can negatively impact their likelihood of achieving optimal GDMT[42] and increase their risk of adverse events, such as dizziness and falls. While the concurrent prescribing of >5 medications may be necessary given the multicomplexity of older adults with HFrEF and optimal GDMT, deprescribing medications without clear benefits will help lower risks of problematic side effects.[41] Prescribing cascades, or situations where side effects are misclassified as a new condition, are common.[41] Deprescribing principles include eliminating duplications in therapy and unnecessary medications, reducing the number and frequency of administrations, using generic medications, and adjusting doses. While polypharmacy is often considered harmful, there are unknowns surrounding deprescribing risks of clinical destabilization.[40]

Adherence

Medication non-adherence has a dramatic impact on health outcomes and health costs.[43] Factors contributing to non-adherence are multifaceted and require understanding each patient's social determinants of health. Treating HFrEF can create a catastrophic financial burden, especially for those with lower income.[44] Patients with lower levels of education and health literacy, as well as lack of social support, not understanding the purpose of medications, and poor continuity of care all contribute to patient non-adherence.[43] Unfortunately, limited studies focus on medication adherence for older adults with HFrEF.[45] However, interventional studies suggest self-monitoring to improve adherence and subsequently reduce mortality and hospital readmissions.[46]

Self-monitoring involves identifying and responding to symptoms of HFrEF, requiring patients to possess the ability to interpret these symptoms accurately—which can be challenging for older adults.[7,47] Comorbidities, geriatric syndromes, and the gradual onset of symptoms muddy patients' ability to accurately perceive and interpret symptoms.[7] While improving older adults' knowledge is an important first step in symptom perception, clinicians can help patients understand and practice skills of how/what/when to improve symptom response. Recommendations for clinicians to integrate medication reconciliation and improve self-monitoring strategies are to 1) assess medication adherence and if or

how older adults monitor their symptoms, 2) assess barriers to adherence and symptom monitoring, and 3) develop individualized strategies to problem solve and address barriers. Telehealth may be an effective option for monitoring, follow-up, medication dose adjustments, and communication and studies support benefit to older adults and their ability to use it.[48] However, clinicians should be mindful that technology literacy, cultural acceptance, access to translation services, and access to the Internet and Internet-capable devices may contribute to disparities in telehealth use.[49]

Matters Most

It is a priority for older adults with HFrEF and attendant multimorbidity to inform care decisions with timely, high-quality conversations with their clinical team about values, life and health priorities, and prognosis.[13,16] Despite the need, fewer than one-third of individuals with HFrEF reported having a conversation about their goals with their clinicians.[50] Multicomplexity with HFrEF presents challenges owing to uncertain health trajectories, treatment and medication burdens, and varying health priorities for patients and treatment clinicians (generalists and specialists).[16] While older adults with HFrEF and/or their care partners express a need or desire to prepare for future changes,[51] studies reveal high rates of prognostic discordance between patients and clinicians and inadequate understanding of the seriousness or trajectory of the illness.[6,52]

Effective communication encompasses several domains, including sharing tailored medical and prognostic information, eliciting, and honoring what matters most, and addressing emotional and social needs.[16,53] Ideal prognostic communication expresses a shared hope for a desired outcome, acknowledges uncertainty, and prepares patients for changes in the future.[53] For many patients, culture, religion, and spirituality impact healthcare decisions.[54] Asking about

Table 1 Summary of Recommendations Corresponding to Each Domain within 5M's Framework

5M's Domain	Recommendations
Multicomplexity	• Consider and discuss with patients the financial impact of therapies (for both HFrEF and other conditions). • Utilize multidisciplinary teams to assess older adults income, housing, food security, transportation, and social support that impact treatment planning. • Include care partners' in care discussions and provide partners with specific support (where available). • Integrate palliative interventions or consultation with palliative care to address physical, psychological, emotional, and spiritual distress.[9,11,23]
Mind	• Longitudinally screen for, and intervene in, depression, anxiety, and CI. • Consider pharmacologic, non-pharmacologic, and combination therapies, including promotion of physical activity through exercise and/or mind-body interventions. • Utilize an interprofessional and multidisciplinary team to inform a holistic approach to improve HFrEF outcomes.[3,9,38]
Mobility	• Longitudinally assess and intervene in mobility impairment and frailty. • Consider holistic interventions, as well as burdens associated with holistic, medical, pharmacologic, or activity-based interventions.
Medications	• Regularly review all medications and other ingested compounds – prescription, OTC, supplements, etc. – by having patients and care partners bring all medications or a list with doses and frequency to every appointment. • Consider treatment tradeoffs, prioritizing those which adhere to patients' values, goals for treatment, and preferences for care. • Support self-monitoring of HFrEF symptoms, including with technology. • Where available, consider conducting medication reconciliation and symptom monitoring discussions over telehealth. • Utilize a multidisciplinary team, including clinical pharmacists, nurses, and social workers, to assess the impact of medications, and patients' abilities to access, manage, and pay for medications.[38] • Deprescribed medications may require a dose-reduction tapering schedule and clinicians should monitor for discontinuation-related symptoms, need to restart a medication, or reverse dosing changes.[39]
Matters Most	• Engage in ongoing conversations with older adults about treatment goals, understanding that preferences and values may change over time. • Recommend treatment that is aligned with goals and values. • Share hope for desired outcome, acknowledge uncertainty, explore sources of strength.

sources of strength and personal values and beliefs demonstrates cultural respect and culturally responsive care while enhancing rapport and connection.

The illness experience associated with HFrEF affects emotional, social, physical, spiritual, and functional well-being, and adapting to the changes that result from HFREF is a personal journey. Coping strategies and social supports vary, and older adults have different levels of readiness to discuss and prepare for changes in the present and future.[52] Asking about worries, for example, may surface their experiences of loss, financial challenges, or other medical or psychosocial needs. Tailoring communication to patient needs and preferences, creating space for discussions about emotions or difficult experiences, and providing coping and psychosocial support, are key elements of high-quality, person-centered communication and care. For these reasons, engaging patients, and caregivers in earlier and longitudinal discussions about what matters most to them requires a coordinated approach that activates the skills of the interprofessional team, including nurses, social workers, nurse practitioners, and physicians.[55]

Conclusion

Heart failure treatment itself is complex, burdensome, emotionally challenging, expensive, and features several junctures at which critical decisions must be made. Each of these challenges is exacerbated by issues associated with advancing age, and clinicians are urged to address these increased complexities mindfully (see Table 1). Herein, we describe a domain-based approach to addressing these challenges to systematize better clinical practices that meet older adult patients who are managing HFrEF where they are.

Abbreviations

HFrEF, Heart failure with reduced ejection fraction; CI, cognitive impairment, QOL, quality of life.

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Disclosure

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