Reprint of: Position of the Academy of Nutrition and Dietetics: Malnutrition (Undernutrition) Screening Tools for All Adults

ABSTRACT
It is the position of the Academy of Nutrition and Dietetics that, based upon current evidence, the Malnutrition Screening Tool should be used to screen adults for malnutrition (undernutrition) regardless of their age, medical history, or setting. Malnutrition (undernutrition) screening is a simple process intended to quickly recognize individuals who may have a malnutrition diagnosis. While numerous malnutrition screening tools are in use, their levels of validity, agreement, reliability, and generalizability vary. The Academy of Nutrition and Dietetics reviewed the body of evidence supporting malnutrition screening tools and determined a single tool for identifying adults in all settings who may have malnutrition, regardless of their age or medical history. The Nutrition Screening for Adults Workgroup conducted a systematic review of the most robust evidence to promote using the highest-quality malnutrition screening tool available. J Acad Nutr Diet. 2022;122(10S):S50-S54.

POSITION STATEMENT
It is the position of the Academy of Nutrition and Dietetics that, based upon current evidence, the Malnutrition Screening Tool should be used to screen adults for malnutrition (undernutrition) regardless of their age, medical history, or setting.

POSITION FOCUS
Malnutrition occurs in health care settings, and in communities where people suffer from food insecurity and hunger. Thus, this position applies in all settings where food assistance and nutrition services are available. This position is based on a comprehensive systematic review and is intended to provide RDNs and all other health professionals with validity, agreement, reliability, and generalizability data for six malnutrition screening tools supported by the largest number of studies (Malnutrition Screening Tool [MST], Malnutrition Universal Screening Tool, Mini Nutritional Assessment—Short Form, Short Nutritional Assessment Questionnaire, Mini Nutritional Assessment—Short Form Body Mass Index, and Nutrition Risk Screening 2002). This position supports using a single tool to identify adults who may be malnourished regardless of age, acute and chronic medical conditions, or settings where care is received.

Position Statement Development Process
The Academy’s Nutrition Screening for Adults Workgroup systematically reviewed validation studies for malnutrition screening tools published in the peer-reviewed literature from January 1997 through July 2017 and used the results as a basis for this position. The Workgroup included tools that met the Academy’s 2011 definition of nutrition screening (Figure 1), which was created for an earlier version of this project. As in the earlier systematic review, the Workgroup sought quick and easy screening tools, defined as requiring fewer than 10 minutes to complete. For the current position, the requirement for robust data necessitated inclusion of tools with adequate supporting evidence, defined as greater than four validation studies. The Workgroup...
Nutrition screening is the process of identifying patients, clients, or groups who may have a nutrition diagnosis and benefit from nutrition assessment and intervention by a registered dietitian nutritionist (RDN). Considered the overall validity, agreement, and reliability results and grades of supporting evidence for each tool, then generalizability of each tool to the widest variety of medical diagnoses or age groups and settings and ranked the tools accordingly (Figure 2). The position paper was posted for public comment before publication.

**POSITION**

It is the position of the Academy of Nutrition and Dietetics that, based upon current evidence, the MST should be used to screen adults for malnutrition (undernutrition) regardless of their age, medical history, or setting.

Ferguson and colleagues developed the MST to detect malnutrition or risk for malnutrition. Between 1999 and 2017, the MST was validated in acute, long-term, rehabilitation, and ambulatory care and oncology clinics in at least nine different countries. These studies revealed that the MST exhibited a moderate degree of validity, a moderate degree of agreement, and a moderate degree of inter-rater reliability in identifying malnutrition risk in adults (Figure 2). The strength of evidence for the MST is Grade I, good/strong with good generalizability. Some of the other tools also had high or moderate validity, agreement, or reliability, but were not supported by Grade I evidence or good generalizability.

**IMPLICATION FOR PRACTITIONERS**

While disease-, age-, or setting-specific malnutrition screening tools exist, most organizations where malnutrition screening occurs have clients or patients of different ages with one or more medical problems and provide nutrition care in a variety of settings. The value of using different screening tools for individuals with different personal characteristics is unclear, and subject to practical limitations. It is appropriate to implement the screening tool that will most accurately identify adults who may have malnutrition. Institutions and programs that implement the MST should have data available to consistently compare the populations screened for malnutrition, predict the resources for needed treatment, and support research.

Based upon the best available evidence, the Academy advocates that RDNs:

- Assume a strong leadership role in implementing the MST. A benefit to society occurs if individuals who may have malnutrition obtain nutrition assessment and intervention services from an RDN. This benefit is not without cost because of the time required for an RDN to complete a nutrition assessment. Thus, the impact of changes to screening procedures affects the amount of RDN time available to provide other required nutrition services and provides justification for RDNs to select and oversee implementation of malnutrition screening tools.
- Implement the MST without changes to the wording of the questions or the scoring system for referrals as originally presented. Adding items, modifying questions, or interpreting scores differently than intended by the authors of the tool should be avoided, as these changes invalidate the MST. Individual patients or clients with an MST score of ≥2 should achieve the greatest benefit from an RDN referral.
- Provide ongoing training to para-professionals who administer the MST and monitor the impact of the screening and referral process by summarizing data from individuals with malnutrition.
- Abandon all unvalidated malnutrition screening tools (eg, pressure injury and illness severity tools), including tools that were validated, then modified without rigorous re-validation against a standard definition of malnutrition.
- Discourage strongly the development of new screening tools in favor of further validating existing tools, especially in adults between the ages of 19 and 49 years, over age 90 years, and in community and long-term care settings.
- Research the costs and outcomes of the malnutrition screening procedure. Minimal data exist on the financial implications of the proper identification of patients who do or do not have malnutrition or the costs of the screening procedure. Obtaining these data could enable the projection of malnutrition assessment and intervention cost and should be a research priority.
- Research the minimum level of education and training needed to accurately administer the MST and develop education and training materials to facilitate consistency among users.
- Develop partnerships with patient advocacy groups, other health care professional organizations, and policy makers to implement the MST.

**CONCLUSIONS**

The amount and quality of evidence for validated malnutrition screening tools has grown considerably since an earlier...
<table>
<thead>
<tr>
<th>TOOL</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Positive Predictive Value</th>
<th>Negative Predictive Value</th>
<th>OVERALL VALIDITY</th>
<th>AGREEMENT</th>
<th>RELIABILITY</th>
<th>GENERALIZABILITY</th>
<th>EVIDENCE GRADE, STRENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MST*</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>Good</td>
<td>I, Good/strong</td>
</tr>
<tr>
<td>MUST†</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
<td>HIGH</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>Fair</td>
<td>II, Fair</td>
</tr>
<tr>
<td>MNA-SF‡</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
<td>MODERATE</td>
<td>LOW</td>
<td>MODERATE</td>
<td>Fair</td>
<td>II, Fair</td>
</tr>
<tr>
<td>SNAQ§</td>
<td>Moderate</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>MODERATE</td>
<td>—</td>
<td>MODERATE</td>
<td>Fair</td>
<td>II, Fair</td>
</tr>
<tr>
<td>MNA-SF-BMI∥</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High</td>
<td>HIGH</td>
<td>MODERATE</td>
<td>—</td>
<td>Limited</td>
<td>II, Fair</td>
</tr>
<tr>
<td>NRS-2002¶</td>
<td>Moderate</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate</td>
<td>MODERATE</td>
<td>—</td>
<td>—</td>
<td>Limited</td>
<td>II, Fair</td>
</tr>
</tbody>
</table>

*Sensitivity, specificity, positive predictive value, negative predictive value cutoffs: High: 90% to 100%, moderate: 80% to ≤ 89%, low: ≤ 79%; agreement and reliability κ cutoffs: High: 0.8 to 1; moderate: 0.6 to ≤ 7.9; low: ≤ 5.9.

†See Figure 3 in Skipper and colleagues for the algorithm to determine the overall validity.

‡The Workgroup determined generalizability based on usefulness of each tool across the broadest array of adult age groups, locations, diseases, and treatments according to evidence.

§Elements considered in the evidence grade include quality of the evidence, consistency of results across studies, quantity of studies, and number of subjects, clinical impact of outcomes, and generalizability to population of interest.14

*MST=Malnutrition Screening Tool.

†MUST=Malnutrition Universal Screening Tool.

‡MNA-SF=Mini Nutritional Assessment—Short Form.

§SNAQ=Short Nutritional Assessment Questionnaire.

∥MNA-SF-BMI=Mini Nutritional Assessment—Short Form Body Mass Index.


**Figure 2.** Validity, agreement, reliability, generalizability, and strength of evidence of adult malnutrition (undernutrition) screening tools.
review of the topic. This additional evidence supports using a single tool, the MST, to screen all adults for malnutrition (undernutrition) in all settings where malnutrition screening occurs. Replacing other malnutrition screening tools, especially those not rigorously validated, with the MST is expected to identify persons with malnutrition and provide consistent data to support nutrition practice and policy.

References


The Academy of Nutrition and Dietetics develops position papers to assist in promoting the public’s optimal nutrition, health and well-being. This position was adopted by the Council on Research on August 6, 2019. This position is in effect until December 31, 2027. All requests to use portions of the position or republish in its entirety must be directed to the Academy at journal@eatright.org.

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STATEMENT OF POTENTIAL CONFLICT OF INTEREST
The authors of the paper have no conflicts to disclose. A. Skipper is an employee of the American Medical Association (AMA), but the ideas expressed in this position are those of the Academy of Nutrition and Dietetics and do not reflect AMA policy.

FUNDING/SUPPORT
There is no funding to disclose.

Reviewers: Constantina Papoutsakis, PhD, RDN (Academy of Nutrition and Dietetics, Chicago, IL); Jason Switt (Academy of Nutrition and Dietetics, Chicago, IL); Jill Bala Kohn, MS, RDN, LDN (Academy of Nutrition and Dietetics, Chicago, IL); Sharon M. McCauley, MS, MBA, RDN, LDN, FADA, FAND (Academy of Nutrition and Dietetics, Chicago, IL); Marsha Schofeld, MS, RD, LD, FAND (Academy of Nutrition and Dietetics, Chicago, IL). This position paper was made available for Academy member feedback.

Systematic Review Workgroup: The authors would like to thank Erin Pover, MS, RDN, CSOWM, LDN (Workgroup member from 2016 to March 2018), Kathy Hoy, EdD, RDN (lead analyst from 2016 and July 2017), and Margaret Foster, MS, MPH, AHIP (librarian) for their contributions to this project. A full listing of the systematic review project team is available on www.andeal.org/nsa.

ACKNOWLEDGEMENTS
The authors thank the reviewers for their many constructive comments and suggestions. The reviewers were not asked to endorse this position or the supporting paper.