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## Frailty Consensus: A Call to Action

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## Abstract

Frailty is a clinical state in which there is an increase in an individual's vulnerability for developing increased dependency and/or mortality when exposed to a stressor. Frailty can occur as the result of a range of diseases and medical conditions. A consensus group consisting of delegates from 6 major international, European, and US societies created 4 major consensus points on a specific form of frailty: physical frailty.

1. Physical frailty is an important medical syndrome. The group defined physical frailty as “a medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death.”
2. Physical frailty can potentially be prevented or treated with specific modalities, such as exercise, protein-calorie supplementation, vitamin D, and reduction of polypharmacy.
3. Simple, rapid screening tests have been developed and validated, such as the simple FRAIL scale, to allow physicians to objectively recognize frail persons.
4. For the purposes of optimally managing individuals with physical frailty, all persons older than 70 years and all individuals with significant weight loss ( 5%) due to chronic disease should be screened for frailty.

## Keywords

Frailty; physical frailty; rapid screening tests; weight loss; comorbidities

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Frailty is a condition in which the individual is in a vulnerable state at increased risk of adverse health outcomes and/or dying when exposed to a stressor.<sup>1</sup> The European Union has placed specific importance on defining frailty, as frail persons are high users of community resources, hospitalization, and nursing homes. It is assumed that early intervention with frail persons will improve quality of life and reduce costs of care.<sup>2,3</sup>

Frailty is either physical or psychological or a combination of the 2 components, and is a dynamic condition that can improve or worsen over time. Two approaches to defining physical frailty have become popular. The deficit model consists of adding together an individual's number of impairments and conditions to create a Frailty Index.<sup>4</sup> The second model originally defined a specific physical phenotype consisting of a constellation of 5 possible components (weight loss, exhaustion, weakness, slowness, and reduced physical activity), which marked an underlying physiologic state of multisystem and energy

dysregulation.<sup>5</sup> Both of these definitions are currently used to define a frail and a prefrail state, a condition between frail and nonfrail. Frailty domains appear to belong to a common construct, with physical strength being one of the discriminating characteristics.<sup>6</sup> Numerous other frailty definitions have been developed, for the most part based on one or the other of these 2 basic approaches.

A recent systematic review incorporating 31 studies of frailty in persons 65 years or older found a prevalence of from 4.0% to 17.0% (mean 9.9%) of physical frailty, with a higher prevalence when psychosocial frailty was also included.<sup>7</sup> Women (9.6%) were almost twice as likely as men (5.2%) to be frail. The prevalence of frailty is markedly increased in persons older than 80.

A previous consensus conference on frailty agreed “on the usefulness of defining frailty in clinical settings” and that there was a need for a clear conceptual framework.<sup>8</sup> Other areas in which they had more than 80% agreement included that frailty is

- A clinical syndrome
- Not disability
- Increased vulnerability in which minimal stress can cause functional impairment
- Might be reversible or attenuated by interventions
- Mandatory for health workers to detect as soon as possible
- Useful in primary and community care

However, the conference failed to recommend a clear course forward because of an inability to agree on a “single operational definition of frailty that can satisfy all experts.” The heterogeneity of that consensus group may have contributed to the inability to come to a firm conclusion.

Rockwood<sup>9</sup> previously suggested criteria for a successful definition of frailty. These are content validity (ie, is dynamic, includes multiple determinants, and is useful in different situations), construct validity (ie, more common in women and advancing age and related to disability), and criterion validity (ie, predicts adverse outcomes including mortality). Numerous models are available that meet most of these criteria (Table 1).<sup>10–26</sup>

Because of the uncertainty created by the previous consensus conference on frailty and a need to determine whether there is sufficient information available to advocate screening by all physicians for frailty, a consensus conference was convened in Orlando, Florida, on December 7, 2012. The conference was based on the International Association of Gerontology and Geriatrics and World Health Organization white paper, recognizing the need to improve the “ability of older persons to age in place” rather than to be institutionalized.<sup>19</sup> The aim of this consensus conference was to define an operational definition of frailty and to frame aspects for screening and treatment and identify an appropriate population to screen. A major finding of this group was a recognition and agreement on the distinction between the broader definition of frailty, which is a general state or condition of an individual, and a more specific medical syndrome: physical frailty.

This communication provides the consensus opinions of experts involved in the Frailty Consensus Conference.

## Methods

Six major international (International Association of Gerontology and Geriatrics; Society on Sarcopenia, Cachexia, and Wasting Diseases; and the International Academy of Nutrition and Aging), European (European Union Geriatric Medicine Society), and US societies (American Medical Directors Association and American Federation for Aging Research) provided delegates to attend this consensus meeting. In addition, 7 other experts in the area of frailty were invited by the conveners (Bruno Vellas and John Morley) to enrich the content knowledge base. Separate areas were discussed and a broad consensus was reached on a variety of recommendations. During the discussion, it became apparent that a major reason that prior attempts at a consensus around frailty were not successful is that they did not resolve distinctions between broad definitions of frailty and more specific subsets. In this meeting, a full consensus was developed and agreement attained around physical frailty being a specific medical syndrome within the broader context of frailty.

Based on this consensus, a preliminary manuscript was developed and a modified Delphi process was used in which the manuscript was circulated to all the delegates until agreement was obtained on the content, leading to the development of this consensus report.<sup>27</sup>

## Recommendations

### 1. Physical Frailty Is an Important Medical Syndrome

The group defined frailty as

“A medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual’s vulnerability for developing increased dependency and/or death.”

In addition to the definition, the group made 4 key points:

1. Although recognizing that frail individuals could be disabled and that not all disabled persons are frail, the group agreed that the emphasis on case finding should target the pre-disabled not the dependent (defined here as persons with 1 or more deficits in basic activities of daily living). Targeting those who are frail and pre-disabled in this manner, case finding becomes of major importance, as it allows interventions that could prevent dependency.
2. Although sarcopenia may be a component of frailty, it was agreed that frailty is more multifaceted than sarcopenia alone.<sup>27–31</sup>
3. The group agreed that a number of well-validated models of frailty existed and that the definitive diagnosis of frailty should be done by a geriatrician using the basic criteria of these well-defined models. It is accepted that these models predict increased vulnerability to adverse health outcomes and mortality.<sup>32–39</sup>

4. As conceived in this document, physical frailty differs from multimorbidity. Both are common, but multimorbidity is more pervasive, being present in 3 of 4 persons older than 65 years and 1 of 4 in those younger than 65.<sup>40</sup> Physical frailty focuses on specific areas for which a general treatment approach can be developed, whereas multimorbidity moves the focus to the management of each condition separately, although both require multidimensional assessment and management. A larger construct of frailty, as proposed by Rockwood et al,<sup>41</sup> as a state of increased vulnerability due to impairments in many systems that may give rise to diminished ability to respond to even mild stresses, incorporates multimorbidity and central nervous system impairments that can be recognized in relation to cognitive and affective disorders.

## **2. Simple Screening Tests Are Available to Be Used by Physicians to Recognize Frail Persons and Identify Persons With Physical Frailty or at Risk of Frailty**

The Royal College of Physicians and the French Society of Geriatrics and Gerontology advocated screening for frailty in older persons.<sup>42,43</sup> Simple rapid screening tests have been developed and validated to allow physicians to rapidly recognize frail persons. Examples of some commonly used and validated frailty tools include the FRAIL (Table 2),<sup>44-47</sup> the Cardiovascular Health Study Frailty Screening Measure (Table 3),<sup>10,11</sup> the Clinical Frailty Scale (Figure 1),<sup>41</sup> and the Gérontopôle Frailty Screening Tool (Table 4).<sup>48</sup> The group agreed that such instruments can be used to identify persons with the physical frailty syndrome who are in need of a more in-depth assessment. All persons aged 70 years and older, as well as any person with significant weight loss ( 5% over the past year) due to chronic illnesses should be screened for frailty.

## **3. Physical Frailty Is a Manageable Condition**

The committee recognized there are numerous potential causes of physical frailty, and many of these could be targeted in future intervention development. However, they agreed that at this time at least some evidence supported 4 possible treatments that appeared to have some efficacy in the treatment of frailty.

- Exercise (resistance and aerobic)
- Caloric and protein support
- Vitamin D
- Reduction of polypharmacy

Singh et al<sup>49</sup> demonstrated that a year of resistance exercise in frail persons following hip fracture decreased hospitalizations and nursing home placement. Yamada et al,<sup>50</sup> in a community-based exercise program involving 610 frail persons, found that exercise was cost effective in preventing frailty progression and disability. Theou et al,<sup>51</sup> in a systematic review, found that 45 to 60 minutes of exercise 3 times a week seemed to have positive effects on frail older adults and may be used for the management of frailty. Exercise in frail individuals increases functional performance, walking speed, chair stand, stair climbing, and balance, and decreased depression and fear of falling. Group and home-based exercise programs reduce falls.<sup>52</sup>

Weight loss is a major component of the frailty syndrome.<sup>53–55</sup> Calorie supplement enhanced weight gain and reduced mortality in undernourished older individuals and reduced complications according to the Cochrane Collaboration.<sup>56</sup> Protein-calorie supplementation improved outcomes in persons with chronic obstructive pulmonary disease.<sup>57</sup> Nutritional supplementation is effective in the treatment of weight loss.<sup>58,59</sup> Protein supplementation increases muscle mass,<sup>60–65</sup> reduces complications,<sup>66</sup> improves grip strength,<sup>66</sup> produces weight gain,<sup>66</sup> and may act synergistically with resistance exercise in older persons.<sup>62,63</sup> Frailty can also be seen in persons who are morbidly obese.<sup>67</sup>

In older persons who are 25(OH) vitamin D deficient, there is evidence that vitamin D supplementation will reduce falls,<sup>68</sup> hip fractures,<sup>69</sup> and mortality.<sup>70</sup> It may also improve muscle function.<sup>71</sup> Although there are no large-scale clinical trials that show that frailty can be prevented or treated by vitamin D alone, there is sufficient evidence of efficacy in frailty-appearing populations to suggest that vitamin D in frail persons who are vitamin D deficient would be useful.

It was agreed that interventions against sarcopenia could be clinically beneficial in cases of frailty.<sup>72,73</sup> Polypharmacy is recognized as a possible major contributor to the pathogenesis of frailty.<sup>74–78</sup> Hence, reduction in inappropriate medicines can clearly decrease costs<sup>79</sup> and medication side effects in frail populations.<sup>80–83</sup> The Beers criteria<sup>84</sup> and STOPP and START criteria<sup>85,86</sup> can be helpful guidelines to reduce inappropriate medicine use in this population.

Other potential causes for frailty can be found in some specific individuals. These include depression, visual and hearing problems, diabetes mellitus, congestive heart failure, and cognitive decline, as examples. The intervention plan in frail older adults must include the management of reversible diseases.

#### **4. All Persons Older Than 70 Years Should Be Screened for Frailty**

It was agreed that sufficient evidence exists for the implementation of frailty screening by health care providers in persons 70 years and older. Although finite evidence is not yet available, there are compelling reasons to screen, as it is noninvasive and may uncover remedial conditions. Based on available data, screening tests for frailty meet the major criteria for screening, viz. they are sensitive. Effective treatments are available for components of the syndrome and simple screening tests produce more beneficial than harmful outcomes.<sup>87</sup> In the presence of a positive screen, the physician can institute management for frailty or refer the patient to a geriatrician.<sup>88</sup> A similar approach has been successfully instituted by the G erontop ole in Toulouse.<sup>48,89</sup> A screening approach is being carried out widely in Japan, with interventions as suggested by the consensus group proving successful.<sup>90–92</sup> Both primary care physicians and specialists need to screen for frailty. Evidence suggests that persons with heart failure,<sup>93</sup> cancer,<sup>94</sup> renal failure,<sup>95</sup> HIV,<sup>96</sup> or diabetes,<sup>97</sup> as well as those undergoing surgery,<sup>98</sup> are more likely to be frail and have more adverse outcomes than those who are not frail. Hence, a focus on the treatment of frail persons in this group may improve overall outcomes. The frailty diagnosis can be implemented to judge the appropriateness of a number of invasive management strategies, such as radiotherapy, chemotherapy, surgery, and cardiology procedures.

To successfully combat frailty, our medical practice must be targeted, strong, and sustained. With the aging of our population, we cannot wait and must implement the screening and management of frailty into clinical practice worldwide.

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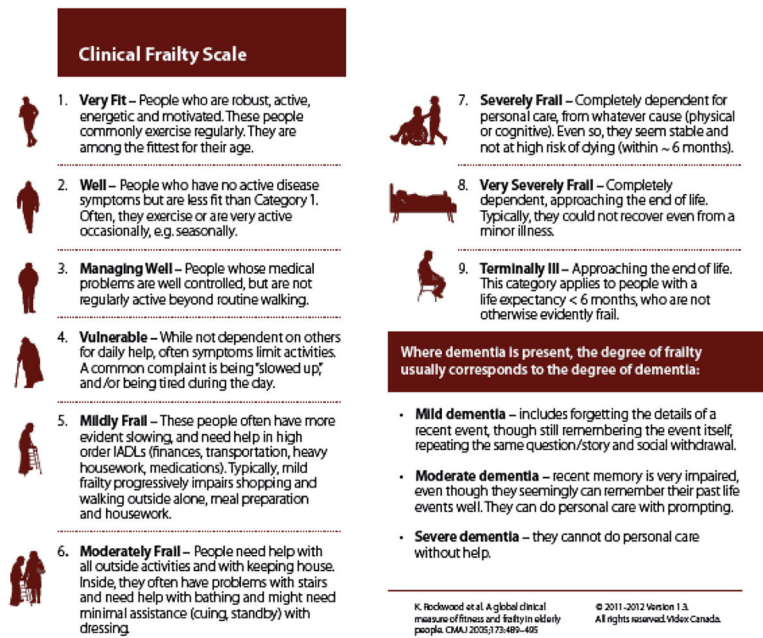
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**Fig. 1.** Clinical Frailty Scale. Scoring is based on clinical judgment. Reprinted with permission from Rockwood et al.<sup>41</sup>

**Table 1****Examples of Well-Validated Frailty Models**

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Cardiovascular Health Study <sup>10,11</sup>
Study of Osteoporotic Fractures <sup>12,13</sup>
Deficit Model <sup>14,15</sup>
FRAIL – International Academy of Nutrition and Aging <sup>16,17</sup>
SHARE-FI <sup>18,19</sup>
Vulnerable Elder Survey-13 <sup>20-22</sup>
Tilburg Frailty Index <sup>23,24</sup>
Groningen Frailty Indicator <sup>25,26</sup>

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**Table 2**

The Simple “FRAIL” Questionnaire Screening Tool

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3 or greater = frailty; 1 or 2 = prefrail

**Fatigue:** Are you fatigued?

**Resistance:** Cannot walk up 1 flight of stairs?

**Aerobic:** Cannot walk 1 block?

**Illnesses:** Do you have more than 5 illnesses?

**Loss of weight:** Have you lost more than 5% of your weight in the past 6 months?

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**Table 3**Cardiovascular Health Study Frailty Screening Scale<sup>10,48</sup>

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Prefrail, 1 or 2; Frail, 3

- 1 Weight Loss – Loss of 10 pounds unintentionally in past year or weight at examination < 10% of age 60 weight.
  - 2 Exhaustion – Self-report of fatigue or felt unusually tired or weak in the past month
  - 3 Low Activity – Frequency and duration of physical activities (walking, doing strenuous household chores, doing strenuous outdoor chores, dancing, bowling, exercise).
  - 4 Slowness – Walking 4m > 7 s if height < 159 cm or > 6 s if height > 159 cm.\*
  - 5 Weakness – Grip strength (kg) for body mass index (kg/m<sup>2</sup>).
- 

\*Data for older women (lowest 20th percentile).

**Table 4**Gérontopôle Frailty Screening Tool<sup>48</sup>

<b>Frailty Screening</b>			
<b>Older patients, 65 y and older, not dependent (activities of daily living 5/6)</b>			
	<b>Yes</b>	<b>No</b>	<b>Unknown</b>
Is your patient living alone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Involuntary weight loss in the past 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatigability from the past 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have some mobility difficulties for the past 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Memory complaints?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slow gait speed (+4 s for 4 meters)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes to at least one of these questions:

Do you feel in your own clinical opinion that your patient is frail and at an increased risk for further disabilities?

Yes  No

If yes, propose to the patient an evaluation of the causes of frailty and prevention of disabilities in a day hospital.

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