

# Improving Identification of Malnutrition in Pretreatment Head and Neck Cancer Patients

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## Problem

### Background

- Around 75-80% of head and neck cancer patients (HNC) have significant weight loss during treatment.<sup>1</sup>
- Malnutrition exists in 35-60% of HNC patients at time of diagnosis.<sup>2</sup>
- During treatment, malnutrition can increase to more than 80% due to treatment related side effects, like mucositis, xerostomia, or dysphagia.<sup>2</sup>
- Poor nutrition status can predict prognosis and increase risk of death.<sup>3</sup>
- Malnutrition can lead to increase mortality, increased morbidity, increased hospital costs, increased readmissions, and increased length of stay.<sup>4</sup>

The aim of this study is to compare this screening tool's ability to identify malnutrition compared to standard clinical practice. The secondary aim is to determine predictors of malnutrition.

### Methods

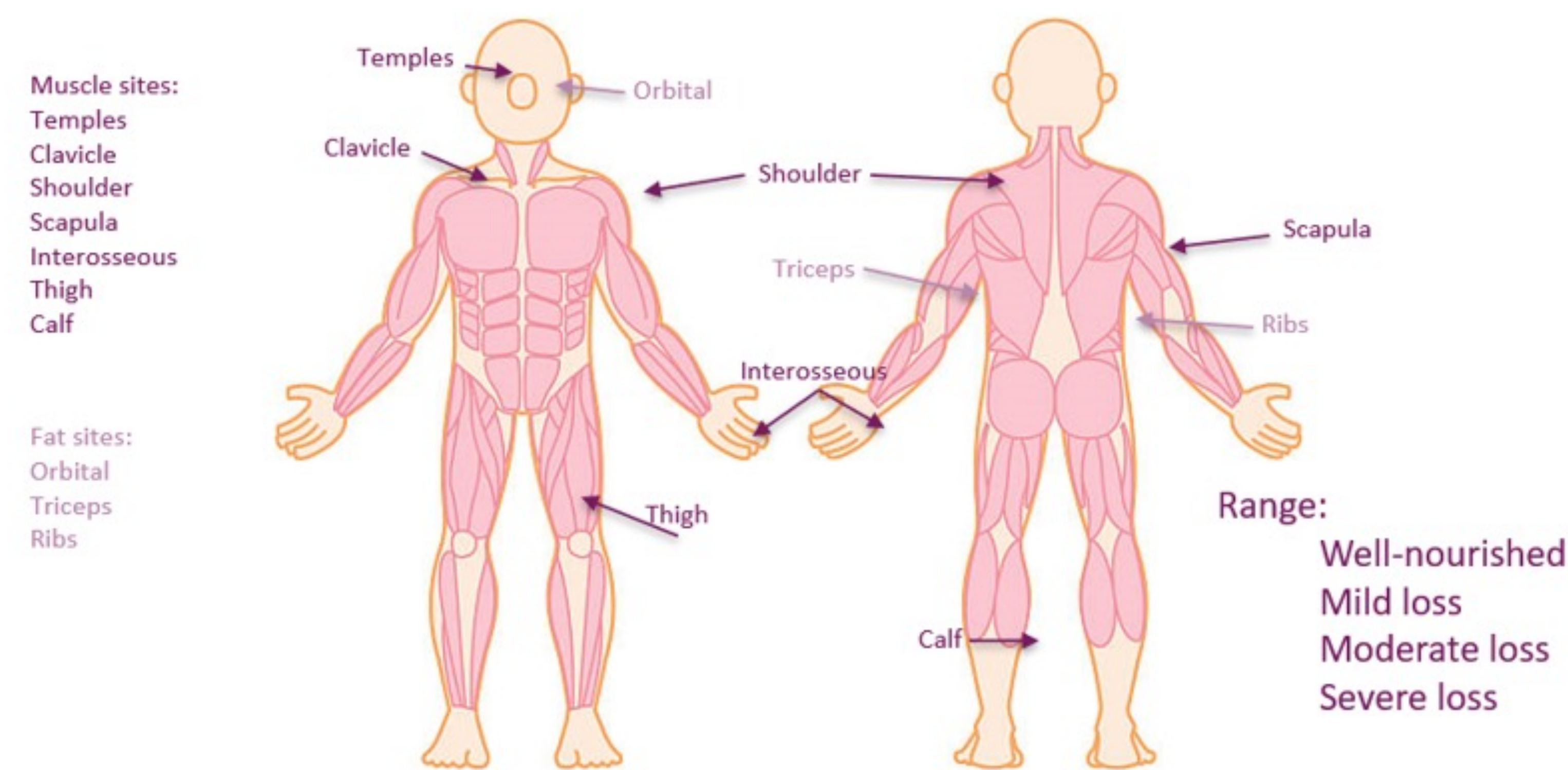
**Setting:** The HNC Survivorship Clinic at UPMC is a multidisciplinary clinic with registered nurses, an otolaryngologist, speech-language pathologist, a physical therapist, a registered dietitian, a dentist, an audiology assistant, and research coordinators.

## Solution

### Methods (continued)

- Previous malnutrition diagnosis criteria evaluated patients just using reported oral intake and weight loss. The Nutrition Focused Physical Exam (NFPE) is a hands-on examination evaluating various muscle and fat to assess for degrees of muscle or fat wasting (figure 1).

Figure 1: NFPE sites



NFPE was implemented on all pretreatment patients from August 5, 2021 through July 7, 2022 to determine if more patients could be identified as malnourished using this additional criteria (figure 2).

Figure 2: Malnutrition Diagnostic Criteria

#### Severe Protein-Calorie Malnutrition

Minimum of any 2 (out of 6) characteristics must be present

Characteristic	Acute Illness	Chronic Illness	Social/Environmental
Intake	≤50% for ≥ 5 days	≤75% for ≥ 1 month	≤50% for ≥ 1 month
Weight Loss	>2%-1 week >5%-1 month >7.5%-3 months	>5%-1 month >7.5%-3 months >10%-6 months >20%-1 year	>5%-1 month >7.5%-3 months >10%-6 months >20%-1 year
Fat Loss	Moderate	Severe	Severe
Muscle Loss	Moderate	Severe	Severe
Fluid Accumulation	Moderate to Severe	Severe	Severe
Grip Strength	Measurably Reduced (not for ICU pts)	Measurably Reduced	Measurably Reduced

#### Moderate Protein-Calorie Malnutrition

Minimum of any 2 (out of 6) characteristics must be present

Characteristic	Acute Illness	Chronic Illness	Social/Environmental
Intake	<75% for > 7 days	<75% for ≥ 1 month	<75% for ≥ 3 months
Weight Loss	1-2%-1 week 5%-1 month 7.5%-3 months	5%-1 month 7.5%-3 months 10%-6 months 20%-1 year	5%-1 month 7.5%-3 months 10%-6 months 20%-1 year
Fat Loss	Mild	Mild	Mild
Muscle Loss	Mild	Mild	Mild
Fluid Accumulation	Mild	Mild	Mild
Grip Strength	NA	NA	NA

### Statistical Analysis

Sensitivity and specificity are reported to compare diagnostic results of malnutrition between with and without physical exam. Descriptive and test statistics are reported for demographic and clinical characteristics between the malnutrition groups.

## Outcome

### Results

Table 1: Demographics and clinical characteristics

	Total N=77 (%)	
	No Malnutrition	Malnutrition
Age (years-mean(SD))	57.14 (12.37)	63.26 (11.65)
Gender N(%)		
Female	10 (28.6)	13 (31.0)
Male	25 (71.4)	29 (69.0)
Race N(%)		
White	34 (97.1)	39 (92.9)
People of color	1 (2.9)	3 (7.1)
Site N(%)		
Oropharynx	22 (62.9)	21 (50.0)
Laryngopharynx	5 (14.3)	11 (26.2)
Oral cavity	2 (5.7)	7 (16.7)
Other	6 (17.1)	3 (7.1)
Histology N(%)		
Squamous Cell	32 (91.4)	38 (90.5)
Other	3 (8.6)	4 (9.5)
Treatment N(%)		
Surgery and adjuvant	8 (10.4)	27 (35.1)
Nonoperative	27 (35.1)	15 (19.4)
Reconstruction N(%)		
Yes	6 (17.1)	26 (61.9)
No	29 (82.9)	16 (38.1)
T stage N(%)		
I	9 (27.3)	8 (20.0)
II	11 (33.3)	9 (22.5)
III	7 (21.2)	9 (22.5)
IV	6 (18.2)	14 (35.0)

Table 2: Malnutrition diagnosis

Total = 77	Malnutrition with NFPE	No Malnutrition with NFPE
Malnutrition without NFPE	9	1
No malnutrition without NFPE	33	34

- Comparing to diagnosing malnutrition with NFPE, diagnosing without NFPE has sensitivity of 0.214 and specificity of 0.971.
- Age, surgery, treatment, and reconstruction are significantly correlated with malnutrition at significance level of 0.05.

### Conclusion

- Incorporating NFPE into nutrition assessment more accurately diagnoses malnutrition.
- The information from this project can allow for earlier nutrition intervention at time of cancer diagnosis and nutrition optimization prior to and during treatment.

For references, please scan QR code:

