Frailty Tools are Not Yet Ready for Prime Time in High-Risk Identification

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In this issue of the *Journal of Hospital Medicine*®, McAlister et al.[1] compared the ability of the Clinical Frailty Scale (CFS) and the Hospital Frailty Risk Score (HFRS) to predict 30-day readmission or death. The authors prospectively assessed adult patients aged ≥18 years without cognitive impairment being discharged back to the community after medical admissions. They demonstrated only modest overlap in frailty designation between HFRS and CFS and concluded that CFS is better than HFRS for predicting the outcomes of interest.

Before a prediction rule is widely adopted for use in routine practice, robust external validation is needed.[2] Factors such as the prevalence of disease in a population, the clinical competencies of a health system, the socioeconomic status, and the ethnicity of the population can all affect how well a clinical rule performs, but may not become apparent until a prospective validation in a different population is attempted.

In developing the HFRS, Gilbert et al. aimed to create a low-cost, highly generalizable method of identifying frailty using International Classification of Diseases (ICD) 10 billing codes.[3] The derivation and validation cohorts for HFRS included older adults aged >75 years in the United Kingdom, many of whom had cognitive impairment. Therefore, it is not surprising that the tool behaved very differently in the younger Canadian cohort described by McAlister et al. where persons with cognitive impairment were excluded. That the HFRS had less predictability in the Canadian cohort may simply indicate that it performs better in an older population with cognitive vulnerabilities; given the frailty constructs of the CFS, it may provide less insights in older populations.

We applaud the efforts to find a way to better identify high-risk groups of adults. We also appreciate the increasing attention to function and other frailty-related domains in risk prediction models. Nevertheless, we recommend caution in using any of the many existing frailty indices[4] in risk prediction tools unless it is clear what domains of frailty are most relevant for the predicted outcome and what population is the subject of interest.

One of the challenges of choosing an appropriate frailty tool is that different tools are measuring different domains or constructs of frailty. Most consider frailty either as a physical phenotype[5] or as a more multifaceted construct with impairments in physical and mental health, function, and social interaction.[6] There is often poor overlap between those individuals identified as frail by different measures, highlighting that they are in fact identifying different people within the population studied and have different predictive abilities.

An ideal frailty tool for clinical use would allow clinicians to identify high-risk patients relative to specific outcome(s) in real time prior to discharge from hospital or prior to a sentinel event in the community. CFS can be calculated at the bedside, but HFRS calculation can only be done retrospectively when medical records are coded for claims after discharge. This makes HFRS more suited to research or post hoc quality measure work and CFS more suited to clinical use as the authors describe.

Although using a frailty indicator to help determine those at high risk of early readmission is an important objective, the presence of frailty accounts for only part of a person's risk for readmission or other untoward events. Reasons for readmissions are complex and often heavily weighted on a lack of social and community supports. A deeper understanding of the reasons for readmission is needed to establish whether readmission of these complex patients has more to do with frailty or other drivers such as poor transitions of care.

The prevalence of frailty will continue to increase as our population ages. Definitions of frailty vary, but there is a broad agreement that frailty, regardless of how it is constructed, increases with age, results in multisystem changes, and leads to increased healthcare utilization and costs. Preventing the development of frailty, identifying frailty, and developing interventions to address frailty in and out of the hospital setting are all vital. We welcome further research regarding the biopsychosocial constructs of frailty, how they overlap with the frailty phenotype, and how these constructs inform both our understanding of frailty and the use of frailty tools.

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