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Frailty in the Rheumatology Clinic: Current Approaches to Assessment and Management

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Clinical Cases

To illustrate frailty in the context of rheumatic disease, we will consider two women, both 65 years of age who have been living with rheumatoid arthritis (RA) for the past 15 years.

Case #1: Rita is a retired lawyer. Her RA has been well-controlled, having remained in remission for the past 5 years on a combination of low-dose methotrexate and a tumour necrosis factor (TNF) inhibitor. She is otherwise healthy, with no comorbid medical conditions and no additional prescription medications. She lives independently with her husband and enjoys attending group fitness classes at the recreation centre in her neighbourhood.

Case #2: Alice lives alone in a rural area. She previously worked as a waitress but has been unable to work for the past 10 years due to chronic mechanical low back pain. Her RA has led to significant joint damage and remains moderately active despite treatment with hydroxychloroquine, sulfasalazine, and chronic low-dose prednisone. She also has a history of diabetes, heart failure, and depression, for which she takes six additional medications. Following a couple of falls last year, she now uses a walker at home. Alice has difficulty leaving the house due to poor mobility along with poor vision. Her neighbour helps with groceries and medical appointments.

Although these two women are chronologically identical in age, their health trajectories and risks for adverse outcomes differ substantially. Frailty provides a framework for understanding this heterogeneity.

Why Frailty Matters

These cases demonstrate how individuals of the same chronological age can vary considerably in their current health status and future life expectancy. It was this unmeasured variability in the risk of death among people of the same age that originally gave rise to the term "frailty" in the medical literature nearly 50 years ago.[1] Since then, the concept has been broadened to describe the greater susceptibility to adverse outcomes experienced by certain individuals.

Frailty can be defined as an age-related process characterized by reduced physiological reserve, greater vulnerability to stressors, and an increased risk of adverse health outcomes.[2] It reflects impaired homeostatic regulation and a diminished capacity to recover from physiological insults. Consequently, frail individuals are more likely to experience functional decline, loss of independence, or death in response to health stressors (e.g., infection or surgery), while robust (non-frail) individuals possess sufficient intrinsic capacity to recover more rapidly and fully under similar circumstances.[2,3]

Although strongly associated with chronological age, frailty reflects more than simply the passage of time. It represents a measure of biological aging, capturing individual differences in physiological reserve and vulnerability not explained by chronological age alone. Frailty is also conceptually related to, yet distinct from, both disability and multimorbidity.[2,3] Multimorbidity refers to the presence of two or more chronic medical conditions, while disability describes impairments in physical or mental function that limit daily activities. Although these constructs often overlap and interact, they represent distinct aspects of health status. Notably, frailty may be present even in the absence of multimorbidity or disability, reflecting a unique dimension of vulnerability that cannot be fully accounted for by chronic disease burden or functional impairment alone.[2,3]

Frailty is becoming an increasingly important consideration for Canadian rheumatologists as our population continues to age. Between 2017 and 2037, the number of Canadians aged 65 years and older is projected to increase by 68%, exceeding 10 million individuals by 2037.[4] As a result, rheumatologists will care for a growing population of older adults with rheumatic diseases, many of whom will also be living with multimorbidity, polypharmacy, and geriatric syndromes, including frailty. Consequently, caring for people living with rheumatic diseases in the context of these age-related conditions is increasingly becoming the norm rather than the exception, making the recognition and assessment of frailty an essential component of contemporary rheumatology practice.

Measuring Frailty in the Rheumatology Clinic

While broad agreement exists on the conceptual definition of frailty, there remains considerable debate regarding the optimal approach for its measurement. Theoretically, a definitive diagnosis of frailty can only be established retrospectively by observing a disproportionately poor response to a physiological stressor. However, to be useful clinically, alternative strategies are needed to identify frailty prospectively (i.e., prior to an inciting event) and to allow opportunity for intervention before any negative health consequences occur.

Most existing frailty assessment tools are grounded in one of two conceptual frameworks: phenotypic frailty[5] or deficit accumulation.[6] Some instruments, however, incorporate features of both approaches.[7,8] Many tools are available to measure frailty in rheumatic disease populations, some of which are disease agnostic[5,9] while others have been developed for use in specific rheumatic disease populations.[7,10,11] Examples of commonly used approaches for measuring frailty are shown in **Table 1**.

Phenotypic frailty, most commonly operationalized using the Fried phenotype, views frailty as a distinct biological syndrome characterized by specific clinical features that can be directly measured: slowness, weight loss, exhaustion, weakness, and decreased physical activity.[5] This approach may be particularly useful for identifying candidates for interventions targeting physical frailty. Although the Fried phenotype is relatively quick to administer, it requires direct assessment of grip strength and gait speed, which may limit feasibility in some settings and preclude its application in existing health datasets. As the phenotypic approach focuses primarily on physical frailty, separate assessment of other health domains (e.g., cognition, mental health, comorbidities) is required to fully characterize vulnerability. Importantly, in patients with active rheumatic

Frailty instrument	Description	Advantages	Limitations
Fried Frailty Phenotype	Five directly measured or patient-reported clinical criteria **3+ criteria** = frail **1–2 criteria** = pre-frail **0 criteria** = robust	• Biologically plausible • Relatively quick and easy to use in clinic • Useful to evaluate interventions that target physical frailty	• Requires specialized equipment and trained assessors • Difficult to apply in existing datasets • Requires separate evaluation of non-physical domains
Frailty Index	At least 30 items spanning multiple domains (e.g., function, comorbidities, lab results, among others) Exact item list and data sources may vary (e.g., patient-reported, medical record, or direct measurement)	• Single measure of vulnerability across multiple domains • Flexibility to adapt to existing datasets • Suitable for large, population-based datasets	• Challenging to implement in clinical settings due to large number of variables and complex calculation
Clinical Frailty Scale	9-point pictorial scale based on subjective clinical judgment	• Rapid and easy to implement as a screening tool in clinical settings • Requires minimal resources or training	• Potential variability between raters • Susceptible to implicit bias

Table 1. Selected approaches for the measurement of frailty among people living with rheumatic diseases in clinical and research settings; *courtesy of Alexandra Legge, MD, MSc.*

disease, manifestations such as fatigue and joint pain may interfere with frailty assessment.[12] In certain populations, modifications to the Fried phenotype may be required, such as using chair sit-to-stand time rather than hand grip strength in people with active hand arthritis or joint deformities.[13]

In contrast, the deficit accumulation approach conceptualizes frailty as a multidimensional risk state arising from the cumulative burden of age-related health deficits (e.g., comorbidities, functional limitations, and geriatric syndromes) across multiple domains.[6] This approach is commonly operationalized using a frailty index,[14] calculated as the proportion of deficits present from a predefined list. Advantages of the frailty index include its flexibility and suitability for use in large, pre-existing datasets (e.g., administrative databases), facilitating population-level frailty measurement. However, unless it is automatically derived within electronic medical records,[15] the complexity of the frailty index may limit its use in routine clinical care.

The Clinical Frailty Scale (CFS) has gained widespread use due to its simplicity and clinical feasibility. The CFS is a 9-point pictorial scale that categorizes individuals according to their baseline level of functioning using clinical judgment.[16] Because it requires minimal time and resources, the CFS may be particularly useful as a point-of-care frailty screening tool in busy rheumatology clinics. However, its reliance on subjective assessment by individual clinicians raises concerns regarding inter-rater reliability and susceptibility to implicit biases.

Despite substantial methodological differences, most frailty instruments demonstrate comparable ability to predict adverse health outcomes. Direct comparisons generally reveal only fair-to-moderate agreement between tools, indicating that different instruments identify overlapping but not identical groups of individuals as frail.[17] Moving forward, harmonizing frailty measurement approaches across rheumatic disease populations is therefore a research priority

to improve interpretability and generalizability of study results.

Currently, no single frailty measurement tool can be considered universally superior. Selection should depend on the intended purpose of the frailty measurement and the feasibility of the tool in the specific clinical or research context. For example, population-based studies may favour electronically derived frailty indices, whereas clinical settings may benefit from more practical tools such as the CFS or patient-facing phenotypic assessments.

Frailty in Rheumatic Disease Populations

Frailty is particularly relevant in the context of rheumatic diseases. Multiple studies have demonstrated that frailty occurs more frequently and at younger ages among people with inflammatory rheumatic diseases when compared to the general population.[7,10,18] Several mechanisms may contribute to the relationship between frailty and rheumatic disease, which may be bidirectional. One hypothesis relates to the concepts of immunosenescence and inflammaging, which respectively describe the immune dysregulation and chronic low-grade systemic inflammation that are observed in association with aging.[19,20] On the one hand, age-related immune dysregulation could predispose individuals to develop autoimmune disease. On the other hand, chronic inflammation associated with immune-mediated rheumatic diseases may accelerate biological aging and promote the premature development of frailty. Clarifying the temporal relationship between these processes remains an important area for future investigation.

Muscle loss and physical deconditioning represent additional contributors to the development of frailty among people living with rheumatic diseases. Chronic pain, fatigue, joint damage, and mobility limitations can reduce physical activity, leading to sarcopenia. Finally, increased medication burden also likely plays a role, in particular via the health risks associated with polypharmacy and glucocorticoid exposure.

Frailty is a powerful predictor of health outcomes in rheumatic disease populations. Across a range of rheumatic diseases, studies consistently demonstrate that frailty is associated with an increased risk of adverse outcomes, including functional decline, organ damage accrual, hospitalizations, and mortality.[10,18,21,22] Importantly, frailty frequently improves risk prediction beyond traditional prognostic factors, enhancing our understanding of why patients with apparently similar rheumatic disease characteristics can experience markedly different health outcomes.

Frailty assessment can help address the impact of ageism on rheumatology care by shifting clinical decision-making away from chronological age and toward a more individualized evaluation of physiologic vulnerability.[23] Reliance on chronological age alone can contribute to both over- and under-treatment of older adults with rheumatic diseases, as assumptions about aging may not accurately reflect a patient's true health status. In contrast, frailty provides a more clinically meaningful measure of susceptibility to adverse outcomes, including treatment-related harms such as the risk of serious infections associated with the use of biologic disease-modifying antirheumatic drugs.[24] Incorporating frailty assessment into routine care for frail individuals can support safer prescribing and facilitate more personalized risk-benefit discussions. At the same time, it may help prevent the under-treatment of robust older adults whose care might otherwise be limited by unfounded concerns about treatment-related harms based on their chronological age.[23]

Routine frailty assessment should be considered for all adults with rheumatic diseases, particularly those aged 50 years and older or those with other risk factors for frailty, such as multimorbidity or polypharmacy. As active rheumatic disease can confound frailty measurement,[12] frailty should ideally be measured during periods of low disease activity or stable disease. Longitudinal assessment of frailty—such as at each clinic visit, or at least once annually—may be more informative than measurement at a single timepoint. Emerging evidence suggests that frailty trajectories provide additional prognostic information[25] and may facilitate earlier identification of at-risk individuals who could benefit most from interventions to prevent frailty progression.

Managing Frailty in People Living with Rheumatic Diseases

Unlike chronological aging, frailty is a dynamic and potentially reversible process. An individual's frailty status may worsen, stabilize, or improve over time, presenting opportunities for prevention and treatment (**Table 2**). The first step in managing frailty among patients with

Treatment Strategies
1. Ensure adequate control of rheumatic disease activity.
2. Consider evidence-based strategies for mitigating health risks associated with frailty in community-dwelling older adults, especially multicomponent interventions. ***Physical activity*** • Multimodal programs including aerobic, strengthening, flexibility, and balance exercises, especially in a group setting • Adequate sleep (7–9 hours/night) ***Vaccinations*** • Annual high-dose influenza vaccination • Shingles and pneumococcal vaccinations ***Medication optimization*** • Regular medication review by a physician or pharmacist ***Social interaction*** • Group-based social activities and educational support groups • Remote digital solutions, local community resources ***Dietary interventions*** • Maintain adequate hydration • Ensure adequate protein intake • Vitamin D supplementation
3. If frailty is identified through routine screening, consider referral for further evaluation with comprehensive geriatric assessment.
4. For individuals with severe frailty, consider prioritizing short-term symptom management strategies over interventions designed for longer-term benefit.
5. Further research is needed to clarify the optimal strategies for rheumatic disease management in the context of frailty.

Table 2. Strategies for the prevention and treatment of frailty among people living with rheumatic diseases; *courtesy of Alexandra Legge, MD, MSc.*

rheumatic disease is optimizing control of the underlying inflammatory condition, which may reduce inflammation-driven aging processes, improve physical function, and potentially delay frailty progression. In some cases, treatment of active rheumatic disease may itself improve frailty status.[12,26] However, for the majority of frail individuals, rheumatic disease control alone is unlikely to be sufficient, and more comprehensive and holistic management plans are needed.

Currently, data supporting interventions to prevent and treat frailty specifically in rheumatic disease populations remains limited. However, extrapolating from the available evidence for community-dwelling older adults, several low-risk therapeutic interventions may be considered for the prevention and treatment of frailty in this patient population. The Canadian Frailty Network's AVOID Frailty framework[27] outlines various evidence-based strategies for mitigating the health risks associated with frailty in older adults, including physical activity,[28] dietary interventions,[29] vaccinations, social interaction,[30] and medication optimization.[31] Multicomponent interventions targeting more than one of these domains may be particularly effective. Importantly, given the strong link between frailty and mortality risk in rheumatic disease populations, the presence of severe frailty may warrant prioritizing short-term symptom relief over interventions intended to yield long-term benefits that patients may not live long enough to experience.

Given the heterogeneity and complexity of frailty, a "one size fits all" approach to management is unlikely to be effective. Screening alone is insufficient; identifying frailty should prompt further evaluation to understand its underlying contributors and guide interventions. One approach is referral for comprehensive geriatric assessment (CGA), a structured,

multidimensional diagnostic and therapeutic process used to establish a holistic picture of an individual's health status.[32] CGA facilitates the identification of modifiable risks (e.g., falls, malnutrition, polypharmacy) and the creation of personalized treatment plans developed through shared decision-making and aligned with patient values and goals of care.[32] Evidence from oncology demonstrates that integrating CGA into treatment planning for older adults improves quality of life, reduces treatment-related toxicity, and lowers rates of unplanned hospitalizations.[33,34] Similar approaches may be beneficial in rheumatology, particularly when considering high-risk therapies for conditions such as systemic vasculitis. Ultimately, effective implementation will require multidisciplinary care pathways involving rheumatologists, geriatricians, primary care providers, and allied health professionals.

The optimal approach to treating rheumatic disease in the context of frailty remains uncertain, and it is unclear whether management strategies should differ from those used in non-frail individuals. A major challenge is that randomized controlled trials in rheumatology frequently exclude individuals with complex medical and psychosocial needs, including frail older adults, limiting the applicability of existing evidence to this patient population.[35] Consequently, rheumatologists currently have limited data to guide individualized treatment decisions for frail patients. Addressing this evidence gap is a research priority, with an urgent need for studies that evaluate the relative benefits and risks of different therapeutic approaches for rheumatic diseases in the context of frailty.

Conclusions

Frailty is increasingly recognized as an important clinical construct in rheumatology, distinct from chronological age, multimorbidity, and disability. Given its high prevalence among people living with rheumatic diseases and its strong association with adverse health outcomes, frailty carries important prognostic implications. Importantly, frailty is not an inevitable consequence of chronological aging or chronic disease but rather a dynamic and potentially reversible process. As such, routine screening for frailty in the rheumatology clinic, coupled with targeted interventions and risk mitigation strategies, represents an important opportunity to improve patient outcomes and support more personalized and holistic care. Ongoing research is needed to refine approaches to frailty assessment and management and to better understand how frailty should inform treatment decision-making for rheumatic diseases.

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