Validated Malnutrition Screening and Assessment Tools: Comparison Guide

General notes on screening tools¹:
- The screening tools outlined below are relatively similar, using parameters such as recent weight loss, recent poor intake/ appetite and body weight measures and providing a numerical score to categorise risk of malnutrition.
- All tools listed generally perform well² with the exception of the nursing home population where all current tools carry limitations in relation to assessing nutritional status and predicting outcomes³.
- When choosing a screening tool that is suitable for your facility, it is important to consider the following:
  - Ensure the tool is validated to the population⁴
  - Complexity: If the tool requires calculations (e.g. BMI, percentage weight loss) or is lengthy with many parameters, it is likely to be more time consuming and subject to error. This may also result in a low compliance with screening.
  - Sensitivity: As screening is only the first step to identify those that require nutritional assessment, a screening tool needs to achieve a high sensitivity (that is, identifies all those at risk), even if this is at the expense of a high specificity (or false positives).
- Other factors to consider: Who will perform screening? How can screening be incorporated into current procedures? What action will be taken for those screened at risk?

<table>
<thead>
<tr>
<th>Name</th>
<th>Author, year, country</th>
<th>Patient Population</th>
<th>Nutrition screening parameters</th>
<th>Criteria for risk of malnutrition</th>
<th>When/ by whom</th>
<th>Reliability established</th>
<th>Validity established</th>
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</thead>
<tbody>
<tr>
<td>Malnutrition Screening Tool (MST)⁵</td>
<td>Ferguson et al. (1999) Australia</td>
<td>Acute adults: inpatients &amp; outpatients⁶,⁷ including elderly⁷ Residential aged care facilities⁷</td>
<td>Recent weight loss Recent poor intake</td>
<td>Score 0-1 for recent intake Score 0-4 for recent weight loss Total score: ≥2 = at risk of malnutrition</td>
<td>Within 24 hours of admission and weekly during admission Medical, nursing, dietetic, admin staff; family, friends, patients themselves</td>
<td>Agreement by 2 Dietitians in 22/23 (96%) cases Kappa = 0.88 Agreement by a Dietitian &amp; Nutrition Assistant in 27/29 (93%) of cases Kappa = 0.84; and 31/32 (97%) of cases Kappa = 0.93</td>
<td>Compared with Subjective Global Assessment (SGA) and objective measures of nutrition assessment. Patients classified at high risk had longer length of stay. Sensitivity = 93% Specificity = 93%</td>
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<td><strong>Mini Nutritional Assessment – Short Form (MNA-SF)</strong></td>
<td>Rubenstein et al. (2001) United States</td>
<td>Elderly</td>
<td>Recent intake Recent weight loss Mobility Recent acute disease or psychological stress Neuropsychological problems BMI</td>
<td>Score 0-3 for each parameter Total score: &lt; 11 = at risk, continue with MNA</td>
<td>On admission and regularly Not stated</td>
<td>Not reported</td>
<td>Compared to MNA and clinical nutritional status. Sensitivity = 97.9% Specificity = 100% Diagnostic accuracy = 98.7% Compared with SGA in older inpatients Sensitivity = 100% Specificity = 52%</td>
</tr>
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<td><strong>Malnutrition Universal Screening Tool (MUST)</strong></td>
<td>Malnutrition Advisory Group, BAPEN (2003) UK</td>
<td>Adults – acute and community</td>
<td>BMI Weight loss (%) Acute disease effect score</td>
<td>Score 0 – 3 for each parameter. Total score: &gt;2 = high risk 1 = medium risk 0 = low risk</td>
<td>Initial assessment and repeat regularly All staff able to use</td>
<td>Quoted to be internally consistent and reliable. Very good to excellent reproducibility Kappa = 0.8 – 1.0</td>
<td>Face validity, content validity, concurrent validity with other screening tools (MST and NRS) Predicts mortality risk &amp; increased length of stay and discharge destination in acute patients</td>
</tr>
<tr>
<td><strong>Nutrition Risk Screening (NRS-2002)</strong></td>
<td>Kondrup et al. (2003) Denmark</td>
<td>Acute adult</td>
<td>Recent weight loss (%) Recent poor intake (%) BMI Severity of disease Elderly</td>
<td>Score 0-3 for each parameter Total score: &gt; 3 = start nutritional support</td>
<td>At admission and regularly during admission Medical and nursing staff</td>
<td>Good agreement between a Nurse, Dietitian and Physician Kappa = 0.67</td>
<td>Retrospective and prospective analysis. Tool predicts higher likelihood of positive outcome from nutrition support and reduced length of stay among patients selected at risk by the screening tool &amp; provided nutrition support.</td>
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</table>

Table adapted, with permission, from Banks (2008)

For more information about nutrition screening tools and how to implement nutrition screening process in your healthcare facility, refer to the Evidence Based Practice Guidelines for the Nutritional Management of Malnutrition in Adult Patients across the Continuum of Care.
Validated Nutrition Assessment Tools: Comparison Guide

General notes on assessment tools:
The tools outlined below are recommended because of their higher sensitivity and specificity at predicting nutritional status. Training is required for the correct application of nutrition assessment tools. A link to a training DVD on completing the SGA is available on the NEMO website.

<table>
<thead>
<tr>
<th>Name</th>
<th>Setting and Patient Population</th>
<th>Nutrition assessment parameters</th>
<th>Rationale/ Clarification</th>
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</table>
| Subjective Global Assessment (SGA)| Setting: Acute14,15,16, Rehab17, Community18, Residential Aged Care19 | Includes medical history (weight, intake, GI symptoms, functional capacity) and physical examination | • Requires training  
• Easy to administer  
• Good intra- and inter-rater reliability |
|                                  | Patient group: Surgery14, Geriatric17,18,19,20, Oncology15, Renal16 | Categorises patients as:  
- SGA A (well nourished)  
- SGA B (mild-moderate malnutrition) or  
- SGA C (severe malnutrition) |                                                                                           |
| Patent Generated Subjective Global Assessment (PG-SGA) | Setting: Acute22-24 | Includes medical history (weight, intake, symptoms, functional capacity, metabolic demand) and physical examination | • Numerical score assists in monitoring changes in nutritional status  
• Easy to administer  
• Scoring can be confusing but this can be addressed through training  
• Patients can complete the first half of the tool |
|                                  | Patient group: Oncology22, Renal23, Stroke24 | Categorises patients into SGA categories (A, B or C) as well as providing a numerical score for triaging. Global categories should be assessed as per SGA. |                                                                                           |
| Mini-Nutritional Assessment (MNA) | Setting: Acute25, Community25, Rehab25, Long term care25 | Screening and Assessment component  
Includes diet history, anthropometry (weight history, height, MAC, CC), medical and functional status.  
Assessed based on numerical score as:  
- no nutritional risk  
- at risk of malnutrition or malnourished | • Lengthy  
• Low specificity for screening section of tool in acute populations2  
• Can be difficult to obtain anthropometric data in this patient group  
• Need calculator to calculate BMI |
|                                  | Patient group: Geriatric25 | |                                                                                           |

For more information about nutrition assessment, refer to the Evidence Based Practice Guidelines for the Nutritional Management of Malnutrition in Adult Patients across the Continuum of Care13.
References

1. Banks M. Economic analysis of malnutrition and pressure ulcers in Queensland hospitals and residential aged care facilities, Queensland University of Technology: Brisbane. 2008
3. van Bokhorst-de van der Schueren M. Guaitoli A P R et al A systematic review of malnutrition screening tools for the nursing home setting. JAMDA 2014; 15: 171-184
13. DAA EBP Guidelines for the Nutritional Management of Malnutritions in Adult Patients Across the Continuum of Care - Wiley Online Library. Nutrition & Dietetics 2009, 66 (S3);1-34
18. Christensson L et al. Evaluation of nutritional assessment techniques in elderly people newly admitted to municipal care. European Journal of Clinical Nutrition 2002; 56 (S3);1-34

This is a consensus document from Dietitian/ Nutritionists from the Nutrition Education Materials Online, "NEMO", team
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