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Does determining the degree of frailty help pandemic decision-making when resources are scarce?

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In general, and never without nuance, the more frail an older person is, the worse their health outcomes with COVID-19, compared with those who are fitter, or less frail.[1,2] In a multicentre, European, COVID-19 study published in *The Lancet Healthy Longevity*, Roos Sablerolles and colleagues[3] report that a higher score on the Clinical Frailty Scale (CFS) was associated with greater risk of hospital mortality.

Frailty tools were developed because informal assessments for frailty are poor and over-emphasise the indubitable effect of age on worse outcomes. Older people, when acutely ill, can seem to be frail when unwell and immobile in a hospital bed. This can reinforce an ageism that is subconscious, not rare, and even exacerbated by COVID-19.[4] The CFS is an efficient clinical tool studied and developed for older adults.[5] It has good validity for inpatient populations and when used by various health-care professionals,[5-8] and has been recommended for many settings,[5,7] making it widely used. Major components of the CFS include exercise, comorbidities, symptom control, disability, and mobility. Based on a theory of how age-associated health deficits accumulate, these components are ordered to reflect the various degrees of fitness and frailty.[5] The nine-point CFS includes a category for people who are understood to be terminally ill.[5] Reflecting the complexity of frailty, scoring the CFS relies on observer judgment. Raters must take a history—the scale is designed to be scored on the basis of the health of the individual 2 weeks before the current state. This 2-week criterion is empirical and reflects how much energy it takes to get back even to baseline health. Recovery requires not just repair, but reversing the inertia of decline.[9,10]

The evidence generally supports evaluating frailty as part of managing frail individuals who are acutely ill, especially if age is the alternative measure.[1,2] The use of a frailty evaluation is also supported specifically in COVID-19-related presentations. Frailty identification is a starting point to understanding patients who are at risk for death, disability, and loss of independence. Management of patients who are frail is not always part of the training provided to health-care workers in acute care, which often means that important information about the breadth of existing social and health issues is ignored, or even derided.[11] So-called atypical presentations, such as delirium, functional decline, and falls are often the only signs of a serious acute illness in patients who are frail.[12] Crucially, frailty exists on a spectrum. Categorising people as being frail and using a standard care plan discussion that does not distinguish between those living with mild frailty and those living with very severe frailty, means that patients will not be properly informed or provided with appropriate care. Following frailty identification (eg, with the CFS) a comprehensive assessment is required to create a realistic, patient-centred treatment strategy that targets reversible contributors to frailty as well as the inciting health issue. So-called long COVID, although not unique to people who had been living with frailty, might serve to prompt closer attention to specific clinical measures thus far not studied other than an expected longer functional recovery after illness.

Pandemic medicine seems to have accommodated, alongside care for patients, the ethical mandate to ensure that health-care systems are maintained.[5] Does this mean that people who live with frailty would be lesser candidates for more traditionally intensive management or be a higher burden to the health-care system? This question must consider outcomes other than mortality: for many people, death is not the worst result of intensive treatment. When the system is under extreme pressure, estimations are needed for whether frail patients take up more health resources than other patients.

Sablerolles and colleagues[3] have extended their use of the frailty construct to include people younger than 65 years. In these patients, the concept of frailty is less well validated than in older patients.[1,5,7] Despite their findings, which are similar to those of a larger study of outcomes of respiratory infection before the pandemic,[8] caution is still needed in applying the CFS to younger populations. That is because disability (including mobility disability) in particular has a different meaning when it is life-long than when it arises in older age. In older people, single system disability is not common. Instead, disability arises from the coalescence of several age-related health deficits.[13] The importance of disabilities in frailty and CFS scoring lies in ability of the scale to integrate a lot of information that is relevant to mortality risk.[9] From a life

course perspective, the mutual information of frailty and mortality is lower among younger people, in whom death is less common (equally it declines in the tenth decade of life onwards, when the risk of death is high, even for people who are fit). This contrasts with younger people, in whom disability more often reflects single-system, non-ageing related processes (eg, spinal cord injury) or conditions present since early in life (eg, cerebral palsy or intellectual disability). In these people, the mechanisms for functional impairment differ from those that arise from the accumulation of health deficits in ageing. In short, the CFS score in a younger person need not confer the same risk that it does in an older person.

This is not to say that the degree of frailty does not accelerate after severe illness. Notably, this acceleration can follow acute illness requiring intensive care.[6] Additionally, a major stroke, together with the multiple contributory factors that commonly accompany it, can accelerate the development of premorbid, baseline frailty due to the cumulative impact across multiple organ and regulatory systems: new deficits beget more deficits.[10]

In this regard, two important questions must be addressed. Does disability accelerate frailty after acute illness? When symptoms persist, what is the best way to determine a newly established baseline frailty state in the still recovering patient? For the former question, it seems likely that even before the age of 65 years, progression of disability is related to the degree of frailty. For example, in a study of people aged 50 years and older who lived with intellectual disabilities, the degree of frailty was related to the risk of incident impairment in activities of daily living.[14] As for the second question, at the moment, too little information is available on relevant health and frailty trajectories in younger people. This important question should motivate additional inquiry.

In older adults, a growing body of evidence, to which the study by Sablerolles and colleagues adds, suggests that the degree of frailty can inform the estimate of mortality risk in people with COVID-19 who are severely ill enough to be considered for intensive care. Caution must be taken about extending the understanding of lifelong disability to equate it with disability as a manifestation of age-related frailty. Until we understand if frailty accelerates following disability and whether ageing and non-ageing related disability are similar in their relationship with adverse outcomes, we need to be cautious in applying the CFS to younger populations. Rather, we will need to rely on careful clinical judgement, comprehensive assessments, and be conscious of not discriminating against age or anyone with a disability.

KR has asserted copyright of the Clinical Frailty scale; use is free for research, educational, and not-for-profit care, users are asked not to change or commercialise it. KR is also President and cofounder of Ardea Outcomes, which offers software and training for individualised outcome measurement to pharmaceutical companies, device manufacturers, and academic institutions, and has had private sector contracts in the past 3 years with EIP Pharma, Hollister, Novartis, Nutricia, Roche, Shire, and Takeda, all outside the submitted work. KR receives career support from the Dalhousie Medical Research Fund as the Kathryn Allen Weldon Professor of Alzheimer's Research, philanthropic programme support from the Fountain Family Innovation Fund (Queen Elizabeth II Health Sciences Centre Foundation), and holds research grants from the Canadian Institutes of Health Research (Canadian Frailty Network), all outside the submitted work. SDS receives fellowship support from the Dalhousie Medical Research Foundation and University Internal Medicine Research Foundation at Dalhousie University, outside the submitted work.

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