Screening

Screening is the first step and essential for a successful nutritional management to detect those at risk of or with nutritional problems. Screening should be performed within 24 hours of admission so that nutrition therapy can be defined and started quickly.

Nutritional screening should be done with a validated screening tool and followed up by appropriate action.

MNA® is the best validated screening tool for elderly residents and is among the recommended tools by ESPEN.[1]

Screening is the first part of the gnp concept. It is a rapid and simple procedure, which can be done routinely by any healthcare professional in less than 5 minutes.

Examples are marked in light blue writing.

Screening needs to take place within 24 hours of admission

Source: 1 Kondrup J et al. Nutritional risk screening (NRS 2002): a new method based on an analysis of controlled clinical trials. Clin Nutr. 2003 Jun;22(3):321-36.

Step 1 **Screening**

! Re-screening every 1 – 3 months.

Please respond to all questions from the MNA® (Mini Nutritional Assessment Short Form) by indicating the relevant number in the box.

In case the Body Mass Index (BMI) can't be given, please indicate the calf circumference.

Please sum up all numbers for the final result.

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Re-screening every 1 – 3 months.

A	**Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?**	0 = severe decrease in food intake 1 = moderate decrease in food intake 2 = no decrease in food intake
B	**Weight loss during the last 3 months**	0 = weight loss greater than 3 kg (6.6 lbs) 1 = does not know 2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs) 3 = no weight loss
C	**Mobility**	0 = bed or chair bound 1 = able to get out of bed / chair but does not go out 2 = goes out
D	**Has suffered psychological stress or acute disease in the past 3 months?**	0 = yes 2 = no
E	**Neuropsychological problems**	0 = severe dementia or depression 1 = mild dementia 2 = no psychological problems
F1	**Body Mass Index (BMI):** ☐ **(weight in kg) / (height in m)²**	0 = BMI less than 19 1 = BMI 19 to less than 21 2 = BMI 21 to less than 23 3 = BMI 23 or greater

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** See also table on carton and calculation aids for residents with amputation in the gnp practical guidance on p. 14	0 = CC less than 31 3 = CC 31 or greater

Screening score (max. 14 points)

☐ 12 – 14 points = **Normal** nutritional status

☐ 8 – 11 points = **At risk** of malnutrition

☐ 0 – 7 points = **Malnourished**

Sources:
Vellas B, Villars H, Abellan G, et al. Overview of the MNA® - Its History and Challenges. J Nutr Health Aging 2006; 10: 456-465. **Rubenstein LZ**, Harker JO, Salva A, Guigoz Y, Vellas B. Screening for Undernutrition in Geriatric Practice: Developing the Short-Form Mini Nutritional Assessment (MNA-SF). J. Geront 2001; 56A: M366-377. **Guigoz Y**. The Mini-Nutritional Assessment (MNA®) Review of the Literature - What does it tell us? J Nutr Health Aging 2006; 10: 466-487. **Kaiser MJ**, Bauer JM, Ramsch C, et al. Validation of the Mini Nutritional Assessment Short-Form (MNA®-SF): A practical tool for identification of nutritional status. J Nutr Health Aging 2009; 13: 782-788.

Measures referring to resident

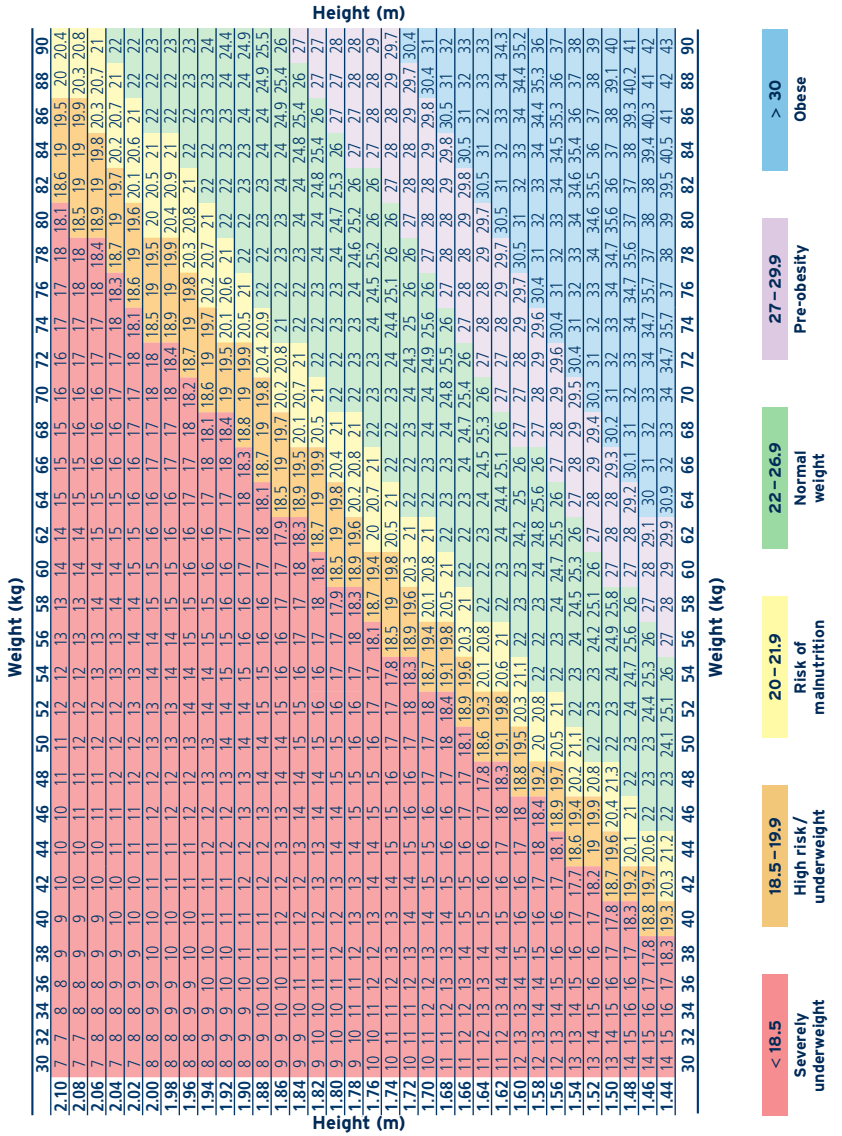
☐ Re-screening every 1 – 3 months
☐ Assessment
☐ Food and fluid protocol
☐ Directly start a nutritional care plan (e. g. ONS)

Comment _____

Step 1 **Screening** | Calculation of BMI

The following calculation tools are designed to help you to complete the screening (Step 1) as quick and easy as possible.[1-3]

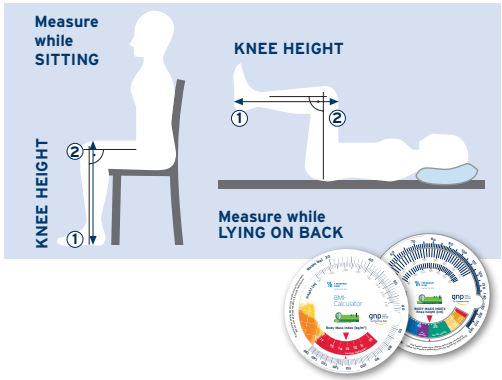
Calculation of Body Mass Index (BMI): Weight in kg / (height in m²)



Sources: 1 Sergi G et al. (2005): An adequate threshold for body mass index to detect underweight condition in elderly persons: The Italian Longitudinal Study on Aging (ILSA). J Gerontol A Biol Sci Med Sci 60 (7): 866-871. **DACH (2002):** Reference values for nutrient intake. German Nutrition society, Austrian Nutrition Society, Swiss Society for Nutrition Research, Swiss Nutrition Association. Frankfurt, Germany. **ESPEN Volkert D et al. (2006):** ESPEN guidelines on enteral nutrition: Geriatrics. Clin Nutr 25 (2): 330-60. **Dutch Malnutrition Steering Group (2011):** Guideline. Screening and treatment of malnutrition. www.fightmalnutrition.eu/

Estimation of body height by measurement of knee height

To be used, if usual measurement of body height is not possible (e.g. in bedridden patients)



Measurement of knee height

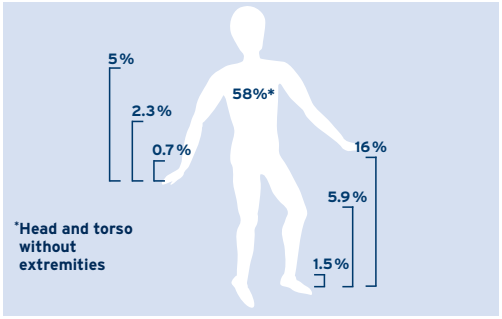
The knee height is measured in cm along the outside of the left leg in lying or sitting position of the resident (please see figure on the left). For this purpose, the leg is bent by 90° at the knee joint. The knee height is the direct line from the sole of the foot at the heel [1] to the upper edge of the kneecap [2]. Ask your Fresenius Kabi contact person for the gnp knee height calculator for a quick and easy performance.

Calculation of body height [1-3]

Residents from 60 to 90 years:
Men: 64.19 – (0.04 x age) + (2.02 x knee height in cm)
Women: 84.88 – (0.24 x age) + (1.83 x knee height in cm)

Residents below 60 years:
Men: 71.85 + (1.88 x knee height in cm)
Women: 70.25 + (1.87 x knee height in cm) – (0.06 x age)

Estimation of BMI in patients with amputation by correction of body weight



Example 1: Amputation of one leg
Current body weight (BW) = 63 kg
Leg = 16 % of height
Weight = 63 kg x 100 : (100–16)
Corrected weight = 75 kg

Example 2: Amputation of both arms
Current body weight (BW) = 63 kg
Both arms = 2 x 5% of height
Weight = 63 kg x 100 : (100–2 x 5)
Corrected weight = 70 kg

Correction formulas for estimating the BMI of residents with amputation(s)

BW = Body weight [kg], BH = Body height [m]

Amputation of	%	BMI-Calculation
foot	1.5	(BW : 0.985) : $(BH)^2$
"below-the-knee"	5.9	(BW : 0.941) : $(BH)^2$
leg	16.0	(BW : 0.84) : $(BH)^2$
hand	0.7	(BW : 0.993) : $(BH)^2$
"below-the-elbow"	2.3	(BW : 0.977) : $(BH)^2$
arm	5.0	(BW : 0.995) : $(BH)^2$

Amputation of	%	BMI-Calculation
both feet	3.0	(BW : 0.97) : $(BH)^2$
both "below-the-knee"	11.8	(BW : 0.882) : $(BH)^2$
both legs	32.0	(BW : 0.68) : $(BH)^2$
both hands	1.4	(BW : 0.986) : $(BH)^2$
both "below-the-elbow"	4.6	(BW : 0.954) : $(BH)^2$
both arms	10.0	(BW : 0.9) : $(BH)^2$

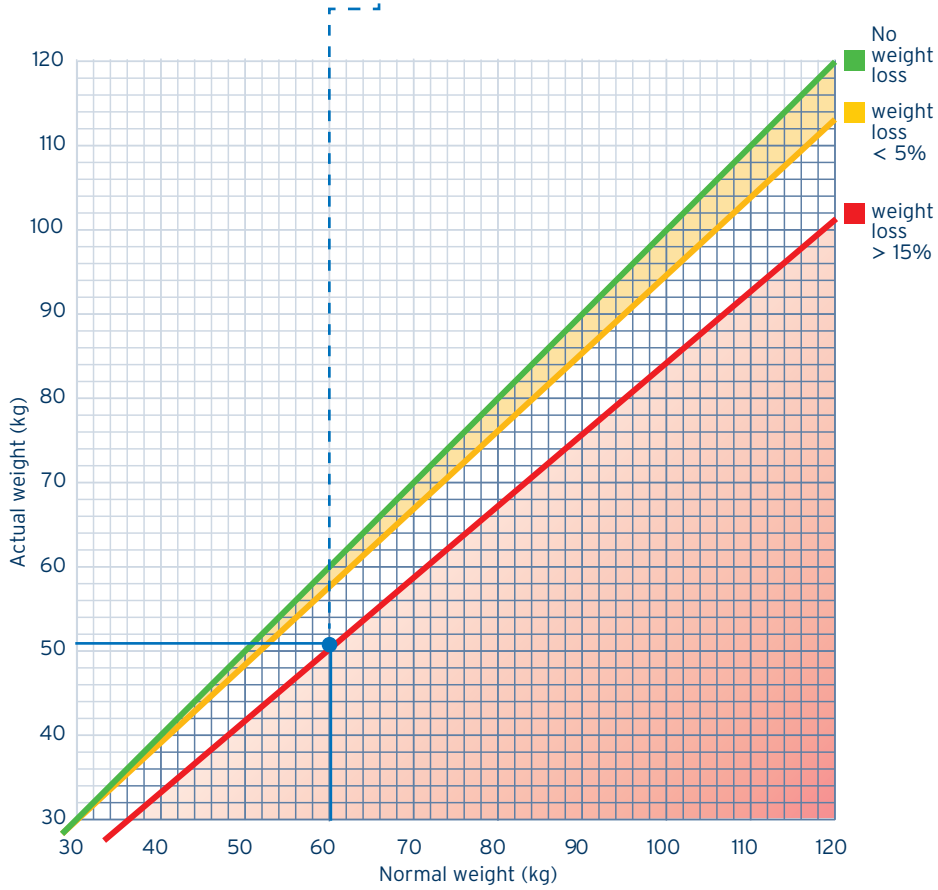
Example 1: Amputation of one leg
Current body weight (BW): 63 kg
Body height = 1.76 m
BMI = (63 : 0.84) : 1.76^2 = 75 : (1.76 x 1.76)
BMI = 24.2 kg/m²

Example 2: Amputation of both arms
Current body weight (BW): 63 kg
Body height = 1.76 m
BMI = (63 : 0.9) : 1.76^2 = 70 : (1.76 x 1.76)
BMI = 22.6 kg/m²

Calculation of weight loss in %

Optional useful parameter in screening procedure.

Normal weight [kg]	Weight loss	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115
Actual weight [kg]	5 %	38	43	47.5	52	57	62	66.5	71	76	81	85.5	90	95	100	104.5	109
	10 %	36	40.5	45	49.5	54	58.5	63	67.5	72	76.5	81	85.5	90	94.5	99	103.5
	15 %	34	38	42.5	47	51	55	59.5	64	68	72	76.5	81	85	89	93.5	98



Sources: 1 Chumlea W et al. (1988): Assessment of the nutritional status of healthy and handicapped adults. In: Lohman TG, Roche AF, Martorell R. Anthropometric standardization reference manual. Champaign Illinois: Human Kinetics Books. S. 115-119 **2** AKE (2008): Recommendations for enteral and parenteral nutrition in adults. Austrian Society of Clinical Nutrition, Vienna **3** Chumlea W et. al. (1994): Prediction of stature from knee height for black and white adults and children with application to mobility-impaired or handicapped persons. J Am Diet Assoc; 94:1385-8, 1391.