Mini Nutritional Assessment (MNA®)

What is the MNA®?

The MNA® is an easy to use nutrition screening and assessment tool:

- It is the most validated and referenced nutrition screening and assessment tool for those 65+ years old

- It is the only nutrition screening tool that incorporates special considerations of the older adult (i.e. functionality, mobility, depression, and dementia)

In 1991, the MNA® was developed as a joint project between the Nestlé Research Center and Toulouse University, France.[1] Experts envisioned the tool becoming a part of the Comprehensive Geriatric Assessment (CGA), a tool commonly used in geriatric practice to evaluate overall functional status. Because functional dependency and quality of life correlate with poor nutritional status in older adults, it is essential to include nutritional screening as part of the evaluation process.
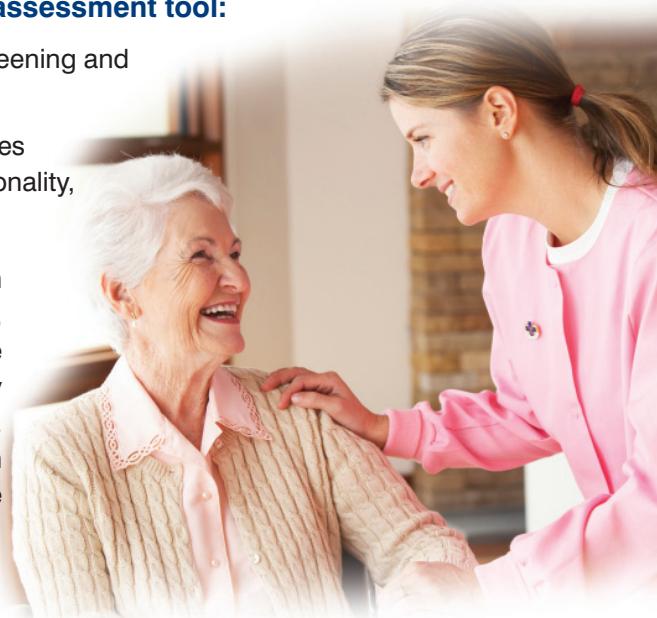
Comprehensive Geriatric Assessment (CGA)

Cognitive Status	Mini Mental Status Examination (MMSE)
Affective Status	Geriatric Depression Scale (GDS)
Mobility–Gait and Balance	Tinetti Performance-Orientated Mobility Assessment (POMA)
Functional Status - Activities of Daily Living	Activities of Daily Living (ADL)
Functional Status - Instrumental Activities of Daily Living	Lawton Instrumental Activities of Daily Living (IADL)
Nutritional Adequacy	Mini Nutritional Assessment (MNA®)

The MNA® consists of 18 easily measurable items classified into four categories:

1. Anthropometric measurements (4 questions on weight, height and weight loss)
2. Dietary questionnaire (6 questions related to number of meals, food and fluid intake, autonomy of feeding)
3. Global assessment (6 questions related to lifestyle, medication and mobility)
4. Subjective assessment (2 questions on self-perception of health and nutrition)

Validation studies demonstrated the strong capacity of the MNA® to reflect the nutritional status and the risk of malnutrition in the older adult. A strong correlation between the MNA® and biochemical parameters was shown, particularly with albumin ($p < 0.0001$).[2]

Validation Criteria[3]

Sensitivity	96%	• Ability to identify malnourished or those at risk
Specificity	98%	• Ability to identify well-nourished
Predictive value	97%	

The MNA®-SF

Soon after the MNA® was first introduced, it was recognised that its complexity and length prevented its use as a screening tool. Thus, the MNA®-SF (Short-Form) was developed by Rubenstein *et al.* in 2001.[4] It is the first 6 questions of the full MNA®. If an older person was identified as at nutritional risk by these 6 questions (Screening score) then the full MNA® would be completed, providing a Malnutrition Indicator Score. This further classified one as malnourished or at risk of malnutrition.

This revised process was shown to have:

- High correlation with full MNA® (rα= 0.945)

- Serum albumin predictability as good as the full MNA®

In addition to the formal validation, the MNA® and MNA®-SF:

- Have been used in studies of more than 30,000 older adult subjects in different settings (community, home care, outpatient, acute and long-term care)

- Are included in more than 400 published studies which support the sensitivity, specificity, and reliability of the MNA® in different settings and geographies

- Are by far the most widely used and validated tool for nutritional screening and assessment of the older adult, in both medical practice and clinical research

- Are recommended by many national and international clinical and scientific organisations as the preferred nutrition screening tool for the older adult

Latest Developments: The *MNA® International Initiative*

Although the MNA® and MNA®-SF have been available for use for many years, it is still not well integrated into clinical practice due to:

- Often being seen as too time consuming (if risk of malnutrition is identified, the full MNA® must be completed)

- Not able to be completed if weight and height measurements are not available

- A lack of awareness and education on the importance of nutrition

In 2008-2009 Nestlé Nutrition addressed these issues with the **The *MNA® International Initiative.*[5]** This study collated data from geriatric settings across the globe, and from this database validated a **new MNA®-SF**.

The key features of the new MNA®-SF are:

- It is now validated as a **stand alone nutrition screening tool**, which can be completed in less than 4 minutes

- Calf circumference may be used instead of Body Mass Index

- It can identify an older person as **well nourished, at risk of malnutrition or malnourished**

This study resulted in a new MNA®-SF which is a more user friendly tool, does not necessitate completion of the full MNA® to identify nutritional risk and facilitates more timely nutrition intervention.

Further information:

For further information on the MNA®, the pertinent scientific literature, educational tools (videos, webinars, congress proceedings) and latest news, visit **www.mna-elderly.com**

References:
1. Vellas B *et al.* (2006) Overview of the MNA®-Its history and challenges. *J Nutr Health Aging*;**10**: 456-463.
2. Vellas B *et al.* (1999) The Mini Nutritional Assessment (MNA) and its use in grading the nutritional state of elderly patients. *Nutrition*; **15**;116-122.
3. Guigoz Y *et al.* (1995) Test d'évaluation de l'etat nutritionnel de la personne âgée: le Mini Nutritional Assessment (MNA). [Test to assess the nutritional status of the elderly The Mini Nutritional Assessment (MNA)]. *Med Hyg*; **53**: 965-1969.
4. Rubenstein LZ *et al.* (2001) Screening for undernutrition in geriatric practice: developing the short-form Mini Nutritional Assessment (MNA®-SF). *Journal of Gerontology*; **56A**:M366-M372.
5. Kaiser MJ *et al.* (2009); Validation of the Mini Nutritional Assessment Short-form (MNA®-SF): A Practical Tool for identification of Nutritional Status. *J Nutr Health Aging*; **3**:782-788.