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Optimizing Front-Door Sarcopenia Screening on the Acute Medical Unit: A Practical Framework for Frailty Management

Kamalika Chakrabarty [1], Asma Aktar [2]

1. Care of the Elderly, University Hospitals Coventry and Warwickshire National Health Service (NHS) Trust, Coventry, GBR 2. General Internal Medicine, University Hospitals Coventry and Warwickshire National Health Service (NHS) Trust, Coventry, GBR

Corresponding author: Kamalika Chakrabarty, kamalika.dmc@gmail.com

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Abstract

Sarcopenia - the progressive, age-related loss of skeletal muscle mass and strength - is common among older adults presenting as emergency medical admissions, yet it is rarely identified at the front door. In the Acute Medical Unit (AMU), acute sarcopenia is frequently worsened by systemic inflammation, enforced bed rest, and subclinical malnutrition, making it a significant driver of functional decline, prolonged hospital stays, and avoidable re-admissions. Despite its clear prognostic importance, formal sarcopenia screening is not yet part of routine acute triage in most units.

This technical report describes a practical four-stage clinical framework using the validated SARC-F questionnaire (Strength, Assistance, Rise from a chair, Climb stairs, Falls (a Sarcopenia screening Questionnaire)) alongside simple bedside physical tests - handgrip strength and the chair stand test - that can be realistically implemented during acute medical assessment. Early identification enables targeted nutritional support and structured mobility plans from the point of admission, helping to preserve function and improve outcomes for frail older patients.

Categories: Geriatrics, Internal Medicine
Keywords: acute medical unit, comprehensive geriatric assessment (cga), deconditioning, frailty, sarc-f, : sarcopenia

Introduction

Sarcopenia is a generalised skeletal muscle disorder associated with physical disability, increased risk of hospital admission, and higher mortality [1]. For older patients admitted through the Acute Medical Unit (AMU), sarcopenia is often acutely worsened by the admission itself - acute illness, systemic inflammation, and enforced bed rest accelerate the very muscle loss that makes recovery so difficult [2].

While tools such as Comprehensive Geriatric Assessment (CGA) and the Clinical Frailty Scale (CFS) are increasingly used at hospital intake, direct assessment of muscle quality and functional reserve remains uncommon [3,4]. This means patients who are not obviously frail can be missed entirely - quietly losing function during their acute stay without any targeted intervention.

At University Hospitals Coventry and Warwickshire National Health Service (NHS) Trust (UHCW) - one of the largest acute teaching trusts in the UK holding Pathway to Excellence designation - an established acute frailty multidisciplinary team operates at the front door of emergency admissions, with dedicated therapy roles incorporating frailty assessment and early mobilisation planning [5-7]. The recent expansion of this frailty pathway to include specialist physiotherapy, occupational therapy, and Allied Health Professional Rapid Emergency Assessment and Care Team (REACT) services reflects a growing institutional awareness of muscle vulnerability and functional deconditioning in acutely unwell older adults [7]. Despite this progress, formal front-door sarcopenia screening using validated tools such as the SARC-F (Strength, Assistance, Rise from a chair, Climb stairs, Falls (a Sarcopenia screening Questionnaire)) remains inconsistently embedded within acute medical triage pathways [8]. So this technical report aims to address this gap.

Older adults can lose approximately 1 kg of leg muscle mass (over 6%) and more than 15% of lower limb strength within 10 days of complete bed rest [9]. Identifying sarcopenia early gives the acute team a clear mandate to act before that decline sets in. This technical report sets out a streamlined, evidence-based framework for rapid front-door sarcopenia screening within acute medical assessment units, focusing on tools and interventions that are genuinely feasible in a busy acute medical environment.

Technical Report

Operational sarcopenia screening framework

The Acute Medical Unit (AMU) is not a forgiving environment for complex assessment pathways. Clinicians are under pressure, beds are needed, and patients are unwell. This framework is designed with that reality in mind; keeping the screening burden on junior medical staff to a minimum while ensuring that patients at genuine risk of sarcopenia are identified promptly and acted on before avoidable deconditioning sets in. The pathway operates across four sequential phases: (1) identification via SARC-F screening at triage; (2) verification through bedside muscle strength assessment; (3) targeted clinical intervention within 24 hours; and (4) monitoring and reassessment throughout the acute admission.

Stage 1: front-door screening (SARC-F)

During initial triage, the admitting nurse completes the SARC-F questionnaire for all patients aged 65 and older. It takes under three minutes, requires no equipment, and covers five domains: strength, walking assistance, rising from a chair, stair climbing, and falls history [8]. A total score of four or above indicates a positive screening result (sarcopenia risk) and triggers bedside muscle strength verification to evaluate for probable sarcopenia.

Three operational considerations are worth noting from routine acute practice.

Cognitive impairment and proxy history: In patients presenting with acute delirium, advanced dementia, or significant communication difficulties, the SARC-F is completed using proxy information from family members, carers, or pre-admission documentation. The focus should be on the patient's functional baseline in the two weeks before the acute illness began - not their current state, which may reflect the admission itself rather than underlying muscle vulnerability.

Electronic integration: Positive screens should be recorded in the electronic health record and generate an automatic referral to the acute frailty therapy team. Where electronic referral pathways do not yet exist, a clear paper-based flagging system should be agreed locally between nursing and therapy leads before implementation.

CFS concordance: Patients who score below four on SARC-F but present with a Clinical Frailty Scale score of four or above should still be considered for therapy review. Self-reported questionnaires occasionally underestimate muscle vulnerability in high-acuity presentations, and clinical judgement should always take precedence over a single screening score.

Component	Question	Score 0	Score 1	Score 2
Strength	Difficulty lifting and carrying 10 lb	None	Some	A lot/unable
Walking	Difficulty walking across a room	None	Some	A lot/ use of walking aids/unable
Rising from a chair	Difficulty getting up from a chair or bed	None	Some	A lot/unable
Climbing stairs	Difficulty climbing flight of 10 stairs	None	Some	A lot/unable
Falls	Number of falls in the past year	None	1-3	4 or more

TABLE 1: SARC-F Screening Questionnaire

SARC-F Screening Questionnaire adapted from Malmstrom and Morley (2013) [8]. A total score of four or above indicates a positive screening result (identifying sarcopenia risk) and triggers bedside muscle strength verification to evaluate for probable sarcopenia.

SARC-F: Strength, Assistance, Rise from a chair, Climb stairs, Falls.

Stage 2: bedside muscle strength assessment

Bedside assessment is performed by a physiotherapist, occupational therapist, or acute frailty practitioner within four hours of a positive SARC-F screen, and no later than the morning following admission. In practice, completing Stage 2 within four hours is not always achievable - particularly at weekends or during periods of reduced therapy staffing. In these circumstances, Stage 3 interventions, particularly early mobilisation and nutritional supplementation, should be initiated by the medical or nursing team based on the SARC-F score alone, without waiting for formal therapy assessment.

Handgrip Strength (*HGS*)

Measured using a Jamar hydraulic dynamometer with the patient seated, elbow flexed at 90 degrees and forearm in a neutral position. The patient performs three maximal contractions on the dominant hand, and the peak value is recorded. Cut-offs for probable sarcopenia are below 27 kg in men and below 16 kg in women [1]. If acute illness severity prevents handgrip testing, the clinician documents this clearly and proceeds to Stage 3 on the basis of the SARC-F score alone.

Five-Times Sit-to-Stand Test (FTSTS)

Using a standard armless chair, the patient rises fully and sits back down five times as quickly as possible without using their arms. A completion time of more than 15 seconds suggests significant lower limb weakness [10]. For patients who are unable to attempt the test safely due to falls risk, severe pain, or acute delirium, maximum calf circumference below 31 cm can be used as a practical surrogate marker of reduced muscle mass [1]. This is not a perfect substitute - it is a pragmatic adjustment for patients who are simply too unwell to mobilise safely on the day of admission.

Stage 3: early targeted intervention (within 24 hours)

A positive Stage 2 assessment - or a positive SARC-F where Stage 2 cannot be completed - should trigger three parallel actions, ideally initiated before the end of the admitting shift.

Nutritional Optimisation

Dietetic assessment is requested within 24 hours. Total daily protein intake is targeted at 1.2-1.5 g/kg body weight per day (combining dietary intake and oral nutritional supplementation as required) [11,12], alongside MUST (Malnutrition Universal Screening Tool) scoring if not already completed at triage. Empiric nutritional therapy should be individualised and adjusted for clinical safety, taking into account baseline renal function (e.g. severe impairment or acute kidney injury), swallow safety/dysphagia, and refeeding syndrome risk in severely malnourished individuals. Serum 25-hydroxyvitamin D testing should be targeted to patients with specific clinical risk factors or indications (such as a history of recurrent falls, bone pain, osteoporosis, or severe frailty) in line with local and national guidance. Where vitamin D deficiency is confirmed, supplementation should be initiated according to local clinical pathways. Where dietetic input is not available on the day, the admitting team should initiate oral nutritional supplementation empirically rather than waiting.

Structured Early Mobilisation

The physiotherapist prescribes a daily walking plan from day one of admission, with an appropriate walking aid provided at the bedside immediately rather than waiting for a formal equipment assessment later in the week. Default bed rest orders and unnecessary nil by mouth instructions should be actively avoided unless there is a specific clinical indication - and where bed rest is genuinely required, the reason should be documented explicitly so it can be reviewed daily.

Targeted Deprescribing

The medical team reviews active medications using STOPP/START (Screening Tool of Older Persons' Prescriptions/Screening Tool to Alert to Right Treatment) criteria within 24 hours of admission [13]. Priority is given to reducing anticholinergic burden, sedative medications, and antihypertensives that may be contributing to postural hypotension, falls risk, or delirium. Deprescribing decisions should be clearly documented and communicated to the general physician (GP) at discharge.

Stage 4: monitoring and reassessment

Handgrip strength and FTSTS are repeated at 48 to 72 hours to assess early response to intervention, and again prior to discharge to document the patient's functional trajectory across the admission. Where a patient deteriorates between assessments rather than improving, this should prompt a formal MDT review to identify reversible contributing factors - including medication side effects, nutritional inadequacy, or undertreated pain limiting mobility.

Sarcopenia status, baseline physical metrics, and functional trajectory should be documented clearly in the discharge summary in plain language that a GP or community practitioner (frailty virtual ward/ follow-up) can act on without needing to interpret clinical shorthand. The goal is not just to identify sarcopenia during the admission but to ensure the information follows the patient into the community, where the longer-term work of rehabilitation and prevention begins.

Discussion

Hospital-acquired deconditioning is one of the most preventable complications of acute admission in older adults. Yet in most AMUs, functional decline goes unmeasured and therefore unaddressed until it becomes

clinically apparent - often only when discharge planning reveals that a patient can no longer manage at home. By that point, the opportunity for early intervention has passed.

This framework attempts to close that gap by embedding sarcopenia recognition into the earliest point of contact - the nursing triage assessment - using a tool that requires no equipment, no specialist training, and under three minutes to complete. The SARC-F has established validity as a rapid screening instrument to identify patients at risk of sarcopenia [1,8]. In accordance with EWGSOP2 (European Working Group on Sarcopenia in Older People, version 2 (the 2019 consensus definition)) consensus criteria, a positive SARC-F screen triggers objective bedside strength testing (Stage 2), which formalises the diagnosis of probable sarcopenia and justifies immediate, targeted interventions [1]. Its integration into existing nursing workflows minimises the additional burden on junior medical staff, who are already stretched on a busy acute take.

The addition of bedside physical testing in Stage 2 provides objective confirmation where the SARC-F screen is positive, moving beyond self-report to a measurable functional parameter. Handgrip strength in particular has been shown to be a reliable and feasible indicator of muscle function in acute care settings, with predictive validity for length of stay and quality of life outcomes [1]. The FTSTS offers a complementary lower-limb measure that is equally quick to perform and requires no specialist equipment.

The three Stage 3 interventions - nutritional optimisation, structured early mobilisation, and targeted deprescribing - are deliberately selected for feasibility as well as efficacy. Each can be initiated within the first shift of admission without requiring specialist review, and each addresses a specific and modifiable driver of acute sarcopenia. The evidence base supporting early protein supplementation [11] and structured mobilisation [6] in hospitalised older adults is well established, and the STOPP/START framework provides a systematic and practical tool for medication rationalisation [13].

Implementation barriers

The most commonly cited barrier is time. Junior medical staff on a busy acute take are understandably stretched, and adding another assessment feels unrealistic. The framework is designed to accommodate this by allowing Stage 3 to proceed without Stage 2 completion where necessary, ensuring that the most time-sensitive interventions - nutrition and mobilisation - are not delayed by assessment bottlenecks.

Conclusions

Acute sarcopenia is a hidden but highly consequential contributor to inpatient morbidity in older adults. A simple two-step screening (front-door SARC-F screening and handgrip test), followed by early targeted interventions, allows general medical teams to identify muscle vulnerability early and act on it effectively. Starting nutritional support and structured mobility plans at the point of admission, rather than waiting for physiotherapy or dietetic referral days later, has the potential to protect baseline function, reduce length of stay, and prevent avoidable readmissions. While formal implementation trials are required to measure its precise clinical impact, this practical, evidence-based framework offers a deliverable approach for acute medical units to address early functional deconditioning.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Kamalika Chakrabarty, Asma Aktar

Acquisition, analysis, or interpretation of data: Kamalika Chakrabarty

Drafting of the manuscript: Kamalika Chakrabarty

Critical review of the manuscript for important intellectual content: Asma Aktar

Supervision: Asma Aktar

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