Nutrition Screening as easy as mna

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

Screen and intervene. Nutrition can make a difference.
Introduction

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. This 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 older persons 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 provides a simple and quick method of identifying elderly persons 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 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.

In 2009 the MNA®-SF was validated as a stand alone screening tool, based on the full MNA®. 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 whenever a change in clinical condition occurs.

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. Pounds (lbs) must be converted to kilograms (1 lb = 0.45 kg).

- **Height (cm)** – Measure height without shoes using a stadiometer (height gauge). If the patient is bedridden, measure height by demispan, half arm-span, or knee height (see Appendix 2). Inches must be converted to centimeters (1 inch = 2.54 cm).

- **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 450 published studies

- **Quick and easy to use**
  - Screen in less than 5 minutes
  - Requires no special training
  - No laboratory 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 or check the medical record.

### A

<table>
<thead>
<tr>
<th>Question</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has food intake declined over the past three months due to loss of appetite, digestive problems, chewing or swallowing difficulties?</td>
<td>severe decrease in food intake</td>
<td>moderate decrease in food intake</td>
<td>no decrease in food intake</td>
</tr>
</tbody>
</table>

**Ask patient or caregiver or check the medical record**
- “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?”

### B

<table>
<thead>
<tr>
<th>Question</th>
<th>Score 0</th>
<th>Score 1</th>
<th>Score 2</th>
<th>Score 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involuntary weight loss during the last 3 months?</td>
<td>greater than 3 kg (6.6 pounds)</td>
<td>does not know</td>
<td>weight loss between 1 and 3 kg (2.2 and 6.6 pounds)</td>
<td>no weight loss</td>
</tr>
</tbody>
</table>

**Ask patient / Review 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.
### C

**Mobility?**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Bed or chair bound</td>
</tr>
<tr>
<td>1</td>
<td>Able to get out of bed/chair, but does not go out</td>
</tr>
<tr>
<td>2</td>
<td>Goes out</td>
</tr>
</tbody>
</table>

**Ask patient / Review patient’s medical record / Ask caregiver**

- “How would you describe your current mobility?”
  - “Are you able to get out of a bed, a chair, or a wheelchair without the assistance of another person?” – if not, would score 0
  - “Are you able to get out of a bed or a chair, but unable to go out of your home?” – if yes, would score 1
  - “Are you able to leave your home?” – if yes, would score 2

### D

**Has the patient suffered psychological stress or acute disease in the past three months?**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
</tr>
</tbody>
</table>

**Ask patient / Review patient medical record / Use professional judgment**

- “Have you been stressed recently?”
- “Have you been severely ill recently?”

### E

**Neuropsychological problems?**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Severe dementia or depression</td>
</tr>
<tr>
<td>1</td>
<td>Mild dementia</td>
</tr>
<tr>
<td>2</td>
<td>No psychological problems</td>
</tr>
</tbody>
</table>

**Review patient medical record / Use professional judgment / Ask patient, nursing staff or caregiver**

- “Do you have dementia?”
- “Have you had prolonged or severe sadness?”

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)
Score 0 = BMI less than 19
   1 = BMI 19 to less than 21
   2 = BMI 21 to less than 23
   3 = BMI 23 or greater

Determining BMI
BMI is used as an indicator of appropriate weight for height (Appendix 1)

BMI Formula – US units
•  $BMI = \left( \frac{\text{Weight in Pounds}}{\text{Height in inches} \times \text{Height in inches}} \right) \times 703$

BMI Formula – Metric units
•  $BMI = \left( \frac{\text{Weight in Kilograms}}{\text{Height in Meters} \times \text{Height in Meters}} \right)$

1 Pound = 0.45 Kilograms
1 Inch = 2.54 Centimeters

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

1. If height has not been measured, please measure using a stadiometer or height gauge (Refer to Appendix 2).
2. If the patient is unable to stand, measure height using indirect methods such as measuring demi-span, arm span, or knee height. (See Appendix 2).
3. Using the BMI chart provided (Appendix 1), locate the patient’s height and weight and determine the BMI.
4. Fill in the appropriate box on the MNA® form to represent the BMI of the patient.
5. To determine BMI for a patient with an amputation, see Appendix 3.

IF BMI IS NOT AVAILABLE, REPLACE QUESTION F1 WITH QUESTION F2.
DO NOT ANSWER QUESTION F2 IF QUESTION F1 IS ALREADY COMPLETED.
Calf circumference (CC) in cm

0 = CC less than 31
3 = CC 31 or greater

**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.

**To measure calf circumference in bed-bound elderly, please refer to Appendix 4**

Add the numbers to obtain the screening score.

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

<table>
<thead>
<tr>
<th>Points</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-14</td>
<td>Normal nutritional status</td>
</tr>
<tr>
<td>8-11</td>
<td>At risk of malnutrition</td>
</tr>
<tr>
<td>0-7</td>
<td>Malnourished</td>
</tr>
</tbody>
</table>

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

For more information, go to [www.mna-elderly.com](http://www.mna-elderly.com)
Recommendations for Intervention

**MNA® Score**

- **Normal Nutritional Status (12 – 14 points)**
  - No Weight Loss
    - Close weight monitoring
    - Rescreen every 3 months

- **At Risk of Malnutrition (8 – 11 points)**
  - Weight Loss
    - Nutrition intervention
      - Diet enhancement
      - Oral nutritional supplementation (400 kcal/d)
    - Close weight monitoring
    - Further in-depth nutrition assessment
  - No Weight Loss
    - Close weight monitoring
    - Further in-depth nutrition assessment

- **Malnourished (0-7 points)**
  - TREAT
    - Nutrition intervention
      - Oral nutritional supplementation (400-600 kcal/d)
    - Diet enhancement
    - Close weight monitoring
    - Further in-depth nutrition assessment

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

**MONITOR**
- Close weight monitoring
- Rescreen every 3 months

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

**Note:** In the elderly, weights and heights 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 height and/or weight are unavailable, should Calf Circumference (CC) be used instead of BMI.

**Important:** When the Calf Circumference is used to complete the MNA®-SF, do not use the full MNA®. Otherwise, the full MNA® score will be inaccurate due to the Calf Circumference measurement being counted twice – once in the MNA®-SF and again in Question R of the full MNA®.

**Follow-Up**
Rescreen all institutionalized 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.

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### Appendix 1 • Body Mass Index table

#### MNA® BMI Table for the Elderly (age 65 and above)

<table>
<thead>
<tr>
<th>Weight (pounds)</th>
<th>Height (feet &amp; inches)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'11&quot;  5'0&quot;  5'1&quot;  5'2&quot;  5'3&quot;  5'4&quot;  5'5&quot;  5'6&quot;  5'7&quot;  5'8&quot;  5'9&quot; 5'10&quot;  5'11&quot;  6'0&quot;  6'1&quot;  6'2&quot;  6'3&quot;</td>
<td>45</td>
<td>20 20 19 18 18 17 17 16 16 15 15 14 14 13 13 13</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>21 21 20 19 19 18 17 17 16 16 15 15 14 14 13 13 13</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>22 22 21 20 20 19 18 17 17 16 16 15 15 14 14 13 13</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>23 23 22 21 20 20 19 18 17 17 16 16 15 15 14 14 13</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>24 23 23 22 21 20 20 19 18 17 17 16 16 15 15 14 13</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>25 24 24 23 22 22 21 20 20 19 18 17 17 16 16 15 14</td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>26 25 25 24 23 22 22 21 20 20 19 18 17 17 16 16 15</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>27 26 26 25 24 23 22 22 21 20 20 19 18 17 17 16 15</td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>28 27 26 26 24 24 23 22 22 21 20 20 19 18 17 16 15</td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>29 28 27 27 26 25 24 23 22 22 21 20 20 19 18 17 16</td>
</tr>
<tr>
<td></td>
<td>68</td>
<td>30 29 28 27 27 26 25 24 23 22 22 21 20 20 19 18 17</td>
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<td></td>
<td>75</td>
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<tr>
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<td>77</td>
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</tr>
<tr>
<td></td>
<td>80</td>
<td>35 34 33 32 31 30 29 28 28 27 26 25 24 23 22 22 15</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>36 35 34 33 32 31 30 29 28 28 27 26 25 24 23 22 15</td>
</tr>
<tr>
<td></td>
<td>84</td>
<td>37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 15</td>
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<td>86</td>
<td>38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 22 15</td>
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<tr>
<td></td>
<td>89</td>
<td>39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 22 15</td>
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<td></td>
<td>91</td>
<td>40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 22 15</td>
</tr>
<tr>
<td></td>
<td>93</td>
<td>41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 22 15</td>
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<td>95</td>
<td>42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 22 15</td>
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<td></td>
<td>98</td>
<td>43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 22 15</td>
</tr>
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<td>100</td>
<td>44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 22 15</td>
</tr>
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<td>102</td>
<td>45 44 43 42 41 40 39 37 36 35 34 33 32 31 30 20 15</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>47 45 44 43 42 41 40 38 37 36 35 34 33 32 31 20 15</td>
</tr>
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<td></td>
<td>107</td>
<td>48 46 44 43 42 40 39 38 37 36 35 34 33 32 31 20 15</td>
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<tr>
<td></td>
<td>109</td>
<td>48 47 45 44 43 41 40 39 38 37 35 34 33 32 31 20 15</td>
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<td></td>
<td>111</td>
<td>49 48 46 45 43 42 41 40 38 37 36 35 34 33 32 31 15</td>
</tr>
<tr>
<td></td>
<td>114</td>
<td>51 49 48 46 44 43 42 40 39 38 37 36 35 34 33 31 15</td>
</tr>
</tbody>
</table>

This abbreviated BMI table is provided for your convenience and facilitates completing the MNA®. It is accurate for the MNA®. In some cases, calculating the BMI may yield a more precise BMI determination.
2.1 • 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.

2.2 • Measuring height using 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.9
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)
2.3 • Measuring height using half arm-span

Half arm-span is the distance from the midline at the sternal notch to the tip of the middle finger. Height is then calculated by doubling the half arm-span.\textsuperscript{10}

1. Locate and mark the edge of the right collar bone (in the sternal notch) with the pen.
2. Ask the patient to place the nondominant 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 tip of the middle finger.
5. Check that arm is flat and wrist is straight.
6. Take reading in cm.

Calculate height by multiplying the half arm-span measurement by 2

Half arm-span

Source:
2.4 • Measuring height using knee height

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

Source:

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 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 patient’s chronological age in the population and gender-specific equations in the table on the right to calculate the subject’s stature.

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 or minus twice the SEE value for each equation.

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

<table>
<thead>
<tr>
<th>Population and Gender 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 men$^{12}$ [SEE = 3.86 cm]</td>
<td>85.10 + (1.73 x knee height) – (0.11 x age)</td>
</tr>
<tr>
<td>Taiwanese women$^{12}$ [SEE = 3.79 cm]</td>
<td>91.45 + (1.53 x knee height) – (0.16 x age)</td>
</tr>
<tr>
<td>Elderly Italian men$^{13}$ [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 women$^{13}$ [SEE = 4.3 cm]</td>
<td>94.87 + (1.58 x knee height) – (0.23 x age)</td>
</tr>
<tr>
<td>French men$^{14}$ [SEE = 3.8 cm]</td>
<td>74.7 + (2.07 x knee height) – (0.21 x age)</td>
</tr>
<tr>
<td>French women$^{14}$ [SEE = 3.5 cm]</td>
<td>67.00 + (2.2 x knee height) – (0.25 x age)</td>
</tr>
<tr>
<td>Mexican Men$^{15}$ [SEE = 3.31 cm]</td>
<td>52.6 + (2.17 x knee height)</td>
</tr>
<tr>
<td>Mexican Women$^{15}$ [SEE = 2.99 cm]</td>
<td>73.70 + (1.99 x knee height) – (0.23 x age)</td>
</tr>
<tr>
<td>Filipino Men$^{14}$</td>
<td>96.50 + (1.38 x knee height) – (0.08 x age)</td>
</tr>
<tr>
<td>Filipino Women$^{16}$</td>
<td>89.63 + (1.53 x knee height) – (0.17 x age)</td>
</tr>
<tr>
<td>Malaysian men$^{17}$ [SEE = 3.51 cm]</td>
<td>(1.924 x knee height) + 69.38</td>
</tr>
<tr>
<td>Malaysian women$^{17}$ [SEE = 3.40]</td>
<td>(2.225 x knee height) + 50.25</td>
</tr>
</tbody>
</table>

SEE = Standard Error of Estimate$^{11}$
To determine the BMI for amputees, first determine the patient’s estimated weight including the weight of the missing body part.\textsuperscript{18,19}

- Use a standard reference (see table) to determine the proportion of body weight contributed by an individual body part.
- Subtract the percentage of body weight contributed by the missing body part(s) from 1.0.
- Then, divide the current weight by the difference of 1 minus the percentage of body weight contributed by the missing body part.

Calculate BMI using estimated height and estimated weight.

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

1. **Estimated body weight:** Current body weight ÷ (1 - proportion for the missing leg)
   
   \[
   58 \text{ (kg)} \div [1-0.059] = 58 \text{ (kg)} \div 0.941 = 61.6 \text{ kg}
   \]

2. **Calculate BMI:**
   
   Estimated body weight / body height (m)\textsuperscript{2}
   
   \[
   61.6 \div [1.72 \times 1.72] = 20.8
   \]

**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:**


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 the trouser leg to uncover to 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, and should be recorded to the nearest 0.1 cm.

Measuring Calf Circumference in bed-bound persons

1. Have the person being measured lie in supine position with the left knee bent at 90° angle.

2. Slip a loop of the tape measure around the left calf until largest diameter is located.

3. Pull tape so it is just snug but not so tight that tissue is compressed.

4. Read and accurately record measurement to the nearest 0.1 cm. Repeated measurements should agree within 0.5 cm.
References


Screen and intervene.
Nutrition can make a difference.