

# Integrating Muscle Measures in Practice to Improve Patient Centred Outcomes

BAPEN's 2022 Annual Conference took place in Brighton in November. Abbott held a scientific symposium at the conference to discuss the impact of loss of muscle mass and function and how integrating muscle measures can improve patient outcomes.

## Introduction

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Immobility, poor nutrition and inflammation all trigger and accelerate muscle loss, particularly in older people. Guidance from groups such as the European Working Group on Sarcopenia in Older People (EWGSOP) and the PROT-AGE study group have focused attention on the importance of muscle and the role of nutrition and exercise in managing low muscle mass. Healthcare professionals now have the opportunity to work with patients and their carers to create person-centred interventions and goals which can translate to meaningful outcomes.

## Focus on frailty

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Sarcopenia is defined as reduced muscle mass, strength, and function. Muscle mass declines by 8% per decade from age 40 years, rising to 15% loss per decade after age 70 years. As we age, muscle loss is further compounded by factors such as lifestyle, malnutrition, acute illness and comorbidities, leading to increased risk of falls and fractures, poor wound healing and increased risk of infection.

Malnutrition is a significant risk factor for the development of sarcopenia. Protein intake is key as the ageing muscle develops anabolic resistance, requiring more protein to stimulate muscle synthesis. Higher protein intakes are also needed to offset inflammatory and catabolic conditions associated with acute and chronic disease.

Sarcopenia is a major feature and driver of frailty, with weakness, slowness and weight loss leading to exhaustion and sedentary behaviour. Frail patients show a disproportionate functional decline, and are likely to present with falls, reduced mobility, acute confusion, incontinence and increasing care needs. Early identification of both sarcopenia and frailty is essential, and simple tools are available such as the Clinical Frailty Score (also available as an app for download) and the SARC-F questionnaire to assess muscle health. Once sarcopenia has been identified, muscle strength can be assessed using tools such as grip strength (using a dynamometer) or the sit to stand test. The 4-metre gait speed test can be used to assess severity.

Management of frailty should take a holistic approach, as seen in the Comprehensive Geriatric Assessment. Management of sarcopenia is currently focused on nutrition and physical activity, with a high protein intake and supplementation with substances that stimulate muscle protein synthesis [such as leucine metabolite,  $\beta$ -hydroxy  $\beta$ -methylbutyrate (HMB)] recommended. Regular exercise,

especially resistance exercise, has also been shown to have a positive impact on muscle and has a synergistic effect with nutrition.

Embedding assessment tools into routine practice can help to improve patient care. Medway NHS Foundation Trust has been taking a quality improvement approach to standardise identification of malnutrition, sarcopenia and frailty across the key pathways of acute frailty, fracture neck of femur and the falls clinic.

## Spotlight on oncology

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Malnutrition affects up to 80% of patients during their cancer journey due to the disease and the effect of anti-cancer therapies on factors such as appetite, ability to eat and gastrointestinal functioning. Cancer wasting and loss of muscle mass occurs in > 50% of newly diagnosed patients, and this is further impacted by chemotherapy. Muscle wasting negatively affects quality of life, leading to fatigue and reduced physical function, and may also lead to treatment delays, dose limitation or discontinuation.

Physical performance measures can be successfully used with cancer patients and a systematic review demonstrated their role in predicting outcomes. Poor results in the timed up and go test (TUG), gait speed and short physical performance battery tests (SPPB) were all associated with treatment related complications and decreased survival. Poorer TUG and SPPB outcomes were also associated with higher rates of functional decline. Functional tests such as the one-minute sit to stand test can be performed by the patient on a virtual consultation, and studies have shown no difference in performance vs face-to-face testing. Calf circumference is another surrogate measure for muscle mass assessment. The Yubi-Wakka or finger ring test allows patients to measure their calf circumference and if it is smaller than their finger ring, it is indicative of sarcopenia.

Nutritional approaches for treating muscle loss include optimal levels of energy (25-30 kcal/kg body weight/day), protein intake of 1.2-1.5 g/kg body weight/day, substances to help build muscle mass such as leucine (2-4 g/day) and its metabolite HMB (3 g/day) and optimal levels of micronutrients such as vitamin D (800 IU) to boost the immune system. Protein is particularly important to help build muscle mass and should be high quality (rich in essential amino acids), with at least 65% from animal sources. Protein intake should be distributed evenly throughout the day, with at least 20 g of protein per meal. This level of intake can be quite difficult to achieve, particularly in patients with a reduced appetite or who are unable to eat, and so oral nutritional supplements should be considered where needed.

## In summary

- Frailty, malnutrition, and poor muscle health are common and often coexist.
- Evidence-based tools for diagnosis are available and should be embedded in routine practice. The **Muscle Assessment video series** on Abbott Nutrition Health Institute (<https://anhi.org/uk>) provides guidance on the key steps of find, assess, confirm and severity.

- Nutrition and resistance exercises remain cornerstones for managing sarcopenia.
- Malnutrition and low muscle mass are prevalent in cancer patients.
- Muscle function measures are key to identifying patients at risk.
- High quality protein is essential to support muscle synthesis and essential amino acid metabolites (e.g. HMB) and vitamin D help to support and maintain muscle mass.