A guide to completing the Mini Nutritional Assessment – Short Form (MNA®-SF)
Mini Nutritional Assessment – Short Form (MNA®-SF)

The MNA®-SF is a screening tool to help identify elderly patients who are malnourished or at risk of malnutrition. The User Guide will assist you in completing the MNA®-SF accurately and consistently. It explains each question and how to assign and interpret the score.

Introduction:

While the prevalence of malnutrition in the free living elderly population is relatively low, the risk of malnutrition increases dramatically in the institutionalized and hospitalized elderly. The prevalence of malnutrition is even higher in cognitively impaired elderly individuals and is associated with cognitive decline.

Patients who are malnourished when admitted to the hospital tend to have longer hospital stays, experience more complications, and have greater risks of morbidity and mortality than those whose nutritional state is normal.

By identifying patients who are malnourished or at risk of malnutrition either in the hospital or community setting, the MNA®-SF allows clinicians to intervene earlier to provide adequate nutritional support, prevent further deterioration, and improve patient outcomes.

Mini Nutritional Assessment – Short Form (MNA®-SF)

The MNA®-SF was validated as a stand alone screening tool, based on the full MNA®.

The MNA®-SF provides a simple and quick method of identifying elderly patients who are at risk for malnutrition, or who are already malnourished. It identifies the risk of malnutrition before severe changes in weight or serum protein levels occur.

The MNA®-SF may be completed at regular intervals in the community and in the hospital or long term care setting. It is recommended to be done annually in the community, and every 3 months in the hospital or long term care or with a change in clinical condition.

The MNA®-SF was developed by Nestlé and leading international geriatricians and remains one of the few validated screening tools for the elderly. It has been well validated in international studies in a variety of settings and correlates with morbidity and mortality.

INSTRUCTIONS TO COMPLETE THE MNA®-SF

Before beginning the MNA®-SF, please enter the patient’s information on the top of the form:

- **Name**
- **Gender**
- **Age**
- **Weight (kg)** – To obtain an accurate weight, remove shoes and heavy outer clothing. Use a calibrated and reliable set of scales. If applicable: convert pounds (lbs) to kilograms (1kg = 2.2lbs).
- **Height (cm)** – Measure height without shoes using a stadiometer (height gauge) or, if the patient is bedridden, by knee height or demispan (see Appendices 4 or 5). Convert inches to centimeters (1inch = 2.54cm).
- **Date of screen**
Identify
The Mini Nutritional Assessment Short Form (MNA®-SF) is an effective tool to help identify patients who are malnourished or at risk of malnutrition

Most validated tool for the elderly
- Sensitive and reliable
- Recommended by national and international organisations
- Supported by more than 400 published studies

Quick and easy to use
- Screen in less than 4 minutes
- Requires no special training
- No lab data needed

Effective
- Identifies at-risk persons before weight loss occurs

Facilitates early intervention

Intervene
Recommend Nestlé Nutrition supplements to help your patients improve their nutritional status

Monitor
Inexpensive diagnostic tool
- The MNA®-SF tool allows standardised, reproducible and reliable determination of nutritional status
- Use the MNA®-SF regularly to assess your patients' nutritional status and provide intervention as required

Screening (MNA®-SF)
Complete the screen by filling in the boxes with the appropriate numbers. Total the numbers for the final screening score.

Key Points
Ask the patient to answer questions A – F, using the suggestions in the shaded areas. If the patient is unable to answer the question, ask the patient’s caregiver to answer.

A
Has food intake declined over the past three months due to loss of appetite, digestive problems, chewing or swallowing difficulties?
Score
0 = Severe decrease in food intake
1 = Moderate decrease in food intake
2 = No decrease in food intake

Ask patient
» “Have you eaten less than normal over the past three months?”
» If so, “is this because of lack of appetite, chewing, or swallowing difficulties?”
» If yes, “have you eaten much less than before or only a little less?”
» If this is a re-assessment, then rephrase the question: “Has the amount of food you have eaten changed since your last assessment?”
Weight loss during the last 3 months?
Score 0 = Weight loss greater than 3 kg (6.6 pounds)
1 = Does not know
2 = Weight loss between 1 and 3 kg (2.2 and 6.6 pounds)
3 = No weight loss

Ask patient / medical record
» “Have you lost any weight without trying over the last 3 months?”
» “Has your waistband gotten looser?”
» “How much weight do you think you have lost? More or less than 3 kg (or 6 pounds)?”

Though weight loss in the overweight elderly may be appropriate, it may also be due to malnutrition. When the weight loss question is removed, the MNA® loses its sensitivity, so it is important to ask about weight loss even in the overweight.

Mobility?
Score 0 = Bed or chair bound
1 = Able to get out of bed/chair, but does not go out
2 = Goes out

Ask patient / Patient’s medical record / Information from caregiver
» “Are you presently able to get out of the bed / chair?”
» “Are you able to get out of the house or go outdoors on your own?”

Has the patient suffered psychological stress or acute disease in the past three months?
Score 0 = Yes
1 = No

Ask patient / Patient medical record / Professional judgment
» “Have you suffered a bereavement recently?”
» “Have you recently moved your home?”
» “Have you been sick recently?”

Neuropsychological problems?
Score 0 = Severe dementia or depression
1 = Mild dementia
2 = No psychological problems

Review patient medical record / Professional judgment / Ask nursing staff or caregiver

The patient’s caregiver, nursing staff or medical record can provide information about the severity of the patient’s neuropsychological problems (dementia).
**Body mass index (BMI)?**
(Weight in kg / height in m²)

<table>
<thead>
<tr>
<th>Score</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Less than 19</td>
</tr>
<tr>
<td>1</td>
<td>19 to less than 21</td>
</tr>
<tr>
<td>2</td>
<td>21 to less than 23</td>
</tr>
<tr>
<td>3</td>
<td>23 or greater</td>
</tr>
</tbody>
</table>

**Determining BMI**

BMI is used as an indicator of appropriate weight for height. BMI is calculated by dividing the weight in kg by the height in m² (Appendix 1).

\[
\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m²)}}
\]

Before determining BMI, record the patients’ weight and height on the MNA® form.

1. Convert subject’s weight to metric using formula 1kg = 2.2lbs. Convert subject’s height to metric using formula 1inch = 2.54cm
2. If height has not been measured, please measure using a stadiometer or height gauge (Refer to Appendix 3).
3. If the patient is unable to stand, measure height using indirect methods such as measuring demi-span (half arm span) or knee height (See Appendices 4 and 5). If height cannot be measured either directly or by indirect methods, use a verbal or historical height to calculate a BMI. Verbal height will be the least accurate, especially for bedridden patients and patients who have lost height over the years.
4. Using the BMI chart provided (Appendix 1), locate the patient’s height and weight and determine the BMI.
5. Fill in the appropriate box on the MNA® form to represent the BMI of the patient.
6. To determine BMI for a patient with an amputation, see Appendix 2.

**IF BMI IS NOT AVAILABLE, REPLACE QUESTION F1 WITH QUESTION F2.**
**DO NOT ANSWER QUESTION F2 IF QUESTION F1 IS ALREADY COMPLETED.**
**Measuring Calf Circumference**

1. The subject should be sitting with the left leg hanging loosely or standing with their weight evenly distributed on both feet.
2. Ask the patient to roll up their trouser leg to uncover the calf.
3. Wrap the tape around the calf at the widest part and note the measurement.
4. Take additional measurements above and below the point to ensure that the first measurement was the largest.
5. An accurate measurement can only be obtained if the tape is at a right angle to the length of the calf.

The screening section of the MNA® is now complete.
Add the numbers to obtain the screening score.

**Screening Score**
(max. 14 points)

- 12-14 points: Normal nutritional status
- 8-11 points: At risk of malnutrition
- 0-7 points: Malnourished

For proposed intervention, please see the algorithm on the next page.

For a more in-depth assessment, complete the full MNA® which is available at [www.mna-elderly.com](http://www.mna-elderly.com)

Note:

In the elderly, weight and height are important because they correlate with morbidity and mortality.

Weight and height measurements are often available in the patient record, and should be used as a priority. Only when unavailable, Calf Circumference (CC) can be used instead of BMI.

**Important:** If the MNA®-SF is completed using Calf Circumference then the full MNA® cannot be used because the Calf Circumference, also found in Question R of the full MNA®, will be redundant leading to an inaccurate interpretation of the Malnutrition Indicator Score.

**Follow-Up**

Re-screen all institutionalised elderly patients every three months and normally nourished elderly patients annually in the community.

Please refer results of assessments and re-assessments to dietitian/doctor and record in medical record.
Recommendations for Intervention

Malnourished
0 – 7

At Risk of Malnutrition
8 – 11

Normally Nourished
12 – 14

TREAT
• Nutrition intervention
  - Oral nutritional supplementation (400-600 kcal/d)
  - Diet enhancement
  - Close weight monitoring
  - Further in-depth nutrition assessment

MONITOR
• Close weight monitoring
  - Rescreen every 3 months

RESCREEN
• After acute event or illness
  - Once per year in community dwelling elderly
  - Every 3 months in institutionalized patients

MNA® Score

Weight Loss

No Weight Loss

•  After acute event or illness
  - Once per year in community dwelling elderly
  - Every 3 months in institutionalized patients
Appendices

Appendix 1 • Body Mass Index table

## Height (feet & inches)

<table>
<thead>
<tr>
<th>Height (cm)</th>
<th>Underweight</th>
<th>Weight Appropriate</th>
<th>Overweight</th>
<th>Obese</th>
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</tbody>
</table>

Source:
Appendix 2 • Determining BMI for amputees

To determine the BMI for amputees, first determine the patient’s estimated weight including the weight of the missing body part.8,9

» Use a standard reference (see table) to determine the proportion of body weight contributed by an individual body part.

» Multiple patient’s current weight by the percent of body weight of the missing body part to determine estimated weight of missing part.

» Add the estimated weight of the missing body part to patient’s current weight to determine estimated weight prior to amputation.

Divide estimated weight by estimated body height\(^2\) to determine BMI.

Example: 80 year old man, amputation of the left lower leg, 1.72 m, 58 kg

1. Estimate body weight: Current body weight + Proportion for the missing leg

\[
58 \text{ (kg)} + [58 \text{ (kg)} \times 0.059] = 61.4 \text{ kg}
\]

2. Calculate BMI:

Estimated body weight / body height (m)\(^2\)

\[
61.4 / 1.72 \times 1.72 = 20.8
\]

Weight of selected body components

It is necessary to account for the missing body component(s) when estimating IBW.

Table: Percent of Body Weight Contributed by Specific Body Parts

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunk w/o limbs</td>
<td>50.0</td>
</tr>
<tr>
<td>Hand</td>
<td>0.7</td>
</tr>
<tr>
<td>Forearm with hand</td>
<td>2.3</td>
</tr>
<tr>
<td>Forearm without hand</td>
<td>1.6</td>
</tr>
<tr>
<td>Upper arm</td>
<td>2.7</td>
</tr>
<tr>
<td>Entire arm</td>
<td>5.0</td>
</tr>
<tr>
<td>Foot</td>
<td>1.5</td>
</tr>
<tr>
<td>Lower leg with foot</td>
<td>5.9</td>
</tr>
<tr>
<td>Lower leg without foot</td>
<td>4.4</td>
</tr>
<tr>
<td>Thigh</td>
<td>10.1</td>
</tr>
<tr>
<td>Entire leg</td>
<td>16.0</td>
</tr>
</tbody>
</table>

References cited:


Appendix 3  •  Ways of Measuring Height

3.1  •  Measuring height using a stadiometer

1. Ensure the floor surface is even and firm.

2. Have subject remove shoes and stand up straight with heels together, and with heels, buttocks and shoulders pressed against the stadiometer.

3. Arms should hang freely with palms facing thighs.

4. Take the measurement with the subject standing tall, looking straight ahead with the head upright and not tilted backwards.

5. Make sure the subject’s heels stay flat on the floor.

6. Lower the measure on the stadiometer until it makes contact with the top of the head.

7. Record standing height to the nearest centimeter.


3.2  •  Measurement of Demispan

Demispan (half-arm span) is the distance from the midline at the sternal notch to the web between the middle and ring fingers along outstretched arm. Height is then calculated from a standard formula.  

1. Locate and mark the midpoint of the sternal notch with the pen.

2. Ask the patient to place the left arm in a horizontal position.

3. Check that the patient’s arm is horizontal and in line with shoulders.

4. Using the tape measure, measure distance from mark on the midline at the sternal notch to the web between the middle and ring fingers.

5. Check that arm is flat and wrist is straight.

6. Take reading in cm.

Calculate height from the formula below:

Females
Height in cm = (1.35 x demispan in cm) + 60.1

Males
Height in cm = (1.40 x demispan in cm) + 57.8

Source:
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For further information see www.bapen.org.uk (http://www.bapen.org.uk/pdfs/must/must_explan.pdf)
3.3 • Measurement Height using Knee Height

Knee height is one method to determine stature in the bed- or chair-bound patient and is measured using a sliding knee height caliper. The subject must be able to bend the knee and the ankle to 90 degree angles.

1. Have the subject bend the knee and ankle of one leg at a 90 degree angle while lying supine or sitting on a table with legs hanging off the side of the table.

2. Place the fixed blade of the knee caliper under the heel of the foot in line with the ankle bone. Place the fixed blade of the caliper on the anterior surface of the thigh about 3.0 cm above the patella.

3. Be sure the shaft of the caliper is in line with and parallel to the long bone in the lower leg (tibia) and is over the ankle bone (lateral malleolus). Apply pressure to compress the tissue. Record the measurement to the nearest 0.1 cm.

4. Take two measurements in immediate succession. They should agree within 0.5 cm. Use the average of these two measurements and the person’s chronological age in the country and ethnic group specific equations in the following table.

5. The value calculated from the selected equation is an estimate of the person’s true stature. The 95 percent confidence for this estimate is plus and minus twice the SEE value for each equation.

Using population-specific formula, calculate height from standard formula:

<table>
<thead>
<tr>
<th>Gender &amp; ethnic group</th>
<th>Equation: Stature (cm) =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic white men (U.S.)¹¹ [SEE = 3.74 cm]</td>
<td>78.31 + (1.94 x knee height) – (0.14 x age)</td>
</tr>
<tr>
<td>Non-Hispanic black men (U.S.)¹¹ [SEE = 3.80 cm]</td>
<td>79.69 + (1.85 x knee height) – (0.14 x age)</td>
</tr>
<tr>
<td>Mexican-American men (U.S.)¹¹ [SEE = 3.68 cm]</td>
<td>82.77 + (1.83 x knee height) – (0.16 x age)</td>
</tr>
<tr>
<td>Non-Hispanic white women (U.S.)¹¹ [SEE = 3.98 cm]</td>
<td>82.21 + (1.85 x knee height) – (0.21 x age)</td>
</tr>
<tr>
<td>Non-Hispanic black women (U.S.)¹¹ [SEE = 3.82 cm]</td>
<td>89.58 + (1.61 x knee height) – (0.17 x age)</td>
</tr>
<tr>
<td>Mexican-American women (U.S.)¹¹ [SEE = 3.77 cm]</td>
<td>84.25 + (1.82 x knee height) – (0.26 x age)</td>
</tr>
<tr>
<td>Taiwanese men¹² [SEE = 3.86 cm]</td>
<td>85.10 + (1.73 x knee height) – (0.11 x age)</td>
</tr>
<tr>
<td>Taiwanese women¹² [SEE = 3.79 cm]</td>
<td>91.45 + (1.53 x knee height) – (0.16 x age)</td>
</tr>
<tr>
<td>Elderly Italian men¹³ [SEE = 4.3 cm]</td>
<td>94.87 – (1.58 x knee height) – (0.23 x age) + 4.8</td>
</tr>
<tr>
<td>Elderly Italian women¹³ [SEE = 4.3 cm]</td>
<td>94.87 + (1.58 x knee height) – (0.23 x age)</td>
</tr>
<tr>
<td>French men¹⁴ [SEE = 3.8 cm]</td>
<td>74.7 + (2.07 x knee height) – (0.21 x age)</td>
</tr>
<tr>
<td>French women¹⁴ [SEE = 3.5 cm]</td>
<td>67.00 + (2.2 x knee height) – (0.25 x age)</td>
</tr>
<tr>
<td>Mexican Men¹⁵ [SEE = 3.31 cm]</td>
<td>52.6 + (2.17 x knee height)</td>
</tr>
<tr>
<td>Mexican Women¹⁵ [SEE = 2.99 cm]</td>
<td>73.70 + (1.99 x knee height) – (0.23 x age)</td>
</tr>
<tr>
<td>Filipino Men¹⁶</td>
<td>96.50 + (1.38 x knee height) – (0.08 x age)</td>
</tr>
<tr>
<td>Filipino Women¹⁶</td>
<td>89.63 + (1.53 x knee height) – (0.17 x age)</td>
</tr>
<tr>
<td>Malaysian men¹⁷ [SEE = 3.51 cm]</td>
<td>(1.924 x knee height) + 69.38</td>
</tr>
<tr>
<td>Malaysian women¹⁷ [SEE = 3.40]</td>
<td>(2.225 x knee height) + 50.25</td>
</tr>
</tbody>
</table>

Source:
http://www.rxkinetics.com/height_estimate.html
References


