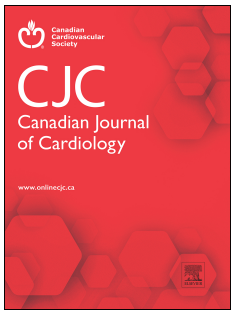

The aggravation of frailty by cardiovascular events: the frail elephant in the overcrowded hospital room?

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Hospital overcrowding in Canada and many other countries stems from high rehospitalization rates and delayed patient discharge.[1,2] In Canada, the term Alternate Level of Care (ALC) designates patients no longer deemed to require hospital services but who cannot be discharged home.[3] There were over 3 million ALC days in Canada in 2023-2024, representing 17% of all hospital days.[4] Solutions to improve "patient flow" have focused on downstream solutions, such as transitional units or long-term care homes, though these have generally failed to resolve hospital over-crowding.[5,6]

Cardiovascular diseases (CVD) are common reasons for hospitalization of older adults, among whom those with concurrent multimorbidity, precarious social situations, and frailty are most likely to experience prolonged hospitalization.[7-11] Frailty is a graded state of vulnerability to stressors that stems from the accumulation over time of deficits across multiple physiological systems.[12] Frailty is common among older adults with cardiovascular disease in whom it is associated with an increased risk of poor outcomes from medication side-effects, surgical complications, or hospital care processes such as bedrest.[13] Frail older adults may benefit from comprehensive geriatric assessment to inform potentially beneficial interventions, including nutritional guidance and exercise prescriptions, but also to identify and mitigate against potentially harmful stressors, such as offering minimally invasive rather than conventional surgeries.[12]

In this issue of the journal, Phyo et al. present a prospective study demonstrating how premorbid vulnerabilities and incident cardiovascular events can interact in certain older adults to bring about greater frailty.[14] The ASPREE-XT is an observational extension of the ASPREE clinical trial of low-dose aspirin for primary prevention of CVD in older adults. The study was conducted primarily in Australia, with about 10% of participants from the United States. Study participants were assessed using various measures, including a frailty index and the Fried Frailty Phenotype, and social determinants of health such as place of residence and socioeconomic status. The primary outcome was incident frailty, defined as a frailty index greater than 0.21, following a non-fatal CVD event (myocardial infarction, stroke, coronary heart disease, heart failure hospitalization). Following such as event, the incidence of frailty exceeded 45%, with risk factors including older age, women, stroke, prior prefrailty, and living outside urban centres. This relationship was robust to sensitivity analyses. The authors conclude that a CVD event can contribute to incident frailty, and recommend screening to identify older adults who would benefit from interventions to prevent frailty progression, enhance recovery after a CVD event, and thus maintain their well-being.

The proposition that CVD events can trigger frailty progression is intriguing, especially since a large proportion of these are preventable with evidence-based therapies and public health interventions. The treatment of frailty is a major objective of geroscience.[15] A recent scoping review concluded that frailty may be partially reversible, primarily with exercise-based interventions, but that the detection of reversibility is more likely using frailty instruments that assess physical and functional function, such as the Fried Phenotype or Clinical Frailty Scale.[16]

Whether these findings reflect a true reduction in age-related physiological vulnerability or simply a positive response to rehabilitation remains to be answered.[17-19]

While important, discussions on whether frailty is reversible detract from an arguably more patient-centered outcome and major driver of delayed hospital discharge and ALC status, that of functional status.[9-11] Numerous observational studies demonstrate that patients hospitalized for CVD, particularly with stroke and heart failure, experience a decline in activities of daily living, with most not returning to pre-hospitalization baseline.[17-19] While Phyo et al do not describe functional trajectories in patients following a CVD event, the high frailty risk associated with stroke, particularly among those living in more remote areas where rehabilitation services may be limited, does suggest that functional decline is a prominent driver of the results observed.

Several health system design implications arise from these results. Strategies are required to identify hospital patients at risk of functional decline and who would benefit from interventions targeting their underlying frailty and precarious sociodemographic determinants, and to limit exposure to potential stressors. Recommendations for senior-friendly emergency departments include high-risk case-finding to triage patients to additional focused geriatric assessment, determine appropriate interprofessional referrals, and initiate discharge and follow-up planning.[20.21] Patients identified as having frailty-related risks would benefit from senior-friendly hospital practices to promote early mobility and reduce the risk of iatrogenic delirium and functional decline, thereby reducing the risk of hospitalizations, emergency department revisits, and costs. Further characterization of vulnerabilities would inform the need for specialized comprehensive geriatric assessment to determine the relative risks and benefits of different approaches to care, such as pharmacotherapy, or minimally versus traditional surgical interventions.[12,22-26]

An equally, if not more important, system strategy is to prevent CVD hospitalizations in the first place. In Canada as in the rest of world, important gaps remain in the control of cardiovascular risk factors.[27-33] Building greater system capacity for heart failure care through a hub-and-spoke system structure has been proposed, with early evidence showing promising results.[34-36] Likewise, identifying older adults at high-risk of frailty-related outcomes is feasible in primary care settings and reduces hospitalizations.[37,38] Cardiovascular and geriatric specialists can and must play greater leadership roles in the implementation, evaluation and spread of such interventions.[39]

Older adults hospitalized with CVD experience progressive functional decline, and this is a major reason for delayed hospital discharge and institutionalization. Thus, the incident frailty demonstrated in ASPREE-XT most likely translates from a patient perspective into functional decline, with significant downstream implications on health service utilization and rehabilitative needs. In routine clinical practice, measuring the progression of frailty may be less meaningful than tracking actual patient function (physical and cognitive).

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Research into preventing, or at least delaying, the development of frailty and associated mortality remains an important scientific and societal endeavour. However, we already have many of the answers needed to move our system from its reactive and predominantly hospital-based focus, towards a proactive and community-based one that can identify older adults at risk and avert the functional complications that would otherwise rob them of their independence and quality of life. Not only would doing this benefit older adults, but by relieving the pressure on our hospitals, it would benefit us all.

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