



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 elderly¹. The prevalence of malnutrition is even higher in cognitively impaired elderly individuals and is associated with cognitive decline.²

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.³

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.⁴

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 settings⁵⁻⁷ 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?"

B

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.

C

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?"*

D

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?"*

E

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).

F1

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. BMI is calculated by dividing the weight in kg by the height in m² (Appendix 1).

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m}^2\text{)}}$$

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.

F2 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.

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

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.

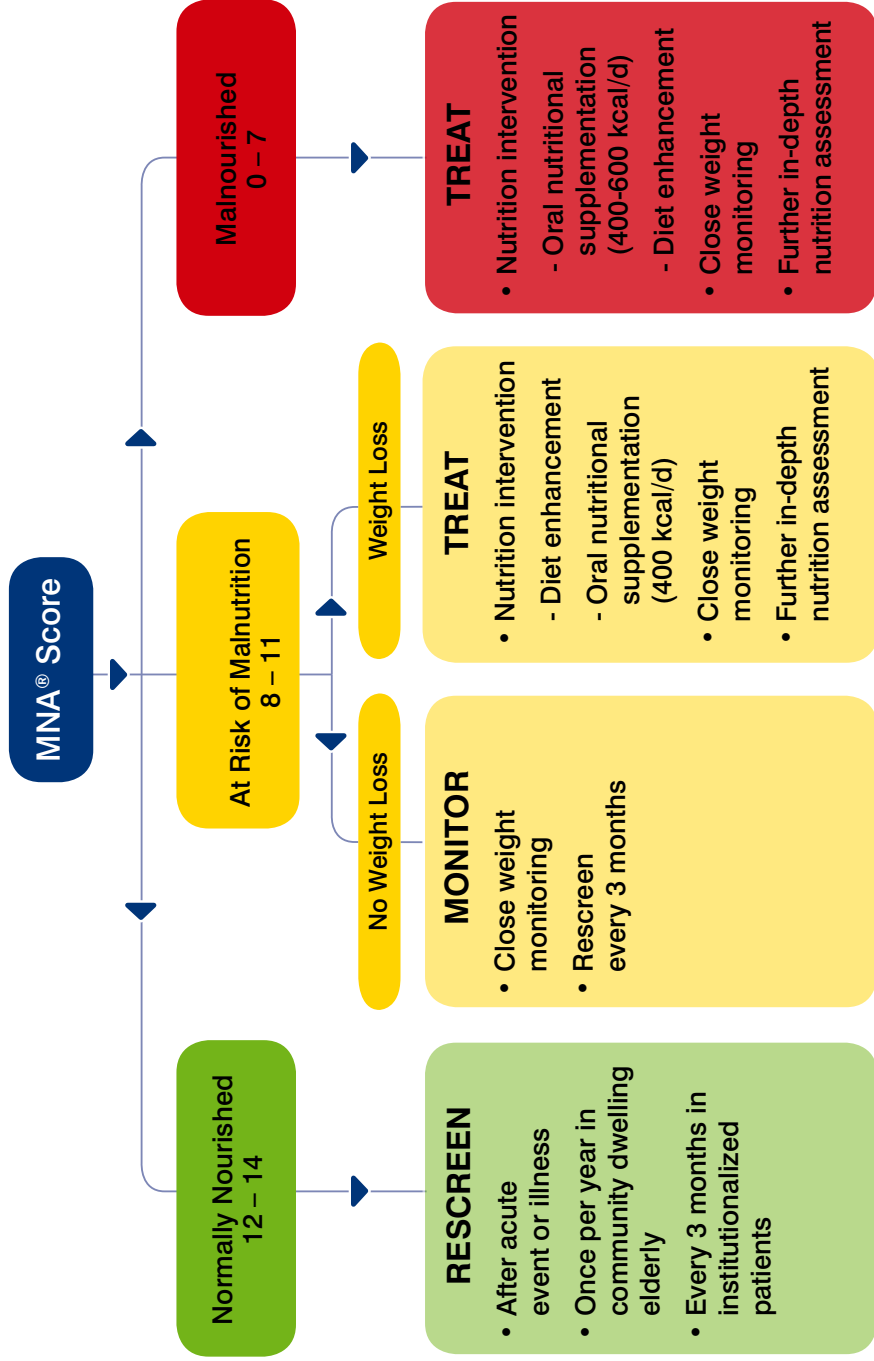
Important: If the MNA®- SF is completed using Calf Circumference then the full MNA® cannot be used because the Calf Circumference, also found in Question R of the full MNA®, will be redundant leading to an inaccurate interpretation of the Malnutrition Indicator Score.

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



Appendices

Appendix 1 • Body Mass Index table

		Height (feet & inches)																			
		5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"			
Weight (kg)	45	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	100	Weight (pounds)	
	47	21	20	19	19	18	17	17	16	16	16	15	15	14	14	13	13	13	105		
	50	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	110		
	52	22	22	21	20	20	19	19	18	17	17	17	16	16	15	15	14	14	115		
	54	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	120		
	57	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	16	15	125		
	59	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	130		
	61	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	135		
	63	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	140		
	66	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	145		
	68	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18	150		
	70	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	155		
	72	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	160		
	75	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	165		
	77	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	170		
	79	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	175		
82	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	180			
84	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	185			
86	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	190			
88	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	195			
91	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	200			
93	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	205			
95	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	210			
98	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	215			
100	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	220			
102	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	225			
104	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	230			
107	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	235			
109	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	240			
111	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	245			
114	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	250			
		150	152.5	155	157.5	160	162.5	165	167.5	170	172.5	175	177.5	180	182.5	185	187.5	190			
		Height (cm)																			

Underweight Weight Appropriate Overweight Obese

Source:

Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report. National Institute of Health, National Heart Lung and Blood Institute

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 height² 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

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

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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 subjects 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.



Accessed at:

http://www.ktl.fi/publications/ehrm/product2/part_iii5.htm

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.¹⁰

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.

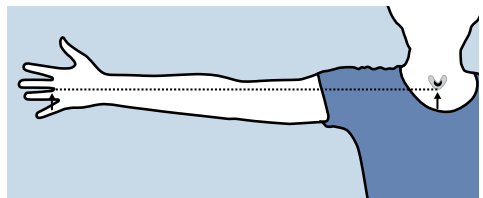
Calculate height from the formula below:

Females

Height in cm =
 $(1.35 \times \text{demispan in cm}) + 60.1$

Males

Height in cm =
 $(1.40 \times \text{demispan in cm}) + 57.8$



Source:

Reproduced here with the kind permission of BAPEN (British Association for Parenteral and Enteral Nutrition) from the 'MUST' Explanatory Booklet.

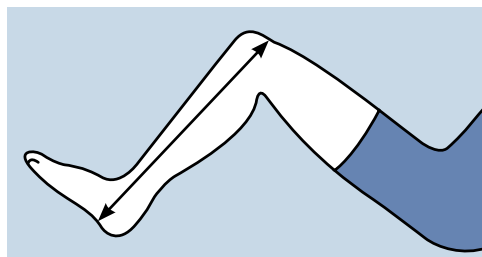
For further information see www.bapen.org.uk

(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.



Source:

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

Accessed December 12, 2006.

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

Gender & ethnic group	Equation: Stature (cm) =
Non-Hispanic white men (U.S.) ¹¹ [SEE = 3.74 cm]	$78.31 + (1.94 \times \text{knee height}) - (0.14 \times \text{age})$
Non-Hispanic black men (U.S.) ¹¹ [SEE = 3.80 cm]	$79.69 + (1.85 \times \text{knee height}) - (0.14 \times \text{age})$
Mexican-American men (U.S.) ¹¹ [SEE = 3.68 cm]	$82.77 + (1.83 \times \text{knee height}) - (0.16 \times \text{age})$
Non-Hispanic white women (U.S.) ¹¹ [SEE = 3.98 cm]	$82.21 + (1.85 \times \text{knee height}) - (0.21 \times \text{age})$
Non-Hispanic black women (U.S.) ¹¹ [SEE = 3.82 cm]	$89.58 + (1.61 \times \text{knee height}) - (0.17 \times \text{age})$
Mexican-American women (U.S.) ¹¹ [SEE = 3.77 cm]	$84.25 + (1.82 \times \text{knee height}) - (0.26 \times \text{age})$
Taiwanese men ¹² [SEE = 3.86 cm]	$85.10 + (1.73 \times \text{knee height}) - (0.11 \times \text{age})$
Taiwanese women ¹² [SEE = 3.79 cm]	$91.45 + (1.53 \times \text{knee height}) - (0.16 \times \text{age})$
Elderly Italian men ¹³ [SEE = 4.3 cm]	$94.87 - (1.58 \times \text{knee height}) - (0.23 \times \text{age}) + 4.8$
Elderly Italian women ¹³ [SEE = 4.3 cm]	$94.87 + (1.58 \times \text{knee height}) - (0.23 \times \text{age})$
French men ¹⁴ [SEE = 3.8 cm]	$74.7 + (2.07 \times \text{knee height}) - (-0.21 \times \text{age})$
French women ¹⁴ [SEE = 3.5 cm]	$67.00 + (2.2 \times \text{knee height}) - (0.25 \times \text{age})$
Mexican Men ¹⁵ [SEE = 3.31 cm]	$52.6 + (2.17 \times \text{knee height})$
Mexican Women ¹⁵ [SEE = 2.99 cm]	$73.70 + (1.99 \times \text{knee height}) - (0.23 \times \text{age})$
Filipino Men ¹⁶	$96.50 + (1.38 \times \text{knee height}) - (0.08 \times \text{age})$
Filipino Women ¹⁶	$89.63 + (1.53 \times \text{knee height}) - (0.17 \times \text{age})$
Malaysian men ¹⁷ [SEE = 3.51 cm]	$(1.924 \times \text{knee height}) + 69.38$
Malaysian women ¹⁷ [SEE = 3.40]	$(2.225 \times \text{knee height}) + 50.25$

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