Part of a presentation given at the Canadian Nutrition Society Conference

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Validated Nutrition Screening Tools
(for hospital use)

- Simple Screening Tools (# 1 & # 2)
- Malnutrition Screening Tool (MST)
- Mini Nutritional Assessment – Short Form (MNA-SF)
- Nutritional Risk Screening 2002 (NRS 2002)
- Malnutrition Universal Screening Tool (MUST)
- Short Nutritional Assessment Questionnaire (SNAQ)
- Canadian Nutrition Screening Tool (CNST)
Malnutrition: Is your patient at risk?

**Table 1**

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>1 point</th>
<th>2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (265 years)</td>
<td>21 - 21.9 kg/m²</td>
<td>&lt;21 kg/m²</td>
</tr>
<tr>
<td>% weight loss over time:</td>
<td>1 week</td>
<td>1 - 2%</td>
</tr>
<tr>
<td>1 month</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>3 months</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td>Unlimited/unknown time frame</td>
<td>&lt;10%</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>1 point</th>
<th>2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (265 years)</td>
<td>21 - 21.9 kg/m²</td>
<td>&lt;21 kg/m²</td>
</tr>
<tr>
<td>Albumin</td>
<td>28 - 35 g/L</td>
<td>&lt;28 g/L</td>
</tr>
</tbody>
</table>

**MST (Malnutrition Screening Tool)**

1. Have you/the patient lost weight recently without trying?
   - No
   - Unsure
   - Yes, how much (kg)? 1 - 5
   - 6 - 10
   - 11 - 15
   - > 15
   - Unsure

2. Have you/the patient been eating poorly because of a decreased appetite?
   - No
   - Yes

**Total Score**

Score 2 or more: Action

**Mini Nutritional Assessment (MNA)**

- Completes the screening by filling in the appropriate boxes. The total score for the final screening score.
- If unsure, ask if they suspect they have lost weight. Examples: eg cloth is looser.
- For example, less than three-quarters of usual intake may also be eating poorly due to chewing and swallowing problems.
- If weight loss and appetite questions:
  - If patients have lost weight and/or are eating poorly is score two or more, or they are very underweight, then they may be at risk of malnutrition.

**Step 1**

- BMI score

**Step 2**

- Weight loss score

**Step 3**

- Acute disease effect score

**Step 4**

- Overall risk of malnutrition

**Step 5**

- Management guidelines

**SNAQ (Short Nutritional Assessment Questionnaire)**

- Did you lose weight unintentionally?
- More than 6 kg in the last 6 months
- More than 3 kg in the last month
- Did you experience a decreased appetite over the last month?
- Did you use supplemental drinks or tube feeding over the last month?

**Score**

- 0: No intervention
- 1: Moderately malnourished: nutritional intervention
- 2: Severely malnourished: nutritional intervention and treatment dietician
**Canadian Nutrition Screening Tool (CNST) 2014**

<table>
<thead>
<tr>
<th>Ask the patient the following questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have you lost weight in the past 6 months without trying to lose this weight?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the patient reports a weight loss but gained it back, consider it as a NO weight loss.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Have you been eating less than usual for more than a week?</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two “YES” answers indicate nutrition risk

- If patient is uncertain regarding weight loss, ask if clothing is now fitting more loosely.
- If the patient is unable to answer the questions, a knowledgeable informant can be used to obtain the information.
<table>
<thead>
<tr>
<th>Screening Tools</th>
<th>Parameters</th>
<th>Criterion Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Screening tools 1998 #1 and #2</td>
<td>Weight loss</td>
<td>BMI</td>
</tr>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MST 1999</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MNA-SF © 2001</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>NRS 2002</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MUST 2003</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SNAQ © 2005</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CNST 2014</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Screening Tools</td>
<td>Reliability (inter-rater) Kappa Score</td>
<td>Simple / Easy to use?</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------</td>
<td>----------------------</td>
</tr>
</tbody>
</table>
| **Screening Tools 1998 #1 and #2** | 0.60 - 0.76 | ± | • Calculation of % weight loss  
• Laboratory parameter |
| **MST 1999** | 0.21 – 0.93 | Yes | • Eating poorly only because ↓ appetite & No time frame of eating poorly and weight loss  
• Validity 93% → Same rater completed the tool and conducted the nutrition assessment |
| **MNA-SF © 2001** | 0.37 | No | • Low specificity  
• For elderly population only  
• Too comprehensive |
| **NRS 2002** | 0.41 | No | • Too detailed (% of food intake and weight loss) |
| **MUST 2003** | 0.31-0.56 | ± | • Calculation of % weight loss in a specific time  
• Same BMI range for adult and elderly populations |
| **SNAQ © 2005** | 0.69 | ± Yes | • No acceptable reference standard (EAL-ADA 2011)  
• Decrease appetite over the last month... |
| **CNST 2014** | 0.88 | Yes | |
Comparison of nutrition screening tools for hospital use

• For many of the validation assessments of nutrition screening tools, same rater completed the tool and conducted the nutrition assessment, which favors higher validity results.

• The validity and reliability of most of the nutrition screening tools were tested when the tools were completed by trained researchers or dietitians or trained nurses, which favors higher validity results.

• **CNST** is the first simple tool validated and reliability tested at admission to acute care hospital by a large number of untrained nursing personal, which reflects the real-world hospital setting.