



# The Importance of Tackling Loss of Muscle/Muscle Function in Secondary Care

Findings from an audit at the North Middlesex University NHS Hospital



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**As dietitians, we recognise the importance of assessing muscle loss and function in secondary care, especially given patients' complex health challenges. However, against a backdrop of increasing bed pressures and time limitations, measuring muscle strength/function is not typically part of routine clinical care, and clinicians' awareness of screening tools is often low.<sup>1</sup>**

**From January to April 2023, our dietetics team at North Middlesex University Hospital Trust participated in a 'Malnutrition and Muscle Screening Audit'. This audit trialed various tools for assessing muscle strength/ function and malnutrition across pilot wards.**

**Conducted among patients with diverse clinical conditions in medical, oncology and surgical wards, the audit aimed to:**

- **Identify the prevalence of malnutrition and loss of muscle/muscle function**
- **Support our teams to regularly screen their patients for loss of muscle/muscle function**
- **Provide early intervention with nutritional support.**

**This article discusses our audit experience, key findings on the prevalence or risk of malnutrition and loss of muscle/muscle function, and why this has prompted us to consider implementing muscle screening/assessment more widely across our Trust.**

## Introduction

Muscle strength is crucial for quality of life and can enhance lifespan, health, independence, and functionality.<sup>2,3</sup> Loss of muscle mass and function is associated with comorbidities, including functional impairments, increased hospitalisation risk, and mortality, especially in older adults or those with chronic conditions.<sup>4,5</sup>

Malnutrition risk is often highlighted using weight, height, and body mass index (BMI) measurements, such as those incorporated in the 'Malnutrition Universal Screening Tool' ('MUST'),<sup>1,6</sup> which is performed as part of standard practice within our Trust.

However, there is a tendency for nutritional screening/ assessment to focus solely on malnutrition, overlooking muscle loss/function. This can be problematic because individuals with normal to high BMI may still be at risk of malnutrition and loss of muscle/muscle function, which may mean they can be overlooked.<sup>1</sup>

Since muscle loss is one of the most critical consequences of malnutrition,<sup>1</sup> and can severely impact patient outcomes, particularly in acutely unwell or chronically ill patients,<sup>4,5</sup> screening for muscle/ muscle function loss is essential.

This underpinned our decision to take part in this audit, which enabled us to:

- Provide clinicians with the opportunity to trial various tools to enable screening patients for muscle loss risk
- Gather and report data on the prevalence of malnutrition and loss of muscle/muscle function
- Ensure patients receive appropriate nutritional support to enable excellent patient outcomes
- Raise awareness of different ways of assessing nutritional status of patients.

During the audit, various screening tools were presented, allowing clinicians to choose the most suitable for each patient. Tools included 'MUST' for identifying malnutrition risk, and handgrip strength, SARC-F (Strength, Assistance with walking, Rise from a chair, Climb stairs, Falls), calf circumference measurement, sit-to-stand test, gait speed test, and timed up and go test for identifying loss of muscle/muscle function risk.

## Key findings

Malnutrition and loss of muscle/muscle function risk screening/assessment was conducted on 518 patients across oncology (64 patients), surgical (123 patients) and medical (331 patients) wards, over 3 months.

The audit comprised screening for both the risk of malnutrition and loss of muscle/muscle function. Of all patients who were screened malnutrition and/or loss of muscle/muscle function:

- 99.8% of patients (517 patients) screened for risk of malnutrition
- 99.0% of patients (513 patients) screened for risk of loss of muscle/muscle function.

### The choice of screening tool used for identifying the risk of loss of muscle/muscle function was patient-centred

Typically, only one tool for screening or assessing loss of muscle/muscle function was used per patient, though occasionally clinicians elected to use more. Tool selection depended on the patient's clinical condition, medical acuity and mobility. Clinicians preferred SARC-F, handgrip strength and calf circumference (as outlined in **Figure 1**), due to their ease of use, especially for acutely unwell, immobile or frail patients who may have been at risk of falls, allowing assessments to be conducted without requiring patients to stand or move excessively.

#### o Handgrip strength was most appropriate for mobile patients

31.7% of patients were assessed using handgrip strength (**Figure 1**). Handgrip strength was primarily used in oncology and surgical wards, with less than 25% of medical ward patients screened this way. As the assessment was performed while standing, clinicians elected to use handgrip strength for mobile patients rather than bedridden patients.

On medical wards, 44.4% of screened patients were identified as frail or ageing. It was, therefore, used on just 4.8% of ageing/frail patients.

#### o SARC-F was the most used tool across all patient cohorts, in particular, those who were frail

44.2% of patients were assessed using SARC-F (**Figure 1**). It was quick and straightforward to use, less invasive, and required no physical exertion, making it suitable for both mobile and bedridden patients.

SARC-F is also known for its high specificity for sarcopenia,<sup>7</sup> and clinicians noted that it provided an efficient, objective screening method that enabled them to easily and confidently identify whether the patient was at risk of losing muscle/muscle function.

#### o Calf circumference measurements were most useful for physically frail or bed-ridden patients

24.9% of patients were assessed using calf circumference (**Figure 1**). Calf circumference measurement was preferred for patients with limited mobility, such as those with cancer or post-surgery patients, as it offered a more comfortable screening option for their conditions.

### Prevalence of loss of muscle/muscle function risk highlights importance of routine screening

42.3% of patients were at risk of malnutrition and/or loss of muscle/muscle function. Patients were much more likely to be at risk of loss of muscle/muscle function alone or in combination with malnutrition (30.8% of patients combined) than they were to be at risk of malnutrition alone (11.4%, **Figure 2**):

- 15.4% at risk of loss of muscle/muscle function alone
- 11.4% at risk of malnutrition alone
- 15.4% at risk of both.

### Prevalence of malnutrition and/or loss of muscle/muscle function across wards

Patients in the medical wards had the highest prevalence of risk of malnutrition and/or loss of muscle/muscle function (43.8%, **Figure 2**). Oncology and medical ward patients were more likely to be at risk of loss of muscle/muscle function alone (17.2% and 17.5%, respectively, **Figure 2**) than they were to be at risk of malnutrition alone (14.1% and 9.4%, respectively, **Figure 2**). The data showed that surgical patients, however, were far more likely to be at risk of malnutrition alone (15.4%, **Figure 2**).

#### o Risk varied (sometimes significantly) across clinical conditions

The patient cohorts most likely to be at risk of either malnutrition and/or muscle loss were ageing/frail, cancer and stroke patients and those with multiple clinical conditions (**Figure 3**).

#### o Ageing/frail patients

Ageing/frail patients had the highest risk of malnutrition and/or loss of muscle/muscle function (61.5%, **Figure 3**).

Ageing and frail patients were 5.5 times more likely to be at risk of loss of muscle/muscle function alone, and almost 10 times more likely to be at risk of loss of muscle/muscle function with or without malnutrition than they were to be at risk of malnutrition alone.

#### o Respiratory conditions

Patients with a respiratory condition were almost 6 times more likely to be at risk of loss of muscle/muscle function alone, and 11 times more likely to be at risk of loss of muscle/muscle function with or without malnutrition than they were to be at risk of malnutrition alone.

#### o Cancer

Patients with cancer were more likely to be at risk of malnutrition alone than loss of muscle/muscle function alone. This is interesting as malnutrition in cancer patients often gives way to sarcopenia and cachexia.<sup>8</sup> However, the risk of loss of muscle/muscle function, with or without malnutrition, was higher than malnutrition alone, which is in line with what we might have expected (34.0% and 22.6%, respectively).

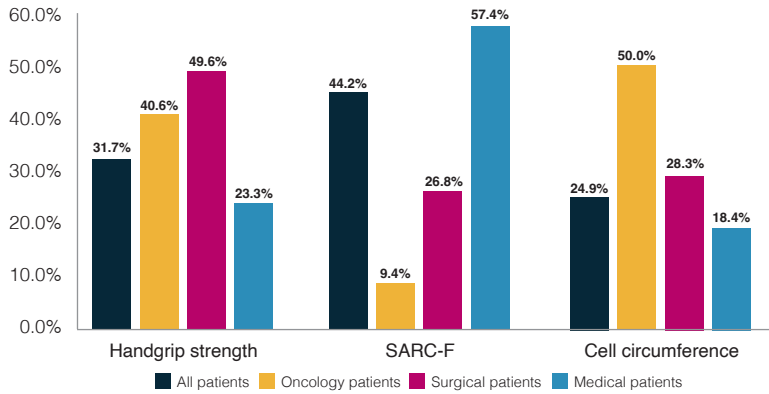
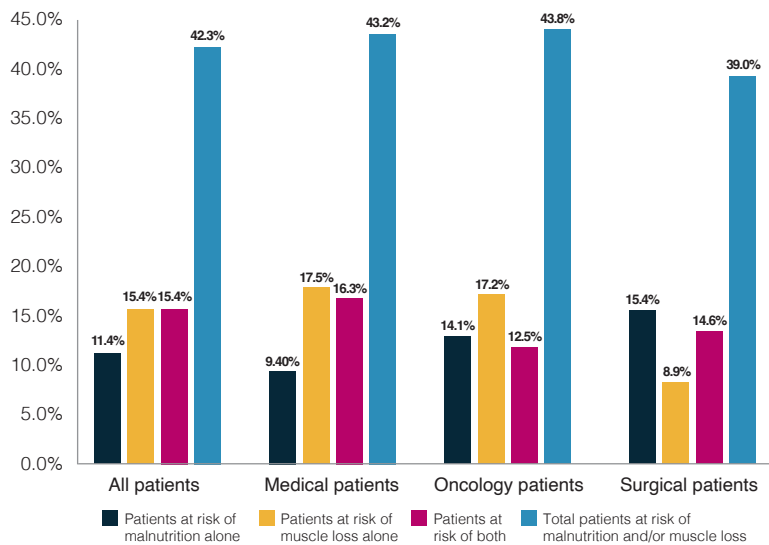
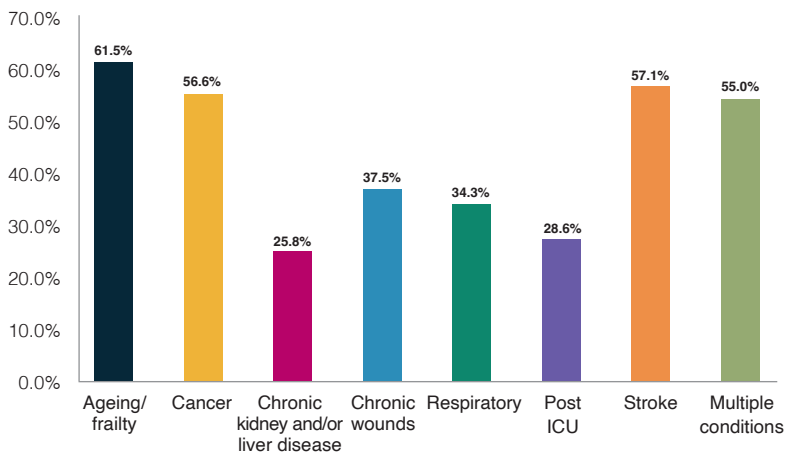
#### o Surgical

Surgical patients had a higher prevalence of malnutrition risk alone than any of the other patient cohorts (15.4%, **Figure 2**). This may be down to the nature of the surgery the patient was undergoing, whether they were pre- or post-operative and their levels of mobility whilst in hospital.

Studies show that patients who have recently undergone surgery are often at risk of muscle loss,<sup>9</sup> and typically require elevated protein and energy intake to support wound healing, immune function and muscle strength.<sup>10</sup> It is perhaps unsurprising then to see that surgical patients were 50% more likely to be at risk of loss of muscle/muscle function with or without malnutrition than they were to be at risk of malnutrition alone (23.5% and 15.4% respectively, **Figure 2**).

## Limitations

A limitation of this study is the method of data collection, which was conducted through the handwritten completion of forms. This process inherently introduces the possibility of human error, such as transcription mistakes, omissions or inconsistencies in the recorded information. Additionally, the manual nature of data entry may also lead to unconscious bias due to the aforementioned method of data collection. These factors may have affected the accuracy and reliability of the study's findings, and should be considered when interpreting the results.

**Figure 1: Screening/assessment tools used to identify risk of loss of muscle/muscle function****Figure 2: Prevalence of risk of malnutrition and/or loss of muscle/muscle function****Figure 3: Prevalence of risk of malnutrition and/or loss of muscle/muscle function per clinical condition\***

\*NB: There were patients with cancer on both medical and surgical wards as well as the oncology ward, hence the different oncology results between Figure 2 and Figure 3.

## Conclusion: The clear need to screen for loss of muscle/muscle function as part of routine clinical practice

Over one third of patients in this audit were identified as at risk of malnutrition and/or loss of muscle/muscle function with or without malnutrition. This demonstrates a significant percentage of patients whose needs might otherwise have gone unnoticed without muscle screening/assessment.

This emphasises the need for awareness and education about screening for the risk of malnutrition and loss of muscle function and the importance of early screening and intervention.

While weight loss and malnutrition are quickly identified, muscle loss can be more subtle and requires screening/assessment as part of routine practice, so the nutritional needs of all patients are picked up promptly. This audit showed how these tools provide a versatile approach that can be adapted for patient and clinician needs. This allows for greater depth and individualisation of patient assessment, ultimately enhancing patient care.

## Audit legacy: Screening for loss of muscle/ muscle function to be implemented trust-wide

This audit has undoubtedly raised awareness of the importance of screening for loss of muscle/muscle function within the Trust. The use of SARC-F, in particular, has been effective in identifying patients needing nutritional support who might otherwise have been overlooked.

Due to the high prevalence of loss of muscle/muscle function and the positive feedback on SARC-F's ease of use, there are plans to integrate SARC-F into clinical practice alongside 'MUST' screening as part of a new digital tool. This tool will be extended to other clinicians, including nursing teams, to enhance service and patient outcomes.

The ultimate aim is to make muscle screening a standard practice for all patients within the Trust. The next step in our Trust is to trial SARC-F within the Acute Stroke Unit and Elderly Care wards. Following the trial, we will review the data to trial across all inpatient wards and we will work as a team with the ward managers to implement this method of screening for loss of muscle/muscle function within these wards

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