

Morphomic Malnutrition Score: A Standardized Screening Tool for Severe Malnutrition in Adults.

Lee C, Raymond E, Derstine BA, Glazer JM, Goulson R, Rajasekaran A, Cherry-Bukowiec J, Su GL, Wang SC. *JPEN J Parenter Enteral Nutr.* 2018 May 22. doi: 10.1002/jpen.1175. [Epub ahead of print] PubMed PMID: 29786877.

BACKGROUND:

Granular diagnostic criteria for adult malnutrition are lacking.

OBJECTIVE:

This study uses analytic morphomics to define the Morphomic Malnutrition Score (MMS), a robust screening tool for severe malnutrition.

METHODS:

The study population (n = 643) consisted of 2 cohorts: 1) 124 emergency department patients diagnosed with severe malnutrition by a registered dietitian (RD) and an available computed tomography (CT) scan within 2 days of RD evaluation, and 2) 519 adult kidney donor candidates to represent a healthy cohort. Body composition markers of muscle area and abdominal adiposity were measured from patient CT scans using analytic morphomic assessment, and then converted to sex- and age-adjusted percentiles using the Reference Analytic Morphomics Population (RAMP). RAMP consists of 6000 patients chosen to be representative of the general population. The combined cohort was then randomly divided into training (n = 453) and validation (n = 190) sets. MMS was derived using logistic regression. The model coefficients were transformed into a score, normalized from 0 to 10 (10 = most severe).

RESULTS:

Severely malnourished patients had lower amounts of muscle and fat than kidney donors, specifically for dorsal muscle group area at the twelfth thoracic vertebral level ($P < 0.001$), psoas muscle area at the fourth lumbar vertebral level ($P < 0.001$), and subcutaneous fat area at the third lumbar vertebral level ($P < 0.001$)-all parameters in MMS. MMS for severely malnourished patients was higher than kidney donors (7.7 ± 2.2 vs 3.8 ± 2.0 , respectively; P -value < 0.001). An MMS > 6.1 was accurate in determining nutrition diagnosis (82.1% sensitivity; 88.3% specificity; 85.2% balanced accuracy).

CONCLUSIONS:

MMS provides an evidence-based, granular assessment to distinguish severely malnourished adults from a healthy population.