Focus on frailty

Essential as the population ages

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We can no longer afford to ignore the problem of frailty. Older adults must be screened objectively for frailty in primary care. Multiple interventions are likely to be necessary, including attention to good nutrition and physical activity.

Never in the course of human history have humans lived longer and healthier lives than they currently do. Importantly, not all humans age in the same way, and therefore there is a strong case for individualisation of treatment approaches for older people rather than a 'one size fits all' strategy. Some older adults remain fit even into very old age, whereas others have multiple, interacting medical and social problems, accumulated as early as middle age.

KEY POINTS

- Frailty screening can help identify older people with multiple interacting medical and social problems who require comprehensive assessment.
- Adaptations of care processes, personalisation of interventions and modifications of standard protocols will benefit frail older patients.
- Screening and assessment for frailty should begin in general practice, supporting early recognition and complex management.
- Good nutrition, including adequate protein intake, is important in preserving muscle health.
- For frail older people, any physical activity is better than none, and there should be a focus on limiting sedentary behaviour.

The concept of frailty was introduced in the geriatric and gerontology literature about 20 years ago to identify older people who are at greater risk of experiencing adverse health outcomes and to encourage better appreciation of the heterogeneous health status of the older population. Because almost all doctors are involved in providing treatment to older people, improving our knowledge and skills around diagnosis and treatment of frailty is vital. This review introduces the importance of frailty, as well as some management principles.

What is frailty?

Everyone as they age has an increased risk of death, but not everyone of the same age has the same risk of death. Those at greater

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risk of death are considered frailer, and those at low risk are considered fitter. It is the number of deficits that determines the risk of death or other adverse health consequences. It is estimated that at the age of 75 years, people will have accumulated double the number of problems that they had when they were 60 years old.[1] Even so, it is important to note that although people accumulate more deficits that affect their wellbeing with increasing age, different people accumulate deficits at different rates. For this reason, treatments provided should not be based on age per se.

Frailty arises from the accumulation of microscopic damage at the cellular and subcellular level that is not repaired or removed. This damage may scale up to macroscopic damage that is clinically detectable at the organ and system level.[2] The damage arises either from the environment, including lifestyle choices, or from within, as the by-product of internal processes (e.g. metabolism, respiration and inflammation), including genetically induced damage.

As organ level problems accumulate, they may give rise to symptoms or signs, thereby presenting as clinically evident disease. For example, changes to muscle quality as well as reduced muscle mass with ageing, exacerbated by concurrent undernutrition and inflammation, may culminate in reduced walk speed and/or reduced strength and manifest as sarcopenia. Also, damage in one organ system may predispose to damage in another organ system, showing that deficit accumulation and repair are intertwined. Because of this, frailty compromises the body's ability to repair further damage, and frail people become vulnerable to stressor events such as illness, falls or any circumstances that affect physical or mental equilibrium. This diminished repair capacity results in frail people being at increased risk of negative health-related outcomes, including disability, institutionalisation and mortality.[3]

The same stressor (e.g. a fall) can thus have widely varying impacts on the functional ability and recovery of older people of the same age and social environment, depending on their level of frailty (Figure 1). After a fall, frailer people will experience much worse function, even if for the frailest this is less of an absolute decline, given their degree of prior impairment. Following a stressor such as a fall, people with greater frailty will also experience slower recovery than those with less frailty; in fact, those who are severely frail may never recover.

Even so, two people with similar frailty who are exposed to the same degree of damage could still have different outcomes because of the different external and social resources available to them to help repair that damage. For example, some people who are severely frail but live in highly protective environments will survive, whereas others in less protected environments will die. This highlights the importance of considering the impact of social and environmental supports of frail patients when making treatment plans.[4]

Why is frailty important?

Although more data are needed for Australia, we estimate that by 2050 at least 850,000 older Australians living in the community will be frail and at least four million Australians aged 70 years and older will be either frail or at risk of frailty. Frailty more commonly affects those who are socioeconomically disadvantaged. The prevalence of frailty in those aged 50 years and older is 16% in wealthier northern European countries compared with 28% in less wealthy southern European countries.[5] Frailty is common, especially among the oldest old. In Canada, 23% of people over the age of 65 years are frail, and the estimates of frailty prevalence increases with age; 39% of men and 45% of women over the age of 85 years are frail.[6]

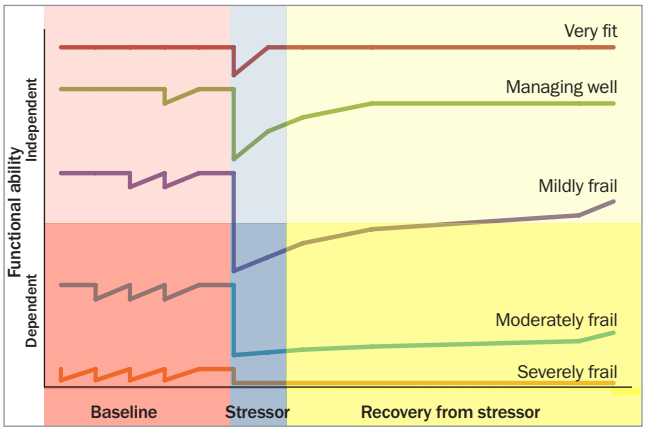

Figure 1. Effect of level of frailty on experience of a stressor (e.g. a fall) and recovery in five people of the same age and social environment.

For older people, one of the greatest fears is loss of independence. Frailty results in costly hospitalisation, increased reliance on aged care services and premature residential care placement. In addition, frailty confers greater susceptibility to adverse drug events, which are a leading cause of preventable hospitalisation among older Australians.[7] The Australian Institute of Health and Welfare predicts that the dollar value of government spending on health and aged care will more than double to $172 billion by 2032-33, taking up 8.7% of predicted gross domestic product. Our health system approach needs to be modified to better meet the needs of older patients, especially those who are frail or at risk of frailty. As a nation, we simply can no longer afford to do nothing about frailty, as timely intervention is likely to be both cost effective and beneficial at the individual level.

What is the impact of frailty on clinical care?

In the past, much discussion centred on the precise age at which older adults become 'geriatric', to understand who might benefit from various healthcare interventions. This led to a range of clinical guidelines focusing on age-specific thresholds for altering intervention approaches. As a result, because of their age, many healthy older adults were refused treatments that would have benefited them, and some younger patients who were frail were treated without benefit.

FRAIL SCALE[11]

Patients receive a score of 1 for every 'yes' answer to the following questions.

A total score of 3 or more = frail; 1 or 2 = 'pre-frail'.

- Fatigue _____ Are you fatigued?
- Resistance _____ Cannot walk up one flight of stairs?
- Ambulation _____ Cannot walk one block?
- Illness _____ Do you have more than five illnesses?
- Loss of weight _____ Have you lost more than 5% of your weight in the past six months?

We now know that deciding a care plan based primarily on age is not appropriate. Fit older adults become ill in similar ways to younger individuals, with typical symptoms and signs, and have stable social situations and predictable drug handling, recovery from surgery and symptom resolution. In contrast, in frail older people of the same age, illnesses can present as non-specific problems in walking, thinking or functioning, such as falls, delirium and immobility.[8] Most importantly, standard treatments for such symptoms may worsen the situation for frail patients; for example, inappropriate use of opioids to manage fracture pain following a fall may lead to avoidable delirium.[9] Frail patients require adaptations of care, personalisation of interventions and modifications of standard protocols.

Screening for risk of frailty should begin in general practice, as GPs are best placed to take into consideration the social and environmental context of their patients and to determine how these interact with the patient's health status. Identifying frailty status will help guide clinicians in determining who would benefit from aggressive medical treatments designed for the fitter patient and who might experience detrimental outcomes from the same treatment approach. By better understanding frailty status, clinicians will be better equipped to discuss with patients and their families the risks and benefits of potential treatments, resulting in more informed and rational shared decision making. Identifying frailty gives us the opportunity to treat the root causes of the problems and not the symptoms manifesting in the frail person. A comprehensive assessment will identify treatable factors; and remediating these factors may contribute to symptom resolution and improved wellbeing.

Unfortunately, frailty is not usually recognised in the early stages, and by the time it is identified by clinicians, patients or carers, it may be too late to improve the patient's function, health and wellbeing. It is therefore vital that frailty is identified and treated early in clinical care, which can be achieved through better screening practices.

How can we assess frailty?

Frailty should always be considered when treating older patients, but to identify it reliably we need tools with sound psychometric properties. When identifying frailty, the current risk is that clinicians rely too much on clinical judgement rather than objective assessment. If we cannot measure frailty objectively then we cannot manage it effectively. Frailty is related to multimorbidity but is not defined by multimorbidity per se, and therefore assessing the medical history is insufficient. Instead, there is a need to undertake a comprehensive assessment of the patient and to consider social circumstances as well as cognition, mobility, balance, nutrition, mood, behaviour and ability to perform daily activities.

There remains debate over which tools are best used for screening and assessment, but this should not delay translation into practice, as we will have the opportunity to modify our approach in clinical practice when consensus is finally achieved. In keeping with this, the British Geriatrics Society in association with the Royal College of General Practitioners recently released the *Fit for Frailty* guidelines advocating screening to allow earlier management (http://www.bgs.org.uk/index.php/fit-for-frailty).

Screening tools for clinical use

Screening tools for potential use in clinical settings include the FRAIL scale, the FRAIL-NH scale and the Clinical Frailty Scale.

The FRAIL scale is similar to the frailty phenotype approach (discussed below) and consists of five variables:

- fatigue
- resistance
- ambulation
- illness
- loss of weight.

The FRAIL scale does not include any performance-based measures, which makes it more practical for clinical settings (see Box).[10,11]

More recently, a screening tool for use in nursing homes has been proposed, the FRAIL-NH, and research is underway to validate this tool.[12]

In contrast, the Clinical Frailty Scale is based on the clinical evaluation of a patient's status in the domains of mobility, energy, physical activity and function. The Clinical Frailty Scale is now expanded to include nine levels ranging from very fit to terminally ill (Figure 2).[13] Currently a large tertiary university National Health Service (NHS) acute hospital in England uses the Clinical Frailty Scale for routine screening for emergency admissions of all people aged 75 years and older. They found that the Clinical Frailty Scale may help to predict inpatient mortality and to target specialist geriatric resources within the hospital.[14]

Frailty diagnostic tools

For diagnosing frailty, the most commonly used tool is the frailty phenotype, which comprises five specific variables, including:

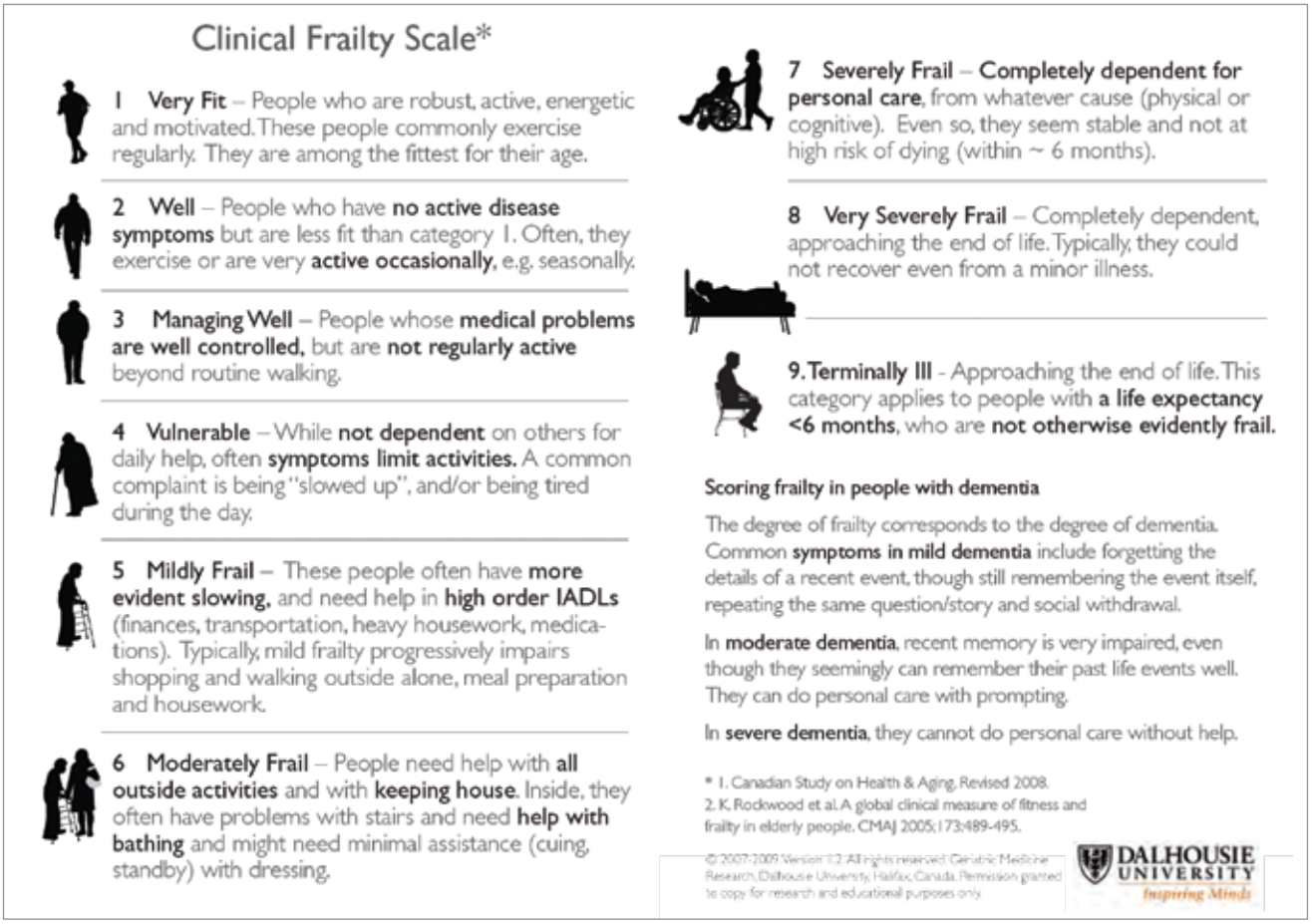

Figure 2. Clinical Frailty Scale.
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- walking speed
- muscle strength
- weight loss
- physical activity
- exhaustion.

The presence of problems with one or two of these variables identifies a person as pre-frail, and the presence of problems with three or more as frail.[15] It is easy to see that assessing for sarcopenia by determining muscle strength and gait speed in addition to muscle mass will contribute also to phenotypic frailty assessment, and this is no surprise given that undernutrition and sarcopenia are strongly associated with frailty.

The second most commonly used approach is the frailty index, which does not include pre-specified variables but suggests assessing a wide range of potential signs, symptoms and laboratory abnormalities to identify the frailty level of a patient.[16] This approach is feasible for clinical use when an electronic health record exists, and it can be used for both screening and diagnosis.

For example, clinicians in the UK can access the frailty index score of their patients through the electronic medical records of the NHS. In addition, a study in 11 acute care hospitals in Queensland and Victoria showed that frailty levels of patients in acute care can be identified using a frailty index constructed from an existing assessment system, the interRAI assessment system for acute care.[17] This could optimise clinical utility and minimise costs and also could be used for administrative purposes.

How can we manage frailty?

Comprehensive assessment of at-risk patients

Patients found to be 'at risk' of frailty by screening should undergo a comprehensive assessment to enable precise diagnosis and targeting of the factors contributing to frailty to improve their health, function and wellbeing. The 75+ Health Assessment in general practice provides an opportunity for holistic assessment and is likely to be most beneficial when coupled with implementation of a comprehensive care plan. If GPs feel that specialist physician input may be important then referral to a geriatrician for comprehensive geriatric assessment and management may support the development of an intervention plan; the geriatrician will also benefit from having

access to the 75+ Health Assessment where available.

Multidomain interventions

Showing promise, a recent Australian single-centre study involving 241 community-dwelling older people identified as frail by phenotypic criteria found that the intervention group had an improvement in physical performance and lower likelihood of frailty compared with the usual care group.[18] The intervention comprised a comprehensive geriatric assessment followed by a management plan that included up to 10 home visits by a physiotherapist to support home exercise, along with medical, nutritional, psychological and social management.

More recently, physical training, cognitive training and nutritional supplementation were found to be effective both independently and in combination in reversing frailty in a group of older community-dwelling individuals identified as pre-frail or frail.[19] Similarly, a larger community-based study provided evidence that regular physical activity can reduce frailty, especially in individuals at higher risk of disability.[20]

Nutrition

Undernutrition is very common in our community, and nutritional risk is present in almost 40% of community-dwelling older people receiving domiciliary services.[21] Poor nutrition results in disproportionate loss of muscle mass, and concomitant loss of muscle performance results in sarcopenia.[22] A focus on nutritional screening and good nutrition therefore has potential to benefit the function, health and wellbeing of older people in our community.[23]

The Mini Nutritional Assessment Short-Form is a validated screening tool that can easily be incorporated into the 75+ Health Assessment to identify nutritional risk.[24] There is now acknowledgement that the daily protein requirements of older people are high, in the range 1.0 to 1.2 g/kg body weight daily.[25] The protein requirement increases to 1.5 g/kg body weight daily for those who have a chronic disease, are receiving renal dialysis or are frail. It is best that this daily protein requirement is spread over the three main meals per day, averaging between 25 and 30 g protein (2.5 to 2.8 g leucine) per meal. For patients who have renal failure but are not on dialysis, the daily protein intake may be lower.[25] Vitamin D supplementation may be necessary in those with low serum vitamin D levels.[26] Referral to a dietitian could be considered.

Physical activity

Older people should be encouraged to increase their levels of physical activity. The American College of Preventive Medicine recommends that primary care health professionals incorporate physical activity counselling into routine patient visits.[27] Addressing barriers to physical activity, such as musculoskeletal pain, depression or financial constraints, may result in improved participation rates. Importantly, physical activities for older people must be enjoyable, relevant, safe, effective and realistic.

The American Heart Association and American College of Sports Medicine recommend that older adults undertake:[28]

- at least 150 minutes of moderate intensity or at least 75 minutes of vigorous intensity aerobic activity per week or an equivalent combination of moderate and vigorous activity
- resistance exercise two days per week using their own body weight, free weights such as dumbbells, or resistance machines
- balance training.

Following these guidelines could be the most beneficial. Even so, health benefits can still be derived from engaging in low-intensity physical activities such as slow walking.

Especially for frail people, the general take-home message is that any physical activity is better than none.[29] There should always be a focus on limiting the hours spent in sedentary behaviour, such as watching television or reading newspapers. Furthermore, engaging in a physical activity program (e.g. day therapy services) may offer the added benefit of more social interaction and perhaps improved appetite.

Conclusion

Frail people are at greater risk of death and other adverse health outcomes compared with others of the same age. In people who are frail, illnesses can present as nonspecific problems in walking, thinking or functioning, and standard treatments can often worsen the situation. It is vital that frailty is measured objectively and identified early in primary care to be treated effectively. Good nutrition and higher levels of physical activity could delay or reverse frailty. MT

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A list of references is included in the website version (www.medicinetoday.com.au) and the iPad app version of this article.

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