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Multimorbidity in Older Adults With Cardiovascular Disease

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ABSTRACT

Multimorbidity occurs in adults of all ages, but the number and complexity of comorbid conditions commonly increase with advancing age such that cardiovascular disease (CVD) in older adults typically occurs in a context of multimorbidity. Current clinical practice and research mainly target single disease-specific care that does not embrace the complexities imposed by concurrent conditions. In this paper, emerging concepts regarding CVD in combination with multimorbidity are reviewed, including recommendations for incorporating multimorbidity into clinical decision making, critical knowledge gaps, and research priorities to optimize care of complex older patients. (J Am Coll Cardiol 2018;71:2149–61)

The population of older adults is rapidly growing and accordingly so is the number of adults with cardiovascular disease (CVD) who survive into later life, as well as the number of older adults who are predisposed to develop incident CVD as a function of normal aging physiological changes. More than 70% of adults develop CVD by 70 years of age, among whom more than two-thirds also develop non-CVD comorbidities (1,2). Thus, multimorbidity is endemic among older adults, particularly those with CVD. Current research and clinical practice in CVD have fostered a disease-specific care paradigm that focuses predominantly on management of a single disease and that rarely embraces the complexities imposed by multimorbidity. With advancing age, patients with symptoms and priorities of care that are meaningful to most become significantly affected by comorbid conditions. Patient-centered priorities for an older patient demographic support the rationale for multimorbidity to become more systematically integrated into the management of patients with CVD. This paper reviews emerging concepts regarding CVD in the context of multimorbidity, provides recommendations for incorporating

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ABBREVIATIONS AND ACRONYMS

ACC = American College of Cardiology

AGS = American Geriatrics Society

CMS = Centers for Medicare & Medicaid Services

CVD = cardiovascular disease

DHHS = Department of Health and Human Services

FDA = Food and Drug Administration

NCDR = National Cardiovascular Data Registry

NIA = National Institute on Aging

NIH = National Institutes of Health

PCORI = Patient-Centered Outcomes Research Institute

RCT = randomized clinical trial

multimorbidity into clinical decision making, and delineates critical knowledge gaps and research priorities to advance the care of patients with CVD and multimorbidity, especially those of advanced age.

BACKGROUND

Age-related changes in cardiovascular structure, physiology, and biology increase susceptibility to CVD, and more adults are surviving into old age with chronic CVD after enduring cardiovascular or other events that would have once ended their lives at a younger age (3). This phenomenon has resulted in a significant proportion of older adults with CVD who, in contrast to younger patients in whom CVD typically presents as a dominant medical condition, are more likely to be challenged with CVD as part of a constellation of chronic conditions (**Figure 1**). For many older adults with multimorbidity, CVD is not necessarily experienced as the most important of their health and/or health care concerns (1,2,4).

Although chronological aging is immutable, a mere tally of years alive does not reliably predict health status. It is more meaningful to use metrics that integrate co-existing conditions and their impact on physical, cognitive, and psychosocial function (5–7). Among adults ≥80 years of age, multimorbidity is more common than any single disease, with over 80% of this age group having 2 or more chronic conditions and 54% of those ≥85 years of age having 4 or more conditions (8–11). Because multimorbidity is a powerful predictor of poor outcome (12), it becomes an important prognostic metric among older patients.

An additional impetus to promote an integrated approach to treatment for patients with multimorbidity is the alarming fact that the 14% of Medicare beneficiaries who report 6 or more chronic conditions consume 46% of Medicare's annual budget of more than $500 billion. The disproportionate costs associated with multimorbidity are especially relevant given Medicare's recent mandates to optimize outcomes, value, and efficiency of care.

Responding to this challenge, the American College of Cardiology and the National Institutes on Aging (NIA), in collaboration with the American Geriatrics Society (AGS), convened a 2-day multidisciplinary workshop to review the ramifications of multimorbidity on CVD as a unique gathering to update, collaborate, and formulate a future agenda (13). This workshop, entitled "Multimorbidity in Older Adults with Cardiovascular Disease," was remarkable for the synergy it generated from a broad cross section of experts (i.e., cardiologists and cardiology care providers, geriatricians, nurses, epidemiologists, and stakeholders from Centers for Medicare and Medicaid Services [CMS], Food and Drug Administration [FDA], Agency for Healthcare Research and Quality, and others) to develop strategies to better address this transformative health care challenge.

DEFINING MULTIMORBIDITY

The definition of multimorbidity established by the Department of Health and Human Services (DHHS) and adopted for this paper involves 2 or more medical diseases or conditions, each lasting more than 1 year, yet multimorbidity defined in this way identifies a population that is quite heterogeneous, in part because the number and variety of diseases and other conditions typically increases with age (14), with the burden and impact of multimorbidity usually becoming more severe over time (11,15,16). Most cardiovascular providers routinely face managing multimorbid patients with interrelated pathophysiologies, such as coronary artery disease, hyperlipidemia, and hypertension. However, this paper focuses primarily on the presence of 1 or more noncardiac diseases or conditions in older adults with CVD as significant modifiers of care and outcomes. These diseases or conditions may include geriatric syndromes, which are broadly defined as multifactorial symptom complexes usually associated with diminished homeostatic reserve, that are associated with adverse outcomes (e.g., frailty, falls, cognitive and physical impairment, incontinence, sensory dysfunction, and delirium) (17). These syndromes are becoming increasingly familiar to providers who now recognize that geriatric syndromes are more common than many cardiovascular disorders and often occur in combination with one another, complicating diagnostic certainty and management, while adversely affecting disease-specific and overall outcomes (18).

PATHOPHYSIOLOGY AND IMPLICATIONS OF MULTIMORBIDITY: INTERSECTIONS WITH CVD

Many of the same age-associated structural, physiological, and biological changes that predispose patients to CVD also predispose them to multimorbidity and compound risks and consequences once diseases occur (19). Physiological stresses from impairment of multiple organ systems in people with multimorbidity may synergistically increase vulnerability and risk for progressive morbidity and mortality (7,8).