Opportunities for Care Optimization and Hospitalization Reduction for Older Persons With Heart Failure

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There is an exponential growth in incidence and prevalence of heart failure (HF) with aging resulting in significant health care resource utilization.[1] HF impacts function, quality of life (QoL), and increased early mortality.[2,3] HF is a global issue; worldwide, in 2015, there were about 40 million people suffering from HF.[4] Furthermore, the projected prevalence is expected to rise, driving up health care costs, largely related to emergency department (ED) visits and hospital admissions.[5] In clinical trials of HF, enrollees tend to be younger, frequently more men with a lower left ventricular (LV) ejection fraction.[6] However, the data from patients with HF registries are mostly related to the age range of 70 to 75 (SD 15 years). Studies show that >50% of acute HF admissions in registries have a mean age of 75 and that those more than 80 years constitute about 21% to 38% of these cases.[7] Moreover, in real world, patients with HF tend to be older people with both multi-morbidity and frailty. In these patients, post-discharge event rates requiring readmission remain high.[8] The highest risk phase is during the transition of care and at the palliative phase. Noteworthy, 50% of HF readmissions are related to a variety of non-cardiovascular causes.[9]

There are also sex differences in HF presentation. For example, there is a higher prevalence of heart failure with preserved ejection fraction (HFpEF) in women by a factor of 2 in comparison with men.[10,11] Among risk factors for developing HF, both hypertension and diabetes are stronger factors in women than men. The risk of developing HF due to hypertension vs normotensive is doubled in men but is tripled in women.[11] In addition, HF due to myocardial ischemia is more common in men. Notably, in those over the age of 75, the proportion of older women is higher than that of older men.

Nevertheless, the impact of sex on HF readmission of older patients is not well studied. Identifying the risk factors associated with readmissions of HF patients is important for better care quality, proper patient education, and effective post-discharge planning. Unfortunately, women with HF tend to experience poorer care. The POWER (Project for an Ontario Women's Health Evidence-Based Report) Study showed that women were less likely to be seen by cardiologists in comparison with men (16% vs 22%) and were less likely to be on evidence-based medications for HF.[12] Among women admitted to hospital with HF, only 33% underwent echocardiography for LV function evaluation. Furthermore, the study showed that 30% of women visited ED within 30 days of hospital discharge and 20% of them were readmitted.

Importantly, a sizable proportion (43%) of older patients with HF has coexisting cognitive problems.[13] Cognitive impairment (CI) impacts capacity for adherence to therapies and services. There is also a higher risk for early HF decompensation and readmission for these patients. Risk factors such as hypertension, coronary artery disease, and atrial fibrillation play a major role in developing CI. Systematic reviews suggest a higher level of decline in cognition over time in patients with HF in comparison with those without HF.[13]

HFpEF is truly a geriatric syndrome.[14] Evolution of HFpEF is complex and clinically heterogeneous resulting from chronic comorbidities with multi-organ involvement. Most of the older adults with HF, particularly women, and nearly all those >90 years old, have HFpEF. With aging of the population, the prevalence of HFpEF is increasing. Interestingly, whereas over past decades the prognosis of heart failure with reduced ejection fraction (HFrEF) has improved, the prognosis of HFpEF has not changed.[3,14] This could possibly be related to better research and treatment options for HFrEF.

There is a higher prevalence of a non-cardiac comorbidity burden in HFpEF patients compared with those with HFrEF.[15] Patients with HFpEF have a higher burden of hypertension (55%-86%), diabetes mellitus (26%-45%), stroke (15%-17%), chronic obstructive pulmonary disease (COPD; 7%-31%), obesity (41%-62%), and anemia (21%-53%). Therefore, management of these patients is more complex and requires optimal therapies for both cardiac and non-cardiac conditions to reduce rehospitalization, number of ED visits, and total mortality. Unfortunately, in the clinical trials, typical geriatric HF patients with multi-morbidity, disability, and frailty have not been the focus and were significantly less recruited and studied. We need to appreciate that these patients are growing in numbers and should be studied in future research. Understanding the impacts of comorbid conditions in health care utilization is of paramount importance. It has been strongly advocated to design newer models of care, likely led by primary care provider (PCP) or generalist and inclusive of other health care providers, to close care gaps and improve continuity and effectiveness of care for such patients in the ambulatory settings.[16] Innovation in provision of care should not only address HF and its risk factor therapies but also offer better coordinated and integrated services/programs to optimize chronic disease management. For example, shared care models including both nurse practitioners and PCPs for more complicated patients with HF likely need better clinical resources and increased frequency of encounters with clinicians and other health care multidisciplinary members, including dieticians, physical therapists, and pharmacists.[17] Improved care of complex older patients with cardiac disease is dependent on a new model of collaboration

and teamwork between PCP, geriatrician, and cardiologist, with timely access to palliative care to accommodate the fundamental heterogeneity of aging and the patient's choices.[18]

Recognition and management of frailty in older HF patients are of crucial importance.[19] Frailty is a significant predictor of all-cause admission after adjusting for ejection fraction and symptom severity.[20] In fact, frailty was associated with a 92% increase in ED visits and a 65% increase risk for hospitalization.[21] Therefore, we need to manage frailty, define the goals of treatment, incorporate risk-benefit intervention assessment, and focus on QoL issues and end-of-life values/preferences of patients in decision making.[22] Optimization of non-cardiac comorbidities including screening for geriatric syndromes, appropriate pharmacologic regimens (ie, understand heterogeneous nature of this population, start low go slow, renal function adjustment, assess drug-drug interactions, medication reconciliations, particularly during care transition), and addressing poly-pharmacy will have a significant impact on treatment outcomes.

Within this context, to meet the intersection of both the cardiology and geriatric care needs of these frail older patients with HF, there is a call for collaboration among providers in improving cardio-geriatric care.[18]

Newer collaborative cardio-geriatric clinics are being tested.[16] These clinics are designed to meet the needs of older patients with HF and their caregivers by providing teaching support and comprehensive care focusing on improving QoL and functional independency. If managed adequately in a multidisciplinary ambulatory care setting, we can potentially prevent most of the unnecessary HF decompensations and hospital readmissions. Naturally, physician time constraints and the lack of appropriate clinical practice guidelines and support for this population are likely the cause of readmission. The geriatric cardiology field has been evolving to meet the demand and incorporating suitable training needs by infusing geriatrics knowledge and skills to cardiology practice and vice versa. This would expand proficiencies in addressing multi-morbidity and geriatric-related conditions such as falls, poly-pharmacy, frailty, cognitive decline, and psychosocial domains.[23] Furthermore, optimal management of non-cardiac comorbidities in frail older patients such as delirium, dementia, incontinence, falls, deconditioning, and pain have significant impact on overall outcomes.[24]

Reduction in HF readmissions is a desired outcome for delivery of optimal care. Service-based research to reduce readmissions should thus focus on cost efficiency and generating translatable research within an agreed-upon standardized framework for universal acceptance. Unfortunately, the gaps in the current clinical practice guidelines contribute to readmissions for comorbid conditions in older HF patients and do not support how we should best meet the needs of our frail older patients with HF within the community. For example, a recent survey of HF providers identified many obstacles to goals-of-care (GoC) discussions in hospital.[25] The result of this survey can provide targets for future interventions to improve communication by and between providers about GoC in advanced HF.

Unfortunately, the current guidelines and existing knowledge are insufficient to adequately provide recommendations in assessment and management of complex older HF patients who are seen in routine clinical practice. To address markers of readmission and prognostic risk, AHA/ACC/AGS (American Heart Association/American College of Cardiology/American Geriatrics Society) scientific statement points to the shortcoming of HF clinical guidelines and makes recommendations for closing the care gaps.[26] In their review of the HF guidelines, focusing on the context of comorbid diseases, frailty, and advancing age, they recommend the needed future research areas. There is also a role for post-translational-type research to provide evidence appropriate for better management of older patients. Regular quality assurance audits and quality improvement projects with prospective database usage are essential. Several recent process-of-care publications on chronic disease management programs and performance markers/metrics have provided a unique opportunity to standardize HF programs.[16]

In conclusion, the complexities of these patients demand an approach that is less algorithmic but more holistic by addressing not only direct HF-related conditions but also optimal management of comorbidities and geriatric syndromes, focusing on functional independency and QoL. To improve care delivery and minimize the need for ED visits and rehospitalization, development of ambulatory services with effective chronic disease management and integrated care programs are needed[27] to benefit both the patient and the health care system. Many opportunities exist.

Author Contributions

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