

# Using frailty tools as prognostic markers in patients who are acutely ill

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■ Cite as: *CMAJ* 2018 February 20;190:E182-3. doi: 10.1503/cmaj.170902

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**F**railty is a state that arises from a multisystem decline. It compromises the body's ability to respond to stressors.<sup>1</sup> Although frailty has been shown to be a good indicator of poor outcomes across settings, limited evidence supports the use of frailty screening tools in acute care, and few studies have been conducted outside of geriatric medicine. In the linked article, Li and colleagues examined the prognostic value of frailty for death and readmission to hospital in 308 older patients with no severe disability who were undergoing emergency abdominal surgery.<sup>2</sup> Preadmission frailty was measured using the Clinical Frailty Scale (CFS), a tool that is commonly used in clinical settings because it is easy to implement.<sup>3</sup> The authors found that 77% of the patients were either vulnerable or frail (CFS > 2), and these patients were more likely than non-frail participants either to die or be readmitted to hospital within 30 days and six months after surgery.<sup>2</sup> However, frailty is a dynamic process and interventions to assess and address frailty could affect such outcomes.

Comprehensive geriatric assessment, the mainstay of a good geriatric consultation, represents an evidence-based intervention for frail inpatients. A well-done 2011 meta-analysis of data involving 10 315 older adults who were admitted to hospital found that the benefits of an inpatient comprehensive geriatric assessment included a greater chance of survival and living at home at six months (odds ratio [OR] 1.25, 95% confidence interval [CI] 1.11–1.42) and 12 months (OR 1.16, 95% CI 1.05–1.28), and a lower chance of placement in long-term care (OR 0.79, 95% CI 0.69–0.88) and deterioration (OR 0.76, 95% CI 0.64–0.90).<sup>4</sup> A systematic review reported that there were 2.6% to 19.7% fewer admissions to hospital when a comprehensive geriatric assessment was completed for older adults in the emergency department.<sup>5</sup> Li and colleagues recorded a low number of geriatric assessments among patients in the population of the linked study: only 4% of patients in the frailty group received a geriatric consultation.<sup>2</sup> This may have been a lost opportunity to prevent the poor outcomes that this group experienced.

There are fewer studies of frailty among specific groups of older inpatients undergoing surgery. However, specific shared ortho-

## KEY POINTS

- Comprehensive geriatric assessment, the anchor of current geriatric consultation, is an evidence-based treatment for inpatients who are frail.
- Clinical studies evaluating frailty should include patients who are younger than 65 years of age, as well as patients who are severely frail.
- Studies involving older inpatients who are acutely ill need to measure markers for frailty and acute state.
- Clinical studies should incorporate frailty, and patient- and caregiver-oriented measures, such as quality of life and function, as outcome measures.

geriatric care appears to improve functional outcomes compared with usual care.<sup>6</sup> A 2014 meta-analysis of models for interventions using geriatric assessment in orthogeriatrics (comparing geriatric ward, consultation or shared care), showed that presurgical geriatric consultation decreased in-hospital mortality (relative risk [RR] 0.60, 95% CI 0.43–0.84) and long-term mortality (RR 0.83, 95% CI 0.74–0.94); however, the meta-analysis could not determine which model was superior.<sup>7</sup> It would be important to know if a comprehensive geriatric assessment would benefit a subpopulation of older adults admitted to hospital for abdominal surgery and if this type of intervention would be cost-effective.

Many tools for frailty assessment distinguish only between frailty and nonfrailty, which is useful for identifying patients who need additional frailty assessments, but it is inappropriate when the goal is to identify precise level of risk. Risk for adverse events differs between patients who are severely frail and those who are mildly frail. Patients with different levels of frailty should not be offered the same treatment plans because they are quite different clinically. For example, aggressive medical treatment may be well tolerated by a patient with mild frailty but may harm a patient with severe frailty.

In their study, Li and colleagues excluded patients who were dependent in three or more activities of daily living, which means

they excluded those who were the most frail. Including such patients could introduce bias, e.g., by including those who are terminally ill. Interventional trials often exclude older participants who are frail because of concern that their inclusion interferes with any understanding of how a given problem responds to a given treatment. However, this approach may lead to poor generalizability and limited usefulness of results because “the problems of old age come as a package.”<sup>8</sup> This is a particular concern for trials evaluating general surgery, where many patients are moderately to severely frail.<sup>9</sup> Patients who are frail are at highest risk for adverse outcomes and may benefit most from appropriate intervention. More research involving this understudied group is needed. Furthermore, although most studies of frailty include only patients aged 65 years and older, frailty is increasingly observed among patients who are younger (e.g., those living with chronic diseases such as HIV). Future studies evaluating frailty need to include younger patients.

Frailty and multimorbidity are distinct but related concepts that are often but not always measured in frailty scales.<sup>3,10</sup> If the objective of a research study is to compare whether frailty or comorbidity can predict adverse health outcomes, then a frailty measure that does not include comorbidity should be used to avoid overadjustment. However, the number of chronic medical conditions that a patient has is informative of the overall health state, which is why it is routinely collected as part of geriatric assessments. Canada’s health care system still embraces the model of single medical conditions, and payments are frequently still related to the “most responsible diagnosis.” Yet for the increasing proportion of patients who are frail, this approach is inappropriate. It is not that medical conditions can be ignored but that overall measures of health and frailty must look beyond medical conditions to include items that reflect the functional, cognitive and psychological state of patients.

Li and colleagues found that identifying even a narrow range of frailty aided prognosis in both short- and long-term outcomes; however, they found only a dose–response relationship for long-term outcomes.<sup>2</sup> A recent retrospective analysis of 539 inpatients found a dose–response relationship between CFS and functional decline during hospital stays and that patients who were frailer took longer to reach their new functional baseline.<sup>11</sup> This suggests that measuring frailty, although useful in the short-term, has stronger predictive value for long-term function after recovery from acute illness.

When studying older inpatients who are acutely ill, markers for both frailty and acute state should be measured. A meta-analysis

that evaluated 10 studies on outcomes following a stay in the intensive care unit (ICU) showed that frailty was associated with increased ICU mortality (RR 1.51, 95% CI 1.31–1.75), in-hospital mortality (RR 1.71, 95% CI 1.43–2.05) and long-term mortality (RR 1.53, 95% CI 1.40–1.68), independent of severity of illness and other prognostic indicators.<sup>12</sup>

Frailty can also be considered a useful outcome measure. It is a measure of overall health state and, arguably, a better predictor of adverse health outcomes than other individual health measures, although it is a dynamic process. Future research should focus on whether modifying clinical treatment plans can modify level of frailty or enable patients to recover to their level of frailty before surgery and admission to hospital.

Screening tools may be too simple to provide insight into short-term health changes; however, comprehensive assessments of frailty are clinically informative and useful interventions that should be implemented for patients who screen positive for frailty. In addition, patient- and caregiver-oriented measures, such as quality of life and function, should be incorporated as outcome measures in studies of frailty.

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**Competing interests:** None declared.

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This article was solicited and has not been peer reviewed.

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