

Commentary

Applying a Geriatrics and Palliative Care Approach to Cardiovascular Care in Older Adults

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Abstract

Cardiovascular Disease (CVD) is a leading cause of morbidity and mortality in older adults with important implications for quality of life. As older adults with CVD live longer lives, and with the growing availability of cardiac devices and interventions, excellent patient care requires a patient-centered approach to align CVD care with patients' values. However, given the international shortage of Palliative Care (PC) and geriatric medicine clinicians, a shared framework is needed for that incorporates these skillsets to care for a growing, vulnerable population. Here we propose the 4Ms framework be used by cardiologists, geriatricians, and PC clinicians to holistically approach older patients with CVD. We apply the 4Ms framework to 3 common types of CVD affecting older adults: heart failure, aortic stenosis and ventricular arrhythmias.

Introduction

While the connection between palliative Care (PC) and geriatrics, and separately with cardiology, has been explored, [1-4] little has been published with regards to the intersection of all three specialties. The rising global prevalence of Cardiovascular Disease (CVD) impacting older adults, [5] combined with geriatric syndromes like frailty creates an important opportunity where the skills of all three specialties are needed to provide integrated evidence-based, patient-centered care. Applying the latest evidence for treating heart disease, while viewing the whole patient, and prioritizing the elicitation of their values to promote goal-concordant care is an ideal way to care for older adults with CVD. However, silos of care, difficulties of integration across disparate electronic medical records, and demands on clinicians' time are just some of the barriers to a cohesive, multidisciplinary approach

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to patient care [3,6]. Additionally, the shortage of PC and geriatric medicine trained specialists [7,8] highlights the expansive clinician gap for the population needs of older adults with complex illness. Because older adults with CVD rarely have the benefit of a geriatrician, PC physician, and cardiologist, all three of these specialists need a shared framework to practice patient-centered care that prioritizes patients' values and quality of life.

An age-friendly framework for approaching older adults, known as the "The 4Ms," was created by the Institute for Healthcare Improvement in 2017 [9]. The 4Ms include Mobility, Medications, Mentation, and What Matters Most. While the concepts within the 4Ms are important to patients, these ideas can be easily missed when viewing patients in the traditional "problem list" format frequently used by internists and subspecialists. The 4Ms framework can ground clinicians in understanding how their specialty care affects an older adult's function and mentation, while advocating that all decisions should be made within the context of what matters most to the older adult. This latter concept perfectly intersects with the principles of cardiovascular PC: complex symptom management, device and procedural shared decision-making, and goal-concordant CVD care [3]. We propose that the 4Ms be used by cardiologists, geriatricians, and PC clinicians to holistically approach older patients with cardiac diseases and allows a shared language for continuity. To expand on our prior publications outlining opportunities to provide PC for CVD, [3,10-12] this paper applies the 4Ms framework to 3 major types of CVD affecting older adults to create an integrated geriatric palliative cardiovascular care approach (Table 1), drawing from the skillsets of all three specialties.

Heart failure with reduced and preserved ejection fraction

Despite advances in CVD care, older adults with heart failure face significant morbidity and mortality [13]. Given the symptom burden and impacts on quality of life, the 4Ms framework is useful for cardiologists, geriatricians, and PC physicians alike to understand the complexity of patient-centered heart failure care. Mobility may be limited in those with heart failure symptoms as exercise intolerance is common, and older adults may have additional challenges from noncardiac comorbidities like osteoarthritis. However, because exercise can prevent progression of systolic and diastolic heart failure, [14] recommending an achievable exercise goal of 1000 steps per day can help ensure maintenance of function and reduction of problematic heart failure symptoms [15]. Medications to treat heart failure often come with adverse effects, especially in those older adults prone to syndromes like urinary incontinence and falls. To promote a patient-centered approach, clinicians should start heart failure medications at a low dose with slow titration, while also simplifying dosing where able. In terms of Mentation, comorbid depression is a negative prognostic factor in older adults with heart failure [16]. Using the Geriatric Depression Scale (short form) in patients with heart failure can be an essential intervention to identify and treat depression in older adults, including those with cognitive impairment [17].

Eliciting What Matters Most is crucial in framing heart failure care for older adults. Ensuring alignment of treatment plans that promote

Cardiac Condition	Mobility	Mentation	Medications	What Matters Most	
Heart Failure	Challenges	Cardiac symptoms, like dyspnea and limited exercise tolerance Noncardiac comorbidities like osteoarthritis and spinal stenosis	Depression associated with worse heart failure prognosis Cognitive impairment limiting medication adherence	Side effects associated with guideline-directed medical therapy Urinary incontinence from diuretics affecting social engagement	Complex cardiac and non-cardiac symptoms Frequent hospitalizations and high mortality
	Solutions	Walking regimen Cardiac rehab Physical therapy	Screen with Geriatric Depression Scale (GDS) Accommodations like pillboxes Home health services and caregiver support	Start low dose with slow up titration and simplified dosing regimens Time diuretics to allow patients to enjoy activities	Treat both traditional cardiac (edema) and noncardiac (pain) symptoms Establish goals of care, reassess as needed, refer to hospice when appropriate
Aortic Stenosis	Challenges	Dyspnea and angina limiting mobility Limited functional status increasing procedural risk and difficult recovery	Cognitive impairment due to poor cerebral perfusion Cognitive impairment increasing procedural risk	Inability to tolerate medications due to preload dependence and orthostasis	Significant morbidity and post-procedural symptom burden in many patients Potential for significant complications that can compromise quality of life (stroke)
	Solutions	Set realistic expectations for symptom improvement	Discuss risks based on calculators that incorporate functional and cognitive impairment	Minimize polypharmacy and reduce pill burden when able	Advance care planning and postprocedural preparedness plan to establish wishes if complications arise

Ventricular Arrhythmias	Challenges	Frailty from noncardiac conditions may limit benefit of ICD therapies, while still at risk for painful shocks	Cognitive impairment may limit patient's ability to report ICD shocks ICD shocks are associated with worse quality of life and high anxiety, depression, and PTSD	Antiarrhythmic medications have significant side effects	Potential for unwanted shocks and suffering for both patient and caregivers if ICD deactivation is not offered and performed in concordance with wishes
	Solutions	Consider frailty and prognosis when discussing benefits and risks of ICD implantation/ deactivation	Frequently address goals of care and its implication on device settings, particularly after a shock	Balance symptoms of arrhythmia with side effects of medications	Shared decision-making regarding ICD implantation, generator exchange, and deactivation

Table 1: Adapting the 4Ms framework to complex cardiovascular disease in older adults.

quality over quantity of life when concordant with patients' goals is the core of cardiovascular PC. In trials of patients with clinical heart failure, PC has been shown to improve physical and emotional symptom control, functional class, self-efficacy, and satisfaction with care through its focus on goal-concordant care [18-23]. Further, as time outside the hospital is an important metric of quality of life, PC interventions have been associated with reduced healthcare utilization through fewer hospital and intensive care unit admissions, shorter lengths of stay, fewer procedures, and reduced cost of care [20,22,24-29]. Patients' goals may change over the course of a disease, and it is imperative to perform frequent check-ins to assess how heart failure, both its management and its progression, is impacting what matters to older adults. Given the high mortality in this population, the circumstances around how and where patients die is an important metric of promoting patients' goals of care throughout the disease course. As such, cardiovascular PC has been associated with improved quality of death metrics such as increased documentation of preferences, advance care planning, and death at home for patients with heart failure [18,24,26,30-32].

Severe aortic stenosis

Another opportunity for convergence between the three specialties is care of the patient with aortic stenosis, a disease that predominantly affects older adults. Transcatheter Aortic Valve Replacement (TAVR) adoption has exponentially risen in the geriatric population, given its much less invasive approach, quicker recovery time, and lower mortality rates compared to surgical aortic valve replacement. While TAVR can significantly improve patient survival and quality of life, more than 40% of high-risk patients die within 2 years, and almost 20% of survivors have persistent debilitating symptoms [33]. Given this high risk, the 4Ms framework can help determine whether TAVR is an appropriate, goal-concordant procedure for an individual patient.

Mobility can be limited by symptoms of aortic stenosis, such as debilitating angina and dyspnea, and also may be attributable to other concurrent medical conditions. Limited mobility can also complicate procedural risk and recovery. Helping to assess risk and set realistic expectations helps clinicians and patients use shared decision-making when considering TAVR. Medications are often difficult to manage with severe aortic stenosis, given the propensity for preload dependence and syncope. Clinicians should try to avoid polypharmacy to reduce side effects and pill burden for older patients. Mentation can be affected by decreased cerebral perfusion, and several studies have shown cognitive improvement after TAVR [34]. Unlike the traditional Society of Thoracic Surgeons risk calculator, tools like ePrognosis that incorporate functional and cognitive status can give clinicians and patients a more complete understanding of prognosis [35].

In a qualitative study examining What Matters Most, 93% of surveyed patients with severe aortic stenosis reported their main goal of TAVR was to maintain independence and/or improve their symptoms [36]. Only 7% reported hoping to extend their lifespan, suggesting TAVR and other valve procedures can be considered palliative in the context of a patient's goals of care. With this goal in mind, the valve team, geriatrician, or PC clinician can help patients with advance care planning and developing a postprocedural preparedness plan to establish their wishes should complications arise or symptoms persist post-procedure.³ Further, for patients whose goals do not align with TAVR, cardiovascular PC can assist with hospice referral when appropriate.

Ventricular arrhythmias

Managing cardiac devices during complex illness is another example of the intersection between geriatrics, PC, and cardiology. Greater than 30% of Implantable Cardioverter Defibrillators (ICDs) are placed in patients over age 75 [37]. While ICDs can be life-saving, the 1-year mortality rate for older patients with ICDs is reported to be up to 25% [38]. Multiple studies have shown that more than one third of patients with ICDs are shocked in the last 30 days of their lives, regardless of their code or hospice status [39]. Family members of patients who died with ICDs have reported that shocks at end of life cause significant physical pain for patients and emotional distress for loved ones [40]. Applying the 4Ms framework can help cardiologists, geriatricians, and PC clinicians to assist patients with complex decisions regarding their ICD and align its settings with their overall goals of care.

Mobility and frailty are interconnected and both should be considered when determining the benefits of the ICD, as patients who have significant frailty from non-CVD etiologies (e.g., advanced cancer, lung disease, renal disease) may not extend their lifespan with an ICD and may only suffer unnecessary pain from the shocks. Similarly, in terms of Mentation, patients with cognitive impairment may not be able to describe shocks to their caregivers and suffer unnoticed shocks. Even in those who do not have significant cognitive impairment, ICD shocks are independently associated with worse perceived quality of life and high rates of anxiety, depression and posttraumatic stress disorder [41-44]. Clinicians should consider patients' goals and physical and cognitive function, as opposed to their chronologic age, when counseling patients on ICD implantation, generator exchange, and deactivation. Antiarrhythmic Medications, such as amiodarone, have significant side effects that can be burdensome and more severe in older patients [45]. Cardiologists should balance the symptoms of arrhythmias with the side effects from the medications to best reduce the overall symptom burden for the patient.

In terms of What Matters Most, the most important aspect of ICD care is shared decision-making on device implantation and deactivation. In multiple studies interviewing ICD patients, very few patients reported considering changing their ICD settings at end-of-life or discussing their ICD settings with a clinician [46,47]. This is a missed opportunity to prepare for the future. By engaging in these conversations, involvement of PC has been found to reduce ICD implantations for patients whose goals of care do not align with ICD shocks [48]. For patients with existing ICDs, PC has been found to increase ICD deactivations and improve concordance between code status and device settings [48,49].

Conclusion

These disease states are just a few examples of opportunities to apply the 4Ms framework to establish a multidisciplinary paradigm for geriatric, palliative and cardiovascular care. Other CVD common in older adults such as amyloidosis, peripheral arterial disease, refractory angina, atrial arrhythmias, and procedures like left atrial appendage occlusion devices would greatly benefit from this collaborative framework that incorporates the skillsets of all three specialties. As older adults with CVD live longer lives, and with the growing availability of cardiac devices and interventions, excellent patient care requires a geriatric medicine and PC informed approach. This shared language and the overlapping skillsets are essential given the dearth of geriatric medicine and PC practitioners for a growing, vulnerable population. Here we propose applying a known framework applicable across a variety of cardiovascular diseases. When approaching older adults with the 4Ms framework in mind, patient-centered, best practice care is realized.

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